

hearing so much. When the geography and English and history and arithmetic simultaneously make cross-references to one another, you get an interesting set of processes all along the line.

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If, then, you wish to insure the interest of your pupils, there is only one way to do it; and that is to make certain that they have something in their minds *to attend with*, when you begin to talk. That something can consist in nothing but a previous lot of ideas already interesting in themselves, and of such a nature that the incoming novel objects which you present can dovetail into them and form with them some kind of a logically associated or systematic whole. Fortunately, almost any kind of a connection is sufficient to carry the interest along. What a help is our Philippine war at present in teaching geography! But before the war you could ask the children if they ate pepper with their eggs, and where they supposed the pepper came from. Or ask them if glass is a stone, and, if not, why not; and then let them know how stones are formed and glass manufactured. External links will serve as well as those that are deeper and more logical. But interest, once shed upon a subject, is liable to remain always with that subject. Our acquisitions become in a measure portions of our personal self; and little by little, as cross-associations multiply and habits of familiarity and practice grow, the entire system of our objects of thought consolidates, most of it becoming interesting for some purposes and in some degree.

An adult man's interests are almost every one of them intensely artificial: they have slowly been built up. The objects of professional interest are most of them, in their original nature, repulsive; but by their connection with such natively exciting objects as one's personal fortune, one's social responsibilities, and especially by the force of inveterate habit, they grow to be the only things for which in middle life a man profoundly cares.

But in all these the spread and consolidation have followed nothing but the principles first laid down. If we could recall for a moment our whole individual history, we should see that our professional ideals and the zeal they inspire are due to nothing but the slow accretion of one mental object to another, traceable backward from point to point till we reach the moment when, in the nursery or in the schoolroom, some little story told, some little object shown, some little operation witnessed, brought the first new object and new interest within our ken by associating it with some one of those primitively there. The interest now suffusing the whole system took its rise in that little event, so insignificant to us now as to be entirely forgotten. As the bees in swarming cling to one another in layers till the few are reached whose feet grapple the bough from which the swarm depends; so with the objects of our thinking,--they hang to each other by associated links, but the *original* source of interest in all of them is the native interest which the earliest one once possessed.

XI. ATTENTION

Whoever treats of interest inevitably treats of attention, for to say that an object is interesting is only another way of saying that it excites attention. But in addition to the attention which any object already interesting or just becoming interesting claims--passive attention or spontaneous attention, we may call it--there is a more deliberate attention,--voluntary attention or attention with effort, as it is called,--which we can give to objects less interesting or uninteresting in themselves. The distinction between active and passive attention is made in all books on psychology, and connects itself with the deeper aspects of the topic. From our present purely practical point of view, however, it is not necessary to be intricate; and passive attention to natively interesting material requires no further elucidation on this occasion. All that we need explicitly to note is that, the more the passive attention is relied on, by keeping the material interesting; and the less the kind of attention requiring effort is appealed to; the more smoothly and pleasantly the classroom work goes on. I must say a few more words, however, about this latter process of voluntary and deliberate attention.

One often hears it said that genius is nothing but a power of sustained attention, and the popular impression probably prevails that men of genius are remarkable for their voluntary powers in this direction. _But a little introspective observation will show any one that voluntary attention cannot be continuously sustained,--that it

comes in beats. _ When we are studying an uninteresting subject, if our mind tends to wander, we have to bring back our attention every now and then by using distinct pulses of effort, which revivify the topic for a moment, the mind then running on for a certain number of seconds or minutes with spontaneous interest, until again some intercurrent idea captures it and takes it off. Then the processes of volitional recall must be repeated once more. Voluntary attention, in short, is only a momentary affair. The process, whatever it is, exhausts itself in the single act; and, unless the matter is then taken in hand by some trace of interest inherent in the subject, the mind fails to follow it at all. The sustained attention of the genius, sticking to his subject for hours together, is for the most part of the passive sort. The minds of geniuses are full of copious and original associations. The subject of thought, once started, develops all sorts of fascinating consequences. The attention is led along one of these to another in the most interesting manner, and the attention never once tends to stray away.

In a commonplace mind, on the other hand, a subject develops much less numerous associates: it dies out then quickly; and, if the man is to keep up thinking of it at all, he must bring his attention back to it by a violent wrench. In him, therefore, the faculty of voluntary attention receives abundant opportunity for cultivation in daily life. It is your despised business man, your common man of affairs, (so looked down on by the literary awarders of fame) whose virtue in this regard is likely to be most developed; for he has to listen to the concerns of so many uninteresting people, and to transact so much drudging detail, that the faculty in question is always kept in training. A genius, on the contrary, is the man in whom you are least likely to find the power of attending to anything insipid or distasteful in itself. He breaks his engagements, leaves his letters unanswered, neglects his family duties incorrigibly, because he is powerless to turn his attention down and back from those more interesting trains of imagery with which his genius constantly occupies his mind.

