himself for every fresh dereliction by saying, "I won't count this time!" Well, he may not count it, and a kind Heaven may not count it; but it is being counted none the less. Down among his nerve-cells and fibres the molecules are counting it, registering and storing it up to be used against him when the next temptation comes. Nothing we ever do is, in strict scientific literalness, wiped out.

Of course, this has its good side as well as its bad one. As we become permanent drunkards by so many separate drinks, so we become saints in the moral, and authorities and experts in the practical and scientific spheres, by so many separate acts and hours of work. Let no youth have any anxiety about the upshot of his education, whatever the line of it may be. If he keep faithfully busy each hour of the working day, he may safely leave the final result to itself. He can with perfect certainty count on waking up some fine morning to find himself one of the competent ones of his generation, in whatever pursuit he may have singled out. Silently, between all the details of his business, the *power of judging* in all that class of matter will have built itself up within him as a possession that will never pass away. Young people should know this truth in advance. The ignorance of it has probably engendered more discouragement and faint-heartedness in youths embarking on arduous careers than all other causes put together.

IX. THE ASSOCIATION OF IDEAS

In my last talk, in treating of Habit, I chiefly had in mind our *motor* habits,--habits of external conduct. But our thinking and feeling processes are also largely subject to the law of habit, and one result of this is a phenomenon which you all know under the name of 'the association of ideas.' To that phenomenon I ask you now to turn.

You remember that consciousness is an ever-flowing stream of objects, feelings, and impulsive tendencies. We saw already that its phases or pulses are like so many fields or waves, each field or wave having usually its central point of liveliest attention, in the shape of the most prominent object in our thought, while all around this lies a margin of other objects more dimly realized, together with the margin of emotional and active tendencies which the whole entails. Describing the mind thus in fluid terms, we cling as close as possible to nature. At first sight, it might seem as if, in the fluidity of these successive waves, everything is indeterminate. But inspection shows that each wave has a constitution which can be to some degree explained by the constitution of the waves just passed away. And this relation of the wave to its predecessors is expressed by the two fundamental 'laws of association,' so-called, of which the first is named the Law of Contiguity, the second that of Similarity.

The *Law of Contiguity* tells us that objects thought of in the coming wave are such as in some previous experience were *next* to the objects represented in the wave that is passing away. The vanishing objects were once formerly their neighbors in the mind. When you recite the alphabet or your prayers, or when the sight of an object reminds you of its name, or the name reminds you of the object, it is through the law of contiguity that the terms are suggested to the mind.

The *Law of Similarity* says that, when contiguity fails to describe what happens, the coming objects will prove to *resemble* the going objects, even though the two were never experienced together before. In our 'flights of fancy,' this is frequently the case.

If, arresting ourselves in the flow of reverie, we ask the question, "How came we to be thinking of just this object now?" we can almost always trace its presence to some previous object which has introduced it to the mind, according to one or the other of these laws. The entire routine of our memorized acquisitions, for example, is a consequence of nothing but the Law of Contiguity. The words of a poem, the formulas of trigonometry, the facts of history, the properties of material things, are all known to us as definite systems or groups of objects which cohere in an order fixed by innumerable iterations, and of which any one part reminds us of the others. In dry and prosaic minds, almost all the mental sequences flow along these lines of habitual routine repetition and suggestion.

In witty, imaginative minds, on the other hand, the routine is broken through with ease at any moment; and one field of mental objects will suggest another with which perhaps in the whole history of human thinking it had never once before been coupled. The link here is usually some *analogy* between the objects successively thought of,--an analogy often so subtle that, although we feel it, we can with difficulty analyze its ground; as where, for example, we find something masculine in the color red and something feminine in the color pale blue, or where, of three human beings' characters, one will remind us of a cat, another of a dog, the third perhaps of a cow.

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Psychologists have of course gone very deeply into the question of what the causes of association may be; and some of them have tried to show that contiguity and similarity are not two radically diverse laws, but that either presupposes the presence of the other. I myself am disposed to think that the phenomena of association depend on our cerebral constitution, and are not immediate consequences of our being rational beings. In other words, when we shall have become disembodied spirits, it may be that our trains of consciousness will follow different laws. These questions are discussed in the books on psychology, and I hope that some of you will be interested in following them there. But I will, on the present occasion, ignore them entirely; for, as teachers, it is the *fact* of association that practically concerns you, let its grounds be spiritual or cerebral, or what they may, and let its laws be reducible, or non-reducible, to one. Your pupils, whatever else they are, are at any rate little pieces of associating machinery. Their education consists in the organizing within them of determinate tendencies to associate one thing with another,--impressions with consequences, these with reactions, those with results, and so on indefinitely. The more copious the associative systems, the completer the individual's adaptations to the world.

