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INFANT PSYCHOLOGY.

THE study of psychology has had so remarkable a development in recent years, and the standpoint from which it is now approached is so unlike the point of view of older writers on mental philosophy, that the several departments which it now comprises stand in need of separate introductions; and not only are such introductions necessary for purposes of exposition, but their apologetic function, though reduced to a minimum, is still real. The expression "nursery psychologist" no doubt means what its author intended it to mean to some others than himself; and it is desirable that it should be understood by the educated public as a badge of honorable service rather than as a phrase of disparagement and discredit.

No doubt we owe to the rise of the evolution idea something at least of the benefit brought about by what we may call the psychological renaissance of the last twenty-five or thirty years. The breadth of the current conception of psychology is certainly in harmony with the conceptions long ago current in other departments of scientific research; but there is a phase of this broadening of psychological inquiry strikingly brought out only when interpreted in the light of evolution doctrine. This is what we may call the genetic phase, the growth phase. The older idea of the soul was of a fixed substance, with fixed attributes. Knowledge of the soul was immediate in consciousness, and adequate; at least, as adequate as such knowledge could be made. The mind was best understood where best or most fully manifested.

Under such a conception, the man was father of the child. What the adult consciousness discovers in itself is true, and wherein the child lacks it falls short of the true stature of soul life. We must therefore, if we take account of the child-mind at all, interpret it up to the revelations of the man-mind. If the adult consciousness shows the presence of principles not observable in the child consciousness, we must suppose, nevertheless, that they are really present in the child consciousness beyond the reach of our observation. The old argument was this,—and it is not too old to be found in the metaphysics of to-day,—consciousness reveals certain great ideas as simple and original: consequently they must be so. If you do not find them in the child-mind, then you must wait for the child-mind to grow.

The genetic idea reverses all this. Instead of a fixed substance, we have the conception of a growing, developing activity. Instead of beginning with the most elaborate exhibition of this growth and development, we shall find most instruction in the simplest activity that is at the same time

the same activity. Development is a process of involution as well as of evolution, and the elements are hidden under the forms of complexity which they build up. Are there principles in the adult consciousness which do not appear in the child consciousness? Then the adult consciousness must, if possible, be interpreted down to the child consciousness.

Now that this genetic conception has arrived, it is astonishing that it did not arrive sooner. The difference between description and explanation is as old as science itself. What chemist long remained satisfied with a description of the substances found in nature? He was no investigator at all, and his science was not born until he became an analyst. The student of philology is not content with a description, a grammar, of spoken languages: he desiderates their reduction to common vocal elements. But the mental-scientist has called such description science, even when he has had examples of nature's own furnishing around him which would have confirmed or denied the results of mental analysis.

The advantages which we look to infant psychology to furnish are covered by this need of analysis; and the reason that the needed analysis is found here, is that the mind, like all other natural things, grows. This general statement may be put into concrete form under several points, which divide this branch of general psychology from others now recognized.¹

1. In the first place, the phenomena of the infant consciousness are simple as opposed to reflective; that is, they are the child's presentations or memories simply, not his own observations of them. In the adult consciousness the disturbing influences of inner observation is a matter of notorious moment. It is impossible for me to know exactly what I feel, for the apprehending of it through the attention alters its character. My volition also is a complex thing of alternatives, one of which is my personal pride and self-conscious egotism. But the child's emotion is as spontaneous as a spring. The effects of it in the mental life come out in action, pure and uninfluenced by calculation and duplicity and adult reserve. There is around every one of us a web of convention and prejudice of our own making. Not only do we reflect the social formalities of our environment, and thus lose the distinguishing spontaneities of childhood, becoming in so far all coins of the same mint, but each one of us builds up his own little world of seclusion and formality with himself. We are subject not only to idols of the forum, but to idols also of the den.

The child, on the contrary, has not learned his own im-

¹ Race, animal, abnormal psychology, etc.

portance, his pedigree, his beauty, his social place, his religion, his paternal disgrace; and he has not observed himself through all these and countless other lenses of time, place, and circumstance. He has not yet turned himself into an idol nor the world into a temple; and we can study him apart from the complex accretions which are the later deposits of his self-consciousness.

Perhaps one of the best illustrations we can find of the value of this consideration in the study of the child-mind is seen in the reversion to the child-type occasioned by hypnotism. The signal service of hypnotism, I think, is the demonstration of the intrinsic motor force of an idea. Any idea tends at once, and irresistibly, to realize itself in action. All conventionalities, proprieties, alternatives, hesitations, are swept away, and the developed mind reveals its skeleton structure, so to speak, its composition from re-active elements. But hypnotism need not have been waited for to show this. The patient observation of the movements of a child during his first year would have put it among the safest generalizations of the science of mind. In the absence of alternative considerations, reflections, the child acts, and act it must, on the first suggestion which has the faintest meaning in terms of its feelings of movement.

