

natural termination of the cycle of his activities, and often suffers from the sense of incompleteness and uncertainty; and there are persons who defend this system as encouraging the pupil to work for the work's sake, and not for extraneous reward. Of course, here as elsewhere, concrete experience must prevail over psychological deduction. But, so far as our psychological deduction goes, it would suggest that the pupil's eagerness to know how well he does is in the line of his normal completeness of function, and should never be balked except for very definite reasons indeed.

Acquaint them, therefore, with their marks and standing and prospects, unless in the individual case you have some special practical reason for not so doing.

VI. NATIVE REACTIONS AND ACQUIRED REACTIONS

We are by this time fully launched upon the biological conception. Man is an organism for reacting on impressions: his mind is there to help determine his reactions, and the purpose of his education is to make them numerous and perfect. _Our education means, in short, little more than a mass of possibilities of reaction, _ acquired at home, at school, or in the training of affairs. The teacher's task is that of supervising the acquiring process.

This being the case, I will immediately state a principle which underlies the whole process of acquisition and governs the entire activity of the teacher. It is this:--

Every acquired reaction is, as a rule, either a complication grafted on a native reaction, or a substitute for a native reaction, which the same object originally tended to provoke.

The teacher's art consists in bringing about the substitution or complication, and success in the art presupposes a sympathetic acquaintance with the reactive tendencies natively there.

Without an equipment of native reactions on the child's part, the teacher would have no hold whatever upon the child's attention or conduct. You may take a horse to the water, but you cannot make him drink; and so you may take a child to the schoolroom, but you cannot make him learn the new things you wish to impart, except by soliciting him in the first instance by something which natively makes him react. He must take the first step himself. He must *do* something before you can get your purchase on him. That something may be something good or something bad. A bad reaction is better than no reaction at all; for, if bad, you can couple it with consequences which awake him to its badness. But imagine a child so lifeless as to react in *no* way to the teacher's first appeals, and how can you possibly take the first step in his education?

To make this abstract conception more concrete, assume the case of a young child's training in good manners. The child has a native tendency to snatch with his hands at anything that attracts his curiosity; also to draw back his hands when slapped, to cry under these latter conditions, to smile when gently spoken to, and to imitate one's gestures.

Suppose now you appear before the child with a new toy intended as a present for him. No sooner does he see the toy than he seeks to snatch it. You slap the hand; it is withdrawn, and the child cries. You then hold up the toy, smiling and saying, "Beg for it nicely,--so!" The child stops crying, imitates you, receives the toy, and crows with pleasure; and that little cycle of training is complete. You have substituted the new reaction of 'begging' for the native reaction of snatching, when that kind of impression comes.

Now, if the child had no memory, the process would not be educative. No matter how often you came in with a toy, the same series of reactions would fatally occur, each called forth by its own impression: see, snatch; slap, cry; hear, ask; receive, smile. But, with memory there, the child, at the very instant of snatching, recalls the rest of the earlier experience, thinks of the slap and the frustration, recollects the begging and the reward, inhibits the snatching impulse, substitutes the 'nice' reaction for it, and gets the toy immediately, by

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 articulate 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.