GALL JAMES

A PRACTICAL ENQUIRY INTO THE PHILOSOPHY OF EDUCATION

James Gall

A Practical Enquiry into the Philosophy of Education

Gall J.

A Practical Enquiry into the Philosophy of Education / J. Gall — «Public Domain»,

Содержание

James Gall
A Practical Enquiry into the Philosophy of Education

PREFACE

The Author of the following pages is a plain man, who has endeavoured to write a plain book, for the purpose of being popularly useful. The philosophical form which his enquiries have assumed, is the result rather of accidental circumstances than of free choice. The strong desire which he felt in his earlier years to benefit the Young, induced him to push forward in the paths which appeared to him most likely to lead to his object; and it was not till he had advanced far into the fields of philosophy, that he first began dimly to perceive the importance of the ground which he had unwittingly occupied. The truth is, that he had laboured many years in the Sabbath Schools with which he had connected himself, before he was aware that, in his combat with ignorance, he was wielding weapons that were comparatively new; and it was still longer, before he very clearly understood the principles of those Exercises which he found so successful. One investigation led to another; light shone out as he proceeded; and he now submits, with full confidence in the truth of his general principles and deductions, the results of more than thirty years' experience and reflection in the great cause of Education.

He has only further to observe, that the term "Nature," which occurs so frequently, has been adopted as a convenient and popular mode of expression. None of his readers needs to be informed, that this is but another manner of designating "The God of Nature," whose laws, as established in the young mind, he has been endeavouring humbly, and perseveringly to imitate.

Myrtle Bank, Trinity, Edinburgh,
8th May, 1840.

PART I
ON THE PRELIMINARY OBJECTS NECESSARY FOR THE ESTABLISHMENT AND IMPROVEMENT OF EDUCATION

CHAP. I
On the Importance of establishing the Science of Education on a solid Foundation

Education is at present obviously in a transition state. The public mind has of late become alive to the importance of the subject; and all persons are beginning to feel awake to the truth, that something is yet wanting to insure efficiency and permanence to the labours of the teacher. The public will not be satisfied till some decided change has taken place; and many are endeavouring to grope their way to something better. It is with an earnest desire to help forward this great movement, that the writer of the following pages has been induced to publish the result of much study, and upwards of thirty years' experience, in the hope that it may afford at least some assistance in directing the enquiries of those who are prosecuting the same object.

On entering upon this investigation, it will be of use to keep in mind, that all the sciences have, at particular periods of their history, been in the same uncertain and unsettled position, as that which Education at present occupies; and that each of them has in its turn, had to pass through an ordeal, similar to that which education is about to undergo. They have triumphantly succeeded; and their subsequent rapid advancement is the best proof that they are now placed on a solid and permanent foundation. It is of importance, therefore, in attempting to forward the science of education, that we should profit by the experience of those who have gone before us. They succeeded by a strict observation of facts, and a stern rejection of every species of mere supposition and opinion; – by an uncompromising hostility to prejudice and selfishness, and a fearless admission of truth wherever it was discovered. Such must be the conduct of the Educationist, if he expects to succeed in an equal degree. The history of astronomy as taught by astrologers, and of chemistry in the hands of the alchymist, should teach both the lovers and the fearers of change an important lesson. These pretended sciences being mere conjectures, were of use to nobody; and yet the boldness with which they were promulgated, and the confidence with which they were received, had the effect of suppressing enquiry, and shutting out the truth for several generations. Similar may be the effects of errors in education, and similar the danger of too easily admitting them. The adoption of plausible theories, or of erroneous principles, must lead into innumerable difficulties; and should they be hastily patronized, and authoritatively promulgated, the improvement of this first and most important of the sciences may be retarded for a century to come.

The other sciences, during the last half century, have advanced with amazing rapidity. This has been the result of a strict adherence to well established facts, and their legitimate inferences. – A docile subjection of the mind to the results of experiment, and a candid confession and abandonment of fallacies, have characterized every benefactor of the sciences; – and the science of education must be advanced by an adherence to the same principles. The Educationist must be willing to abandon error, as well as to receive truth; and must resolutely shake off all conjecture and opinions not founded on fair and appropriate experiment. This course may appear tedious; – but it is the shortest and the best. By this mode of induction, all the facts which he is able to glean will assuredly be found

to harmonize with nature, with reason, and with Scripture; and with these for his supporters, the Reformer in education has nothing to fear. His progress may be slow, but it will be sure; for every principle which he thus discovers, will enable him, not only to outrun his neighbours, but to confer a permanent and valuable boon upon posterity.

That any rational and accountable being should ever have been found to oppose the progress of truth, is truly humiliating; yet every page of history, which records the developement of new principles, exhibits also the outbreakings of prejudice and selfishness. The deductions of Galileo, of Newton, of Harvey, and innumerable others, have been opposed and denounced, each in its turn; while their promoters have been vilified as empyrics or innovators. Nor has this been done by those only whose self love or worldly interests prompted them to exclude the truth, but by good and honourable men, whose prejudices were strong, and whose zeal was not guided by discretion. Such persons have frequently been found to shut their eyes against the plainest truths, to wrestle with their own convictions, and positively refuse even to listen to evidence. The same thing may happen with regard to education; – and this is no pleasing prospect to the lover of peace, who sets himself forward as a reformer in this noble work. – Change is inevitable. Teaching is an art; and it must, like all the other arts, depend for its improvement upon the investigations of science. Now, every one knows, that although the cultivation of chemistry, and other branches of natural science, has, of late years, given an extraordinary stimulus to the arts, yet the science of education, from which the art of teaching can alone derive its power, is one, beyond the threshold of which modern philosophy has scarcely entered. Changes, therefore, both in the theory and practice of teaching, may be anticipated; – and that these changes will be inconvenient and annoying to many, there can be no doubt. That individuals, in these circumstances, should be inclined to deprecate and oppose these innovations and improvements, is nothing more than might be expected; but that the improvements themselves should on that account be either postponed or abandoned, would be highly injurious. An enlightened system of education is peculiarly the property of the public, on which both personal, family, and national happiness in a great measure depends. These interests therefore must not be sacrificed to the wishes or the convenience of private individuals. The prosperity and happiness of mankind are at stake; and the welfare of succeeding generations will, in no small degree, be influenced by the establishment of sound principles in education at the present time. Nothing, therefore, should be allowed to mystify or cripple that science, upon which the spread and the permanence of all useful knowledge mainly rest.

CHAP. II
On the Cultivation of Education as a Science

From numerous considerations, it must be evident, that education claims the first rank among the sciences; and, in that case, the art of Teaching ought to take precedence among the arts; – not perhaps in respect of its difficulties, but most certainly in respect of its importance.

The success of the teacher in his labours, will depend almost entirely on the extent and the accuracy of the investigations of the philosopher. The science must guide the art. Experience shews, that where an artist in ordinary life is not directed by science, – by acknowledged principles, – he can never make any steady improvement. In like manner, when the principles of education are unknown, no advancement in the art can be expected from the teacher. Every attempt at change in such circumstances must be unsatisfactory; and even when improvements are by chance accomplished, they are but partial, and must be stationary. – When, on the contrary, the teacher is directed by ascertained principles, he never can deviate far from the path of success; and even if he should, he has the means in his own power of ascertaining the cause of his failure, and of retracing his steps. He can, therefore, at his pleasure, add to or abridge, vary or transpose his exercises with his pupils, provided only that the great principles of the science be kept steadily in view, and be neither outraged, nor greatly infringed. No teacher, therefore, should profess the art, without making himself familiar with the philosophical principles upon which it is founded. In the mechanical arts, this practice is now generally followed, and with the happiest effects. The men of the present generation have profited by the painful experience of thousands in former times; who, trusting to mere conjectures, tried, failed, and ruined themselves. The mechanics of our day, instead of indulging in blind theories of their own, and hazarding their money and their time upon speculation and chance, are willing to borrow light for their guidance from those who have provided it. They slowly, but surely, follow in the path opened up to them by the discoveries of science, – and they are never disappointed.

The unexampled success of the mechanical arts, would, upon the above principles, naturally lead us to conclude, that the sciences, from which they have derived all that they possess, must have been cultivated with corresponding energy. And such is the fact. Since the adoption of the inductive method of philosophizing, nearly all the sciences have been advancing rapidly and steadily; and the cause of this is to be found in adhering to the rules of induction. No science has been allowed to rest its claims upon mere theory, or authority of any kind, but upon evidence derived from facts. Mere opinions and suppositions have been rigidly excluded; and that alone which was acquired by accurate investigation, has been acknowledged in science as having the stamp of truth. The inductive philosophy takes nothing for granted. Every conclusion must be legitimately drawn from ascertained facts, or from principles established by experiment; and the consequence has been, not only that what has been attained is permanent, and will benefit all future generations, but the amount of that attainment, in the short time that has already elapsed, is actually greater than all that had been previously gained during centuries. In this general improvement, however, the science of Education has till lately formed an exception. The principles of true philosophy do not appear to have been brought to bear upon it, as they have upon the other sciences; and the consequences of this neglect have been lamentable. In every branch of natural philosophy, there are great leading principles already established. But where were there any such principles established by the philosopher for the guidance of the teacher? By what, except their own experience, and conjectures, were teachers directed in the training of the young? – Thirty or forty years ago, what was called "education" in our ordinary week-day schools, was little more than a mechanical round of barren exercises. The excitement of religious persecution, which had been the means of disciplining the intellectual and moral powers of Scotsmen for several previous generations, had by that time gradually subsided, and had left education to do its own work, by the use of its own resources. But these were perfectly inadequate to the task.

The exercises almost universally employed in the education of the young, had neither been derived from science, nor from experience of their own inherent power; and they would, from the beginning, have been found perfectly inefficient, had they not been aided, as before noticed, by the stimulant of religious persecution. – The state of education, at the time we speak of, is still fresh on the memory of living witnesses who were its victims; and some of the absurdities which were then universal, are not even yet altogether extinct.

Soon after the period above stated, an important change began to take place in the art of teaching, – but still unaided and undirected by science. Some of the more thinking and judicious of its professors, roused by the flagrant failures of their own practice, made several noble and exemplary efforts to place it on a better footing. Had these efforts been guided by scientific research, much more good would have been done than has been accomplished, and an immense amount of misdirected labour would have been saved. But although many of the attempts at a change failed, yet some of them succeeded, and have gradually produced ameliorations and improvements in the art of teaching. Still it must be observed, that philosophy has had little or no share in the merit. Her labours in this important field have yet to be begun. Valuable exercises have no doubt been introduced; but the principles upon which the success of these exercises depends, remain in a great measure concealed from the public generally: – And the reason of this is, that the public have been indebted for them to the *art* of the teacher, and not to the *science* of the philosopher.

That this is not the position in which matters of so much public importance should continue, we think no one will deny. Education must be cultivated as a science, before teaching can ever flourish as an art. The philosopher must first ascertain and light up the way, before the teacher can, with security, walk in it. Experiment must be employed to ascertain facts, investigate causes, and trace these causes to their effects. By fair and legitimate deductions drawn from the facts thus ascertained, he will be enabled to establish certain principles, which, when acted upon by the teacher, will invariably succeed. But without this, the history of all the other arts and sciences teaches us, that success is not to be expected; – for although chance may sometimes lead the teacher to a happy device, there can be no steady progress. Even those beneficial exercises upon which he may have stumbled, become of little practical value; because, when the principles upon which they are based are unknown, they can neither be followed up with certainty, nor be varied without danger.

There will no doubt be a difficulty in the investigation of a science which is in itself so complicated, and which has hitherto been so little understood; but this is only an additional reason why it should be begun in a proper manner, and pursued with energy. The mode of procedure is the chief object of difficulty; but the experience and success of investigators in the other sciences, will be of great advantage in directing us in this. In the sciences of anatomy and physiology, for example, the investigations of the philosopher are designed to direct the several operations of the physician, the surgeon, and the dentist; in the same way as the investigations of the Educationist are intended to direct the operations of the Teacher. Now the mode of procedure in those sciences for such purposes is well known, and forms an excellent example for us in the present case. The duty of the anatomist, or physiologist, is simply to examine the operations of Nature in the animal economy, and the plans which she adopts for accomplishing her objects during health, and for throwing off impediments during disease. In conducting his investigations, the enquirer begins by taking a general view of the whole subject, and then separating and defining its leading parts. Pulsation, respiration, digestion, and the various secretions and excretions of the body, are defined, and their general connection with each other correctly ascertained. These form his starting points; and then, taking each in its turn, he sets himself to discover the principles, or laws, which regulate its working in a healthy state; – what it is that promotes the circulation or stagnation of the blood, the bracing or relaxing of the nerves, the several processes in digestion, and the various functions of the skin and viscera. These are all first ascertained by observation and experience, and then, if necessary, established by experiment.

These principles, having thus been established by science, are available for direction in the arts. The physician acts under their guidance; and his object is simply to regulate his treatment and advice in accordance with them. In other words, *he endeavours to imitate Nature*, to remove the obstructions which he finds interfering with her operations, or to lend that aid which a knowledge of these principles points out as necessary. The surgeon and the dentist follow the same course, but more directly. In healing a wound, for example, the surgeon has to ascertain from science how Nature in similar cases proceeds when left to herself; and all his cuttings, and lancings, and dressings, are nothing more than *attempts to imitate her* in her healing operations. So well is this now understood, that every operation which does not at least recognise the principle is denounced – and justly denounced – as quackery; and the reason is, that uniform experience has convinced professional men, that they can only expect success when they follow with docility in the path which Nature has pointed out to them.

Precisely similar should be the plan of operation pursued by the Educationist. He should, in the first place, take a comprehensive view of the whole subject, and endeavour to map out to himself its great natural divisions; – in other words, he should endeavour to ascertain what are the things which Nature teaches, that he may, by means of this great outline, form a general programme for the direction of the teacher. His next object ought to be, to ascertain the mode, and the means, adopted by Nature in forwarding these several departments of her educational process; the powers of mind engrossed in each; the order in which they are brought into exercise; and the combinations which she employs in perfecting them. In ascertaining these principles which regulate the operations of Nature in her educational processes, the same adherence to the rules prescribed by the inductive philosophy, which has crowned the other sciences with success, must be rigidly observed. There must be the same disregard of mere antiquity; there must be the same scrupulous sifting of evidence, and strict adherence to facts; there must be a discarding of all hypotheses, and a simple dependence upon ascertained truths alone. Adherence to these rules is as necessary in cultivating the science of education, as it has been in the other sciences; and the neglect of any one of them, may introduce an element of error, which may injure the labours of a whole lifetime.