2. The study of children is generally the only means of testing the truth of our mental analyses. If we decide that a certain complex product is due to a union of certain simpler mental elements, then we may appeal to the proper period of child-life to see it taking place. The range of growth is so enormous from the infant to the adult, and the beginnings of the child's mental life are so low in the scale in the matter of instinctive and mental endowment, that there is hardly a question of analysis now under debate which may not be tested by this method. On the other hand, such confirmation shuts out most conclusively the advocates of irreducibility in cases where the adult consciousness is silent or utters a favorable voice. A good example of such analysis is seen in the distinction between simple consciousness and self-consciousness. Over and over again have systems been built upon the necessary subject-object theory of consciousness; namely, that all subjectivity, or consciousness, necessarily implicates an antithesis between *ego* and *non-ego*. But an example of what is thus denied may be seen upon the floor of any nursery where there is a child less than a year of age.

At this point it is that child psychology is more valuable than the study of forms of the consciousness of animals. The latter never become men, while children do. In studying animals we are always haunted by the fear that the analogy may not hold; that some element essential to the development of the human mind may be entirely wanting. Even in such a question as the localization of the motor functions of the brain, where the analogy is one of comparative anatomy and only secondarily of psychology, the monkey presents analogies with man where dogs do not. But in the study of children we may be always sure that a normal child has in him the promise of a normal man.

The contrast between this branch of psychology and mental pathology also shows points of advantage on the side of the former. In the study of mental disease the mental function as a whole is or may be involved. We are never sure that functional connections and sympathies have not been

developed in the growth of the personality as a whole, which lead to idiosyncrasies in that area of mental activity which seems to be most unaffected. For this reason the application of the logical "method of difference," which consists in observing the change brought about in a phenomenon from the removal of part of its antecedent conditions, cannot be always relied upon.

The same difficulty confronts the student of animal pathology. The indefinite source of error called "shock" is always present. The organs left intact by the disease or the operator sympathize in the sufferings of the organism as a whole; and sometimes temporary loss of function is reported, when time repairs the apparent damage.

In dealing with the child, however, the same advantage of simplicity is secured without the corresponding disadvantage of possible interference of functions. In other words, the simplicity of the child is normal simplicity, while the simplicity of disease or surgery is abnormal simplicity; and the danger of what physicians call "complication" is in the former case entirely ruled out.

3. Again, in the study of the child-mind, we have the added advantage of a corresponding simplicity on the organic side; that is, we are able to take account of the physiological processes at a time when they are relatively simple. I say "relatively simple," for in reality they are enormously complex at birth, and the embryologist pushes his research much further back in the life-history of the organism. But yet they are simple relatively to their complex condition after the formation of habits, motor complexes, brain integrations and associations; in short, after the nervous system has been educated to its whole duty in its living environment. For example: a psychology which holds that we have a "speech faculty," an original mental endowment which is incapable of further reduction, may appeal to the latest physiological research and find organic confirmation, at least as far as a determination of its cerebral apparatus is concerned; but such support for the position is wanting when we return to the brain of the infant. Not only do we fail to find the series of centres into which the organic basis of speech has been divided, but even those of them which we do find have not taken up the function, either alone or together, which they perform when speech is actually realized. In other words, the primary object of each of the various centres involved is not speech, but some other and simpler function; and speech arises from a union of such separate functions.

We accordingly find a development of consciousness keeping pace with the development of the physical organism. The extent of possible analogies between the growth of body and that of mind may thus be estimated from below; and any outstanding facts of the inner life which cannot be reduced to the form of physical analogy (if there be any such facts) get greater prominence and safer estimation.

The advocates of a spiritual theory of mind, therefore, should be quite ready to adopt this method, even from the standpoint of their traditional caution. Certainly they gain nothing by refusing to subject their high beliefs to the tests of conformity to the requirements of this law of the developing manifestation of the mental principle. The sphere of critical discussion will then be limited to places in the development of consciousness where spiritual implications force

themselves upon us. It certainly is as unscientific and unphilosophical to refuse to locate such points and to test such implications by the development hypothesis as it is, on the other hand, to claim a victory for the sensational interpretation of the hypothesis before all such points of apparent spiritual implication have been resolved. If the former attitude is arrogant, the latter is as certainly presumptuous.

