

under different and, doubtless in some cases, more favourable circumstances. A science of education, then, would bring before the teacher the labours and experience of others in the same field, —the labours of the greatest minds, the experience of the most skilled in its several departments. The teacher knowing the views of others on the different points of his profession, would thus in each case be able to select that method that would be best suited to the circumstances.* The materials for this are to be found in the vast number of books that have been written upon education. There is probably no subject on which so many books have been written, and there are few, we believe, whose professors are more ignorant of the literature of their profession, or of what has been done in the same field by their predecessors. The theologian is familiar with the history of his church, the medical man draws largely for his knowledge upon the experience of others, the lawyer is guided almost entirely by precedent, yet how few teachers are there that have more than a faint glimmering of the literature of their profession, or of the systems or methods that have been recommended or adapted by some of the greatest names that have adorned it? No attempt has hitherto been made to gather up, systematise, and utilise the vast amount of knowledge that is shut up here. Many a good rule or observation, says Richter, in speaking on this subject, "is lost because it is imprisoned in some monstrous folio, or blown away in some single sheet." In a science of education, then, all that can be found bearing upon the subject in the works of previous writers, would fall to be collected, systematised, explained, and carried out to their legitimate consequences. Also in works of history, biography, natural science, and general literature, will be found many observations directly bearing upon education. It is impossible to estimate the amount of light that would be thrown upon the subject in this way. There are many important principles generally recognized that are comparatively worthless from want of being properly understood, many rules that are of little value from want of knowing when or where they are to be applied, and not a few that are taken advantage of in one department, but not in others, where they are equally suitable.

Education is the drawing out or forth of the various powers and faculties of man, each to the highest state of perfection of which it is capable, and at the same time in perfect harmony with all the rest. In order to this, it is necessary to know first of all the nature of these faculties themselves, second, the means by which they are to be cultivated, and third, the end or point up to which they are to be brought. This is exactly in the same way as a sculptor who wishes to form an image in marble, must know first of all the nature of the material upon which he is to work, and its capabilities for the object he has in view; second, he must know how to use the various tools of his art; and third, he must have a distinct idea or impression in his own mind of the image he wishes to form. The material upon which the educator has to practise his art, to exercise his skill, is a young human being,—a being composed of two widely different constituents, a body made up of different parts, limited as to space and time, changeable, destructible; a soul or spirit, destitute of parts unlimited as to time and space, unchangeable, indestructible. With the nature or character of either of these, separately or by itself, the teacher has little or nothing to do.† It is only as they manifest themselves conjointly, in the operations of the body or in the phenomena of the mind that they come within his sphere; and here he must ever bear in mind, that in neither case is he dealing with the one or the other separately or by itself, but ever with both in intimate, inseparable connection. In mind the teacher has to deal with incorporated spirit, in body with animated matter. The highest operations of the human mind are material, in so far as they are dependent upon the mind's material organ, the brain; while the most mechanical of our physical actions in like manner partake of the nature of spirit. Physiologists tell us, not a thought, feeling, or motion passes through the mind without causing the destruction of a certain portion of the nerve-matter of the brain. The brain partakes of the same nature as the other parts of the body, being subject to the same laws, and sustained and nourished in the same way. The same arterial blood supplies nourishment to all parts of the system, and is dependent upon the various digestive, respiring, and other functions of the body. Hence it is that soundness of body is necessary to soundness of mind.

A knowledge of the intimate connection subsisting between body and mind is of the utmost importance in education. There are many persons who look upon the body and mind of man as having little or no connection together, while some regard them even as antagonistic, and consider that what they can abstract from the one is so much given to the other. The interests of the two are inseparably connected, and the one cannot suffer without the other suffering with it. How many young men of the greatest promise have fallen victims to the ignorance of teachers and others on this all-important point!

It is from physiology that we obtain a knowledge of the physical constitution of man. Physiology makes us acquainted with the laws of health, and of the conditions of growth and development of