We have some reason to fear, that although all this will be readily admitted in theory, it will be found somewhat difficult to adopt it in practice. The reason of this will be obvious when we reflect on the deep interest which the best and most philanthropic individuals in society take in this science. The other sciences are in some measure removed from the busy pursuits of life; they are the concern of certain persons, who are allowed to investigate and to experiment, to judge and to decide as they please, without the public in general caring much about the matter. – But education is a science of a different kind. Its value is acknowledged by every one, and its interests are dear to every benevolent heart. The individual who undertakes to examine, and more especially to promulgate, any new principle upon which education rests, will have a harder task to perform, and a severer battle to fight, than the philosopher who attempts to overturn a false conclusion in chemistry, or an erroneous principle in mechanics. Among the learned community, not more than one in a thousand perhaps is personally interested either in mechanics or in chemistry; and few others will enter the lists to oppose that which appears legitimate and fair. The enemies and opponents of the chemical reformer in that case may be zealous and even fierce; but they are few, and he enjoys the sympathy and the countenance of the great majority of those whose countenance is worthy of his regard. But when we calculate the number of those who take an interest in the subject of education, and those who do not, the above numbers will be reversed. Nine hundred and ninety-nine among the educated public will be found who take a real interest in the progress of education, for one who cares nothing about it.

This is a fearful odds where there is a likelihood of opposition; – and opposition may be expected. For there will be influences in many of the true friends of education, derived from old prejudices within, combined with the pressure of conflicting sentiments in their friends from without, which will render the task of establishing new and sound principles in this first of the sciences an irksome, and even a hazardous employment. Coldness or opposition from those whom we honour

and love is always painful; and yet it should be endured, rather than that the best interests both of the present and future generations should be sacrificed. The opinions of all good men deserve consideration; – but when they are merely opinions, and are not founded on reason, they are at best but specious; and when they are opposed to truth, and are contrary to experience, a zealous adherence to them becomes sinful and dangerous. Such persons ought to commend, rather than blame, the reformer in education, when he declines to adopt ancient dogmas which he finds to be useless and hurtful: And at all events, if all have agreed to disregard the authority of an Aristotle or a Newton, when opposed to new facts and additional evidence, the Educationist must not allow himself to be driven from the path of fact and experience by either friends or enemies. No authority can make darkness light; – and although he may be opposed for a time, and the public mind may be abused for a moment, it will at last correct itself, and truth will prevail.

But the friends of education ought in no case to put the perseverance of those who labour for its improvement to so severe a trial. They ought in justice, as well as charity, to cultivate a forbearing and a candid spirit; and they will have many opportunities of exercising these virtues during the progress of this science. Education is confessedly but in its infancy; and therefore it must grow much, and change much, before it can arrive at maturity. But if there be an increasing opposition to all advance, and if a stumbling-block be continually thrown in the way of those who labour to perfect it, the labourers may be discouraged, and the work be indefinitely postponed. Let all such then guard against a blind opposition, or an attempt to explain away palpable facts, merely because they lead to principles which are new, or to conclusions which are at variance with their pre-conceived opinions. If they persevere in a blind opposition, they may find at last that they have been resisting truth, and defrauding their neighbour. Truth can never be the enemy of man, although many inadvertently rank themselves among its opponents. The resistance which has invariably been offered to every important discovery hitherto, should be a beacon to warn the inconsiderate and the prejudiced against being over-hasty in rejecting discoveries in education; and the obloquy that now rests on the memory of such persons, should be a warning to them, not to plant thorns in their own pillows, or now to sow "the wind, lest they at last should reap the whirlwind."

CHAP. III
On the Improvement of Teaching as an Art

As Education on account of its importance takes precedence in the sciences, so Teaching should rank first among the arts. The reasons for this arrangement are numerous; but the consideration of two will be sufficient. – The first is, that all the other arts refer chiefly to time, and the conveniences and comforts of this world; while the art of teaching not only includes all these, but involves also many of the interests of man through eternity. – And the second is, that without this art all the other arts would produce scarcely any advantage. Without education of some kind, men are, and must continue to be savages, – it being the only effectual instrument of civilization. It is the chief, if not the only means for improving the condition of the human family, and for restoring man to the dignity of an intelligent and virtuous being.

As "Science" is the investigation and knowledge of principles, so an "art" may be defined as a system of means, in accordance with these principles, for attaining some special end. Teaching is one of the arts; and it depends as entirely for its success upon a right application of the principles of the science of education, as the art of dying does upon the principles of chemistry. As an art, therefore, teaching must be subjected to all those laws which regulate the improvement of the other arts, and without which it can never be successfully carried on, far less perfected. These laws are now very generally understood; and we shall briefly advert to a few of them, which are necessary for our present purpose, and endeavour to point out their relation to the art of teaching.

1. One of the first rules connected with the improvement of the arts is, that the artist have *a specific object in view, for the attainment of which all his successive operations are to be combined*. – The manufacturer has his *cloth* in prospect, before he has even purchased the wool of which it is to be composed; and it is the desire of procuring cloth of the most suitable quality, and by the easiest means, that compels him to draw liberally and constantly from the facts ascertained, and the principles developed, by the several sciences. From the science of mechanics he derives the various kinds of machinery used in the progressive stages of its production; and from the science of chemistry he obtains the processes of dying, and printing, and dressing. But he never troubles himself about the science of mechanics or of chemistry in the abstract; he thinks only of his cloth, and of these sciences as means to assist him in procuring it. He is careful of his machinery, and is constantly alive to the mode of its working, and is thus prompted to adopt such improvements as observation or experience may suggest; but it is not the machinery of itself that he either cares for, or thinks about. No; it is still the cloth that he keeps in view; and his machinery is esteemed or slighted, adopted or abandoned, exactly in proportion as it forwards his object. The processes necessary in the different departments of his establishment, are complicated and various, and to a stranger they are both curious and instructive; but it is neither the labour nor the variety that he is seeking. His is a very different object; and of this object he never loses sight; for the varied operations of stapling and carding, of spinning and weaving, are nothing more than means which he employs for accomplishing his end. He knows the uses of the whole complicated operations; and he sees at a glance, and can tell in a moment, how each in its turn contributes to the great object of all, – the production of a good and marketable cloth.

Now this law ought to be applied with the utmost strictness to the art of teaching. For if teaching be really an art, – that is, a successive combination of means, – it should undoubtedly be a combination of means to some specific end. Nothing can be more obvious, than that a man who sits down to work, should know what he intends to do, and how he is to do it. Such a line of conduct should be imperatively demanded of the teacher, both on account of the importance of his work, and of the immense value of the material upon which he is to operate. The end he has in view, whatever that end may be, ought to be correctly defined before he begins; and no exercise should upon any account be prescribed or demanded from his pupils, which does not directly, or indirectly at least, conduce to its

attainment. To do otherwise is both injudicious and unjust. For if the operations of the husbandman during spring have to be selected and curtailed with the strictest attention to time and the seasons, how carefully ought the energies and the time of youth to be economized, when they have but one short spring time afforded them, during which they are to sow the seed which shall produce good or evil fruit for eternity? As to what this great end which the teacher ought steadily to contemplate should be, we shall afterwards enquire; at present we are desirous only of establishing this general law in the art of teaching, that there should be an end accurately defined, and constantly kept in view; and for the attainment of which every exercise prescribed in the school should assist. The teacher who does otherwise is travelling in the dark, and compelling labour for labour's sake; – like the manufacturer who would keep all his machinery in motion, not to make cloth, but to appear to be busy.

2. Another law adopted in the successful prosecution of the arts is, *to use the best known means for attaining any particular end*. – This law is well known in all the other arts, and success invariably depends upon its adoption. The fields are not now tilled by the hoe, nor is cotton spun by the hand. These modes of operating have no doubt the recommendation of antiquity; but here antiquity is always at a discount, and no one doubts the propriety of its being so. The arts are advancing; and they who would impede their progress on the plea of not departing from the usages of antiquity, would be pitied or laughed at.

The art of teaching, like the other arts, depends for its success on a strict adherence to this law; and the fear of departing in this case from the particular usages of our ancestors is equally unreasonable. Soft ground in the valleys compelled them to travel their pack horses right over the hills, and the want of the "Jenny" made them spin their yarn by the hand; but still, the same principle which guided them in the adoption of those methods, was strictly the one which we are here recommending, that of "using the best *known* means for accomplishing the particular end." Those who adopt the principle do most honour to their sagacity; while their shallow admirers, by abandoning the principle, and clinging to their necessarily imperfect mode of applying it, at once libel their good sense, and dishonour those whom they profess to revere. As society is rapidly advancing, paternal affection would undoubtedly have prompted them to advise their descendants to take the benefits of every advance; – and it would be as reasonable for us to suppose, that if they were now alive, they would advise us to travel over the hills on their old roads, or make our cloth in the old way, as to think they would be gratified by our continuing to use exercises in education, which sound philosophy and experience have shewn to be fallacious and hurtful, or that they would be displeased by the use of those which extensive experiment has now proved to be natural, easy, and efficient.

These ancestral trammels have all been shaken off, wherever the acquisition of money is concerned. The mechanical processes of his forefathers have no charm for the modern manufacturer, when he can attain his object more economically by a recent improvement. Neither does he go blindfold upon a mere chance, – seldom even upon a sagacious conjecture, – unless there be some good grounds for its formation. In every successive stage of his operations, he is awake to the slightest appearance of defect; and he hesitates not a moment in abandoning a lesser good for a greater, whenever he perceives it. He husbands time; – he husbands expense; – he husbands supervision and risk. Every step with him is a step in advance; – every operation has a design; – every movement has a meaning; – and he makes all unite for the attainment of one common object. Can we doubt that, in like manner, the most rigid economy of time and labour ought to be adopted in the art of teaching? When the end has once been distinctly defined, it ought steadily to be kept in view; and no exercise should be prescribed which does not contribute to its attainment. There should be no bustling about nothing; no busy idleness; no fighting against time; no unnecessary labour, nor useless exhaustion of the pupil's energies. The time of youth is so precious, and there is so much to be done during it, that economy here is perhaps of more importance than in any thing else. Every book or exercise, therefore, which has not a palpable tendency to forward the great object designed by education, should by the teacher be at once given up.

3. Another law which experience has established as necessary for the perfecting of any of the arts is, *a fair and honest application of the successive discoveries of science to its improvement.* – This has been the uniform practice in those arts which have of late been making such rapid progress. The artist and mechanic are never indifferent to the various improvements which are taking place around them; nor do they ever stand apart, till they are forced upon their notice by third parties, or public notoriety. There is, in the case of the manufacturer, no nervous timidity about innovation; nor does he ever attempt to deceive himself by ignorantly supposing that the change can be no improvement. – Nor will he suffer himself to be deceived by others. His workmen are not allowed, to save themselves future trouble, to be careless or sinister in their trials of the improvement; for he knows, that however it may be with them, yet if his neighbour succeeds, and he fails, it may prove his ruin.

Such also should be the conduct of the teacher. The time has now gone by when parents were ignorant, either of what was communicated at school, or the manner in which it was taught. The improvement of their children by education, has become a primary object with all sensible parents; and they will never again be satisfied with a school or a teacher, where solid instruction, and the most useful kind of knowledge are not imparted. Ameliorations in his art, therefore, is now as necessary to the teacher, as improvements in machinery are to the mechanic and the manufacturer. It will no longer do for him to say, "I can see no improvement in the change," if the parents of his pupils have been able to discover it; and the teacher who stands still in the present forward march of society, will soon find himself left alone. The practical Educationist, like the mechanician, ought no doubt to be cautious in adopting changes upon chance; but wherever an improvement in his art has been sufficiently proved by fair experiment or long experience, and particularly, when the principle upon which its success depends has been fully ascertained, his rejecting the change on the plea of inconvenience, or from the fear of trouble, is not only an act of injustice to the parents of his pupils, but is a wrong which will very soon begin to re-act upon his own interests. The effect of indifference to improvement in this, as in other arts, may not be felt for a time; but as soon as *others* have made themselves masters of the improvements which he has rejected, the successive departure of his pupils, and the melting away of his classes, will at last awaken him to a sense of his folly, when it may be too late. Such has usually been the effect of remissness in the other arts; and the present state of the public mind in regard to education, indicates a similar result in similar circumstances.

In connection with this part of our subject, it may here be necessary to remark, that as the experience of all teachers may not be alike in the *first working* of a newly applied principle, – the principle itself, when fully ascertained, is not on that account to be either belied or abandoned. There are many concurring circumstances, which may make an exercise that succeeds well in the hands of one person, fail in the hands of another; but to refuse credence to the principle itself, because he cannot as yet successfully apply it, is neither prudent nor wise. There are chemical experiments so exceedingly nice, and depending on so many varying circumstances, that they frequently fail in the hands of even good operators. But the chemical principles upon which they rest remain unchanged, although individual students may have not been able successfully to apply them. If their professor has but *once* fairly and undoubtedly succeeded in ascertaining the facts on which the principle is based, their failure for a thousand times is no proof that the ascertained principle is really a fallacy. In like manner, any important principle in education, if once satisfactorily ascertained, is a truth in the science, and will remain a truth, whoever may believe or deny it. If it has been proved to produce certain effects in certain given circumstances, it will in all future times do the same, when the circumstances are similar. The inability, therefore, of a parent or teacher, to produce equal effects by its means, may be good enough proof of his want of skill, but it is no proof of the want of inherent power in the principle itself. The rings of Saturn which my neighbour's telescope has clearly brought to view, are not blotted from the heavens because my pocket glass has failed to detect them.

It has been by attention to these, and similar rules, that all the secular arts have advanced to their present state; and the art of teaching must be perfected by similar means. There ought therefore

to be a distinct object in view on the part of the teacher, – a specific end which he is to endeavour to arrive at in his intercourse with his pupil. For the attainment of this end, he must employ the best and the surest means that are in his power; for the same purpose, he ought honestly and fairly to apply the successive discoveries of science as they occur; and should never allow himself to abandon an exercise founded upon ascertained principles, merely because he at first finds difficulty in putting it in operation.

CHAP. IV
On the Establishment of Sound Principles in Education

The application of the foregoing remarks to our present purpose, is a matter of great practical importance. It has indeed been owing chiefly to their having been hitherto overlooked, that education has been left in the backward state in which we at present find it.

But if, as we have seen, education must bend to the same rigid discipline to which the other sciences have had to submit, – and if teaching can be improved only by following the laws which have determined the success of the other arts – the question naturally arises, "What is to be done now for education?" – "Where are we to begin?" – "How are we to proceed?" – "In what manner are the principles of the science to be investigated, so that they shall most extensively promote the success of the art? and how is the art to be cultivated, so that it may, to the fullest extent, be benefited by the science?" To these enquiries we shall in the present chapter direct our attention.

