

THE BATTLE OF BEHAVIORISM AN EXPOSITION AND AN EXPOSURE

By John B. Watson and William MacDougall (1929)

Classics in the History of Psychology

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BEHAVIORISM -- THE MODERN NOTE IN PSYCHOLOGY

By John B. Watson (1929)

Introduction. When I innocently committed myself to meet Professor MacDougall in debate, I understood that all that was required of me was to give a brief account of the new Behavioristic movement in psychology now rapidly forging to the front. Had I known that my presentation was expected to take the present form I fear timidity would have overcome me. Professor MacDougall's forensic ability is too well known, and my own shortcomings in that direction are too well known, for me knowingly to offer him combat. So I think the only self-protective plan is to disregard all controversial developments and attempt to give here a brief résumé of Behaviorism -- the modern note in psychology [p. 8] -- and to tell why it will work and why it will work and why the current introspective psychology of Professor MacDougall will not work.

What is the Behavioristic note in psychology? Psychology is as old as the human race. The tempting of Eve by the serpent is our first biblical record of the use of psychological methods. May I call attention to the fact, though, that the serpent when he tempted Eve did not ask her to introspect, to look into her mind to see what was going on. No, he handed her the apple and she bit into it. We have a similar example of the Behavioristic psychology in Grecian mythology,

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when the golden apple labeled "For the Fairest" was tossed into a crowd of society women, and again when Hippomenes, in order to win the race from Atalanta, threw golden apples in front of her, knowing full well that she would check her swift flight to pick them up.

One can go through history and show that early psychology was Behavioristic -- grew up around the notion that if you place a certain thing in front of an individual or a group of individuals, the individual or [p. 9] group will act, will do something. Behaviorism is a return to early common-sense. The keynote is: Given a certain object or situation, what will the individual do when confronted with it. Or the reverse of this formulation: Seeing an individual doing something, to be able to predict what object or situation is calling forth that act.

Behavioristic psychology, then, strives to learn something about the nature of human behavior. To get the individual to follow a certain line, to do certain things, what situation shall I set up? Or, seeing the crowd in action, or the individual in action, to know enough about behavior to predict what the situation is that leads to that action.

This all sounds real; one might say it seems to be just common-sense. How can any one object to this formulation? And yet, full of common-sense as it is, this Behavioristic formulation of the problem of psychology has been a veritable battleground since 1912. To understand why this is so, let us examine the more conservative type of psychology which is represented [p. 10] by Professor MacDougall. But to understand at all adequately the type of psychology which he represents we must take one little peep at the way superstitious responses have grown up and become a part of our very nature.

Religious Background of Introspective Psychology. No one knows just how the idea of the supernatural started. It probably had its origin in the general laziness of mankind. Certain individuals who in primitive society declined to work with their hands, to go out hunting, to make flints, to dig for roots, became Behavioristic psychologists observers of human nature.

They found that breaking boughs, thunder, and other sound-producing phenomena would throw the primitive individual from his very birth into a panicky state (meaning by that: stopping the chase, crying, hiding, and the like), and that in this state it was easy to impose upon him. These lazy but good observers began to speculate on how wonderful it would be if they could get some device by which they could at will throw in individuals into this fearsome attitude [p. 11] and in general control their behavior. The colored nurses down south have gained control over the children by telling them that there is some one ready to grab them in the dark; that when it is thundering there is a fearsome power which can be appeased by their being good boys and girls. Medicine men flourished -- a good medicine man had the best of everything and, best of all, he didn't have to work. These individuals were called medicine men, soothsayers, dream interpreters, prophets -- deities in modern times. Skill in bringing about these emotional conditionings of the people increased; organization among medicine men took place, and we began to have religions of one kind or another, and churches, temples, cathedrals, and the like, each presided over by a medicine man.

I think an examination of the psychological history of people will show that their behavior is much more easily controlled by fear stimuli than by love. If the fear element were dropped out of any religion, that religion would not survive a year.

