

which strike into it at random, displacing the focal ideas, and carrying association in their own direction. Persons of the latter type find their attention wandering every minute, and must bring it back by a voluntary pull. The others sink into a subject of meditation deeply, and, when interrupted, are 'lost' for a moment before they come back to the outer world.

The possession of such a steady faculty of attention is unquestionably a great boon. Those who have it can work more rapidly, and with less nervous wear and tear. I am inclined to think that no one who is without it naturally can by any amount of drill or discipline attain it in a very high degree. Its amount is probably a fixed characteristic of the individual. But I wish to make a remark here which I shall have occasion to make again in other connections. It is that no one need deplore unduly the inferiority in himself of any one elementary faculty. This concentrated type of attention is an elementary faculty: it is one of the things that might be ascertained and measured by exercises in the laboratory. But, having ascertained it in a number of persons, we could never rank them in a scale of actual and practical mental efficiency based on its degrees. The total mental efficiency of a man is the resultant of the working together of all his faculties. He is too complex a being for any one of them to have the casting vote. If any one of them do have the casting vote, it is more likely to be the strength of his desire and passion, the strength of the interest he takes in what is proposed. Concentration, memory, reasoning power, inventiveness, excellence of the senses,—all are subsidiary to this. No matter how scatter-brained the type of a man's successive fields of consciousness may be, if he really *care* for a subject, he will return to it incessantly from his incessant wanderings, and first and last do more with it, and get more results from it, than another person whose attention may be more continuous during a given interval, but whose passion for the subject is of a more languid and less permanent sort. Some of the most efficient workers I know are of the ultra-scatterbrained type. One friend, who does a prodigious quantity of work, has in fact confessed to me that, if he wants to get ideas on any subject, he sits down to work at something else, his best results coming through his mind-wanderings. This is perhaps an epigrammatic exaggeration on his part; but I seriously think that no one of us need be too much distressed at his own shortcomings in this regard. Our mind may enjoy but little comfort, may be restless and feel confused; but it may be extremely efficient all the same.

XII. MEMORY

We are following a somewhat arbitrary order. Since each and every faculty we possess is either in whole or in part a resultant of the play of our associations, it would have been as natural, after treating of association, to treat of memory as to treat of interest and attention next. But, since we did take the latter operations first, we must take memory now without farther delay; for the phenomena of memory are among the simplest and most immediate consequences of the fact that our mind is essentially an associating machine. There is no more pre-eminent example for exhibiting the fertility of the laws of association as principles of psychological analysis. Memory, moreover, is so important a faculty in the schoolroom that you are probably waiting with some eagerness to know what psychology has to say about it for your help.

In old times, if you asked a person to explain why he came to be remembering at that moment some particular incident in his previous life, the only reply he could make was that his soul is endowed with a faculty called memory; that it is the inalienable function of this faculty to recollect; and that, therefore, he necessarily at that moment must have a cognition of that portion of the past. This explanation by a 'faculty' is one thing which explanation by association has superseded altogether. If, by saying we have a faculty of memory, you mean nothing more than the fact that we can remember, nothing more than an abstract name for our power inwardly to recall the past, there is no harm done: we do have the faculty; for we unquestionably have such a power. But if, by faculty, you mean a principle of *explanation of our general power to recall*, your psychology is empty. The associationist psychology, on the other hand, gives an explanation of each particular fact of recollection; and, in so doing, it also gives an explanation of the general faculty. The 'faculty' of memory is thus no real or ultimate explanation; for it is itself explained as a result of the association of ideas.

Nothing is easier than to show you just what I mean by this. Suppose I am silent for a moment, and then say in commanding accents: "Remember! Recollect!" Does your faculty of memory obey the order, and reproduce any definite image from your past? Certainly not. It stands staring into vacancy, and asking, "What kind of a thing do you wish me to remember?" It needs in short, a *cue*. But, if I say, remember the date of your birth, or remember what you had for breakfast, or remember the succession of notes in the musical scale; then your faculty of memory immediately produces the required result: the '_cue_' determines its vast set of potentialities toward a particular point. And if you now look to see how this happens, you immediately perceive that the cue is something *contiguously associated* with the thing recalled. The words, 'date of my birth,' have an ingrained association with a particular number, month, and year; the words, 'breakfast this morning,' cut off all other lines of recall except those which lead to coffee and bacon and eggs; the words, 'musical scale,' are inveterate mental neighbors of do, ré, mi, fa, sol, la, etc. The laws of association govern, in fact, all the trains of our thinking which are not interrupted by sensations breaking on us from without. Whatever appears in the mind must be *introduced*; and, when introduced, it is as the associate of something already there. This is as true of what you are recollecting as it is of everything else you think of.