The method of investigating the operations of Nature in the several sciences is very nearly alike in all. For example, in the science of chemistry, as we have formerly noticed, the first object of the philosopher would be to take a comprehensive view of his whole subject, and endeavour to separate the substances in Nature according to their great leading characteristics. He would at once distinguish mineral substances as differing from vegetables; – and vegetable substances as differing from animals; – thus forming three distinct classes of objects, blending with each other, no doubt, but still sufficiently distinct to form what have been called the three kingdoms of Nature. The various objects included under each of these he would again subdivide according to their several properties; – and as he went forward, he would endeavour, by careful examination and experiment, to ascertain, not only their combinations, but also the characteristic properties of their several elements. The chemist, in this method of investigating Nature, almost always proceeds upwards, analytically, advancing from the general to the special, from the aggregate to its parts, endeavouring to ascertain as he proceeds the laws which regulate their composition and decomposition, for the purpose simply of endeavouring to imitate them. By this means alone he expects to perfect the science, and to benefit the arts.

In the science of Botany, Zoology, Anatomy, Physiology, and almost all the others, the same plan has been adopted with invariable success. The subject, whatever it be, is looked upon as a whole, and then separated into its great divisions; – these again, are subdivided into classes; and these again, into orders, genera, species, and varieties, by which means each minute part can be examined by itself in connection with the whole; the memory and the judgment are assisted in their references and application; and order reigns through the whole subject, which otherwise would have been involved in inextricable confusion.

In education, as in the other sciences, Nature is our only sure teacher; and the Educationist, therefore, who desires success, must proceed in the investigation in a similar way. He must first take a comprehensive view of Nature's educational processes; divide them into their several kinds; and subdivide these again when necessary, that each may be viewed alone. He must then ascertain the nature and the object of these processes, and observe the means and the methods employed for accomplishing them, that he may, if possible, be enabled to *imitate* them. In this way, and in this way alone, he is to perfect the science of education, and benefit the art of teaching.

That this is the best way yet known of proceeding in investigating and improving the science of education, experience has already proved; and that it must theoretically be so, we think can admit of little doubt. The operations of Nature exhibit the soundest philosophy, and the most perfect examples of art. The materials she selects are the most suitable for the purpose; the means she employs are always the most simple and efficient; and her ends are invariably gained at the least expense of material, labour, and time. In the pursuit, therefore, of any object or end similar to that in which we find Nature engaged, man's truest wisdom is to distrust his own speculations, and to learn from her

teaching. He should, with a child-like docility, follow her leadings and imitate her operations, both as it respects the materials he is to employ, and the mode and order in which he is to use them. Were an artist to find himself at a loss for the want of an instrument to accomplish some particular purpose, or some new material upon which to operate, or some special, but as yet unknown means for attaining some new and important object, – we are warranted by facts to say, that the natural philosopher would be his best instructor. For if he can be directed to some similar operation of Nature, or have pointed out to him some one or more of Nature's pupils, – some animal or insect, perhaps, – whose labour or object is similar to his own, he will most probably find there, or have suggested to him by their mode of procedure, the very thing he is in search of. By studying their methods of operating, and the means employed by them for accomplishing their end, some principle or device will be exhibited, by the imitation of which his own special object will most readily and most successfully be attained. Every day's experience gives us additional proof of the importance and soundness of this suggestion. For it is a remarkable fact, that there is scarcely a useful mechanical invention to which genius has laid claim, – and deservedly laid claim, – that has not its prototype somewhere in nature. The same principles, working perhaps in the same manner, have been silently in operation, thousands of years before the inventor was born; but which, from want of observation, or the neglect of its practical application to useful purposes, lay concealed and useless. This culpable neglect in practically applying the works and ways of God as he intended, has carried with it its own punishment; for thousands of the conveniences and arts, which at present smooth and adorn the paths of civilized life, have all along been placed within the reach of intelligent man. If he had but employed his intelligence, as he ought to have done, in searching them out, and had asked himself when he perceived them, "What does this teach me?" the very question would have suggested a use. This accordingly will be found to be the true way of studying nature, and one especial design for which a beneficent Creator has spread out his works for our inspection. In proof, and in illustration of this fact, we may refer to the telescope, which has from the beginning had its type in the human eye; – to the formation of paper, which has been manufactured for thousands of years by the wasp; – to the levers, joints, and pulleys of the human body, of which the mechanist has as yet only made imperfect imitations; – and to the saw of an insignificant insect, (the saw-fly) which has never yet been successfully imitated by man.

In prosecuting our investigations into the science of education, therefore, our business is to study Nature in all the educational processes in which we find her occupied, and of which we shall find there are many; – to observe and collect facts; – to detect principles, and to discover the means employed in carrying them out, and the modes of their working; – to trace effects back to their causes, and then again to follow the effects through their various ramifications, to some ultimate end. These are the things which it is the business of the Educationist to investigate, and to record for the benefit of the teacher and his art.

The duty of the teacher, on the other hand, is to apply to his own purposes, and to turn to use in the prosecution of his objects, those facts discovered by the philosopher in the study of Nature. He should by all means understand the principles upon which Nature works, and the means which she employs for attaining her ends. He ought, as far as circumstances will allow, to arrive at his object by similar means; chusing similar materials, and endeavouring invariably to work upon the same model. By honestly following out such a mode of procedure, he must be successful; for although he can never attain to the perfection of Nature, yet this is obviously the best, if not the only method by which he can ever approximate towards it.

PART II
ON THE GREAT DESIGN OF NATURE'S TEACHING, AND THE METHODS SHE EMPLOYS IN CARRYING IT ON

CHAP. I
A Comprehensive View of the several Educational Processes carried on by Nature

We have seen in the former chapters, that the most probable method of succeeding in any difficult undertaking is to learn from Nature, and to endeavour to imitate her. The first great question with the Educationist then should be, "Does Nature ever teach?" If he can find her so employed, and if he be really willing to learn, he may rest assured, that by carefully studying her operations, he will be able to detect something in the ends which she aims at, and the methods which she adopts for attaining these ends, that will lead him to the selection of similar means, and crown him ultimately with similar success.

Now we find that Nature does teach; and in so far as rational beings are concerned, whether angelic or human, it appears to be her chief and her noblest employment. In regard to the human family, she no doubt, at a certain period, intends that the task should be taken up and carried on by parents and teachers, under her controul; but when we compare the nature and success of their operations with hers, we perceive the immense inferiority of their best endeavours, and are obliged to confess, that in many instances, instead of forwarding her work, they either mar or destroy it. For in regard to the *matter* of their teaching, it may be observed, that they can teach their pupils nothing, except what they or their predecessors have learned of Nature before; – and as to the *manner* in which it is taught, it is generally so very imperfect, that for their success, teachers are often indebted in no small degree to the constant interference of Nature, in what is ordinarily termed the "common sense" of their pupils, for rectifying many of their errors, and supplying innumerable deficiencies. Of this we shall by and by have to advert more particularly.

The educational operations of Nature are universal; and she attaches large rewards to diligence in attending to them. She evidently intends, as we have said, that the parent and teacher should take up, and follow out her suggestions in this great work; but even when this is delayed, or altogether neglected, her part of the proceedings is not abandoned. Nature is so strong within the pupil, and her educational promptings are so powerful, that even without a teacher, he is able for a time to teach himself. In man, and even among many of the more perfect specimens of the lower creation, Nature has suspended the larger portion of their comforts and their security, upon attention to her lessons, and the practical application of that which she teaches. The dog which shuns the person who had previously beaten him; the infant that clings to its nurse, and refuses to leave her; the boy who refuses to cross the ditch he never tried before; the savage who traces the foot-prints of his game; the man who shrinks from a ruffian countenance; and Newton, when the fall of an apple prompted him to pursue successively the lessons which that simple event suggested to him, are all examples of the teachings of Nature, – specimens of the manner in which she enables her pupils to collect and retain knowledge, and stimulates them to apply it. Wherever these suggestions of Nature are individually neglected, there must be discomfort and danger, and wretchedness to the *person* doing so; and wherever they are not taken up by communities, and socially taught by education of some kind or another, *society* must

necessarily remain little better than savage. – The opposite of this is equally true; for wherever they are personally attended to, the individual promotes his own safety and comfort; and when they are socially taken up and followed out by education, however imperfectly, then civilization, and national security, prosperity, and happiness, are the invariable consequences.

The information which we are to derive from the Academy of Nature, is to be found chiefly in those instances where she is least interfered with by the operations of others. In these we shall endeavour to follow her; and, by classifying her several processes, and investigating each of them in its order, we shall assuredly be able to arrive at some first principles, to guide us in imitating the modes of her working, and which will enable us, in some measure, to share in her success.

When we take a comprehensive view of the educational processes of Nature, we find them arranging themselves under four great divisions, blending into each other, no doubt, like the kingdoms of Nature and the colours of the rainbow, but still perfectly distinct in their great characteristics.

The *first* educational process which is observable in Nature's Academy, is the stimulating of her pupil to such an exercise of mind upon external objects, as tends powerfully and rapidly to expand and strengthen the powers of his mind. This operation begins with the first dawning of consciousness, and continues under different forms during the whole period of the individual's life.

The *second* educational process, which in its commencement is perhaps coeval with the first, is Nature's stimulating her pupil to the acquisition of knowledge, for the purpose of retaining and using it.

The *third* consists in the disciplining of her pupil in the practical use, and proper application of the knowledge received; by which means the knowledge itself becomes better understood, better remembered, and much more at the command of the will than it was before: —

And her *fourth* educational process consists, in training her pupil to acquire facility in communicating by language, his knowledge and experience to others.

The *first* of these four general departments in Nature's educational process, *is the developement and cultivation of the powers of her pupil's mind*. – This part of Nature's work begins at the first dawn of intelligence; and it continues through every other department of her educational process. For several months during infancy, sensation itself is but languid. The first indistinct perceptions of existence gradually give place to a dreamy and uncertain consciousness of personal identity. – Pain is felt; light is perceived; objects begin to be defined, and distinguished; ideas are formed; and then, but not till then, reflection, imagination, and memory, are gradually brought into exercise, and cultivated. It is the extent and strength of these faculties, as we shall afterwards see, that is to measure the educational progress of the child; and therefore it is, that the first object of Nature seems to be, to secure their proper developement. The child feels and thinks; and it is these first feelings and thoughts, frequently repeated, that enable it gradually to extend its mental operations. It is in this way only that the powers, of the mind in infants are expanded and strengthened, as there can be no mental culture without mental exercise. While a child is awake, therefore, Nature prompts him to constant and unwearied mental exertion; by which means he becomes more and more familiar with external objects; acquires a better command over his own mind in perceiving and remembering them; and becomes more and more fitted, not only for receiving constant accessions of knowledge, but also for putting that knowledge to use.

The *second* part of Nature's educational process, we have said, consists in her powerfully stimulating her pupil to *the acquisition of knowledge*. – This, which we call the second part of Nature's operations, has been going on from an early period of the child's history, and it acts usually in conjunction with the first. As soon as an infant can distinguish objects, it begins to form ideas regarding them. It remembers their shape; it gradually acquires a knowledge of their qualities; and these it remembers, and, as we shall immediately see, is prompted to put to use upon proper occasions. – It is in the acquisition of this kind of knowledge that the principle of curiosity begins to be developed. The child's desire for information is increased with every new accession; and for

this reason, its mental activity and restlessness, while awake, have no cessation. Every glance of the eye, every motion of the hands or limbs made to gratify its curiosity, as it is called, is only an indication of its desire for information: – Every sight or sound calls its attention; every portable object is seized, mouthed, and examined, for the purpose of learning its qualities. These operations at the instigation of Nature are so common, that they are scarcely observed; but when we examine more minutely into their effects, they become truly wonderful. For example, were we to hear of an infant of two or three years of age, having learned in the course of a few months to distinguish each soldier in a regiment of Negroes, whose features their very parents perhaps would have some difficulty in discriminating; if he could call each individual by his name; knew also the names and the uses of their several accoutrements; and, besides all this, had learned to understand and to speak their language; – we would be surprised and incredulous. And yet this would be an accumulation of knowledge, not much greater than is attained in the same space of time by many of the feeble unsophisticated pupils of Nature. – Infants, having no temptation to depart from her mode of discipline, become in a short period acquainted with the forms, and the uses, and even the names, of thousands of persons and objects, not only without labour, but with vast satisfaction and delight.

The training of her pupils to *the practical use of their knowledge*, forms the *third* department in Nature's educational process. – This is the great end which the two previous departments were designed to accomplish. This is Nature's *chief* object; – all the others are obviously subordinate. The cultivation of the mind, and the acquisition of knowledge were necessary; – but that necessity arose from the circumstance of their being preparatory to this. Nature, in fact, appears to have stamped this department of her operations almost exclusively with her own seal; – repudiating all knowledge that remains useless, and in a short time blotting it entirely from the memory of her pupils; while that portion of their acquired knowledge, on the contrary, which is useful and is put to use, becomes in proportion more familiar, and more permanent. It is also worthy of remark, that the knowledge which is most useful, is always most easily and pleasantly acquired.

The superior importance of this department of education is very observable. In the previous departments of Nature's educational process, the child was induced to *acquire* new ideas; – in this he is prompted to *make use of them*. In the former he was taught to *know*; – in this he is trained to *act*. For example, if he has learned that his nurse is kind, Nature now prompts him to act upon that knowledge, and he accordingly strains every nerve to get to his nurse; – if he has learned that comfits are sweet, he acts upon that knowledge, and endeavours to procure them; – and if he has once experimentally learned that the fire will burn, he will ever afterwards keep from the fire.