The chief medicine man in a family [p. 12] group is, of course, always the father. In the still larger group God or Jehovah takes the place of the family father. Thus even the modern child from the beginning is confronted by the dicta of the medicine man -- be that his father, the soothsayer of the village, the God or Jehovah. Having been brought up in this attitude of authority, he never questions their written or spoken statements. He accepts them at their face value. He has never deviated from them, neither have his associates, and hence has never had an opportunity to prove or doubt their worth. This accounts for the hold religion and superstition have upon our life. It accounts for the psychology current to-day in practically every university. It partly accounts for the convincingness of Professor MacDougall's argument for purpose.

An Example of Such Concepts. One example of such a concept is that every individual has a soul. This dogma has been present in human psychology from earliest antiquity. No one has ever touched the soul, or has seen one in a test tube, or has in any way come into a relationship [p. 13] with it as he has with the other objects of his daily experience. Nevertheless, to doubt it is to become a heretic and once might possibly even have led to the loss of one's head. Even to-day for a university man to question it in many institutions is to sign his own professional death warrant.

Medieval philosophy not only accepted the concept of the soul, but tried to define it, to deal with it as they dealt with objects of everyday experience. Consequently, in the philosophy of the Middle Ages we find such questions hotly debated as to the number of angels which can stand on the point of a needle.

With the development of the physical sciences which came with the renaissance, a certain release from this stifling soul-cloud was obtained. A man could think of astronomy, the celestial bodies and their motions, of gravitation and the like, without involving soul, although the early scientists were as a rule devout Christians; nevertheless, they early began to leave soul out of their test tubes. Psychology and philosophy, however, in dealing as they [p. 14] thought with non-material objects, found it difficult to sidestep, and hence the concepts of mind and soul come down to the latter part of the nineteenth century. It was the boast of Wundt's students, in 1869, when the first psychological laboratory was established, that psychology had at last become a science without a soul. For fifty years we have kept this pseudo-science exactly as Wundt laid it down. All that Wundt and his students really accomplished was to substitute for the word "soul" the word "consciousness."

An Examination of Consciousness. From the time of Wundt on, consciousness becomes the keynote of psychology. It is the keynote to-day. It has never been seen, touched, smelled, tasted, or moved. It is a plain assumption just as unprovable as the old concept of the soul. And to the Behaviorist the two terms are essentially identical, so far as their metaphysical implications are concerned.

To show how unscientific is the concept, look for a moment at William James' definition of psychology: "Psychology is the description and explanation of states [p. 15] of consciousness as such." Starting with a definition which assumes what he starts out to prove, he escapes his difficulty by an *argumentum ad hominum*. "Consciousness -- oh, yes, everybody must know what this 'consciousness' is." When we have a sensation of red, a perception, a thought, when we will to do something, or when we purpose to do something, or when we desire to do something, we are being conscious. In other words, they do not tell us what consciousness is, but merely begin to put things into it by assumption, and then when they come to analyze consciousness, naturally they find in it just what they put into it. Consequently, in the analysis of consciousness made by certain of the psychologists you find, as elements, sensations and their ghosts, the images. With others you find not only sensations, but so-called affective elements; in still others you will find such elements as will -- the so-called conative element in consciousness. With some psychologists you will find many hundreds of sensations of a certain type; others will maintain that only a few of that type exist. [p. 16] And so it goes. Literally, millions of printed pages have been published on the minute analysis of this intangible something called "consciousness." And how do we begin work upon it? Not by analyzing it as we would a chemical compound, or the way a plant grows. No, those things are material things. This thing we call consciousness can be analyzed only by self-introspection, turning around, and looking at what goes on inside.

In other words, instead of gazing at woods and trees and brooks and things, we must gaze at this undefined and undefinable something we call consciousness. As a result of this major assumption that there is such a thing as consciousness, and that we can analyze it by introspection, we find as many analyses as there are individual psychologists. There is no element of control. There is no way of experimentally attacking and solving psychological problems and standardizing methods.

The Advent of the Behaviorists. In 1912 the Behaviorists reached the conclusion that they could no longer be content [p. 17] to work with the *intangibles*. They saw their brother scientists making progress in medicine, in chemistry, in physics. Every new discovery in those fields was of prime importance, every new element isolated in one laboratory could be isolated in some other laboratory; each new element was immediately taken up in the warp and woof of science as a whole. May I call your attention to radium, to wireless, to insulin, to thyroxin, and hundreds of others? Elements so isolated and methods so formulated immediately began to function in human achievement.