Reflection will show you that there are peculiarities in your memory which would be quite whimsical and unaccountable if we were forced to regard them as the product of a purely spiritual faculty. Were memory such a faculty, granted to us solely for its practical use, we ought to remember easiest whatever we most *needed* to remember; and frequency of repetition, recency, and the like, would play no part in the matter. That we should best remember frequent things and recent things, and forget things that are ancient or were experienced only once, could only be regarded as an incomprehensible anomaly on such a view. But if we remember because of our associations, and if these are (as the physiological psychologists believe) due to our organized brain-paths, we easily see how the law of recency and repetition should prevail. Paths frequently and recently ploughed are those that lie most open, those which may be expected most easily to lead to results. The laws of our memory, as we find them, therefore are incidents of our associational constitution; and, when we are emancipated from the flesh, it is conceivable that they may no longer continue to obtain.

We may assume, then, that recollection is a resultant of our associative processes, these themselves in the last analysis being most probably due to the workings of our brain.

Descending more particularly into the faculty of memory, we have to distinguish between its potential aspect as a magazine or storehouse and its actual aspect as recollection now of a particular event. Our memory contains all sorts of items which we do not now recall, but which we may recall, provided a sufficient cue be offered. Both the general retention and the special recall are explained by association. An educated memory depends on an organized system of associations; and its goodness depends on two of their peculiarities: first, on the persistency of the associations; and, second, on their number.

Let us consider each of these points in turn.

First, the persistency of the associations. This gives what may be called the *quality of native retentiveness* to the individual. If, as I think we are forced to, we consider the brain to be the organic condition by which the vestiges of our experience are associated with each other, we may suppose that some brains are 'wax to receive and marble to retain.' The slightest impressions made on them abide. Names, dates, prices, anecdotes, quotations, are indelibly retained, their several elements fixedly cohering together, so that the individual soon becomes a walking cyclopædia of information. All this may occur with no philosophic tendency in the mind, no impulse to weave the materials acquired into anything like a logical system. In the books of anecdotes, and, more recently, in the psychology-books, we find recorded instances of monstrosities, as we may call them, of this desultory memory; and they are often otherwise very stupid men. It is, of course, by no means incompatible with a philosophic mind; for mental characteristics have infinite capacities for permutation. And, when both memory and philosophy combine together in one person, then indeed we have the highest sort of intellectual efficiency. Your Walter Scotts, your Leibnizes, your Gladstones, and your Goethes, all your folio copies of mankind, belong to this type. Efficiency on a colossal scale would indeed seem to require it. For,

although your philosophic or systematic mind without good desultory memory may know how to work out results and recollect where in the books to find them, the time lost in the searching process handicaps the thinker, and gives to the more ready type of individual the economical advantage.

The extreme of the contrasted type, the type with associations of small persistency, is found in those who have almost no desultory memory at all. If they are also deficient in logical and systematizing power, we call them simply feeble intellects; and no more need to be said about them here. Their brain-matter, we may imagine, is like a fluid jelly, in which impressions may be easily made, but are soon closed over again, so that the brain reverts to its original indifferent state.

