eliminating all the intermediary steps. If a child's first snatching impulse be excessive or his memory poor, many repetitions of the discipline may be needed before the acquired reaction comes to be an ingrained habit; but in an eminently educable child a single experience will suffice.

One can easily represent the whole process by a brain-diagram. Such a diagram can be little more than a symbolic translation of the immediate experience into spatial terms; yet it may be useful, so I subjoin it.

[Illustration: FIGURE 1. THE BRAIN-PROCESSES BEFORE EDUCATION.]

Figure 1 shows the paths of the four successive reflexes executed by the lower or instinctive centres. The dotted lines that lead from them to the higher centres and connect the latter together, represent the processes of memory and association which the reactions impress upon the higher centres as they take place.

[Illustration: FIGURE 2. THE BRAIN-PROCESS AFTER EDUCATION.]

In Figure 2 we have the final result. The impression *see* awakens the chain of memories, and the only reactions that take place are the *beg* and *smile*. The thought of the *slap*, connected with the activity of Centre 2, inhibits the *snatch*, and makes it abortive, so it is represented only by a dotted line of discharge not reaching the terminus. Ditto of the *cry* reaction. These are, as it were, short-circuited by the current sweeping through the higher centres from *see* to *smile*. *Beg* and *smile*, thus substituted for the original reaction *snatch*, become at last the immediate responses when the child sees a snatchable object in some one's hands.

The first thing, then, for the teacher to understand is the native reactive tendencies,--the impulses and instincts of childhood,--so as to be able to substitute one for another, and turn them on to artificial objects.

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It is often said that man is distinguished from the lower animals by having a much smaller assortment of native instincts and impulses than they, but this is a great mistake. Man, of course, has not the marvellous egg-laying instincts which some articulates have; but, if we compare him with the mammalia, we are forced to confess that he is appealed to by a much larger array of objects than any other mammal, that his reactions on these objects are characteristic and determinate in a very high degree. The monkeys, and especially the anthropoids, are the only beings that approach him in their analytic curiosity and width of imitativeness. His instinctive impulses, it is true, get overlaid by the secondary reactions due to his superior reasoning power; but thus man loses the *simply* instinctive demeanor. But the life of instinct is only disguised in him, not lost; and when the higher brain-functions are in abeyance, as happens in imbecility or dementia, his instincts sometimes show their presence in truly brutish ways.

I will therefore say a few words about those instinctive tendencies which are the most important from the teacher's point of view.

VII. WHAT THE NATIVE REACTIONS ARE

First of all, *Fear*. Fear of punishment has always been the great weapon of the teacher, and will always, of course, retain some place in the conditions of the schoolroom. The subject is so familiar that nothing more need be said about it.

The same is true of *Love*, and the instinctive desire to please those whom we love. The teacher who succeeds in getting herself loved by the pupils will obtain results which one of a more forbidding temperament finds it impossible to secure.

Next, a word might be said about *Curiosity*. This is perhaps a rather poor term by which to designate the *impulse toward better cognition* in its full extent; but you will readily understand what I mean. Novelties in the way of sensible objects, especially if their sensational quality is bright, vivid, startling, invariably arrest the attention of the young and hold it until the desire to know more about the object is assuaged. In its higher, more intellectual form, the impulse toward completer knowledge takes the character of scientific or philosophic curiosity. In both its sensational and its intellectual form the instinct is more vivacious during childhood and youth than in after life. Young children are possessed by curiosity about every new impression that assails them. It would be quite impossible for a young child to listen to a lecture for more than a few minutes, as you are now listening to me. The outside sights and sounds would inevitably carry his attention off. And, for most people in middle life, the sort of intellectual effort required of the average schoolboy in mastering his Greek or Latin lesson, his algebra or physics, would be out of the question. The middle-aged citizen attends exclusively to the routine details of his business; and new truths, especially when they require involved trains of close reasoning, are no longer within the scope of his capacity.