Voluntary attention is thus an essentially instantaneous affair. You can claim it, for your purposes in the schoolroom, by commanding it in loud, imperious tones; and you can easily get it in this way. But, unless the subject to which you thus recall their attention has inherent power to interest the pupils, you will have got it for only a brief moment; and their minds will soon be wandering again. To keep them where you have called them, you must make the subject too interesting for them to wander again. And for that there is one prescription; but the prescription, like all our prescriptions, is abstract, and, to get practical results from it, you must couple it with mother-wit.

The prescription is that _the subject must be made to show new aspects of itself; to prompt new questions; in a word, to change_. From an unchanging subject the attention inevitably wanders away. You can test this by the simplest possible case of sensorial attention. Try to attend steadfastly to a dot on the paper or on the wall. You presently find that one or the other of two things has happened: either your field of vision has become blurred, so that you now see nothing distinct at all, or else you have involuntarily ceased to look at the dot in question, and are looking at something else. But, if you ask yourself successive questions about the dot,--how big it is, how far, of what shape, what shade of color, etc.; in other words, if you turn it over, if you think of it in various ways, and along with various kinds of associates,--you can keep your mind on it for a comparatively long time. This is what the genius does, in whose hands a given topic coruscates and grows. And this is what the teacher must do for every topic if he wishes to avoid too frequent appeals to voluntary attention of the coerced sort. In all respects, reliance upon such attention as this is a wasteful method, bringing bad temper and nervous wear and tear as well as imperfect results. The teacher who can get along by keeping spontaneous interest excited must be regarded as the teacher with the greatest skill.

There is, however, in all schoolroom work a large mass of material that must be dull and unexciting, and to which it is impossible in any continuous way to contribute an interest associatively derived. There are, therefore, certain external methods, which every teacher knows, of voluntarily arousing the attention from time to time and keeping it upon the subject. Mr. Fitch has a lecture on the art of securing attention, and he briefly passes these methods in review; the posture must be changed; places can be changed. Questions, after being answered singly, may occasionally be answered in concert. Elliptical questions may be asked, the pupil supplying the missing word. The teacher must pounce upon the most listless child and wake him up. The habit

of prompt and ready response must be kept up. Recapitulations, illustrations, examples, novelty of order, and ruptures of routine,--all these are means for keeping the attention alive and contributing a little interest to a dull subject. Above all, the teacher must himself be alive and ready, and must use the contagion of his own example.

But, when all is said and done, the fact remains that some teachers have a naturally inspiring presence, and can make their exercises interesting, while others simply cannot. And psychology and general pedagogy here confess their failure, and hand things over to the deeper springs of human personality to conduct the task.

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A brief reference to the physiological theory of the attentive process may serve still further to elucidate these practical remarks, and confirm them by showing them from a slightly different point of view.

What is the attentive process, psychologically considered? Attention to an object is what takes place whenever that object most completely occupies the mind. For simplicity's sake suppose the object be an object of sensation,--a figure approaching us at a distance on the road. It is far off, barely perceptible, and hardly moving: we do not know with certainty whether it is a man or not. Such an object as this, if carelessly looked at, may hardly catch our attention at all. The optical impression may affect solely the marginal consciousness, while the mental focus keeps engaged with rival things. We may indeed not 'see' it till some one points it out. But, if so, how does he point it out? By his finger, and by describing its appearance,--by creating a premonitory image of *where* to look and of *what* to expect to see. This premonitory image is already an excitement of the same nerve-centres that are to be concerned with the impression. The impression comes, and excites them still further; and now the object enters the focus of the field, consciousness being sustained both by impression and by preliminary idea. But the maximum of attention to it is not yet reached. Although we see it, we may not care for it; it may suggest nothing important to us; and a rival stream of objects or of thoughts may quickly take our mind away. If, however, our companion defines it in a significant way, arouses in the mind a set of experiences to be apprehended from it,--names it an enemy or as a messenger of important tidings,--the residual and marginal ideas now aroused, so far from being its rivals, become its associates and allies. They shoot together into one system with it; they converge upon it; they keep it steadily in focus; the mind attends to it with maximum power.

The attentive process, therefore, at its maximum may be physiologically symbolized by a brain-cell played on in two ways, from without and from within. Incoming currents from the periphery arouse it, and collateral currents from the centres of memory and imagination re-enforce these.