But it may occur here, just as in other gelatinous substances, that an impression will vibrate throughout the brain, and send waves into other parts of it. In cases of this sort, although the immediate impression may fade out quickly, it does modify the cerebral mass; for the paths it makes there may remain, and become so many avenues through which the impression may be reproduced if they ever get excited again. And its liability to reproduction will depend of course upon the variety of these paths and upon the frequency with which they are used. Each path is in fact an associated process, the number of these associates becoming thus to a great degree a substitute for the independent tenacity of the original impression. As I have elsewhere written: Each of the associates is a hook to which it hangs, a means to fish it up when sunk below the surface. Together they form a network of attachments by which it is woven into the entire tissue of our thought. The 'secret of a good memory' is thus the secret of forming diverse and multiple associations with every fact we care to retain. But this forming of associations with a fact,--what is it but thinking *about* the fact as much as possible? Briefly, then, of two men with the same outward experiences, *the one who thinks over his experiences most*, and weaves them into the most systematic relations with each other, will be the one with the best memory.

But, if our ability to recollect a thing be so largely a matter of its associations with other things which thus becomes its cues, an important pædagogic consequence follows. _There can be no improvement of the general or elementary faculty of memory: there can only be improvement of our memory for special systems of associated things_; and this latter improvement is due to the way in which the things in question are woven into association with each other in the mind. Intricately or profoundly woven, they are held: disconnected, they tend to drop out just in proportion as the native brain retentiveness is poor. And no amount of training, drilling, repeating, and reciting employed upon the matter of one system of objects, the history-system, for example, will in the least improve either the facility or the durability with which objects belonging to a wholly disparate system--the system of facts of chemistry, for instance--tend to be retained. That system must be separately worked into the mind by itself,--a chemical fact which is thought about in connection with the other chemical facts, tending then to stay, but otherwise easily dropping out.

We have, then, not so much a faculty of memory as many faculties of memory. We have as many as we have systems of objects habitually thought of in connection with each other. A given object is held in the memory by the associates it has acquired within its own system exclusively. Learning the facts of another system will in no wise help it to stay in the mind, for the simple reason that it has no 'cues' within that other system.

We see examples of this on every hand. Most men have a good memory for facts connected with their own pursuits. A college athlete, who remains a dunce at his books, may amaze you by his knowledge of the 'records' at various feats and games, and prove himself a walking dictionary of sporting statistics. The reason is that he is constantly going over these things in his mind, and comparing and making series of them. They form for him, not so many odd facts, but a concept-system, so they stick. So the merchant remembers prices, the politician other politicians' speeches and votes, with a copiousness which astonishes outsiders, but which the amount of thinking they bestow on these subjects easily explains.

The great memory for facts which a Darwin or a Spencer reveal in their books is not incompatible with the possession on their part of a mind with only a middling degree of physiological retentiveness. Let a man early in life set himself the task of verifying such a theory as that of evolution, and facts will soon cluster and cling

to him like grapes to their stem. Their relations to the theory will hold them fast; and, the more of these the mind is able to discern, the greater the erudition will become. Meanwhile the theorist may have little, if any, desultory memory. Unutilizable facts may be unnoted by him, and forgotten as soon as heard. An ignorance almost as encyclopedic as his erudition may coexist with the latter, and hide, as it were, within the interstices of its web. Those of you who have had much to do with scholars and *savants* will readily think of examples of the class of mind I mean.

The best possible sort of system into which to weave an object, mentally, is a *rational* system, or what is called a 'science.' Place the thing in its pigeon-hole in a classificatory series; explain it logically by its causes, and deduce from it its necessary effects; find out of what natural law it is an instance,--and you then know it in the best of all possible ways. A 'science' is thus the greatest of labor-saving contrivances. It relieves the memory of an immense number of details, replacing, as it does, merely contiguous associations by the logical ones of identity, similarity, or analogy. If you know a 'law,' you may discharge your memory of masses of particular instances, for the law will reproduce them for you whenever you require them. The law of refraction, for example: If you know that, you can with a pencil and a bit of paper immediately discern how a convex lens, a concave lens, or a prism, must severally alter the appearance of an object. But, if you don't know the general law, you must charge your memory separately with each of the three kinds of effect.

A 'philosophic' system, in which all things found their rational explanation and were connected together as causes and effects, would be the perfect mnemonic system, in which the greatest economy of means would bring about the greatest richness of results. So that, if we have poor desultory memories, we can save ourselves by cultivating the philosophic turn of mind.