Not so with psychology, as we have pointed out. One has to agree with Professor Warner Fite that there has never been a discovery in subjective psychology; there has been only medieval speculation. The Behaviorist began his own formulation of the problem of psychology by sweeping aside all medieval conceptions. He dropped from his scientific vocabulary all subjective terms such as sensation, perception, image, desire, purpose, and even thinking and emotion as they were originally defined. [p. 18]

What has he set up in their place? The Behaviorist asks: Why don't we make what we can observe the real field of psychology? Let us limit ourselves to things that can be observed, and formulate laws concerning only the observed things. Now what can we observe? Well, we can observe *behavior* -- *what the organism does or says*. And let me make this fundamental point at once: that *saying* is doing -- that is, *behaving*. Speaking overtly or silently is just as objective a type of behavior as baseball.

The Behaviorist puts the human organism in front of him and says: What can it do? When does it start to do these things? If it doesn't do these things by reason of its original nature, what can it be taught to do? What methods shall society use in teaching it to do these things? Again, having taught it to do these things, how long will that organism be able to do them without practice? With this as subject matter, psychology connects up immediately with life.

We have known for a long time that we cannot get our animal to introspect and [p. 19] tell us about its consciousness, but we can keep it without food, we can put it in a place where the temperature is low, or the temperature is high, where food is scarce, where sex stimulation is absent, and the like, and we *can* observe its behavior in those situations. We find that without asking it anything, we can, with this systematic, controlled observation, tell volumes about what each animal does, both by reason of its unlearned activities and through activities which it has to learn. We soon get to the point where we can say it is doing so and so because of so and so.

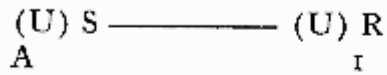
The rule, or measuring rod, which the Behaviorist puts in front of him always is: Can I describe this bit of behavior I see in terms of "stimulus and response"? By stimulus we mean any object in the general environment or any change in the physiological condition of the animal, such as the change we get when we keep an animal from sex activity, when we keep it from feeding, when we keep it from building a nest. By response we mean that system of organized activity that we see [p. 20] emphasized anywhere in any kind of an animal, as building a skyscraper, drawing plans, having babies, writing books, and the like.

The Behaviorist's psychology is based upon reflexes such as the neuro-physiologist studies. First then we must make clear what these are. Let us assume (until observation gives us an exact formulation) that there are at birth a large number of ontogenetic, embryologic responses or "reflexes." I prefer the term "squirmings." Even if there were only a hundred to start with (and there are many thousands), the process of "conditioning," working according to the law of permutations and combinations, would establish many millions of total responses -- a far greater number than the environment ever calls on even the most versatile human being to make.

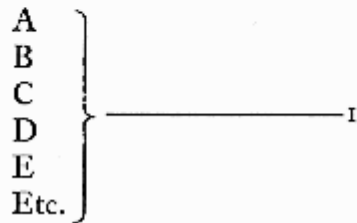
Now what do we mean by "conditionmg" embryologic responses? The process of conditioning is familiar to all. It plays a much more important rôle in human behavior than is generally supposed. I need only summarize a few facts here. We start with the assumption expressed above [p. 21] that the infant exhibits certain definite *unconditioned responses* or "squirmings" at

birth (U) R. Now some definite stimulus must call out each of these responses. So far as known from observation of the infant, this stimulus can call out this response in advance of any training. Let us call such stimuli *unconditioned stimuli* (U) S.