Last of all comes the *fourth*, or supplementary step in this beautiful educational process of Nature. It consists in gradually training her pupil to *communicate the knowledge and experience which he has attained*. – It is probable that Nature begins this part of her process before the child has acquired the use of language; – but as it is by language chiefly that man holds fellowship with man, it is not till he has learned to speak that the mental exercise on which its success depends, becomes sufficiently marked and obvious. It consists, not in the acquisition of language so much, as in the use of language after it has been gained. The pupil is for this purpose prompted by Nature to think and to speak at the same moment; – mentally to prepare one sentence, while he is giving utterance to its predecessor. That this is not the result of instinct, but is altogether an acquisition made under the tuition of Nature by the mental exertions of the infant himself, is obvious from the fact, that he is at first incapable of it, and never pronounces three, and very seldom two words consecutively without a pause between each. This the child continues to do after he is perfectly familiar with the meaning of many words, and after he can also pronounce each of them individually. In giving utterance to the first words which he uses, there is an evident suspension of the mind in regard to every thing else. His whole attention appears to be concentrated upon the word and its pronunciation. He cannot think of any thing else and pronounce the word at the same time; and it is not till after long practice that he can utter two, three, or more words in a sentence, without hesitation and a decided pause between

them. It is only by degrees that he acquires the ability to utter a phrase, and at last a short sentence, without interruption. Nature prompts the child to this exercise, which from the first attempt, to the full flow of eloquence in the extemporaneous debater, consists simply in commanding and managing one set of ideas in the mind, at the moment the person is giving utterance to others. This cannot be done by *the child*, but it is gradually acquired by *the man*; and we shall see in its proper place, that this acquisition is entirely the result of a mental exercise, such as we have here described, and to which various circumstances in childhood and youth are made directly subservient.

Here then we have the highway of education, marked off, and walled in by Nature herself. That these four great departments in her educational process will be much better defined, and their parts better understood, when experience has given more ample opportunities for their observation, cannot be doubted; and it is not improbable, that future investigations will suggest a different arrangement of heads, and a different modification of their parts also; but still, the great outline of the whole, we think, is so distinctly marked, that, so far as they go, there can be little mistake; and by following them, we are most likely to obtain a large amount of those benefits which education is intended to secure. – To excel Nature is impossible; but by endeavouring to imitate her, we may at least approach nearer to her perfections.

It is not enough, however, for us to perceive the great outlines of Nature's operations in education; we must endeavour to follow her into the details, and investigate the means which she employs for carrying them into practical effect. We shall therefore take up the several departments above enumerated in their order, and endeavour to trace the laws which regulate her operations in each, for the purpose of assisting the teacher in his attempts to imitate them.

CHAP. II
On the Method employed by Nature for cultivating the Powers of the Mind

The *first* step in Nature's educational process, is the cultivation of the powers of the mind; and, without entering into the recesses of metaphysics, we would here only recall to the recollection of the reader, that the mind, so far as we yet know, can be cultivated in no other way than by voluntary exercise: – not by mere sensation, or perception, nor by the involuntary flow of thought which is ever passing through the mind; but by the active mental operation called "thinking," – the voluntary exertion of the powers of the mind upon the idea presented to it, and which we have denominated "reiteration,"[1] as perhaps best descriptive of that thinking of the presented idea "over again," by which alone, as we shall see, the mind is cultivated, and knowledge increased.

It is also here worthy of remark, that the cultivation of the powers of her pupil's mind, as a preliminary to their acquiring and applying of knowledge, appears to be a settled arrangement of Nature, and one which must be rigidly followed by the teacher, wherever success is to be hoped for. Analogy, in other departments of Nature's operations, proves its necessity, and points out its wisdom; for she is never premature, and never stimulates her pupils to any work, till they have been properly prepared for accomplishing it. Hence the consistency and importance of commencing the process of education, by expanding and cultivating the powers of the mind, preparatory to the future exertions of the pupil; and hence also the wisdom of requiring no more from the child, than the state of his mental powers at the time are capable of performing. Our object, at present, is to discover the means employed by Nature for accomplishing this preliminary object, that we may, by imitating her plans, obtain the greatest amount of benefit.

In infancy, and during the early part of a child's life, each of the thousands of objects and actions which are presented to its observation, falls equally on the organs of sense, and each of them *might*, if the child had pleased, have become objects of perception, as well as objects of sensation. But it is evident, that till the mind occupy itself upon one or more of these objects, there can be no mental exercise, and, of course, no mental culture. On the contrary, if the mind shall single out any one object from the mass that surrounds it, – shall entertain the idea suggested by its impression on the organs of sense, and think of it – that is, review it on the mind – there is then mental exercise, and, in consequence, mental cultivation. From this obvious truth it necessarily follows, that the cultivation of the mind does not depend upon the multitude of objects presented to the observation of a child, but only on those which it really does observe, – which it looks at, and thinks upon, by an active voluntary exercise of its own powers. The child, no doubt, *might* have smelt every odour; it *might* have listened to every sound that entered the ear; and it *might* have looked upon every image that entered the eye; but we know that it did not. A few of them only were thought of, – the ideas which they suggested were alone "reiterated" by the mind, – and therefore they, and they alone, tended to its cultivation.

As this act of the mind lies at the root of all mental improvement, during every stage of the pupil's education, it becomes a matter of considerable importance, that its nature, and mode of operation, should be thoroughly understood.

Let us for this purpose suppose that a lighted candle is suddenly presented before a young infant. He looks at it; he thinks of it; his mind is employed with the flame of the candle in a manner quite different from what it is upon any thing else in the room. All the other images which enter the eye fail to make an impression upon the mind; but this object which the child looks at, – observes, – does this; and accordingly, while it is passive as to every thing else, the mind is found to be actively

[1] Note A.

engaged with the candle. He not only sees it, but he looks at it. This, and similar "reiterations" of ideas by the mind, frequently repeated by the infant, gradually communicate to it a consciousness of mental power, and enable him more and more easily to wield it. Every such instance of the reiteration of an idea, – of the voluntarily exercise of active thought, – strengthens the powers of the mind, so that he is soon able to look at and follow with his eyes other objects, although they are much less conspicuous than the glare of a candle.

When we examine the matter a little farther in regard to infants, we perceive, that all the little arts used by the mother or the nurse, to "amuse the child," as it is called, are nothing more than means employed to excite this reiteration of ideas by the mind. A toy, for example, is presented to the infant, and his attention is fixed upon it. He is not satisfied with passively seeing the toy, as he sees all the other objects in the room, but he actively looks at it. Nor is this enough; the toy is usually seized, handled, mouthed, and turned; and each movement prompts the mind to active thought, – to reiterate the idea which each of the sensations suggests. These impressions are no doubt rapid, but they are real; and each of them has been reiterated, – actively thought of, – before they could either be received, or remembered; and it is only by these impressions frequently repeated, in which the mind is vigorously and delightfully engaged, that it acquires that activity and strength which we so frequently witness in the young.

At a more advanced period during childhood and youth, we find the cultivation of the mind still depending upon the same principle. It is not enough that numerous objects be presented to the senses of the pupil; or that numerous words or sounds be made to vibrate in his ears; or even that he himself be made mechanically to utter them. This may be done, and yet the mind may remain perfectly inactive with respect to them all: – Nay, experience shews, that during such mechanical exercises, his mind may all the time be actively employed upon something else. There must therefore, not only be a hearing, or a reading of the words which convey an idea, but he must make the idea his own, by thinking it over again for himself. Hence it is that mental vigour is not acquired in proportion to the number of pages that the pupil is compelled to read; nor to the length of the discourses which are delivered in his hearing; nor to the multiplicity of objects placed before him. It is found entirely to depend upon his diligence in thinking for himself; – in reiterating in his own mind the ideas which he hears, or reads, or which are suggested to his mind by outward objects. This is still the same act of the mind which we have described in the infant, with this very important difference, however, that a large portion of his ideas is now suggested by *words*, instead of *things*; but it is the ideas, and not the words, that the mind lays hold of, and by which its powers are cultivated. When this act therefore is successfully forced upon a child in any of his school operations, the mind will be disciplined and improved; – but wherever it is not produced, however plausible or powerful the exercise may *appear* to be, it will on scrutiny be found to be totally worthless in education, – a mere mechanical operation, in which, there being no mental exertion, there can be no mental culture.

In the adult, as well as in the young and the infant, the culture of the mind is carried on in every case by the operation of the same principle. – However various the means employed for this purpose may be, they all depend for their success upon this kind of active thought, – this reiteration of the *ideas* suggested in the course of reading, hearing, observation, or reasoning. A man may turn a wheel, or point pins, or repeat words from infancy to old age, without his mind's being in the least perceptible degree benefited by such operations; while the mill-wright, the engineer, or the artist, whose employments require varied and active thought, cannot pursue his employment for a single day, without mental culture, and an acquisition of mental strength. – The reason is, that in mere mechanical operations there is nothing to induce this act of reiteration, – this active mental exercise of which we are speaking. In the former case, the individual is left to the train of thought in the mind, which appears to afford no mental cultivation; – whereas, in the latter, the mind is, by the acts of comparing, judging, trying, and deciding, which the nature of his occupation renders necessary, constantly excited to active thought, – that is, to the reiteration of the several ideas presented to it.

These remarks may be thought by some to be exceedingly commonplace and self-evident. – It may be so. If they be admitted, we ask no more. – Our purpose at present is answered, if we have detected a principle in education, by the operation of which the powers of the mind are invariably expanded and strengthened; – an effect which, so far as we yet know, in its absence never takes place. It is by means of this principle alone that Nature accomplishes this important object, both in young and old; but its effects are especially observable in the young, where, her operations not being so much interfered with, we find her producing by its means the most extraordinary effects, and that even during the most imbecile period of her pupil's existence.

In concluding this part of our investigation, we would very briefly remark, that the existence of this principle in connection with the cultivation of the mind, accounts in a very satisfactory manner for the beneficial results which usually accompany the study of languages, mathematics, and some other branches of education similar in their nature. – These objects of study, when once acquired, may never afterwards be used, and will consequently be lost; but in learning them the pupil was compelled to think, – to exercise his own mind on the subjects taught, – to reflect, and to reiterate the ideas communicated to him, till they had been fully mastered. The mental vigour which was at first forced upon the pupil, by these beneficial exercises, remains with him, and is exercised upon other objects, as they are presented to his observation in ordinary life. – The mind in commencing these studies gradually emancipates itself from the mechanical tendencies which an improper system of teaching had previously formed, and now gathers strength daily by this natural mode of exercising its powers. It is the effects of this kind of discipline that constitute the chief element of a cultivated mind. In this principally consists the difference between a man of "liberal education," and others who have been less highly favoured. – His superiority does not lie in his ability to read Latin and Greek, – for these attainments may long ago have been forgotten and lost; – but in the state of his mind, and the superior cultivation of the mental powers. – He possesses a clearness, a vigour, and a grasp of mind above others, which enable him at a glance to comprehend a statement; – to judge of its accuracy; – and, without effort, to arrange and communicate his ideas concerning it. This ability, as we have seen, can be acquired only by active mental exercise, and is not necessarily the result of extensive reading, nor is it always accompanied by extensive knowledge. It is the natural and the necessary product of mental discipline, through which the above described act of "reiteration," like a golden thread, runs from beginning to end. It is the fire of intellect, kindled at first perhaps by classical, and mathematical studies; but which now, collecting force and fuel from every circumstance of life, glows and shines, long after the materials which first excited the flame have disappeared.

If then, as we formerly explained, the arts are to derive benefit from the investigations of science, we are led to the conclusion, that the wisdom of the Teacher will consist in taking advantage of the principle which has been here exhibited. He should not speculate nor theorize, nor go forward inconsiderately in using exercises, the benefits of which are at least questionable; but he ought implicitly to follow Nature in the path which she has thus pointed out to him. One chief object with him should be, the cultivation of the minds of his pupils; and the only method by which he can attain success in doing so has now been stated. He must invent, or procure some exercise, or series of exercises, by which the act of "reiteration" in the minds of his pupils shall be regularly and systematically carried on. – He must induce them to think for themselves, and to exercise the powers of their own minds deliberately and frequently, – in the same manner as we see Nature operating in the mind of a lively and active child. When he can accomplish this, he will, and he must succeed; whereas, if he allow an exercise to be prepared where this act of the mind is absent, he may rest assured that he is deceiving both himself and the child. – The laws of Nature are inflexible; and while she will undoubtedly countenance and reward these who act upon the principles which she has established, she will as certainly leave those who neglect them to eat the "fruit of their own doings." – But the pupil, more than the Teacher is the sufferer. Under the pure discipline of Nature in the infant

and the child, learning is not only their business, but their delight; and it is only when her principles are unknown, or violently outraged, that education becomes a burden, and the school-house a prison.

FOOTNOTES:

CHAP. III.*On the Means by which Nature enables her Pupils to acquire Knowledge.* The *second* stage of the pupil's advance under the teaching of Nature is that in which she prompts and assists him in the acquisition of knowledge. – The importance of this department of a child's education has uniformly been acknowledged; – so much so, indeed, that it has too frequently absorbed the whole attention of the Teacher, as if the possession of knowledge were the whole of education. – That this is a mistake we shall afterwards see; because the value of knowledge must always be in proportion to the use we can make of it; but it is equally true, that as we cannot use knowledge till we have acquired it, its acquisition as a preliminary step is of the greatest importance. Our intention is at present, to enquire into the means employed by Nature, for enabling her pupils to acquire, to retain, and to classify their knowledge; so that, by ascertaining and imitating her methods, we may in some degree share in her success.For some time during the early years of childhood Nature is the chief, or the only Teacher; and the contrast between her success at that time, and the success of the parent or teacher who succeeds her, is very remarkable, and deserves consideration.When we examine this process in the case of infants, we see Nature acting without interference, and therefore with undeviating success. Within a few months after the child has attained some degree of consciousness, we find that Nature, under every disadvantage of body and mind, has succeeded in communicating to the infant an amount of knowledge, which, when examined in detail appears very wonderful. – The child has been taught to know his relations and friends; he has acquired the ability to use his limbs, and muscles, and organs, and the knowledge how to do so in a hundred different ways. He has become familiar with the form, the colour, the texture, and the names of hundreds of articles of dress, of furniture, of food, and of amusement, not only without fatigue, but in the exercise of the purest delight, and with increasing energy. He has begun to contrast objects, and to compare them; and this capacity he evinces by an undeviating accuracy in choosing those things which please him, and in rejecting those things which he dislikes. But above all, the infant, along with all this substantial knowledge, has been taught to understand a language, and even to speak it. The fact of all this having been accomplished by a child of only two or three years of age, is so common, that the mysterious principles which it involves, are too generally overlooked. We thoughtlessly allow them to escape observation, as if they were mere matters of instinct, and were to be ranked with the spider's catching its prey, or the sparrow's building its nest. But the principles which regulate these different operations are perfectly dissimilar. In the case of the spider and the sparrow there is no teaching, and, of course, no learning. Their first web, and their first nest, are as perfect as the last; but in the case of the infant, with only two or three exceptions, there is nothing that he does, and nothing that he knows, which he has not really learned, – acquired by experience under the tuition of Nature, by the actual use of his own mental and physical powers.