There are many artificial systems of mnemonics, some public, some sold as secrets. They are all so many devices for training us into certain methodical and stereotyped *ways of thinking* about the facts we seek to retain. Even were I competent, I could not here go into these systems in any detail. But a single example, from a popular system, will show what I mean. I take the number-alphabet, the great mnemonic device for recollecting numbers and dates. In this system each digit is represented by a consonant, thus: 1 is *t* or *_d_*; 2, *_n_*; 3, *_m_*; 4, *_r_*; 5, *_l_*; 6, *_sh, j, ch_, or _g_*; 7, *_c, k, g_, or _qu_*; 8, *f* or *_v_*; 9, *b* or *_p_*; 0, *_s, c_, or z*. Suppose, now, you wish to remember the velocity of sound, 1,142 feet a second: *_t, t, r, n_*, are the letters you must use. They make the consonants of *tight run*, and it would be a 'tight run' for you to keep up such a speed. So 1649, the date of the execution of Charles I., may be remembered by the word *sharp*, which recalls the headsman's axe.

Apart from the extreme difficulty of finding words that are appropriate in this exercise, it is clearly an excessively poor, trivial, and silly way of 'thinking' about dates; and the way of the historian is much better. He has a lot of landmark-dates already in his mind. He knows the historic concatenation of events, and can usually place an event at its right date in the chronology-table, by thinking of it in a rational way, referring it to its antecedents, tracing its concomitants and consequences, and thus ciphering out its date by connecting it with theirs. The artificial memory-systems, recommending, as they do, such irrational methods of thinking, are only to be recommended for the first landmarks in a system, or for such purely detached facts as enjoy no rational connection with the rest of our ideas. Thus the student of physics may remember the order of the spectral colours by the word *vibgyor* which their initial letters make. The student of anatomy may remember the position of the Mitral valve on the Left side of the heart by thinking that L.M. stands also for 'long meter' in the hymn-books.

You now see why 'cramming' must be so poor a mode of study. Cramming seeks to stamp things in by intense application immediately before the ordeal. But a thing thus learned can form but few associations. On the other hand, the same thing recurring on different days, in different contexts, read, recited on, referred to again and again, related to other things and reviewed, gets well wrought into the mental structure. This is the reason why you should enforce on your pupils habits of continuous application. There is no moral turpitude in cramming. It would be the best, because the most economical, mode of study if it led to the results desired.

But it does not, and your older pupils can readily be made to see the reason why.

It follows also, from what has been said, that _the popular idea that 'the Memory,' in the sense of a general elementary faculty, can be improved by training, is a great mistake_. Your memory for facts of a certain class can be improved very much by training in that class of facts, because the incoming new fact will then find all sorts of analogues and associates already there, and these will keep it liable to recall. But other kinds of fact will reap none of that benefit, and, unless one have been also trained and versed in *their* class, will be at the mercy of the mere crude retentiveness of the individual, which, as we have seen, is practically a fixed quantity. Nevertheless, one often hears people say: "A great sin was committed against me in my youth: my teachers entirely failed to exercise my memory. If they had only made me learn a lot of things by heart at school, I should not be, as I am now, forgetful of everything I read and hear." This is a great mistake: learning poetry by heart will make it easier to learn and remember other poetry, but nothing else; and so of dates; and so of chemistry and geography.

But, after what I have said, I am sure you will need no farther argument on this point; and I therefore pass it by.

But, since it has brought me to speak of learning things by heart, I think that a general practical remark about verbal memorizing may now not be out of place. The excesses of old-fashioned verbal memorizing, and the immense advantages of object-teaching in the earlier stages of culture, have perhaps led those who philosophize about teaching to an unduly strong reaction; and learning things by heart is now probably somewhat too much despised. For, when all is said and done, the fact remains that verbal material is, on the whole, the handiest and most useful material in which thinking can be carried on. Abstract conceptions are far and away the most economical instruments of thought, and abstract conceptions are fixed and incarnated for us in words. Statistical inquiry would seem to show that, as men advance in life, they tend to make less and less use of visual images, and more and more use of words. One of the first things that Mr. Galton discovered was that this appeared to be the case with the members of the Royal Society whom he questioned as to their mental images. I should say, therefore, that constant exercise in verbal memorizing must still be an indispensable feature in all sound education. Nothing is more deplorable than that inarticulate and helpless sort of mind that is reminded by everything of some quotation, case, or anecdote, which it cannot now exactly recollect. Nothing, on the other hand, is more convenient to its possessor, or more delightful to his comrades, than a mind able, in telling a story, to give the exact words of the dialogue or to furnish a quotation accurate and complete. In every branch of study there are happily turned, concise, and handy formulas which in an incomparable way sum up results. The mind that can retain such formulas is in so far a superior mind, and the communication of them to the pupil ought always to be one of the teacher's favorite tasks.