UNCONDITIONED EMBRYOLOGIC RESPONSES



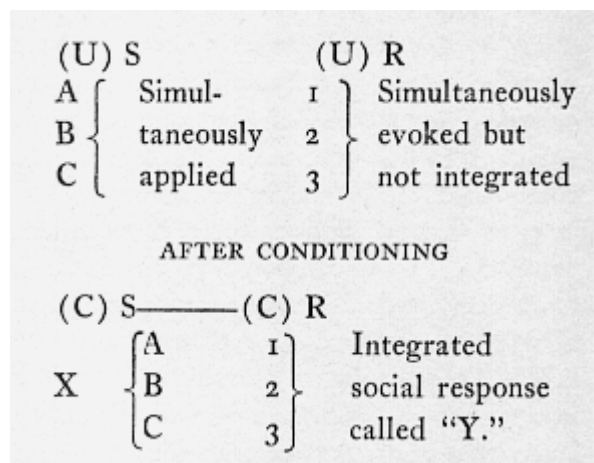
AFTER CONDITIONING



Again let us interject the possibility here that even this relationship between unconditioned stimulus and unconditioned response [p. 22] may not be a biologically given datum. Intra-uterine conditioning may have been the process which established it in embryologic life. All we mean by unconditioned stimuli and unconditioned responses is that, as observers, we find at the moment of birth that certain stimuli will call out certain responses. In the diagram above, *A* is such an unconditioned stimulus, *I* is such an unconditioned response. Now if we take *B* (which, so far as we know, may be any object in the universe), and let it stimulate the organism simultaneously with *A* for a certain number of times (sometimes even once is enough), it also there-after will arouse *I*. In the same way we can make *C*, *D*, *E* call out *I*; in other words, we can make any object at will call out *I* (stimulus substitution). This does away with the old hypothesis that there is any inherent or sacred connection with or association of one object with another.

Order in the universe is merely a matter of conditioning. We start to write at the left of the page and go to the right. The Japanese starts at the top of the page and [p. 23] goes down. The behavior of the European is just as orderly as the behavior of the Japanese. All such so-called connections are built in. This shows how the stimulus side of our life gets more and more complicated as life goes on; how one stimulus comes soon to be able to call out not only *I* in the scheme in the diagram above, but many other responses as well.

But how do *reactions* become more complicated? Neurologists have studied integrations but mainly their number and complexity, and how they are called out in an organization already developed, what their sequences are (for example, in the scratch reflex), what neural architecture is involved in them, and so on. But they have not been particularly interested in their origin. In the following diagram we assume that at birth *A* will call out 1, *B* will call out 2, *C* will call out 3. When the three stimuli are applied in quick succession, they will still call out a pattern reaction, the components of which are 1, 2, 3 (if mutual inhibitions do not enter in). So far there is no integration. Suppose, however, I apply a single stimulus *X* each [p. 24] time I apply *A*, *B* and *C*. In a short time the single stimulus *X* can function alone in place of stimuli, *B* and *C*; in other words, the single stimulus *X* can call out all three responses "1, 2 and 3."



For example, the sight of your wife entering the room may call out the integrated social response which we will call Y, consisting of (1) rising from your chair, (2), bowing, (3) offering her a chair. I would call this an integrated response. Our problem in social conditioning therefore is to find the kinds of individual responses we want brought together to form some pattern [p. 25] of response demanded by society, then to locate the individual stimuli which will call out these responses and substitute for that whole group of stimuli a *single* stimulus -- often a verbal one. All verbal commands are of this type, for example, "Right front into line!" The verbal stimulus is X of our diagram, the separate movements necessary to execute this maneuver illustrate the "1, 2, 3," of our diagram.

In this way, which may seem a little complicated unless one is familiar with the establishment of conditioned responses the Behaviorist tries to take the old vague concept of habit formation and to give it a new and exact scientific formulation in terms of conditioned responses. On this basis the most complicated of our adult habits are explicable in terms of chains of simple conditioned responses.

The Behaviorist finds no scientific evidence for the existence of any vitalistic principle, such, for example, as Prof. MacDougall's "purpose," in his explanation of the increasing complexity of behavior as we pass from infancy to adulthood. It [p. 26] is a truism in science that we should not bring into our explanation any vitalistic factor. We need nothing to explain behavior but the ordinary laws of physics and chemistry. There are many things we cannot explain in behavior just as there are many things we cannot explain in physics and chemistry, but where objectively verifiable experimentation ends, hypothesis, and later theory, begin. But even theories and hypotheses must be couched in terms of what is already known about physical and chemical processes. He then who would introduce consciousness, either as an epiphenomenon or as an active force interjecting itself into the chemical and physical happenings of the body, does so because of spiritualistic and vitalistic leanings. The Behaviorist cannot find consciousness in the test-tube of his science. He finds no evidence anywhere for a stream of consciousness, not even for one so convincing as that described by William James. He does, however, find convincing proof of an ever-widening stream of behavior.