In this process the incoming impression is the newer element; the ideas which re-enforce and sustain it are among the older possessions of the mind. And the maximum of attention may then be said to be found whenever we have a systematic harmony or unification between the novel and the old. It is an odd circumstance that neither the old nor the new, by itself, is interesting: the absolutely old is insipid; the absolutely new makes no appeal at all. The old *in* the new is what claims the attention,--the old with a slightly new turn. No one wants to hear a lecture on a subject completely disconnected with his previous knowledge, but we all like lectures on subjects of which we know a little already, just as, in the fashions, every year must bring its slight modification of last year's suit, but an abrupt jump from the fashion of one decade into another would be distasteful to the eye.

The genius of the interesting teacher consists in sympathetic divination of the sort of material with which the pupil's mind is likely to be already spontaneously engaged, and in the ingenuity which discovers paths of connection from that material to the matters to be newly learned. The principle is easy to grasp, but the accomplishment is difficult in the extreme. And a knowledge of such psychology as this which I am recalling can no more make a good teacher than a knowledge of the laws of perspective can make a landscape painter of effective skill.

A certain doubt may now occur to some of you. A while ago, apropos of the pugnacious instinct, I spoke of our modern pedagogy as being possibly too 'soft.' You may perhaps here face me with my own words, and ask whether the exclusive effort on the teacher's part to keep the pupil's spontaneous interest going, and to avoid the more strenuous path of voluntary attention to repulsive work, does not savor also of sentimentalism. The greater part of schoolroom work, you say, must, in the nature of things, always be repulsive. To face uninteresting drudgery is a good part of life's work. Why seek to eliminate it from the schoolroom or minimize the sterner law?

A word or two will obviate what might perhaps become a serious misunderstanding here.

It is certain that most schoolroom work, till it has become habitual and automatic, is repulsive, and cannot be done without voluntarily jerking back the attention to it every now and then. This is inevitable, let the teacher do what he will.

It flows from the inherent nature of the subjects and of the learning mind. The repulsive processes of verbal memorizing, of discovering steps of mathematical identity, and the like, must borrow their interest at first from purely external sources, mainly from the personal interests with which success in mastering them is associated, such as gaining of rank, avoiding punishment, not being beaten by a difficulty and the like. Without such borrowed interest, the child could not attend to them at all. But in these processes what becomes interesting enough to be attended to is not thereby attended to *without effort*. Effort always has to go on, derived interest, for the most part, not awakening attention that is *easy*, however spontaneous it may now have to be called. The interest which the teacher, by his utmost skill, can lend to the subject, proves over and over again to be only an interest sufficient *to let loose the effort*. The teacher, therefore, need never concern himself about *inventing* occasions where effort must be called into play. Let him still awaken whatever sources of interest in the subject he can by stirring up connections between it and the pupil's nature, whether in the line of theoretic curiosity, of personal interest, or of pugnacious impulse. The laws of mind will then bring enough pulses of effort into play to keep the pupil exercised in the direction of the subject. There is, in fact, no greater school of effort than the steady struggle to attend to immediately repulsive or difficult objects of thought which have grown to interest us through their association as means, with some remote ideal end.

The Herbartian doctrine of interest ought not, therefore, in principle to be reproached with making pedagogy soft. If it do so, it is because it is unintelligently carried on. Do not, then, for the mere sake of discipline, command attention from your pupils in thundering tones. Do not too often beg it from them as a favor, nor claim it as a right, nor try habitually to excite it by preaching the importance of the subject. Sometimes, indeed, you must do these things; but, the more you have to do them, the less skilful teacher you will show yourself to be. Elicit interest from within, by the warmth with which you care for the topic yourself, and by following the laws I have laid down.

If the topic be highly abstract, show its nature by concrete examples. If it be unfamiliar, trace some point of analogy in it with the known. If it be inhuman, make it figure as part of a story. If it be difficult, couple its acquisition with some prospect of personal gain. Above all things, make sure that it shall run through certain inner changes, since no unvarying object can possibly hold the mental field for long. Let your pupil wander from one aspect to another of your subject, if you do not wish him to wander from it altogether to something else, variety in unity being the secret of all interesting talk and thought. The relation of all these things to the native genius of the instructor is too obvious to need comment again.

One more point, and I am done with the subject of attention. There is unquestionably a great native variety among individuals in the type of their attention. Some of us are naturally scatterbrained, and others follow easily a train of connected thoughts without temptation to swerve aside to other subjects. This seems to depend on a difference between individuals in the type of their field of consciousness. In some persons this is highly focalized and concentrated, and the focal ideas predominate in determining association. In others we must suppose the margin to be brighter, and to be filled with something like meteoric showers of images,

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.