The teacher can formulate his function to himself therefore in terms of 'association' as well as in terms of 'native and acquired reaction.' It is mainly that of *building up useful systems of association* in the pupil's mind. This description sounds wider than the one I began by giving. But, when one thinks that our trains of association, whatever they may be, normally issue in acquired reactions or behavior, one sees that in a general way the same mass of facts is covered by both formulas.

It is astonishing how many mental operations we can explain when we have once grasped the principles of association. The great problem which association undertakes to solve is, _Why does just this particular field of consciousness, constituted in this particular way, now appear before my mind?_ It may be a field of objects imagined; it may be of objects remembered or of objects perceived; it may include an action resolved on. In either case, when the field is analyzed into its parts, those parts can be shown to have proceeded from parts of fields previously before consciousness, in consequence of one or other of the laws of association just laid down. Those laws *run* the mind: interest, shifting hither and thither, deflects it; and attention, as we shall later see, steers it and keeps it from too zigzag a course.

To grasp these factors clearly gives one a solid and simple understanding of the psychological machinery. The 'nature,' the 'character,' of an individual means really nothing but the habitual form of his associations. To break up bad associations or wrong ones, to build others in, to guide the associative tendencies into the most fruitful channels, is the educator's principal task. But here, as with all other simple principles, the difficulty lies in the application. Psychology can state the laws: concrete tact and talent alone can work them to useful results.

Meanwhile it is a matter of the commonest experience that our minds may pass from one object to another by various intermediary fields of consciousness. The indeterminateness of our paths of association *in concreto* is thus almost as striking a feature of them as the uniformity of their abstract form. Start from any idea whatever, and the entire range of your ideas is potentially at your disposal. If we take as the associative starting-point, or cue, some simple word which I pronounce before you, there is no limit to the possible diversity of suggestions which it may set up in your minds. Suppose I say 'blue,' for example: some of you may think of the blue sky

and hot weather from which we now are suffering, then go off on thoughts of summer clothing, or possibly of meteorology at large; others may think of the spectrum and the physiology of color-vision, and glide into X-rays and recent physical speculations; others may think of blue ribbons, or of the blue flowers on a friend's hat, and proceed on lines of personal reminiscence. To others, again, etymology and linguistic thoughts may be suggested; or blue may be 'apperceived' as a synonym for melancholy, and a train of associates connected with morbid psychology may proceed to unroll themselves.

In the same person, the same word heard at different times will provoke, in consequence of the varying marginal preoccupations, either one of a number of diverse possible associative sequences. Professor Münsterberg performed this experiment methodically, using the same words four times over, at three-month intervals, as 'cues' for four different persons who were the subjects of observation. He found almost no constancy in their associations taken at these different times. In short, the entire potential content of one's consciousness is accessible from any one of its points. This is why we can never work the laws of association forward: starting from the present field as a cue, we can never cipher out in advance just what the person will be thinking of five minutes later. The elements which may become prepotent in the process, the parts of each successive field round which the associations shall chiefly turn, the possible bifurcations of suggestion, are so numerous and ambiguous as to be indeterminable before the fact. But, although we cannot work the laws of association forward, we can always work them backwards. We cannot say now what we shall find ourselves thinking of five minutes hence; but, whatever it may be, we shall then be able to trace it through intermediary links of contiguity or similarity to what we are thinking now. What so baffles our prevision is the shifting part played by the margin and focus--in fact, by each element by itself of the margin or focus--in calling up the next ideas.

For example, I am reciting 'Locksley Hall,' in order to divert my mind from a state of suspense that I am in concerning the will of a relative that is dead. The will still remains in the mental background as an extremely marginal or ultra-marginal portion of my field of consciousness; but the poem fairly keeps my attention from it, until I come to the line, "I, the heir of all the ages, in the foremost files of time." The words 'I, the heir,' immediately make an electric connection with the marginal thought of the will; that, in turn, makes my heart beat with anticipation of my possible legacy, so that I throw down the book and pace the floor excitedly with visions of my future fortune pouring through my mind. Any portion of the field of consciousness that has more potentialities of emotional excitement than another may thus be roused to predominant activity; and the shifting play of interest now in one portion, now in another, deflects the currents in all sorts of zigzag ways, the mental activity running hither and thither as the sparks run in burnt-up paper.

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One more point, and I shall have said as much to you as seems necessary about the process of association.