To understand this stream of behavior [p. 27] we must first survey the activity of the new-born infant, and enumerate the unconditioned responses and the unconditioned stimuli that call them out. Not all unconditioned responses are present at birth. Certain of them appear at fairly definite intervals afterwards. And this inquiry is not being undertaken for the purpose of classification. The information is sought because these stimuli and responses are the "raw material" out of which our child, adolescent and adult, is to be built up. Love, fear and rage behavior begin at birth, just as do sneezing, hiccupping, feeding, movements of the leg, larynx, grasping, defecation, urination, crying, erection of penis, smiling, defense and other movements. Reaching, blinking and others begin at a later stage. Some of these embryologic responses persist throughout the life history of the individual, others disappear.

Most important of all, conditioned responses are almost immediately built on these embryologic

foundations. For example, the child will smile at birth (U) R; stroking the lips and other skin [p. 28] of the body (U) S (and certain intraorganic stimuli) will evoke it. So the birth situation may be represented diagrammatically thus:

(U) S Stroking contact	(U) R Smiling
AFTER CONDITIONING	
(C) S Sight of mother's face	(U) R Smiling
Again take the reaction we call rage:	
(U) S Hampering movement	(U) R Violent crying, stiffening of body, etc. (rage)
AFTER CONDITIONING	
S Mere sight of person hampering	(C) R Rage

Consider fear. Our work has shown that the fundamental unconditioned stimulus (U) S calling out a fear reaction is a loud sound or loss of support. Every child I have examined, with one exception, [p. 29] in approximately a thousand, will catch his breath, pucker his lips, cry, or, if older, crawl away, when a loud sound is given behind his head, or when the blanket on which he is lying is suddenly jerked forward. Nothing else in the whole universe will produce fear in early infancy. Now it is very easy to make the child fear every other object in the universe. All one has to do is to show the object and strike a steel bar behind his head, repeating the procedure once or twice. Thus:

(U) S Loud sound Loss of support	}	(U) R "Start" crying, etc. (fear).
AFTER CONDITIONING		
C Rabbit, dog, furry objects	—	U (R) Fear

So far I have described the process of conditioning or building. Possibly the process of breaking down or unconditioning is the more important one. Work on it has hardly begun, so I can only sketch the process [p. 30] roughly in a few words. Suppose I set up a conditioned fear-reaction to gold fish in a glass bowl, in an infant eighteen months old who is just beginning to talk, by means of the process already described. The moment the child sees the fish bowl he says "Bite." No matter how rapid his walk, he checks his step the moment he comes within seven or eight feet of the fish bowl. If I lift him by force and place him in front of it, he cries and tries to break away and run. No psychoanalyst, no matter how skillful, can remove such a fear by analysis. No advocate of reasoning can remove it by talking to the child about the beautiful fishes, how they move, live and have their being. So long as the fish is not present, you can, by such verbal organization, get the child to say "Nice fish, fish won't bite;" but immediately you show him the fish, the former reaction recurs.

Try another method. Let his brother, aged four, who has no fear of fish, come up to the bowl and put his hands in the bowl and catch the fish. No amount of watching a fearless child play with these [p. 31] harmless animals will remove the fear from the toddler. Try shaming him, making a scapegoat of him. Your attempts are equally futile. Let us try, however, this simple method. Place the child at meal time at one end of a table ten or twelve feet long, and move the fish bowl to the extreme other end of the table and cover it. Just as soon as the meal is placed before him remove the cover from the bowl. If disturbance occurs, extend your table and place the bowl still farther off, so far away that no disturbance occurs. Eating takes place normally, nor is digestion interfered with. Repeat the procedure on the next day, but move the bowl a little nearer. In four or five days the bowl can be brought right up to the food tray without causing the slightest disturbance. Then take a small glass dish, fill it with water and move the dish back, and at subsequent meal times bring it nearer and nearer to him. Again in three or four days the small glass dish can be put on the tray alongside of his milk. The old fear has been driven out by training, unconditioning has taken place, and this unconditioning [p. 32] is permanent. I think this method is based on re-training the visceral component of a total bodily reaction; in other words, to remove the fear the intestine must be conditioned. Now I think one reason why so many psychoanalytic "cures" are not permanent is because the intestine is not conditioned simultaneously with the verbal and manual components. In my opinion, the analyst cannot re-train the intestine by any system of analysis or verbal instruction because in our past training words have not served as stimuli to intestinal response.