The sensational curiosity of childhood is appealed to more particularly by certain determinate kinds of objects. Material things, things that move, living things, human actions and accounts of human action, will win the attention better than anything that is more abstract. Here again comes in the advantage of the object-teaching and manual training methods. The pupil's attention is spontaneously held by any problem that involves the presentation of a new material object or of an activity on any one's part. The teacher's earliest appeals, therefore, must be through objects shown or acts performed or described. Theoretic curiosity, curiosity about the rational relations between things, can hardly be said to awake at all until adolescence is reached. The sporadic metaphysical inquiries of children as to who made God, and why they have five fingers, need hardly be counted here. But, when the theoretic instinct is once alive in the pupil, an entirely new order of pedagogic relations begins for him. Reasons, causes, abstract conceptions, suddenly grow full of zest, a fact with which all teachers are familiar. And, both in its sensible and in its rational developments, disinterested curiosity may be successfully appealed to in the child with much more certainty than in the adult, in whom this intellectual instinct has grown so torpid as usually never to awake unless it enters into association with some selfish personal interest. Of this latter point I will say more anon.

Imitation. Man has always been recognized as the imitative animal *par excellence*. And there is hardly a book on psychology, however old, which has not devoted at least one paragraph to this fact. It is strange, however, that the full scope and pregnancy of the imitative impulse in man has had to wait till the last dozen years to become adequately recognized. M. Tarde led the way in his admirably original work, "Les Lois de l'Imitation"; and in our own country Professors Royce and Baldwin have kept the ball rolling with all the energy that could be desired. Each of us is in fact what he is almost exclusively by virtue of his imitativeness. We become conscious of what we ourselves are by imitating others--the consciousness of what the others are precedes--the sense of self grows by the sense of pattern. The entire accumulated wealth of mankind--languages, arts, institutions, and sciences--is passed on from one generation to another by what Baldwin has called social heredity, each generation simply imitating the last. Into the particulars of this most fascinating chapter of psychology I have no time to go. The moment one hears Tarde's proposition uttered, however, one feels how supremely true it is. Invention, using the term most broadly, and imitation, are the two legs, so to call them, on which the human race historically has walked.

Imitation shades imperceptibly into *Emulation*. Emulation is the impulse to imitate what you see another doing, in order not to appear inferior; and it is hard to draw a sharp line between the manifestations of the two impulses, so inextricably do they mix their effects. Emulation is the very nerve of human society. Why are you, my hearers, sitting here before me? If no one whom you ever heard of had attended a 'summer school' or teachers' institute, would it have occurred to any one of you to break out independently and do a thing so unprescribed by fashion? Probably not. Nor would your pupils come to you unless the children of their parents' neighbors were all simultaneously being sent to school. We wish not to be lonely or eccentric, and we wish not to be cut off from our share in things which to our neighbors seem desirable privileges.

In the schoolroom, imitation and emulation play absolutely vital parts. Every teacher knows the advantage of having certain things performed by whole bands of children at a time. The teacher who meets with most success is the teacher whose own ways are the most imitable. A teacher should never try to make the pupils do a thing which she cannot do herself. "Come and let me show you how" is an incomparably better stimulus than "Go and do it as the book directs." Children admire a teacher who has skill. What he does seems easy, and they wish to emulate it. It is useless for a dull and devitalized teacher to exhort her pupils to wake up and take an interest. She must first take one herself; then her example is effective, as no exhortation can possibly be.

Every school has its tone, moral and intellectual. And this tone is a mere tradition kept up by imitation, due in the first instance to the example set by teachers and by previous pupils of an aggressive and dominating type, copied by the others, and passed on from year to year, so that the new pupils take the cue almost immediately. Such a tone changes very slowly, if at all; and then always under the modifying influence of new personalities aggressive enough in character to set new patterns and not merely to copy the old. The classic example of this sort of tone is the often quoted case of Rugby under Dr. Arnold's administration. He impressed his own character as a model on the imagination of the oldest boys, who in turn were expected and required to impress theirs upon the younger set. The contagiousness of Arnold's genius was such that a Rugby man was said to be recognizable all through life by a peculiar turn of character which he acquired at school. It is obvious that psychology as such can give in this field no precepts of detail. As in so many other fields of teaching, success depends mainly on the native genius of the teacher, the sympathy, tact, and perception which enable him to seize the right moment and to set the right example.