the different physical organs, and not only so, but we obtain from it also an explanation of many of the mental phenomena, a knowledge of many of the laws and conditions under which our mental faculties are developed. Our mental as well as our physical powers are developed and strengthened by exercise,—by exercise under the like conditions and limitations. The laws that regulate it, the effects produced by it, the conditions demanded by it are the same in both cases. In the one case as in the other the exercise is at first difficult, can only be performed slowly, and soon produces fatigue. Hence, at first, we ought to proceed by little and little at a time, gradually enlarging and lengthening as the powers acquire strength. The exercise ought neither to be continued too long nor ceased too soon, neither to be conducted too slowly nor yet too fast, neither to be intermitted too long nor resumed too soon. There is a certain rate of acquisition to be observed in each case, in order to obtain the greatest amount of progress with the smallest amount of practice. An organ may receive permanent injury by being over-exercised, particularly at first. In physical training, where systematically carried out, as in drilling recruits for the army, the conditions under which certain movements are most speedily and most accurately acquired are understood and acted upon, but how few know or believe that there are similar laws or conditions to be observed in mental training.* And yet, when we come to regard the physical nature of the mind's organ, the brain, it is not unnatural to think that it may be so. We know that the effect of exercise upon a muscle is the destruction of a portion of the material of which it is composed, followed by an increased flow of fresh material to compensate for the loss that has taken place. And not only so, but there is every reason to believe that the new material receives in the act of assimilation a particular form or basis from the state of the muscle at the time, which ever after gives it greater dexterity and ease in the like movements. In like manner, we know that the exercise of any of our mental faculties causes the destruction of a portion of the material constituents of the brain; and here, too, there is an increased flow of material matter to make up for the waste that is taking place. May we not here too believe that the new material receives a particular mould or impression from the state of the organ at the time.†

We believe that in this way, from a study of our physical nature, we may come to understand many of the mental phenomena, and learn in many cases how we ought to proceed in education. The rules to be observed and the order to be followed are frequently the same in both cases. In setting a child to any physical exercise, in instructing him in any manual art, we simply and at once put him in the way of practising it without troubling him with any learned disquisitions on the principles or philosophy of it. The practice precedes, does not follow, the knowledge of the principles. Ought not this to also characterise our moral and intellectual teaching to a much greater extent than it does at present? In moral teaching, for instance, in place of telling, lecturing, and explaining so much as we do, would it not be infinitely better simply and quietly to set them to the practice of what is right and proper, and then, if necessary, give them the lectures and explanations afterwards? As Aristotle says, "By doing just things we become just, by doing temperate things temperate, by doing brave things brave." In the same way, in the learning of languages, we believe that the natural and proper way is to begin with the practice or speaking of it, in place of, as is commonly done at present, with rules, and definitions, and exceptions. At least, this system has many able advocates on its side. In the acquiring of a good style, or in the studying of such arts as logic or rhetoric, we are of opinion that the same course ought to be followed, and that in place of rules, examples for imitation should more frequently be placed before the scholar. It has been remarked, that if one would acquire a good English style, he "must give his days and his nights to the study of Addison;" and in like manner, if one would be a skilled logician or rhetorician, he can only become so by studying the works of the chief masters of these arts. Men do not apply rules to everything that they may speak or think, but they speak or think in a particular way because they had been accustomed so to speak or so to think. The child learns to speak its mother's tongue grammatically not from grammar rules, but from hearing it spoken grammatically by those around it. Comparison is a dominant principle in the human mind, and whenever a subject is presented to it, it instinctively refers to something of a similar nature that has previously been before it brings the two together, compares them, and treats the one in the same way that the other had been treated. Not more readily does a man perform a mechanical ope-

* "The readiness with which particular habitudes of thought are formed, varies greatly in different individuals and at different periods of life. As a general rule, it is far greater during the period of growth and development than after the system has come to its full maturity." "Infancy childhood, youth, adolescence, adult age, the period of decline and senility have all their characteristic phases of psychical as of physical development, and decline."—(*Carpenter's Human Physiology.*)

† We seem justified in affirming that some change must be effected in the condition of the nervous centres, by every impression of which we become conscious, whereby that impression is organically perpetuated in such a manner as to allow of its presenting itself anew to the cognisance of the mind at any future time when it may be excited from a passive to an active condition."—(*Carpenter's Human Physiology.*)

"If the mind partakes truly of an organic character, though in a higher region, the laws which apply to the progress of organic life generally ought *mutatis mutandis* to hold good within its own subjective sphere, and the functions of the one ought to throw light upon the several stages of the other."—(*J. D. Morell's Elements of Psychology.*)

* "Method in education ought to be, as far as possible, eclectic—a selection not only of the best, but the best for those actually under our care."—(*Education Reform*, by Thomas Wyse, M. P.)

† That a disembodied spirit has consciousness we must indeed believe, at least it is impossible to conceive how spiritual existence can be otherwise manifested; but at the same time it is impossible such consciousness is at all resembling our own, at any rate in the particular phenomena which are conveyed by means of the senses."—(*Mansel's Metaphysics.*)