Does Behavior Psychology leave out anything? Professor MacDougall will doubtless tell you that the Behaviorist selects his problems. He will admit that the kind of work I have sketched is valuable to society, but he will tell you that there are many other phases in psychology which the Behaviorist studiously and possibly ignorantly dismisses. One such problem is "thinking." How can you explain "thought" in Behavioristic terms? To do so requires considerable time.

The increasing dominance of language [p. 33] habits in the behavior of the developing child leads naturally over into the behaviorist's conception of thinking. The behaviorist makes no mystery of thinking. He holds that thinking is behavior, is motor organization, just like tennis playing or golf or any other form of muscular activity. But what kind of muscular activity? The muscular activity that he uses in talking. Thinking is merely talking, but talking with concealed musculature.

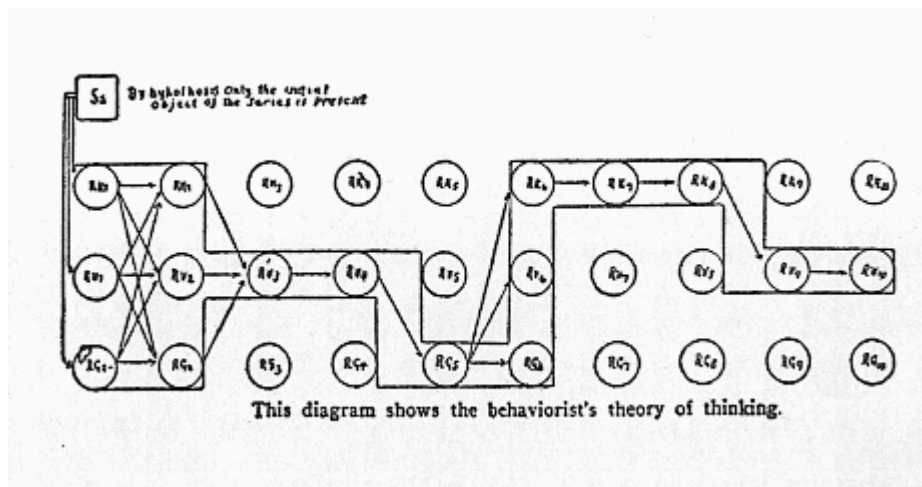
I ask you to take any child (as I have been doing with two lately) when he first begins to talk. Peep through the keyhole and watch him in the early morning. He will sit up in bed with his toys, talk aloud to his toys, talk about them. When a little older, he will plan out his day aloud, say aloud that his nurse is going to take him for a walk, that his daddy is going to bring him an auto. In other words, he talks overtly when alone just as naturally as he works overtly with his hands. A social factor comes in. The father gets to the point when his own morning nap is disturbed. He yells out "keep quiet." The child begins then to mumble to himself -- a [p. 34] great many individuals never pass this stage, and they mumble to themselves all through life whenever they try to think. The father does not like the child's mumbling any better than his talking aloud, and so he may slap him on the lips. Finally, the parents get the child to the point where he talks silently to himself. When his lips are closed, it is nobody's business what is going on below. Thus we come to behave as we please if we do not give any external motor sign of it -- in other words, our thoughts are our own.

Now a further question comes up for serious consideration: Do we think only in terms of words? I take the position to-day that whenever the individual is thinking, the whole of his bodily organization is at work (implicitly) -- even though the final solution shall be a spoken, written or subvocally expressed verbal formulation. In other words, from the moment the thinking problem is set for the individual (by the situation he is in) activity is aroused that may lead finally to adjustment. Sometimes the activity goes on (1) in terms of implicit [p. 35] manual organization; (2) more frequently in terms of implicit verbal organization; (3) sometimes in terms of implicit (or even overt) visceral organization. If (1) or (3) dominates, thinking takes place without words.