Among the recent modern reforms of teaching methods, a certain disparagement of emulation, as a laudable spring of action in the schoolroom, has often made itself heard. More than a century ago, Rousseau, in his 'Émile,' branded rivalry between one pupil and another as too base a passion to play a part in an ideal education. "Let Émile," he said, "never be led to compare himself to other children. No rivalries, not even in running, as soon as he begins to have the power of reason. It were a hundred times better that he should not learn at all what he could only learn through jealousy or vanity. But I would mark out every year the progress he may have made, and I would compare it with the progress of the following years. I would say to him: 'You are now grown so many inches taller; there is the ditch which you jumped over, there is the burden which you raised. There is the distance to which you could throw a pebble, there the distance you could run over without losing breath. See how much more you can do now!' Thus I should excite him without making him jealous of any one. He would wish to surpass himself. I can see no inconvenience in this emulation with his former self."

Unquestionably, emulation with one's former self is a noble form of the passion of rivalry, and has a wide scope in the training of the young. But to veto and taboo all possible rivalry of one youth with another, because such rivalry may degenerate into greedy and selfish excess, does seem to savor somewhat of sentimentality, or even of fanaticism. The feeling of rivalry lies at the very basis of our being, all social improvement being largely due to it. There is a noble and generous kind of rivalry, as well as a spiteful and greedy kind; and the noble and generous form is particularly common in childhood. All games owe the zest which they bring with them to the fact that they are rooted in the emulous passion, yet they are the chief means of training in fairness and magnanimity. Can the teacher afford to throw such an ally away? Ought we seriously to hope that marks, distinctions, prizes, and other goals of effort, based on the pursuit of recognized superiority, should be forever banished from our schools? As a psychologist, obliged to notice the deep and pervasive character of the emulous passion, I must confess my doubts.

The wise teacher will use this instinct as he uses others, reaping its advantages, and appealing to it in such a way as to reap a maximum of benefit with a minimum of harm; for, after all, we must confess, with a French critic of Rousseau's doctrine, that the deepest spring of action in us is the sight of action in another. The spectacle of effort is what awakens and sustains our own effort. No runner running all alone on a race-track will find in his own will the power of stimulation which his rivalry with other runners incites, when he feels them at his heels, about to pass. When a trotting horse is 'speeded,' a running horse must go beside him to

keep him to the pace.

As imitation slides into emulation, so emulation slides into _Ambition_; and ambition connects itself closely with *Pugnacity* and *Pride*. Consequently, these five instinctive tendencies form an interconnected group of factors, hard to separate in the determination of a great deal of our conduct. The *Ambitious Impulses* would perhaps be the best name for the whole group.

Pride and pugnacity have often been considered unworthy passions to appeal to in the young. But in their more refined and noble forms they play a great part in the schoolroom and in education generally, being in some characters most potent spurs to effort. Pugnacity need not be thought of merely in the form of physical combativeness. It can be taken in the sense of a general unwillingness to be beaten by any kind of difficulty. It is what makes us feel 'stumped' and challenged by arduous achievements, and is essential to a spirited and enterprising character. We have of late been hearing much of the philosophy of tenderness in education; 'interest' must be assiduously awakened in everything, difficulties must be smoothed away. *Soft* pedagogics have taken the place of the old steep and rocky path to learning. But from this lukewarm air the bracing oxygen of effort is left out. It is nonsense to suppose that every step in education *can* be interesting. The fighting impulse must often be appealed to. Make the pupil feel ashamed of being scared at fractions, of being 'downed' by the law of falling bodies; rouse his pugnacity and pride, and he will rush at the difficult places with a sort of inner wrath at himself that is one of his best moral faculties. A victory scored under such conditions becomes a turning-point and crisis of his character. It represents the high-water mark of his powers, and serves thereafter as an ideal pattern for his self-imitation. The teacher who never rouses this sort of pugnacious excitement in his pupils falls short of one of his best forms of usefulness.

The next instinct which I shall mention is that of *Ownership*, also one of the radical endowments of the race. It often is the antagonist of imitation. Whether social progress is due more to the passion for keeping old things and habits or to the passion of imitating and acquiring new ones may in some cases be a difficult thing to decide. The sense of ownership begins in the second year of life. Among the first words which an infant learns to utter are the words 'my' and 'mine,' and woe to the parents of twins who fail to provide their gifts in duplicate. The depth and primitiveness of this instinct would seem to cast a sort of psychological discredit in advance upon all radical forms of communistic utopia. Private proprietorship cannot be practically abolished until human nature is changed. It seems essential to mental health that the individual should have something beyond the bare clothes on his back to which he can assert exclusive possession, and which he may defend adversely against the world. Even those religious orders who make the most stringent vows of poverty have found it necessary to relax the rule a little in favor of the human heart made unhappy by reduction to too disinterested terms. The monk must have his books: the nun must have her little garden, and the images and pictures in her room.