4. In observing young children, a more direct application of the experimental method is possible.¹ By "experiment" here, I mean both external and internal experiment. In experimenting on adults great difficulties arise through the fact that re-actions are broken at the centre, and closed again by a conscious voluntary act. The subject hears a sound, identifies it, and presses a button. What goes on between the advent of the incoming nerve process and the discharge of the outgoing nerve process? Something, at any rate, which represents a brain process of great complexity. Now, any thing that fixes this sensori-motor connection or simplifies the central process, in so far gives greater certainty to the results. For this reason, experiments on reflex re-actions are valuable and decisive where similar experiments on voluntary re-actions are uncertain and of doubtful value. The fact that the child consciousness is relatively simple, and so offers a field for more fruitful experiment, has already been illustrated in what was said above as to the value of suggestion in child-life; it is also seen in the mechanical re-actions of an infant to strong stimuli, such as bright colors.² Of course, this is the point where originality may be exercised in the devising and executing of experiments. After the subject is a little better developed, new experimentation will be as difficult here as in the other sciences; but at present the simplest phenomena of child life and activity are open to the investigator.

With this inadequate review of the advantages of infant psychology, it is well also to point out the dangers of the abuse of such a branch of inquiry. Such dangers are real. The very simplicity which seems to characterize the life of the child is often extremely misleading, and misleading because the simplicity in question is not typical but idiosyncratic. Mr. Spencer had a large range of facts in view when he made organic development a progression not only in complexity, but also in definiteness; and the distinction between simplicity which indicates mere absence of complexity and that which indicates definiteness of function as well, applies with force to mental growth. Two nervous re-actions may appear equally simple; but one may be an adaptive re-action, and the other inadaptive. So a state of infant consciousness may seem to involve no complexity or integration, and yet turn out to represent, by reason of its very simplicity and definiteness, a mass of individual or race experience. In other words, children differ most remarkably in the early manifestations of their conscious lives. It is never safe, except under the qualification mentioned below, to say, "This child did, consequently all children must." The most we can usually say in observing single infants is, "This child did, consequently another child may." Yet the uncertainties of the case may be summed up and avoided if certain principles of mental development are kept in view.

¹ On the nature and application of experiment in psychology, see my *Handbook of Psychology, Senses and Intellect*, 2d ed., pp. 25-31.

² See the writer's note in *Science*, Oct. 31, 1890, p. 247.

(1) In the first place, we can fix no absolute time in the history of the mind at which a certain mental function takes its rise. The observations, now quite extensively recorded, and sometimes quoted as showing that the first year, or the second year, etc., brings such and such development, tend, on the contrary, to show that such divisions do not hold in any strict sense. Like any organic growth, the nervous system may develop faster under more favorable conditions, or more slowly under less favorable; and the growth of mental faculty is largely dependent upon such organic growth. Only in broad outline and by the widest generalization can such epochs be marked off at all.

(2) The possibility of the occurrence of a mental phenomenon must be distinguished from its necessity. The occurrence of a single clearly observed event is decisive only against the theory according to which its occurrence under the given conditions may not occur; that is, the cause of the event is proved not to lie among agencies or conditions which are absent. For example: the very early adaptive movements of the infant in receiving its food cannot be due to volition, but as to what may account for them the case is still open. It is well to emphasize the fact that one case may be decisive in overthrowing a theory, but the conditions are seldom simple enough to make it decisive in establishing a theory.

(3) It follows from the principle of growth itself that the order of development of the mental functions is constant, and normally free from idiosyncrasy: consequently the most fruitful observations of children are those which show that such a function was present before another could be observed. The complexity becomes finally so remarkable that there seems to be no before or after at all in mental things, and, if child processes show stages in which any element is clearly absent, we have at once light upon the law of growth. For example: if a single case is conclusively established of a child's drawing an inference before it begins to use words or significant vocal sounds, the one case is as good as a thousand to show that thought develops to a degree independently of spoken language.

(4) While the most direct results are acquired by systematic experiments with a given point in view, still general observations kept regularly, and carefully recorded, are important for the interpretation of a great many such records may ultimately afford. In the multitude of experiences here, as everywhere, there is strength. Such observations should cover every thing about the child,—his movements, cries, impulses, sleep, dreams, personal preferences, muscular efforts, attempts at expression, etc.,—and should be recorded in a regular day-book at the time of occurrence. What is important and what is not, is, of course, something to be learned; and it is extremely desirable that any one contemplating such observations should acquaint himself beforehand with the principles of general psychology and physiology, especially the former.

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THE INTERMARRIAGE OF THE DEAF, AND THEIR EDUCATION.

In his valuable article on the above topic in *Science*, Nov. 28, Dr. E. M. Gallaudet erroneously states, that, in considering the intermarriage of the deaf, the "important fact has been overlooked . . . that with a large proportion of persons