You just saw how a single exciting word may call up its own associates prepotently, and deflect our whole train of thinking from the previous track. The fact is that every portion of the field *tends* to call up its own associates; but, if these associates be severally different, there is rivalry, and as soon as one or a few begin to be effective the others seem to get siphoned out, as it were, and left behind. Seldom, however, as in our example, does the process seem to turn round a single item in the mental field, or even round the entire field that is immediately in the act of passing. It is a matter of *constellation*, into which portions of fields that are already past especially seem to enter and have their say. Thus, to go back to 'Locksley Hall,' each word as I recite it in its due order is suggested not solely by the previous word now expiring on my lips, but it is rather the effect of all the previous words, taken together, of the verse. "Ages," for example, calls up "in the foremost files of time," when preceded by "I, the heir of all the"--; but, when preceded by "for I doubt not through the,"--it calls up "one increasing purpose runs." Similarly, if I write on the blackboard the letters A B C D E F,... they probably suggest to you G H I.... But, if I write A B A D D E F, if they suggest anything, they suggest as their complement E C T or E F I C I E N C Y. The result depending on the total constellation, even though most of the single items be the same.

My practical reason for mentioning this law is this, that it follows from it that, in working associations into your pupils' minds, you must not rely on single cues, but multiply the cues as much as possible. Couple the desired reaction with numerous constellations of antecedents,--don't always ask the question, for example, in the same way; don't use the same kind of data in numerical problems; vary your illustrations, etc., as much as you can. When we come to the subject of memory, we shall learn still more about this.

So much, then, for the general subject of association. In leaving it for other topics (in which, however, we shall abundantly find it involved again), I cannot too strongly urge you to acquire a habit of thinking of your pupils in associative terms. All governors of mankind, from doctors and jail-wardens to demagogues and statesmen, instinctively come so to conceive their charges. If you do the same, thinking of them (however else you may think of them besides) as so many little systems of associating machinery, you will be astonished at the intimacy of insight into their operations and at the practicality of the results which you will gain. We think of our acquaintances, for example, as characterized by certain 'tendencies.' These tendencies will in almost every instance prove to be tendencies to association. Certain ideas in them are always followed by certain other ideas, these by certain feelings and impulses to approve or disapprove, assent or decline. If the topic arouse one of those first ideas, the practical outcome can be pretty well foreseen. 'Types of character' in short are largely types of association.

X. INTEREST

At our last meeting I treated of the native tendencies of the pupil to react in characteristically definite ways upon different stimuli or exciting circumstances. In fact, I treated of the pupil's instincts. Now some situations appeal to special instincts from the very outset, and others fail to do so until the proper connections have been organized in the course of the person's training. We say of the former set of objects or situations that they are *interesting* in themselves and originally. Of the latter we say that they are natively uninteresting, and that interest in them has first to be acquired.

No topic has received more attention from pedagogical writers than that of interest. It is the natural sequel to the instincts we so lately discussed, and it is therefore well fitted to be the next subject which we take up.

Since some objects are natively interesting and in others interest is artificially acquired, the teacher must know which the natively interesting ones are; for, as we shall see immediately, other objects can artificially acquire an interest only through first becoming associated with some of these natively interesting things.

The native interests of children lie altogether in the sphere of sensation. Novel things to look at or novel sounds to hear, especially when they involve the spectacle of action of a violent sort, will always divert the attention from abstract conceptions of objects verbally taken in. The grimace that Johnny is making, the spitballs that Tommy is ready to throw, the dog-fight in the street, or the distant firebells ringing,--these are the rivals with which the teacher's powers of being interesting have incessantly to cope. The child will always attend more to what a teacher does than to what the same teacher says. During the performance of experiments or while the teacher is drawing on the blackboard, the children are tranquil and absorbed. I have seen a roomful of college students suddenly become perfectly still, to look at their professor of physics tie a piece of string around a stick which he was going to use in an experiment, but immediately grow restless when he began to explain the experiment. A lady told me that one day, during a lesson, she was delighted at having captured so completely the attention of one of her young charges. He did not remove his eyes from her face; but he said to her after the lesson was over, "I looked at you all the time, and your upper jaw did not move once!" That was the only fact that he had taken in.

Living things, then, moving things, or things that savor of danger or of blood, that have a dramatic quality,--these are the objects natively interesting to childhood, to the exclusion of almost everything else; and the teacher of young children, until more artificial interests have grown up, will keep in touch with her pupils by constant appeal to such matters as these. Instruction must be carried on objectively, experimentally,