CHAP. III.
On the Means by which Nature enables her Pupils to acquire Knowledge

The *second* stage of the pupil's advance under the teaching of Nature is that in which she prompts and assists him in the acquisition of knowledge. – The importance of this department of a child's education has uniformly been acknowledged; – so much so, indeed, that it has too frequently absorbed the whole attention of the Teacher, as if the possession of knowledge were the whole of education. – That this is a mistake we shall afterwards see; because the value of knowledge must always be in proportion to the use we can make of it; but it is equally true, that as we cannot use knowledge till we have acquired it, its acquisition as a preliminary step is of the greatest importance. Our intention is at present, to enquire into the means employed by Nature, for enabling her pupils to acquire, to retain, and to classify their knowledge; so that, by ascertaining and imitating her methods, we may in some degree share in her success.

For some time during the early years of childhood Nature is the chief, or the only Teacher; and the contrast between her success at that time, and the success of the parent or teacher who succeeds her, is very remarkable, and deserves consideration.

When we examine this process in the case of infants, we see Nature acting without interference, and therefore with undeviating success. Within a few months after the child has attained some degree of consciousness, we find that Nature, under every disadvantage of body and mind, has succeeded in communicating to the infant an amount of knowledge, which, when examined in detail appears very wonderful. – The child has been taught to know his relations and friends; he has acquired the ability to use his limbs, and muscles, and organs, and the knowledge how to do so in a hundred different ways. He has become familiar with the form, the colour, the texture, and the names of hundreds of articles of dress, of furniture, of food, and of amusement, not only without fatigue, but in the exercise of the purest delight, and with increasing energy. He has begun to contrast objects, and to compare them; and this capacity he evinces by an undeviating accuracy in choosing those things which please him, and in rejecting those things which he dislikes. But above all, the infant, along with all this substantial knowledge, has been taught to understand a language, and even to speak it. The fact of all this having been accomplished by a child of only two or three years of age, is so common, that the mysterious principles which it involves, are too generally overlooked. We thoughtlessly allow them to escape observation, as if they were mere matters of instinct, and were to be ranked with the spider's catching its prey, or the sparrow's building its nest. But the principles which regulate these different operations are perfectly dissimilar. In the case of the spider and the sparrow there is no teaching, and, of course, no learning. Their first web, and their first nest, are as perfect as the last; but in the case of the infant, with only two or three exceptions, there is nothing that he does, and nothing that he knows, which he has not really learned, – acquired by experience under the tuition of Nature, by the actual use of his own mental and physical powers.

The benefits accruing to education, from successfully imitating Nature in this department of her process, will be incalculable; not only in adding to the amount of knowledge communicated, but in the ease and delight which the young will experience in acquiring it. All must admit that the pleasure, as well as the rapidity, of the educational process in the young, continues only during the time that Nature is their teacher; – and that her operations are generally checked, or neutralized by the mismanagement of those who supersede her work, and begin to theorize for themselves. The proof of this is to be found in the fact, that although a child is much less capable of acquiring knowledge between one and three years of age, than he is between eight and ten; yet, generally, the amount of his intellectual attainments by his school exercises, during the two latter years, bears no proportion

to those of the former, when Nature *alone* was his teacher. In the one case, too, his knowledge was acquired without effort or fatigue, and in the exercise of the most delightful feelings; – in the other, quite the reverse.

That we shall ever be able to equal Nature in this part of her educational process, is not to be expected; but that, by following up the principles which she has developed, and imitating the methods by which she accomplishes her ends, we shall become more and more successful, there can be no doubt. The method, therefore, to be adopted by us is, to examine carefully the principles which she employs with the young, through the several stages of her process, and then, by adopting exercises which embody these principles, to proceed in a course similar to that which she has pointed out.

In prosecuting this plan, then, our object must be, first, to examine generally the various means employed by Nature, in the acquisition of knowledge by the young, – and then to attend more in detail to the mode by which she applies the principles involved in each.

These general means appear to consist of four distinct principles, which, for want of better definitions, we shall denominate "Reiteration," "Individuation, or Abstraction," "Grouping, or Association," and "Classification, or Analysing."[2]

The *first* is the act of "Reiteration," of which we have already spoken, as the chief instrument in cultivating the powers of the mind, and without which, we shall also find, there can be no acquisition of knowledge. The *second* is the principle of "Individuation," by which Nature communicates the knowledge of single ideas, or single objects, by constraining the child to concentrate the powers of its mind upon one object, or idea, till that object or idea is familiar, or, at least, known. The *third* is the common principle of "Grouping, or Association," and appears to depend, in some degree, on the imaginative powers, by which a child begins to associate objects or truths together, after they have become individually familiar; so that any one of them, when afterwards presented to the mind, enables the pupil at a glance, to command all the others which were originally associated with it. The *fourth* is the principle of "Classification, or Analysing," by which the mind distributes objects or truths according to their nature, – puts every truth or idea, as it is received, into its proper place, and among objects or ideas of a similar kind. This classification of objects is not, as in the principle of grouping, regulated according to their accidental relation to each other, by which the canary and the cage in which it is confined would be classed together; but according to their nature and character, by which the canary would be classified with birds, and the cage among other articles of household furniture. All knowledge, so far as we are aware, appears to be communicated and retained for use, by means of these four principles; and we shall now proceed to examine the mode in which each of them is employed by Nature for that purpose.

[2] Note A.

CHAP. IV
On Nature's Method of communicating Knowledge to the Young by the Principle of Reiteration

We have, in a former chapter, endeavoured to describe that particular act of the mind which generally follows simple perception, and by which an idea, when presented to it, is made the subject of *active thought*, or is "*reiterated*" again to itself. We have found upon good evidence, that it is by this process, whether simple or complex, that the powers of the mind are cultivated; and we now proceed to shew, that it is by the same act, and by it alone, that any portion of knowledge is ever communicated.[3] No truth, or idea of any kind, can make an effective entrance into the mind, or can find a permanent lodgement in the memory, so as to become "knowledge," until it has successfully undergone this process.

There are two ways by which we usually acquire knowledge: – The one is by *observation*, without the use of language, and which is common to us with those who are born deaf and dumb; and the other is *through the medium of words*, either heard or read. In both cases, however, the knowledge retained consists entirely of the several *ideas* which the objects or the words convey; and what we are now to shew, is, that these ideas thus conveyed, can neither be received by the mind, nor retained by the memory, till they have undergone this process of "reiteration." While, on the contrary, it will be seen that, whenever this process really takes place, the idea thus reiterated does become part of our knowledge, and is, according to circumstances, more or less permanently fixed upon the memory. We shall for this purpose endeavour to trace the operation of the principle, both in the case of ideas communicated by objects without language, and in those conveyed to the mind by means of words.

That this act of reiteration of an idea by the mind, must take place, before objects of perception can become part of our knowledge, will, we think, be obvious, from a consideration of the following facts. – When, for example, we are in a crowded room, or in the fields, numerous sounds enter the ear, – thousands of images enter into and impress the eye, yet not one of these becomes part of our knowledge till it is *thought of*; – that is, till the idea suggested by the sensation, has not only been perceived, but reiterated by the mind. This will appear to many so plain, that any farther illustration of the fact may be deemed useless. But experience, has shewn, that the illustration of this important process in education, is not only expedient, but is really necessary; as the overlooking of this simple principle has often been the cause of great inconsistencies on the part of teachers. We shall therefore endeavour to exhibit the working of the principle in various forms, that it may be fully appreciated when we come to apply it.

Let us then suppose two children taken silently through a museum of curiosities, the one active and lively, the other dull and listless. It would be found on retiring, that the former would be able to give an account of many things which he saw, and that the other would remember little or nothing. In this case, all the objects in the exhibition were seen by both; and the question arises, "Why does the knowledge of the one, so much exceed that of the other?" The reason is, that the mind of the one was active, while the mind of the other was in a great measure inactive. Both *saw* the objects; but only one *looked at* them. The one actively employed his mind – fixed his eye on an object, and thought of it; that is, he reiterated the ideas it suggested to him, whether as to form, or colour, or movement, and by doing so, the ideas thus reiterated, were effectively received, and given over to the keeping of the memory. The other child saw the whole; they were perhaps objects of perception; but he allowed his sensations to die away as they were received; and his mind was left to wander, or to remain under the dreamy influence of a mere passive and evanescent train of thought. His "attention"

[3] Note B.

was not arrested; – his mind was not actively engaged on any of the articles he saw; in other words, the ideas which they suggested were not "reiterated."[4]

Now, that it was the want of this mental reiteration which was the cause, and the only cause, why this very usual means of acquiring knowledge failed to communicate it, may be proved we think by a very simple experiment. For if we shall suppose that the child who was obtaining no knowledge by means of the various curiosities around him, had been asked at the time a question respecting any of them, – a stuffed dog, for example, – his attention would have been arrested, and his mind would have been roused to active thought. The words, "What is that?" from his teacher, or companion, would have made him look at it, and reiterate the ideas of its form and colour, so far as to enable him to give an answer. And if he does so, it will be found afterwards, on leaving the place, that although he might have remained unconscious of the presence of all the other objects in the museum, he will remember the stuffed dog, merely because, by the question, the idea it suggested was taken up, and reiterated by the mind; while the sensations caused by all the rest, were allowed to pass away.

There is another circumstance of daily occurrence, which adds to the evidence that it is this principle which we have called "reiteration," which forms the chief, if not the only avenue, by which ideas find access to the mind; and it is this: – That when at any time we bring to recollection some former circumstance of life, however remote, or when we recall any part of our former knowledge or experience, it comes up to the mind, accompanied with the perfect consciousness, that, at the time we are thinking of, this act of reiteration had taken place upon it; that we most assuredly have thought of it before. We are not more certain that it occupies our thoughts now, than we are that it did so when it occurred; – that the operation of which we are at present speaking, did actually then take place; and that it was by our doing so then, that it is remembered now. This circumstance, when duly considered, is of itself, we think, a sufficient proof, that no part of our knowledge, – not a single idea, – can be acquired, or retained on the memory by any other process, than by this act of reiteration.

Hence then it is plain, that all the knowledge which we receive by observation, without the use of language, is received and retained on the memory by the operation of this principle; and we will now proceed to shew, that the same process must also take place, when our ideas are received by means of *words*, whether these be spoken or read.

It is of great importance for us to remember, that the only legitimate use of words is to convey ideas; and that Nature rigidly refuses to acknowledge any other use to which they may be put. Hence it is, that in conversation, we are quite unconscious of the words which our friend uses in communicating his ideas. Nature impels us to lay hold of the ideas alone; and in proof of this we find, that we have only to attempt to concentrate our attention upon the *words* he uses, and then we are sure to lose sight of the *ideas* which the words were intended to convey. Hence it is, that our opinion of the style, and the language, and the manner of a speaker, when the subject itself is not familiar, are formed more by indirect impressions, than by direct attention to these things while he speaks; and oftener by reflection afterwards, than by any critical observation during the time. The reason of this, we may remark once for all, is, that what the mind reiterates it remembers, – but nothing more. If during the hearing, it reiterates the ideas, it will then remember the ideas; but if it reiterates the words without the ideas, it will remember nothing but words. Those therefore who sow words in the minds of the young, hoping afterwards to reap ideas, are as inconsistent as those who seek to "gather grapes of thorns, or figs of thistles."[5]

Knowledge is received by the use of words in two ways, – either by oral speech, or by written language; but in both cases, the reception of the ideas is still governed by reiteration. We shall endeavour to examine the operation in both cases.

[4] Note C.

[5] Note D.

Let us suppose that a teacher announces to a class of young children, that "Cain killed his brother Abel," – and then examines the state of each child's mind in regard to it. All of them heard the words, but some only perhaps are now in possession of the truth communicated. Those who are so, followed the teacher in his announcement, not so much in reiterating the words, as in reiterating the idea, – the truth itself; and therefore it is, that they are now acquainted with the fact. Of those who heard, but have failed to add this truth to their stock of knowledge, there may be two classes; – those who attended to what was said, but failed to interpret the words; and those whose attention was not excited at all. Those who failed to interpret the words, or to extract the idea from them, reiterated the *words* to themselves, and would perhaps be able to repeat the words again, but they do so in the same manner that a person reads or repeats words in an unknown tongue. The idea, – the truth, – is not yet perceived, and therefore cannot be remembered. The others who remember nothing, have reiterated nothing; their minds remained inactive. They also heard the words, but they failed to listen to them; in the same way as they often see objects, but do not look at them. Here it is evident that every child who reiterated the idea in his own mind, is in possession of the fact communicated; and all who did not do so, even although they reiterated the words, have no addition made to their knowledge; which shews that it is only by this act of the reiteration of the ideas, that any portion of our knowledge is ever acquired.

That this is a correct exhibition of the principle, and a legitimate inference from the phenomena, may be still farther proved by an experiment similar to one formerly recommended. Let the teacher, in the middle of a story, ask some of the inattentive pupils a question respecting some of the persons or things he is speaking about, and force the reiteration of that part of the narrative in the child's mind by getting an answer, and it will be found at the close, that although he may remember nothing else of all that he heard, yet he will most perfectly remember that part about which he was questioned, and respecting which he returned an answer.

The same thing may be ascertained by our own experience, in hearing a lecture or sermon, or even in conversation with a friend. In these cases, as long as our attention is kept up, – that is, as long as we continue to reiterate the ideas that we hear, – we may remember them; but when our minds flag, or wander; in other words, when we cease to reiterate the ideas of the speaker, the sounds enter our ear, but the matter is gone. All that has been said during that period of inattention has been lost; it never has formed, and never can form, part of our knowledge.

Thus we see, that in the act of hearing oral communications, the principle of reiteration of the ideas is obviously necessary for the acquiring of knowledge; and we shall now shew, that it is equally necessary in the act of reading.

Many persons must have witnessed children reading distinctly, and fluently perhaps, who yet were not made one whit wiser by what they read. The act of reading was correctly performed, and yet there was no accession to their knowledge. The cause of this is easily explained. The *ideas* conveyed by the words have not been reiterated by the mind, – perhaps they were never perceived. For as long as the act of reading is difficult, the words undergo this process first, and the ideas must be gleaned afterwards. Hence it is, that children, when hurried from lesson to lesson before they can read them so easily as to perceive and reiterate the ideas while reading, acquire the habit of decyphering the words alone, and the eye from practice reads mechanically, while the mind at the moment is usually wandering, or is engaged in attending to something else. Nature, as we have before shewed in the act of hearing, does not intend that the mind should pay attention both to the words and the ideas at the same time; and reading being only an artificial substitute for hearing, is made subject to the same law. It is the *ideas* that Nature induces us to grapple with; and the reading of words like the hearing of language, is merely the means employed to get at them. Hence the necessity of children being taught to read fluently, and with perfect ease, before they leave the school; and the neglect of this is the reason why so many after leaving school, derive so little instruction from the use of books. Of these individuals, experience shews, that many, who on leaving school could not collect ideas by their mode

of mechanical reading, yet persevere, and at last teach themselves by long practice to understand what they read; while there are not a few who, in similar circumstances, become discouraged, abandon the practice of reading, and soon forget the art altogether.