In learning 'by heart,' there are, however, efficient and inefficient methods; and, by making the pupil skilful in the best method, the teacher can both interest him and abridge the task. The best method is of course not to 'hammer in' the sentences, by mere reiteration, but to analyze them, and think. For example, if the pupil should have to learn this last sentence, let him first strip out its grammatical core, and learn, "The best method is not to hammer in, but to analyze," and then add the amplificative and restrictive clauses, bit by bit, thus: "The best method is of course not to hammer in *the sentences*, but to analyze *them and think*." Then finally insert the words '*by mere reiteration*,' and the sentence is complete, and both better understood and quicker remembered than by a more purely mechanical method.

* * * * *

In conclusion, I must say a word about the contributions to our knowledge of memory which have recently come from the laboratory-psychologists. Many of the enthusiasts for scientific or brass-instrument child-study are taking accurate measurements of children's elementary faculties, and among these what we may call *immediate memory* admits of easy measurement. All we need do is to exhibit to the child a series of letters, syllables, figures, pictures, or what-not, at intervals of one, two, three, or more seconds, or to sound a similar

series of names at the same intervals, within his hearing, and then see how completely he can reproduce the list, either directly, or after an interval of ten, twenty, or sixty seconds, or some longer space of time. According to the results of this exercise, the pupils may be rated in a memory-scale; and some persons go so far as to think that the teacher should modify her treatment of the child according to the strength or feebleness of its faculty as thus made known.

Now I can only repeat here what I said to you when treating of attention: man is too complex a being for light to be thrown on his real efficiency by measuring any one mental faculty taken apart from its consensus in the working whole. Such an exercise as this, dealing with incoherent and insipid objects, with no logical connection with each other, or practical significance outside of the 'test,' is an exercise the like of which in real life we are hardly ever called upon to perform. In real life, our memory is always used in the service of some interest: we remember things which we care for or which are associated with things we care for; and the child who stands at the bottom of the scale thus experimentally established might, by dint of the strength of his passion for a subject, and in consequence of the logical association into which he weaves the actual materials of his experience, be a very effective memorizer indeed, and do his school-tasks on the whole much better than an immediate parrot who might stand at the top of the 'scientifically accurate' list.

This preponderance of interest, of passion, in determining the results of a human being's working life, obtains throughout. No elementary measurement, capable of being performed in a laboratory, can throw any light on the actual efficiency of the subject; for the vital thing about him, his emotional and moral energy and doggedness, can be measured by no single experiment, and becomes known only by the total results in the long run. A blind man like Huber, with his passion for bees and ants, can observe them through other people's eyes better than these can through their own. A man born with neither arms nor legs, like the late Kavanagh, M.P.--and what an icy heart his mother must have had about him in his babyhood, and how 'negative' would the laboratory-measurements of his motor-functions have been!--can be an adventurous traveller, an equestrian and sportsman, and lead an athletic outdoor life. Mr. Romanes studied the elementary rate of apperception in a large number of persons by making them read a paragraph as fast as they could take it in, and then immediately write down all they could reproduce of its contents. He found astonishing differences in the rapidity, some taking four times as long as others to absorb the paragraph, and the swiftest readers being, as a rule, the best immediate recollectors, too. But not,--and this is my point,--*not* the most *intellectually capable subjects*, as tested by the results of what Mr. Romanes rightly names 'genuine' intellectual work; for he tried the experiment with several highly distinguished men in science and literature, and most of them turned out to be slow readers.