In education, the instinct of ownership is fundamental, and can be appealed to in many ways. In the house, training in order and neatness begins with the arrangement of the child's own personal possessions. In the school, ownership is particularly important in connection with one of its special forms of activity, the collecting impulse. An object possibly not very interesting in itself, like a shell, a postage stamp, or a single map or drawing, will acquire an interest if it fills a gap in a collection or helps to complete a series. Much of the scholarly work of the world, so far as it is mere bibliography, memory, and erudition (and this lies at the basis of all our human scholarship), would seem to owe its interest rather to the way in which it gratifies the accumulating and collecting instinct than to any special appeal which it makes to our cravings after rationality. A man wishes a complete collection of information, wishes to know more about a subject than anybody else, much as another may wish to own more dollars or more early editions or more engravings before the letter than anybody else.

The teacher who can work this impulse into the school tasks is fortunate. Almost all children collect something. A tactful teacher may get them to take pleasure in collecting books; in keeping a neat and orderly collection of notes; in starting, when they are mature enough, a card catalogue; in preserving every drawing or

map which they may make. Neatness, order, and method are thus instinctively gained, along with the other benefits which the possession of the collection entails. Even such a noisome thing as a collection of postage stamps may be used by the teacher as an inciter of interest in the geographical and historical information which she desires to impart. Sloyd successfully avails itself of this instinct in causing the pupil to make a collection of wooden implements fit for his own private use at home. Collecting is, of course, the basis of all natural history study; and probably nobody ever became a good naturalist who was not an unusually active collector when a boy.

Constructiveness is another great instinctive tendency with which the schoolroom has to contract an alliance. Up to the eighth or ninth year of childhood one may say that the child does hardly anything else than handle objects, explore things with his hands, doing and undoing, setting up and knocking down, putting together and pulling apart; for, from the psychological point of view, construction and destruction are two names for the same manual activity. Both signify the production of change, and the working of effects, in outward things. The result of all this is that intimate familiarity with the physical environment, that acquaintance with the properties of material things, which is really the foundation of human *consciousness*. To the very last, in most of us, the conceptions of objects and their properties are limited to the notion of what we can *do with them*. A 'stick' means something we can lean upon or strike with; 'fire,' something to cook, or warm ourselves, or burn things up withal; 'string,' something with which to tie things together. For most people these objects have no other meaning. In geometry, the cylinder, circle, sphere, are defined as what you get by going through certain processes of construction, revolving a parallelogram upon one of its sides, etc. The more different kinds of things a child thus gets to know by treating and handling them, the more confident grows his sense of kinship with the world in which he lives. An unsympathetic adult will wonder at the fascinated hours which a child will spend in putting his blocks together and rearranging them. But the wise education takes the tide at the flood, and from the kindergarten upward devotes the first years of education to training in construction and to object-teaching. I need not recapitulate here what I said awhile back about the superiority of the objective and experimental methods. They occupy the pupil in a way most congruous with the spontaneous interests of his age. They absorb him, and leave impressions durable and profound. Compared with the youth taught by these methods, one brought up exclusively by books carries through life a certain remoteness from reality: he stands, as it were, out of the pale, and feels that he stands so; and often suffers a kind of melancholy from which he might have been rescued by a more real education.

There are other impulses, such as love of approbation or vanity, shyness and secretiveness, of which a word might be said; but they are too familiar to need it. You can easily pursue the subject by your own reflection. There is one general law, however, that relates to many of our instinctive tendencies, and that has no little importance in education; and I must refer to it briefly before I leave the subject. It has been called the law of transitoriness in instincts. Many of our impulsive tendencies ripen at a certain period; and, if the appropriate objects be then and there provided, habits of conduct toward them are acquired which last. But, if the objects be not forthcoming then, the impulse may die out before a habit is formed; and later it may be hard to teach the creature to react appropriately in those directions. The sucking instincts in mammals, the following instinct in certain birds and quadrupeds, are examples of this: they fade away shortly after birth.