Of the correctness of these facts, every one may be convinced, by recollecting what must often have taken place with himself. When at any time the mind is exhausted while reading, we continue to read on, page after page, and when we have finished, we find, that not a single truth has made its way to the memory. Now this did not arise from any difficulty in comprehending the ideas in the book, because it does not make much difference whether the subject has been simple or otherwise; neither did it arise from the want of all mental activity, for the mind was so much engaged as to read every word and every letter in the pages upon which we were occupied. But it arose entirely from the want of that principle of which we are here speaking. The words were read mechanically, and the ideas were either not thought of, or at least they were not reiterated by the mind, and therefore it is that they are lost, – and no effort can ever again recall them. The proof of the accuracy of these views will still be found in the circumstance, that if, while the person is reading, this act of the reiteration of some one or more of the ideas be in any way forced upon him, *these* ideas thus reiterated will afterwards be remembered, although all the others are lost.

Here then we have arrived at a principle connected with the acquisition of knowledge, by attending to which education may be made most efficient for that purpose; but without which, education must remain a mere mechanical routine of barren exercises. No idea, no truth, we have seen, can ever form part of our knowledge, till it has undergone this particular mental process, which we have called "reiteration." If the idea, or truth, intended to be communicated, be reiterated by the mind, – thought over again, – it will then be remembered: – but if it be not reiterated by the mind, it never can. It is also worthy of remark, that the tenacity with which the memory keeps hold of any idea or truth, depends greatly upon the vigour of the mind at the time, and still more perhaps upon the frequency of its reiteration. If a child, however languid, is forced to this act of reiteration of an idea but once, it will be remembered for a longer or a shorter time; but if his mind be vigorous and lively, and more especially if he can be made *repeatedly* to reiterate the same idea in his mind at intervals, he will on that account, retain it much more tenaciously, and will have it at the command of the will more readily. Hence the vividness with which the scenes and the circumstances of youth arise upon the mind, and the tenacity with which the memory holds them. These scenes were of daily occurrence; and the small number of remarkable circumstances connected with childhood and youth having few rivals to compete with them in attracting the attention, were witnessed frequently with all the vigour and liveliness of the youthful mind, as yet unburdened with care. They were of course frequently subjected to observation, and as frequently reiterated by the mind, and have on these accounts ever since been vividly pictured by the imagination, and continue familiar to the memory. It also accounts for another circumstance of common occurrence. For when, even in early infancy, any event happened which made a deeper impression upon the mind than usual, that simple circumstance will generally outlive all its neighbours, and will take precedence in point of distinct recollection to the close of life. The reason of this is, not only the deep impression it made upon the mind at the moment, but principally because it had so strongly excited the feelings, that it was oftener thought of then and afterwards; – in other words, this act of reiteration occurred more frequently with respect to it than the others, and therefore it is now better remembered.

This is a principle then of which the Educationist should take advantage. For if Nature invariably communicates knowledge by inducing her pupils to exercise their own minds on the subject taught, it is plain that the teacher should follow the same plan. His pupils cannot remain mentally inactive, and yet learn; neither can the mere routine of verbal exercises either cultivate the mind or increase knowledge. These are but the husks of education, which may tantalize and weaken, but which can never satisfy the cravings of the young mind for information. Their mental food must be of a perfectly different kind, consisting of *ideas*, and not of *words*; and these ideas they must receive and concoct

by the active use of their own powers. The teacher must no doubt select the food for his pupils, and prepare it for their reception, by breaking it down into morsels, suited to their capacities. But this is all. They must eat and digest it for themselves. The pupil must think over in his own mind, and for himself, all that he is either to know or remember. The ideas read or heard must be reiterated by himself, – thought over again, – if he is ever to profit by them. Without this, no care or pains on the part of the teacher, no exertion on the part of the pupil, will be of any avail. All the knowledge that he seems to acquire in any other way is repudiated by Nature; and however plausible the exercise may appear, it will ultimately be found fruitless and vain.

CHAP. V
On the Acquisition of Knowledge by the Principle of Individuation

Nature, as we have seen, has rendered it imperative that the act of reiteration should be performed upon every idea before it can have an entrance into the mind, or be retained by the memory; but as the individual cannot reiterate, or think over, all the ideas suggested to him by the innumerable objects of sensation with which he is surrounded, it next becomes a matter of importance to ascertain the means employed by Nature for enabling her pupils to receive and retain the greatest number of ideas, so that they shall ever afterwards remain at the command of the will. This she accomplishes by the operation of the three other principles to which we have adverted; namely, "Individuation," or "Abstraction," "Grouping," or "Association," and "Classification," or "Analysis." – We shall in this chapter attend to the principle of "Individuation," and endeavour to trace its nature and uses in the acquisition of knowledge by the young.

The first thing in an infant that will be remarked by a close observer of Nature is, that while adding to its knowledge by observation, it always confines its attention to one thing at a time, till it has examined it. Before the period when this principle becomes conspicuous in an infant, the eye, and the other senses are in a great measure inactive, so far as the mind is concerned; and the first indication of the senses really ministering to the mind is the eye chusing an object, and the infant examining that object by itself, without allowing its attention to be distracted by any thing else.

This operation takes place as soon as an infant is capable of observation. It fixes its eye upon an object, generally one that is new to it, and it continues to look upon it till it has collected all the information that this object can give, or which the limited capacity of the infant will enable it to receive. Hence with stationary objects this information is soon acquired; but with moveable objects, or toys, or things which are capable of varying, or multiplying the ideas received by the child, the look is more intense, and the attention is sustained without fatigue for a longer time. Till this information has been received, the child continues to look on; and if the object be removed, the eye still follows it with interest, and gives it up at last with reluctance. That by this concentration of its mind upon one object, the infant is adding to its knowledge, appears evident from the fact, that objects which have already communicated their stock of information, and have become familiar, are less heeded than those that are new or uncommon. Every new thing excites the curiosity of the child, who is not content till that curiosity be gratified. This has been called "the love of novelty;" – but it is not the love of novelty in the very questionable sense in which many understand that term. On the contrary, it is obviously a wise provision of Nature, suited to the capacity and circumstances of children, which is to be taken advantage of, for conveying such crumbs and morsels of knowledge as their limited powers are able to receive; and which should never be abused, by presenting to them an unceasing whirl of names and objects, – a process which fatigues the mind, and leaves them without any specific information. It is the same principle, and is to be considered in the same light, as that which induces the philosopher to confine himself to the investigation of one phenomenon till he understands it. The information which the child is capable of receiving from each of the impressions then made is no doubt small; but it is still information – knowledge. – This is what he is seeking; and, at this stage of his progress, it is only acquired by the concentration of the powers of the mind upon one thing at a time.

The effect of this principle in the infant is worthy of remark. – While the pupil remains under the teaching of Nature, there is no confusion, – no hurry, – no failure. The tasks which she prescribes for him are never oppressive, and are constantly performed with ease and with pleasure. – Although there be no selection made by the parent or teacher for the child to exercise his faculties upon, yet he instinctively selects for himself, without hesitation, and without mistake. All the objects in a room or in a landscape are before him: yet he is never oppressed by their number, nor bewildered by their variety. – His mind is always at ease. – He chooses for himself; but he never selects more for his

special observation at one time than he can conveniently attend to. When the objects are new, his attention is restricted to one till it be known; and then, but not till then, as we shall immediately see, he is able, and delights to employ himself in grouping it with others.

In early infancy this attention to one object is protracted and slow, till he gradually acquires sufficient energy of mind by practice. – Every one must have observed how slowly the eye of an infant of two or three months old moves after an object, in comparison with one of ten. – But even in the latter case, when the glance is lively and rapid, the same principle of individuation continues to operate. The information from an unknown object must still be received alone, and without distraction, although by that time the child is capable of receiving it more quickly. He is not now satisfied with viewing an object on one side, but he must view it on all sides. He endeavours by various means to acquire every one of the ideas which it is capable of communicating. His new toy is viewed with delight and wonder; and his eye by exercise can now scan in a moment its different parts. – But this is not enough; he has now learned to make use of his other senses, and he employs them also, for the purpose of becoming better acquainted with the object which he is contemplating. His toy is seized, mouthed, handled, turned, looked at on all sides, till all the information it can communicate has been received; – and then only is it cast aside for something else, which is in its turn to add to his stock of knowledge.

The circumstance to which we would especially call attention at present is, the singleness of thought exercised upon the object, during the time that the child is amused by it. – He attends to nothing else, and he will look at nothing else; and were his attention forced from it for a moment, this is evidently done unwillingly; and, when allowed, it immediately returns to the object. It is also worthy of notice, that if, while he is so engaged, we attempt to teach him something else, or in other words, to induce him to divide his attention upon some other new object, the distraction of his mind is at once apparent; we perceive that it is unnatural; and we find by experience that he does not profit by either. Now, from these indications it must be evident, that any interference with this principle of individuation in teaching any thing for the first time, must always be hurtful: – on the contrary, by attending to the principle, and acting upon it in the training of the young, it must be productive of the happiest effects. – While acted upon, under the guidance of Nature, its efficiency and power are astonishing. It is by means of this principle, that the infant mind, with all its imbecility and want of developement, acquires and retains more real knowledge in the course of a few months, than is sometimes received at school afterwards during as many years. – Few things are more cheering in prospect than the knowledge of this fact; for what may we not expect from the *man*, when his education while a *child* shall have been improved, and approximated to that of Nature!

The operation of the principle of individuation, is not confined to the infant, but continues to maintain its place during all the after stages of life, whenever any thing new and uncommon is presented as an object of knowledge. Every thing is new to the infant, and therefore this principle is more conspicuous during the early stages of education. – But it is still equally necessary for the child or the youth in similar circumstances; and Nature compels him, as it were, still to concentrate the powers of his mind upon every new object, till he has received and become familiar with the information it is calculated to furnish. – Every one must have observed the intensity with which a child examines an object which he has never seen before, and the anxiety which he evinces to know all about it. – It requires a considerable effort on his own part, and still greater on the part of others, to detach his mind from the object, till it has surrendered the full amount of information which the young enquirer is seeking. The boy with his new drum will attend to nothing else if he can help it, as long as he has any thing to learn concerning it, and the noises it is capable of producing. – And even when he has tired himself with beating it, he is not satisfied till he has explored its contents, to find out the cause which has created the sounds. The girl with her doll, in the same way, will voluntarily think of nothing else, as long as it can provide her with mental exercise; that is, as long as it can add something new to her present stock of knowledge. And it is here worthy of remark, that the apparent

exception in this case, arising from the greater length of time that a doll and a few other similar toys will amuse a child, is in reality a striking confirmation, and illustration of the principle of which we are speaking. – Such toys amuse longer, because it is longer before the variety of which they are capable is exhausted. – The doll is fondled, and scolded, and cradled, and dressed, and undressed in so many different ways, that the craving for new ideas continues for a long period to be amply gratified; – but the effect would be quite different, were the very same doll placed where it could only be looked at. Every new movement with the toy is employed by Nature, for the cultivation of the mental powers, by reiterating the ideas thus imparted, and on which the imagination delights to dwell; and also in receiving a knowledge of individual objects and ideas, which, when once known, are to form the elements of future groupings, and of an endless variety of information.

It is here of importance to recollect, that almost all the information received by children, is of a sensible kind. They can form little or no idea of abstract truths. The mind and the memory must be stored with sensible objects, – first individually, and then by grouping, – before the child can arrive at a capacity for abstraction. Nature's first object, therefore, is to store the memory and imagination of the young with the names and images of things, which, as we have seen, are acquired individually, and, when once known, are remembered for future use. But those things which they have not yet seen, or felt, or heard, or tasted, are totally beyond their conception, and cannot be of any service, either in grouping, or classification. – Hence the great importance of allowing the young mind to act freely in acquiring new ideas by this principle of individuation; as without this, all the lessons into which such ideas shall afterward be introduced, must be in a great measure lost. Even adults can form no idea of an unknown object, except by compounding it of something that they already know. And this is at least equally the case with children; who, till they can group and compare objects which they have seen, can realize no idea of any thing, however simple, that has not previously been subjected to the senses. – Hence, therefore, the importance at this period of a child's education, of confining the attention chiefly to sensible objects, and of not confounding his faculties, by too early an introduction of abstract ideas.

Here then we have been able to detect the method by which Nature selects, and enables her pupils to prepare the materials of which their future knowledge is to be compounded. These materials are the ideas of sensible objects, and their properties and uses; which must be gathered and stored one by one. By inducing them to attempt to seize even two at a time, they will most probably lose both, and their powers of collecting and storing will, by the same attempt, be injured and weakened. It is by means of this principle of individuation, that, with the most intense craving for information, and while placed among innumerable objects calculated to gratify it, the infant and the child remain perfectly collected, without the slightest appearance of distraction of mind, or confusion of ideas. With his thirst of knowledge ardent and constant, it enables him with the greatest delight to add hourly to his stores of knowledge, without difficulty, without irritation, and without fatigue.

The application of these truths to the business of education, we shall attend to in its proper place; in the meantime we may remark, of how much importance it is, that all knowledge communicated to the young be simple, and that for some time it consist chiefly of sensible objects, and their qualities; – objects which they either know, or can have access to. Abstract subjects are not suited for children, till they can group, and classify, and compare the sensible objects with which they are already acquainted. The aim of the teacher, therefore, ought to be, strictly to follow Nature in this early stage of her operations, and to furnish food for his pupils, of the proper kind, and in proper proportions; – keeping the thinking powers constantly in healthful exercise, by giving as many ideas as the mind can reiterate without fatigue; but carefully avoiding all hurry or force, seeing that the powers of the mind are greatly weakened and injured by a multiplicity of objects, particularly when they are presented so rapidly, that the thoughts have not time to settle upon them, nor the mind to reiterate the ideas which they suggest.

CHAP. VI
On the Application of Knowledge by the Principle of Association, or Grouping

Another principle which exhibits itself in the acquisition of knowledge by Nature's pupils, is that of "grouping," or associating objects together, after they are individually known. A child, or even an infant, who is frightened, or alarmed, or who suffers any severe injury, remembers the several circumstances, and has the place, the persons, and the things connected with the event, all associated together, and grouped into one scene or picture on the memory. These objects may have been numerous; but by the operation of this principle, they have all been apprehended, and united so powerfully with each other, that no future effort of the child can either separate or obliterate any portion of them; and so comprehensive, that the recollection of any one of the circumstances instantly recalls all the others.