In the light of all such facts one may well believe that the total impression which a perceptive teacher will get of the pupil's condition, as indicated by his general temper and manner, by the listlessness or alertness, by the ease or painfulness with which his school work is done, will be of much more value than those unreal experimental tests, those pedantic elementary measurements of fatigue, memory, association, and attention, etc., which are urged upon us as the only basis of a genuinely scientific pedagogy. Such measurements can give us useful information only when we combine them with observations made without brass instruments, upon the total demeanor of the measured individual, by teachers with eyes in their heads and common sense, and some feeling for the concrete facts of human nature in their hearts.

Depend upon it, no one need be too much cast down by the discovery of his deficiency in any elementary faculty of the mind. What tells in life is the whole mind working together, and the deficiencies of any one faculty can be compensated by the efforts of the rest. You can be an artist without visual images, a reader without eyes, a mass of erudition with a bad elementary memory. In almost any subject your passion for the subject will save you. If you only care enough for a result, you will almost certainly attain it. If you wish to be rich, you will be rich; if you wish to be learned, you will be learned; if you wish to be good, you will be good. Only you must, then, *really* wish these things, and wish them with exclusiveness, and not wish at the same time a hundred other incompatible things just as strongly.

One of the most important discoveries of the 'scientific' sort that have recently been made in psychology is that of Mr. Galton and others concerning the great variations among individuals in the type of their imagination. Every one is now familiar with the fact that human beings vary enormously in the brilliancy, completeness, definiteness, and extent of their visual images. These are singularly perfect in a large number of individuals, and in a few are so rudimentary as hardly to exist. The same is true of the auditory and motor images, and probably of those of every kind; and the recent discovery of distinct brain-areas for the various orders of sensation would seem to provide a physical basis for such variations and discrepancies. The facts, as I said, are nowadays so popularly known that I need only remind you of their existence. They might seem at first sight of practical importance to the teacher; and, indeed, teachers have been recommended to sort their pupils in this way, and treat them as the result falls out. You should interrogate them as to their imagery, it is said, or exhibit lists of written words to their eyes, and then sound similar lists in their ears, and see by which channel a child retains most words. Then, in dealing with that child, make your appeals predominantly through that channel. If the class were very small, results of some distinctness might doubtless thus be obtained by a painstaking teacher. But it is obvious that in the usual schoolroom no such differentiation of appeal is possible; and the only really useful practical lesson that emerges from this analytic psychology in the conduct of large schools is the lesson already reached in a purely empirical way, that the teacher ought always to impress the class through as many sensible channels as he can. Talk and write and draw on blackboard, permit the pupils to talk, and make them write and draw, exhibit pictures, plans, and curves, have your diagrams colored differently in their different parts, etc.; and out of the whole variety of impressions the individual child will find the most lasting ones for himself. In all primary school work this principle of multiple impressions is well recognized, so I need say no more about it here.

This principle of multiplying channels and varying associations and appeals is important, not only for teaching pupils to remember, but for teaching them to understand. It runs, in fact, through the whole teaching art.

One word about the unconscious and unreproducible part of our acquisitions, and I shall have done with the topic of memory.

Professor Ebbinghaus, in a heroic little investigation into the laws of memory which he performed a dozen or more years ago by the method of learning lists of nonsense syllables, devised a method of measuring the rate of our forgetfulness, which lays bare an important law of the mind.

His method was to read over his list until he could repeat it once by heart unhesitatingly. The number of repetitions required for this was a measure of the difficulty of the learning in each particular case. Now, after having once learned a piece in this way, if we wait five minutes, we find it impossible to repeat it again in the same unhesitating manner. We must read it over again to revive some of the syllables, which have already dropped out or got transposed. Ebbinghaus now systematically studied the number of readings-over which were necessary to revive the unhesitating recollection of the piece after five minutes, half an hour, an hour, a day, a week, a month, had elapsed. The number of rereadings required he took to be a measure of the *amount of forgetting* that had occurred in the elapsed interval. And he found some remarkable facts. The process of forgetting, namely, is vastly more rapid at first than later on. Thus full half of the piece seems to be forgotten within the first half-hour, two-thirds of it are forgotten at the end of eight hours, but only four-fifths at the end of a month. He made no trials beyond one month of interval; but, if we ourselves prolong ideally the curve of remembrance, whose beginning his experiments thus obtain, it is natural to suppose that, no matter how long a time might elapse, the curve would never descend quite so low as to touch the zero-line. In other words, no matter how long ago we may have learned a poem, and no matter how complete our inability to reproduce it now may be, yet the first learning will still show its lingering effects in the abridgment of the time required for learning it again. In short, Professor Ebbinghaus's experiments show that things which we are quite unable definitely to recall have nevertheless impressed themselves, in some way, upon the structure of the mind. We are different for having once learned them. The resistances in our systems of brain-paths are altered. Our apprehensions are quickened. Our conclusions from certain premises are probably not just what they would be