In children we observe a ripening of impulses and interests in a certain determinate order. Creeping, walking, climbing, imitating vocal sounds, constructing, drawing, calculating, possess the child in succession; and in some children the possession, while it lasts, may be of a semi-frantic and exclusive sort. Later, the interest in any one of these things may wholly fade away. Of course, the proper pedagogic moment to work skill in, and to clench the useful habit, is when the native impulse is most acutely present. Crowd on the athletic opportunities, the mental arithmetic, the verse-learning, the drawing, the botany, or what not, the moment you have reason to think the hour is ripe. The hour may not last long, and while it continues you may safely let all the child's other occupations take a second place. In this way you economize time and deepen skill; for many an infant prodigy, artistic or mathematical, has a flowering epoch of but a few months.

One can draw no specific rules for all this. It depends on close observation in the particular case, and parents

here have a great advantage over teachers. In fact, the law of transitoriness has little chance of individualized application in the schools.

Such is the little interested and impulsive psychophysical organism whose springs of action the teacher must divine, and to whose ways he must become accustomed. He must start with the native tendencies, and enlarge the pupil's entire passive and active experience. He must ply him with new objects and stimuli, and make him taste the fruits of his behavior, so that now that whole context of remembered experience is what shall determine his conduct when he gets the stimulus, and not the bare immediate impression. As the pupil's life thus enlarges, it gets fuller and fuller of all sorts of memories and associations and substitutions; but the eye accustomed to psychological analysis will discern, underneath it all, the outlines of our simple psychophysical scheme.

Respect then, I beg you, always the original reactions, even when you are seeking to overcome their connection with certain objects, and to supplant them with others that you wish to make the rule. Bad behavior, from the point of view of the teacher's art, is as good a starting-point as good behavior. In fact, paradoxical as it may sound to say so, it is often a better starting-point than good behavior would be.

The acquired reactions must be made habitual whenever they are appropriate. Therefore Habit is the next subject to which your attention is invited.

VIII. THE LAWS OF HABIT

It is very important that teachers should realize the importance of habit, and psychology helps us greatly at this point. We speak, it is true, of good habits and of bad habits; but, when people use the word 'habit,' in the majority of instances it is a bad habit which they have in mind. They talk of the smoking-habit and the swearing-habit and the drinking-habit, but not of the abstention-habit or the moderation-habit or the courage-habit. But the fact is that our virtues are habits as much as our vices. All our life, so far as it has definite form, is but a mass of habits,--practical, emotional, and intellectual,--systematically organized for our weal or woe, and bearing us irresistibly toward our destiny, whatever the latter may be.

Since pupils can understand this at a comparatively early age, and since to understand it contributes in no small measure to their feeling of responsibility, it would be well if the teacher were able himself to talk to them of the philosophy of habit in some such abstract terms as I am now about to talk of it to you.

I believe that we are subject to the law of habit in consequence of the fact that we have bodies. The plasticity of the living matter of our nervous system, in short, is the reason why we do a thing with difficulty the first time, but soon do it more and more easily, and finally, with sufficient practice, do it semi-mechanically, or with hardly any consciousness at all. Our nervous systems have (in Dr. Carpenter's words) *grown* to the way in which they have been exercised, just as a sheet of paper or a coat, once creased or folded, tends to fall forever afterward into the same identical folds.

Habit is thus a second nature, or rather, as the Duke of Wellington said, it is 'ten times nature,'--at any rate as regards its importance in adult life; for the acquired habits of our training have by that time inhibited or strangled most of the natural impulsive tendencies which were originally there. Ninety-nine hundredths or, possibly, nine hundred and ninety-nine thousandths of our activity is purely automatic and habitual, from our rising in the morning to our lying down each night. Our dressing and undressing, our eating and drinking, our greetings and partings, our hat-raisings and giving way for ladies to precede, nay, even most of the forms of our common speech, are things of a type so fixed by repetition as almost to be classed as reflex actions. To each sort of impression we have an automatic, ready-made response. My very words to you now are an example of what I mean; for having already lectured upon habit and printed a chapter about it in a book, and read the latter when in print, I find my tongue inevitably falling into its old phrases and repeating almost literally what I said before.