These groupings in the mind of a child, formed chiefly by means of the imagination, are almost wholly compounded of sensible objects; and the only necessary prerequisite for their formation appears to be a knowledge of the individual elements of which they are to be composed. If an unknown object be presented to the mind in connection with the others that are known, it is generally excluded, and the things previously known retained. For example, in the case supposed above, of an accident occurring to a child, there would be thousands of objects present, and all cognisable by the senses; but not one of all these that were unknown, that is, that had not previously undergone the process of individuation, is found to form part of the remembered group.

There is another circumstance connected with the operation of this principle in the young, which is of importance. Almost the whole of a child's knowledge is composed of these groupings. Before the developement of the reasoning powers, by which the individual is enabled to *classify* the elements of his knowledge, there is no way of remembering these elements in connection with each other, except by this principle. If, therefore, we change the order or relative position of the elements or objects which compose the scene, or group, we draw the attention of the pupil altogether from the former, and create another which is entirely new; – in the same way as the transposition of the figures in any sum, forms another of an entirely different amount. The drawing-room, for example, is seen by the children of the family with the fire-place, the cabinet, the sofas, the tables, and other stationary ornaments, in certain relative positions, and this grouping of those objects is to them in reality all that they know of the room. Any material change in shifting these objects to other places in the apartment, would, to the *parent*, whose judgment is ripened, produce feelings comparatively slight; but, to the younger branches of the family who group, but cannot as yet classify, it would appear like the complete annihilation of the former apartment. The different arrangement of a few of the articles only, would to them create another, and an entirely different room.

This leads us to observe another circumstance connected with the operation of this principle, in the instruction of the young, which is the remarkable fact, that, by making the child familiar with a very few primitive elements, a parent or teacher may communicate an almost infinite variety of groupings, or stories, for cultivating the mind, and increasing the knowledge of his pupil. Hence it is, that hundreds of agreeable and useful little histories have been composed for children, with no other machinery than a mamma and her child, and the occasional introduction of a doll or a dog, a cat or a canary bird. To the child, there is in these numerous groupings no appearance of sameness, nor want of variety; and although so much circumscribed in their original elements, they never fail to amuse and delight.

The most important circumstance, however, connected with the working of this principle in the education of the young, appears to be the necessity of a previous familiarity with the individual

objects, before the child is called upon to group them. If this has been attended to, the grouping of these into any combination will be easy and pleasant; – but if his attention be called from the group, to examine exclusively even but one of its elements, the operation is checked, the mind becomes confused, its powers are weakened, and the grouping has again to commence under serious disadvantages.

To illustrate this point, let us suppose a child introduced to the bustle and sports of a common fair. Here he sees thousands both of familiar and strange objects, all of which are calculated to excite his mind to increased attention; and yet the child, while greatly amused, is still perfectly at his ease. There is not the slightest indication of his being incommoded by the numerous objects about him; no confusion of ideas, no distraction of mind, no mental distress of any kind; but, on the contrary, in the midst of so much to see and to learn, the young looker-on is not only at his ease, but appears to be delighted. The reason of this is, that he is not by any external force compelled to attend to *all* that he sees; and Nature within directs him to attend to no more than he is able to group, or reiterate in his thoughts. We shall endeavour to examine this condition of the child's mind in such circumstances a little more particularly.

The child in the circumstances supposed, must either be a spectator in general, or an examiner in particular; in other words, he must either employ himself with the principle of combination or grouping, or with the principle of individuation, – but he never attempts to employ himself with both at the same time. If he amuses himself as an observer in general, he is engaged in grouping objects which are already familiar to him; but while he is so engaged, he never directs his attention to any one unknown object for the purpose of examining it for the first time by itself. He passes over all the minute and unknown objects with a glance, and attends only to the grouping or associating of those which are already familiar. Nature induces him, while thus employed, to pass by all these minute and unknown objects; because, if he were to do otherwise, his observation in general would instantly be recalled, and his whole attention would be monopolized by the object which he had resolved to examine, to the exclusion of every other for the time. This, however, is not what he seeks; and he employs himself entirely in the grouping of things which are already known. His mind is left at ease, and in the possession of all its powers; he looks only at those things which please him; and he passes over all the others without effort or difficulty.

But if the boy shall come to something strange and new, which he is desirous of studying more closely, he immediately becomes an examiner in particular; but, at the same moment, he ceases to be an observer in general. The extended business of the fair, and the several groupings of which it is composed, are lost sight of for the moment; – the principle of individuation begins to act, and the operation of the principle of association, or grouping, is at the same moment brought to a stand. The two are incompatible, and cannot act together; and therefore Nature never allows the one to interfere with the other.

To shew the evil effects of overlooking this important law of Nature in the education of a child, we have only to attend to the painful results which would be the consequence of acting contrary to it, even in the vigorous mind of an adult. Let us for this purpose suppose a person of a powerful understanding, and a capacious mind, ushered for the first time, and for only five minutes into a crowded apartment in some eastern caravansary, or eastern bazaar, in which every thing to him was new and strange; and let us also suppose that it was imperatively demanded of him, that he should, in that short space of time, make himself acquainted with all that was going on, and be able, on his retiring, minutely to describe all that he saw. The first moment he entered, and the first strange object that caught his eye, would convince him that *the thing was impossible*. If, without such a demand, he had been introduced into such a place, and had seen various groups of strange persons differently employed, each engaged in a manner altogether new to him, and the nature of which was wholly unknown, he might look on with perfect composure, and considerable amusement, because he could attend, like the boy in the fair, either to the general mass, to isolated groups, or to individual things.

He would in that case attend to no more than he was able to understand; and would placidly allow the other parts of the scene to pass without any particular attention. But the imperative injunction here supposed, – this pressure from without, – this artificial and unnatural demand upon him, – entirely alters the case. If he even attempted to make himself master of all the particulars of the scene in a circumscribed portion of time, he would find himself bewildered and confounded. The very attempt to individualize and to group so many various objects at the same moment, within such a limited period, would be enough to prostrate all the powers of his mind. He might perhaps be able to observe the persons and their costume, because varieties of persons and dresses are daily and constantly objects of observation, and are grouped without difficulty; but of their several employments, of which he was previously ignorant, he could know nothing, and on retiring, he would neither be able to remember nor to describe them. In such an experiment, it would be found, that the more anxious he was to perfect his task and to answer the demand, in the same proportion would he find himself harassed and distressed, and the powers of his mind overstretched and weakened. And if this would be the result of confounding the principles of individuation and grouping in an adult, – a person of good understanding, and of vigorous mind, – how much more hurtful must such a task be, when demanded from children or youths of ordinary capacity, during their attendance at school!

Few we believe will doubt the general accuracy of the above results in the cases supposed; – but some may perhaps question, whether they really do arise from the interference of these two antagonist principles during the experiment. To shew that this is the real cause of the distress felt, and the weakness and prostration of mind produced during it, we have only to institute another experiment which is exactly parallel. Let us suppose the same person, and for the same limited period, ushered into the traveller's room in a well frequented hotel, and let us also suppose, that the very same demand is made imperative, that he shall observe, and again detail when he retires, all that he sees. Let us also suppose, that the number of persons here is equally great, and that their employments are all equally diversified, but that each is familiar to him; and we will at once see that the difficulty of the task is really as nothing. A child could accomplish it. His eye would be able to group the whole in an instant, without effort, and without fatigue. If he saw one party at supper, another at tea, another group at cards, and others amusing themselves at draughts and backgammon; one minute instead of five, would be quite enough to make him master of the whole. On retiring, he would be able to tell the employment of every group in the room; and if any of his acquaintances had made part of the number, he would be able to tell who they were, where they were sitting, and how they were occupied. In doing all this he would find no difficulty; and yet the knowledge he has received is entirely new, and so extensive, that it would take at least ten fold more time to rehearse it, than it took to acquire it. The entire scene also would be permanently imprinted by the imagination upon the memory; and the whole, or any part of it, could be recalled, and reviewed, and rehearsed, at any future period. Here then are two cases, precisely similar in their nature, and undertaken by the very same person, where the results are widely different; and we now see, that the difference arises entirely from the principle of individuation having prepared the way in the one case, while it was not allowed to operate in the other.

From these circumstances taken together, we perceive, that the grouping of objects, when once they are individually familiar, is never a difficult task, but is rather one of gratification and pleasure; – and we also are taught, that the amount of knowledge thus pleasantly communicated to a child may be most extensive and valuable, while the materials necessary for the purpose, being comparatively few, may be previously rendered familiar with very little exertion. It is the confounding of these two principles in the communication of knowledge, that makes learning appear so forbidding to the young, and prevents that cultivation of the mental powers by their exercises which these would otherwise infallibly produce. By keeping each in its proper place, a child will soon acquire a thorough knowledge of the few elements necessary for the purpose; and these, when acquired, may be grouped by the

teacher into thousands of forms, for extending the knowledge, and for invigorating the mind of his delighted pupil.

The benevolence and wisdom of this beautiful arrangement in the educational process of Nature, are truly wonderful; and in proportion as it is so, every deviation from it on our parts will be attended with disappointment and evil. If all our ideas were to be acquired and retained by the principle of individuation alone, the memory being without help or resting place, would soon become so overpowered by their number, that our knowledge would be greatly circumscribed, and its use impeded. Of the benefits arising from attention to the principle we have many apt illustrations in ordinary life, among which the various groupings of the ten numeral figures into sums of any amount, and the forming of so many thousands of words by a different arrangement of the letters of the alphabet, are familiar examples. When a child knows the ten numerals, he requires no more teaching to ascertain the precise amount of any one number among all the millions which these figures can represent. The value of such an acquirement can only be appreciated by considering the labour it would cost a child to gain a knowledge of all these sums individually, and the overwhelming burden laid upon his memory if each of the millions of sums had to be remembered by a separate character. By the knowledge and various groupings of only ten such characters, the whole of this mighty burden is removed.

In the art of writing, the same principle is brought into operation with complete success, by the combination, or various groupings of the twenty-six letters of the common Roman alphabet in the formation of words. The value of this adaptation of the principle will be obvious, if we shall suppose, that a person who is acquainted with all the modern European languages, had been compelled to discriminate, and continue to remember, a distinct arbitrary mark or character for the many thousands of words contained in each. We may not be warranted, perhaps, to say that such a task would be impossible; but that it would be inconceivably burdensome can admit of no doubt. We have, indeed, in the writings of the Chinese, although it is but one language, a living monument of the evil effects of the neglect of this principle in literature, and the unceasing inconveniences which daily arise from that empire continuing to persevere in it. There is comparatively but little combination of characters in their words, and the consequences are remarkable. In that extensive empire, the highest rewards, and the chief posts of honour and emolument, are held out to those who are most learned, whatever be their rank or their station; and yet, amidst a population immersed in poverty and wretchedness, not one person in a thousand can master even one of their books; and not one in ten thousand of those who profess to read, is able to peruse them all. The reason of this simply is, the neglect of this natural principle of grouping letters, or the signs of sounds, in their written language. With us, the elements of all the words in all the European languages are only twenty-six; and the child who has once mastered the combination of these, in any one of our books, has the whole of our literature at his command.

The application of this principle to the elements of general knowledge is equally necessary, as its application to written language. The difficulty of remembering the many thousands of unconnected characters in Chinese literature, is an exact emblem of what will always be the case with children in respect to their general knowledge, when this principle of association, or grouping, is neglected. Adults acquire and retain a large portion of *their* knowledge, as we shall afterwards see, by the principle of classification and analysis; but *children* are not as yet capable of this; and they must receive their knowledge by the grouping of a few simple elements previously known, or they will not be able to receive and retain knowledge at all. The amount of this knowledge also, it should be kept in mind, is not at all in proportion to the number or the variety of the elements of which that knowledge is composed. We have formerly alluded to this, and it may be farther illustrated by a circumstance of daily occurrence. A seaman when he observes a vessel at a distance knows her class and character in an instant, whether she be a sloop or a brig, a schooner or a ship, and he forms an instantaneous idea of all her parts grouped into a whole. His memory, instead of being harassed in remembering the shape, and place, and position of each of its several parts, is relieved of the whole by the operation

of this principle of association. The whole rigging, about which his mind is occupied, is composed of only *three* elements, – ropes, and spars, and sails, – with each of which he has long ago made himself familiar. All the remaining parts of this kind of knowledge are a mere matter of grouping. By previously observing the varied arrangement of the spars, and ropes, and sails, on the several masts of the different kinds of vessels, he has already grouped them into one whole, and each is remembered by itself without effort, and without mistake. They are retained, as it were, painted by the imagination upon the memory, and may at any after period be recalled and reviewed at pleasure. Hence the sight of a vessel in the distance calls up the former pictures to the mind, and enables the practised eye of the mariner to decide at once as to the kind and character of what he so imperfectly sees. – This helps also to explain the reason why children are so gratified with pictures when presented to the eye; and why they are best pleased when the figures are most simple and distinct, and particularly, when the objects grouped in the picture have previously been familiar. Pictures are indeed a pretty close imitation of Nature in this part of her work; and they are defective chiefly on account of their want of *motion* and *continuity*. These last are two great and inimitable characteristics in all the groupings painted upon the memory by the imagination.

From all this it is obvious, that there is an essential difference between a child's acquiring the knowledge of things individually, and acquiring a knowledge of their several associations. The two must never, if possible, be confounded with each other. When they are kept distinct in the education of a child, he has an evident pleasure in attending to either; but as soon as they are allowed to interfere, and more especially when they are systematically blended together in the same exercise, he experiences confusion, irritation, and fatigue. There is no necessity, however, for this ever being the case. All that is required is, that the few individual elements that are to be grouped or associated in a lesson, whether they be objects or ideas, shall previously be made familiar to the pupil. These, when once known, may be brought before the mind of the child in any variety of order or form, and will be received readily and pleasantly, and will be retained by the memory without confusion, and without effort. By attention to these two principles, keeping each in its proper place, and bringing each to aid and uphold the other in its proper order, it will be found, that a child may be taught more real knowledge in one week, than is often communicated in other circumstances in the course of a year.