if those modifications were not there. The latter influence the whole margin of our consciousness, even though their products, not being distinctly reproducible, do not directly figure at the focus of the field.

The teacher should draw a lesson from these facts. We are all too apt to measure the gains of our pupils by their proficiency in directly reproducing in a recitation or an examination such matters as they may have learned, and inarticulate power in them is something of which we always underestimate the value. The boy who tells us, "I know the answer, but I can't say what it is," we treat as practically identical with him who knows absolutely nothing about the answer at all. But this is a great mistake. It is but a small part of our experience in life that we are ever able articulately to recall. And yet the whole of it has had its influence in shaping our character and defining our tendencies to judge and act. Although the ready memory is a great blessing to its possessor, the vaguer memory of a subject, of having once had to do with it, of its neighborhood, and of where we may go to recover it again, constitutes in most men and women the chief fruit of their education. This is true even in professional education. The doctor, the lawyer, are seldom able to decide upon a case off-hand. They differ from other men only through the fact that they know how to get at the materials for decision in five minutes or half an hour: whereas the layman is unable to get at the materials at all, not knowing in what books and indexes to look or not understanding the technical terms.

Be patient, then, and sympathetic with the type of mind that cuts a poor figure in examinations. It may, in the long examination which life sets us, come out in the end in better shape than the glib and ready reproducer, its passions being deeper, its purposes more worthy, its combining power less commonplace, and its total mental output consequently more important.

Such are the chief points which it has seemed worth while for me to call to your notice under the head of memory. We can sum them up for practical purposes by saying that the art of remembering is the art of thinking; and by adding, with Dr. Pick, that, when we wish to fix a new thing in either our own mind or a pupil's, our conscious effort should not be so much to *impress* and *retain* it as to *connect* it with something else already there. The connecting *is* the thinking; and, if we attend clearly to the connection, the connected thing will certainly be likely to remain within recall.

I shall next ask you to consider the process by which we acquire new knowledge,--the process of 'Apperception,' as it is called, by which we receive and deal with new experiences, and revise our stock of ideas so as to form new or improved conceptions.

XIII. THE ACQUISITION OF IDEAS

The images of our past experiences, of whatever nature they may be, visual or verbal, blurred and dim, vivid and distinct, abstract or concrete, need not be memory images, in the strict sense of the word. That is, they need not rise before the mind in a marginal fringe or context of concomitant circumstances, which mean for us their *date*. They may be mere conceptions, floating pictures of an object, or of its type or class. In this undated condition, we call them products of 'imagination' or 'conception.' Imagination is the term commonly used where the object represented is thought of as an individual thing. Conception is the term where we think of it as a type or class. For our present purpose the distinction is not important; and I will permit myself to use either the word 'conception,' or the still vaguer word 'idea,' to designate the inner objects of contemplation, whether these be individual things, like 'the sun' or 'Julius Cæsar,' or classes of things, like 'animal kingdom,' or, finally, entirely abstract attributes, like 'rationality' or 'rectitude.'

The result of our education is to fill the mind little by little, as experiences accrete, with a stock of such ideas. In the illustration I used at our first meeting, of the child snatching the toy and getting slapped, the vestiges left by the first experience answered to so many ideas which he acquired thereby,--ideas that remained with him associated in a certain order, and from the last one of which the child eventually proceeded to act. The sciences of grammar and of logic are little more than attempts methodically to classify all such acquired ideas and to trace certain laws of relationship among them. The forms of relation between them, becoming