CHAP. VII
On the Acquisition of Knowledge by the Principle of Analysis, or Classification

There is yet another principle brought into operation by Nature to enable her pupils to receive, to retain, and to make use of their knowledge. This is the principle of Classification, or Analysis.[6] The difference between this and the former principle described we think is sufficiently marked. The principle of Association, or Grouping, is carried on chiefly by means of the imagination, and begins to operate as soon as the mind is capable of imagining any thing; but the principle of Classification, or Analysis, is more intimately connected with the judgment. The consequence of this is, that it is but very partially called into action during the early stages of a child's education, and is never able to operate with vigour, till the reasoning powers of the pupil begin to develope themselves.

The characteristic differences between the two principles, and their respective uses in education, may be illustrated by a circumstance of every-day occurrence. For example, a child who from infancy has been brought up in a house of several apartments, gets acquainted with each of the rooms by means of its contents. He has been in the habit of seeing the heavy pieces of furniture in each apartment in a certain place and order, and the room and its furniture, therefore, are identified together, and remain painted upon his imagination exactly as he has been in the habit of seeing them. In this case, the articles of furniture in the room are grouped, and not classified; and are remembered together, not on account of their nature and uses, but purely on account of their position, and their relative arrangement in the room. Most of our readers perhaps, will remember the strange feelings produced in their minds during some period of their childhood, when in the house of their infancy, some material alteration of this kind was effected in one or more of the rooms. A change in the position of a bed, or the abstraction or introduction of a chest of drawers, a wardrobe, or other bulky piece of furniture, causes in the mind of the child an effect much deeper, and more extensive, than in the adult. The former picture of the place never having been observed or contemplated in any other aspect, is painted by the imagination, and fixed upon his memory, by long continued familiarity. But by this change it is suddenly defaced; and the new group, partaking as it will do of some of the elements of the old, produces feelings which are strange and unaccountable, and entirely different from those of his parents, who have been in the habit of contemplating the room and its furniture more by the exercise of the judgment, than of the imagination; that is, more by their uses, than by their appearance.

The cause of this strangeness of feeling in a child, arises from the predominance of the principle of grouping, over that of classification. He has as yet no knowledge of any of the apartments in the house, except what he has received by grouping their contents. When, therefore, their arrangement is materially altered, the reasoning powers not being as yet able to soften down the effect, the former apartment appears to the child as if it had ceased to exist. He can scarcely believe it to be the same. He never thinks of the *uses* of the articles in the apartment, but only of their *appearance*; – the first being an act of the judgment, – the latter of the imagination. In a similar manner he thinks of the kitchen and its furniture, not as a part of the household economy, but only in connection with the articles it contains. The dresser, the jack, and the tin covers, are never thought of in connection with their uses; but are identified with the kitchen, merely because they have always been seen there, and seen together. In like manner, the seats, the tables, and the ornaments of the drawing-room, are not connected in the child's mind because they are what are commonly called "drawing-room furniture," for that would imply a degree of reasoning of which he is as yet unacquainted; but they

[6] Note E.

are remembered together, as they have always been observed in that particular place, and are now pictured on the mind, in the position in which they are usually beheld. Their particular locality in the room, and their relative position with respect to each other, are of far more importance in assisting the memory of the child, than any knowledge which he has as yet acquired of their respective uses.

Though a child had in this way gained an exact knowledge of every apartment in a house, it is obvious that there may not have been, during the whole process, a single act of the understanding. Many of the lower animals are capable of collecting all the knowledge he has received; and even infants are, to a certain extent, in the daily habit of acquiring it. But the classification of objects, according to their nature and uses, is an operation of a perfectly different kind. Hence it is, that a change in the arrangement of the furniture of a room acts so slightly on the feelings of the adult, and so powerfully on the young. In the former, the reasoning powers neutralize the effect produced; to the latter, the change appears a complete revolution.

This principle of classification, though peculiar to the mature mind, is not restricted to any particular class of men. It is found to be universal, wherever the reasoning powers are capable of acting. It is no doubt conspicuous in civilized societies, because there it is more cultivated; but it is not confined to them. The savage is prompted to its exercise under the tuition of Nature. For example, the various articles and arts which he employs in hunting, are all regularly classified in his mind, and retained upon his memory, as perfectly distinct from those which he employs in fishing; and neither of these classes of articles are ever confounded with his implements and weapons of war. His hooks and lines, are as naturally classified in his mind with his nets and his canoe, as his club or his tomahawk is with his other weapons used in battle. It is by this means that Nature aids the memory in the retention of knowledge, and keeps all the successive accumulations of the individual at the command of the will. When cultivated, as Nature designs that it should be, it forms an extensive cabinet in the mind, where every department of knowledge has its appropriate place; and which, when once systematically formed, can be furnished at leisure. When a new idea is acquired, it is immediately put in its place, and associated with others of the same kind; and when any portion of the knowledge which we have accumulated is required, we know at once the particular place where it is to be found.

The benefits of this principle in the above form are extensively felt and acted upon in society, even where the principle itself is neither observed nor known; for in the family, in the work shop, and in the manufactory, it is of the last importance. It is upon this principle that a clergyman, for the help of his own memory, as well as for assisting the memory of his hearers, arranges the subject of his sermons in a classified form; – his text is the root of the classification. This he divides into heads, which form the first branch in this table; and these again he sometimes sub-divides into particulars, which form a second branch depending on the first, and all proceeding from the root, – the original text. Similar, but more extensive, is the plan adopted in the divisions and subdivisions of objects in the Sciences, such as Botany, Zoology, Chemistry, &c. in all of which the existence of this principle in Nature's educational process is acknowledged and exemplified. In these sciences, the efficiency of the principle in facilitating the reception of knowledge, and in assisting the memory in retaining it, and in putting it to use, is universally acknowledged.

But there is another form in which the same principle appears, not so obvious indeed, but it is one which is at least equally important in the education of the young. Nature always brings it into operation when a teacher, while communicating any series of *connected truths*, such as a portion of history or of science, gives more of the details than the mind of his pupil can receive, or his memory retain at one time. It may be desirable that the pupil should be made thoroughly acquainted with all the minute, as well as with the general circumstances of a history or a science; but if so, it must be done, not at once, but by degrees, or steps. It is usually done by repeating the course, – "revising," as it is called, – and that perhaps more than once; – going over all the exercises again and again, till the several parts are perceived and remembered in their connection. In these "revisings," the mind forms an analytical table of the subject for itself, consisting of successive steps, formed by the successive

courses. By the first course, or hearing, it is chiefly the great outlines of the subject that are perceived; and these form the first branch of a regular analytical table, which every succeeding course of reading or hearing tends to fill up. This will perhaps be best understood by an example.

Let us suppose that a young person sits down to read a history for the first time, and that he reads it with attention and care. When we examine the state of his mind after he has finished it, we find that, independently of what, by the principle of grouping, he has got in the form of episode, he has been able to retain only the great outlines of the history, and no more. He remembers perhaps of whose reign he has been reading, and the principal events that took place during it; but the intermediate and minor events, as connected with the history, he has not been able to remember. Nothing has been imparted by this first reading, but the great landmarks of the narrative. These are destined to form the first branch of a regular analytical table, of which the reign of the particular monarch is the root. This is the frame-work of the whole history of that period, however numerous the minor circumstances may be; and a second reading will only enlarge his knowledge of the circumstances under each of the heads. In other words, it will enable him to sub-divide them into more minute details or periods, and thus form a series of second branches from each. Now it is quite obvious, that when this analysis of the circumstances of that period is once formed in the mind, no new event connected with it can ever come to his knowledge without being classed with some of the others. It will be disposed of according to the relation which it bears to the parts already existing; and thus the whole texture will be regularly framed, and every event will have its proper place, and be readily available for future use. One part may be filled up and finished before another; but the regular proportions of the whole remain undisturbed. The pupil has, by the original outline and its several branches, got a date and a place for every new fact which he may afterwards glean, either in his reading or his conversation; and he has a place in which to put it, where it can easily be found. When placed there, it is safe in the keeping of the memory, and will always afterwards be at the command of the will.

The connection of these circumstances, with the principle in education which we are at present endeavouring to illustrate, may not to some be very apparent. We shall therefore take another example from a circumstance similar to what occurs every day in ordinary life, and in which the principle, in the hands of Nature, is abundantly conspicuous. In the example we are here to give, she forms the several steps of the classification in a number of hearers by *once* reading a subject, very similar to what she does successively in the mind of one individual by *repeated* readings.

Let us then suppose a teacher with two or three hundred pupils, including every degree of mental capacity, from the youngest child who is able to understand, up to his own classical assistant; and that he reads to them the history of Joseph as given in the Book of Genesis. Let us also suppose, that they all give him their best attention, and that they all hear the narrative for the first time. Such an experiment, let it be observed, has its parallel every day, in the church, in the class room, and in the seminary; and similar effects to those we are about to describe invariably take place in each of them.

When the teacher has read and concluded this lengthened exercise, it will be found, that no two individuals among his hearers have acquired the same amount of knowledge. Some will have received and retained more of the circumstances, and some less, but no two, strictly speaking, will be alike. Those whose minds were incapable of connecting the several parts of the narrative into a whole, will retain what they have received in disjointed groups and patches, – episodes, as it were, in the narrative, – without being able very clearly to perceive its general design. This class, upon whom the principle of association chiefly has been at work, we leave out, and confine ourselves to the state of knowledge possessed by those who are in a greater or less degree capable of classification, and of taking some cognisance of the narrative as a connected whole.

Among this latter class, some will have retained no more than the bare outline of the history, interspersed with groupings, as in the younger children. They will remember little more than that Joseph was at first a boy in his father's house; – that he was afterwards a slave, and in prison; – and at last, a great man and a governor. Here the *whole history* is divided into three distinct heads, or

eras, – the first branch of an analytical table of the whole story, from one or other of which all the other particulars, of whatever kind, must of necessity take their rise, and branch off in their natural order. An advanced class of the auditors will have retained some of the more obvious circumstances connected with *each of these three great divisions*, as well as the divisions themselves. They will not only remember that Joseph was a boy in his father's house, but they will also be able to remember the more prominent subdivisions of the narrative regarding him while there; such as his father's partiality, his dreams, and his brothers' hatred. The second great division will be recollected as including the particulars of his being sold, his serving in Potiphar's house, and his conduct in prison; and the third division will be remembered as containing his appearance before Pharoah, his laying up corn, his conduct to his brothers, and his reception of his father and family. These subdivisions, it will at once be perceived, form the *second branch* of a regular analytical table, each of which has sprung from, and is intimately connected with, some one or other of the three great divisions forming the first branch, of which the "History of Joseph" is the comprehensive root.

In like manner, a third class of the pupils, whose minds have been better cultivated, and whose memories are more retentive, will not only remember all this, but they will also remember, in connection with each of these subdivisions, many of the more specific events included in, or springing from them, and which carry forward this regular analytical table one step farther. As for example, under the subdivision entitled "Joseph's conduct to his brethren," they will remember the "detention of Simeon," – "the feast in the palace," – "the scene of the cup in the sack," and "Joseph's making himself known." Even these again might be subdivided into their more minute circumstances, as a fourth, or even a fifth branch, if necessary, all of which might be exactly delineated upon paper, as a regular analytical table of the history of Joseph.

Here, then, we have an example of Nature herself dividing an audience into different classes, and that by one and the same operation, – by one reading, – forming in each class part of a regular analytical table of the whole history, each class being one step in advance of the other. The first has the foundation of the whole fabric broadly and solidly laid; and it is worthy of remark, that there is not one of the ideas acquired by the most talented of the hearers, that is not strictly and regularly derived from some one or other of the three general divisions possessed by the first and the least advanced; and any one of the ideas may be regularly traced back through the several divisions to the root itself. The additional facts possessed by the second class, are nothing more than a more full developement of the circumstances remembered by the first; and those obtained by the third, are but a more extensive developement of the facts remembered by the second.

This being the state of the several classes into which Nature divides every audience, it is of importance to trace the means which she employs for the purpose of *advancing* each, and of ultimately completing the analysis; or, in other words, perfecting the knowledge of the narrative, in each individual mind. This is equally beautiful, and equally simple. It is, if we may be allowed the expression, by a regular system of building. The foundation being laid, and the frame-work of the whole being erected, in the knowledge of the great general outline, confusion is ever after completely prevented. Every piece of information connected with the history, which may be afterwards received, has a specific place provided for it. It must belong to some one or other of the three great divisions; and it is there inserted as a part of the general building. It is now remembered in its connection, till all the circumstances, – the whole of the information, – gradually, and perhaps distantly received, complete the narrative.

To follow out this plan of Nature regularly, as in a school education, the method must be exceedingly obvious; for if the first class, by once hearing the chapters read, have received merely the outline, – the frame-work of the narrative, – it must be obvious, that when this has by reflection become familiar, a second reading would enable them to fill up much of this outline, by which they would be on a par with the second. Another reading would, in like manner, add to the second, and form a third; and so forth of all the others. Each reading would add more and more to the knowledge

of the pupil; and yet, every idea communicated would be nothing more than a fuller developement of the original outline, – the frame-work, – the skeleton of the story which he had acquired by the first reading. By successive readings, therefore, the first class will take the place of the second, the second of the third, and so on to the end. This is Nature's uniform method of perfecting her pupils in any branch of *connected* knowledge; – a method which, therefore, it should be the object of the Educationist to understand, and closely to imitate.

From the cases which we have in this chapter supposed as examples, there are several important practical inferences to be derived, to which we shall here very briefly advert.

In the first place, we are led to infer, from all the cases brought into notice, that every kind of external force, or precipitation in education, is abhorrent to Nature. In each of the cases supposed, we have a remarkable exhibition of the calm serenity of Nature's operations in the education of the young. For instance, in the last case supposed, the children all listened, – they all heard the same words, – the mental food was the same to each, however diversified their abilities might be; and it was indiscriminately offered in the same form to all, although all were not equally prepared to receive and digest it. The results accordingly were, in fact, as various as the number of the persons present. And yet, notwithstanding of all this, there was no hurry, no confusion, no attempt to stretch the mind beyond its strength. Each individual, according to his capacity, laid hold of as much as his mind could receive, and silently abandoned the remainder. – But if there had been any external urgency or force employed, to compel the child to accomplish more than his mind was capable of, this serenity and composure would have been destroyed; irritation, and confusion, and mental weakness, would have been the consequence; and altogether, matters would not have been made better, but worse, by the attempt.

Another inference, which we think may legitimately be drawn from the above examples, is this, that although Nature prompts the child silently to throw off or reject that which the mind at the time cannot receive, yet it would be better for the child if no more had been pressed upon him than he was capable of receiving. The very rejection of any portion of the mental food presented for acceptance, must in some measure tend to dissipate the mind, and exhaust its strength. This we think is demonstrated by the fact, that the child had to listen for *an hour*

Конец ознакомительного фрагмента.