A diagram will make clear my present convictions about thinking. In this diagram I take it for

granted that the body has been simultaneously organized to respond to a series of objects, manually, verbally, and viscerally. I take it for granted further that only one of the objects, the initial one, S1, is at hand, and that it starts the body to work on its problem of thinking. The object actually present may be a person asking the individual a question. "Will X leave his present job to become Y's partner?" By hypothesis the world is shut off, and he has to think his problem out.

The diagram shows clearly that thinking involves all three sets of our organized reaction system. Note that *RK1* can arouse *VK2*, *RR2*, *RG2*; whereas *RV1* may call out *RK2*, *RV2*, *RG2*; and *RG1* calls out *RK2*, *RV2* or *RG2*; and that all [p. 37] of them serve, respectively, as kinesthetic, laryngeal or visceral substitutes for S2, the next real object in the series of objects originally producing the organization. Note that, in accordance with the diagram, thinking activity may go on for a considerable time without words. If at any step in the process the RY organization does not appear, thinking goes on without words.



[alone on p. 36]

It seems reasonable, does it not, to suppose that thinking activity at successive moments of time may be kinesthetic, verbal or visceral (emotional) ? When kin-esthetic organization becomes blocked, or is lacking, then the verbal processes function; if both are blocked, the visceral (emotional) organization becomes dominant. By hypothesis, however, the final response or adjustment, if one is reached, must be verbal (subvocal).

This line of argument shows how one's total organization is brought into the process of thinking. I think it shows clearly that manual and visceral organizations are operative in thinking even when no verbal processes are present -- it shows that we [p. 38] could still think in some sort of way even if we had no words!

We thus think and plan with the whole body. But since, as I have already pointed out, word organization is, when present, probably usually dominant over visceral and manual organization, we can say that thinking is largely subvocal talking-provided we hasten to explain that it can occur without words.

Words are thus the conditioned (C) S substitutes for our world of objects and acts. Thinking is a device for manipulating the world of objects when those objects are not present to the senses. Thinking more than doubles our efficiency. It enables us to carry our day world to bed with us and manipulate it at night or when it is a thousand miles away. Psychoanalysts when taking an individual out of a bad situation often forget that the patient carries the bad verbal situation to the new location. Most of the happy results of analysis are due to the fact that the analyst builds up a new word world correlated with a new visceral and a new manual world. There can be no virtue in analysis *per se*.

This is the end of my little story. I have had opportunity only to hurl at the reader a few Behavioristic words; it is beyond reason to expect him to react favorably to a scientific

formulation which throws out of adjustment so much of his previous organization. If it serves to make you only a little more critical of our present easy-going psychological formulations, I shall rest content. To accept Behaviorism fully and freely requires a slow growth -- the putting away of old habits and the formulation of new. Behaviorism is new wine that cannot be poured into old bottles.

FUNDAMENTALS OF PSYCHOLOGY -- BEHAVIORISM EXAMINED

By William MacDougall (1929)

Dr. Watson and I have been invited to debate upon the fundamentals of psychology, because we are regarded as holding extremely different views; yet there is much in common between us. I wish to emphasize this common ground no less than our differences.

I would begin by confessing that in this discussion[1] I have an initial advantage over Dr. Watson, an advantage which I feel to be so great as to be unfair; namely, all persons of common-sense will of necessity be on my side from the outset, or at least as soon as they understand the issue. [p. 41]

On the other hand, Dr. Watson also can claim certain initial advantages; all these together constitute a considerable asset that partially redresses the balance. First, there is a considerable number of persons so constituted that they are attracted by whatever is bizarre, paradoxical, preposterous, and outrageous, whatever is "agin the government," whatever is unorthodox and opposed to accepted principles. All these will inevitably be on Dr. Watson's side.

Secondly, Dr. Watson's views are attractive to many persons, and especially to many young persons, by reason of the fact that these views simplify so greatly the problems that lie before the student of psychology: they abolish at one stroke many tough problems with which the greatest intellects have struggled with only very partial success for more than two thousand years; and they do this by the bold and simple expedient of inviting the student to shut his eyes to them, to turn resolutely away from them, and to forget that they exist. This naturally inspires in the breast of many young people, especially [p. 42] perhaps those who still have examinations to pass, a feeling of profound gratitude to Dr. Watson. He appears to them as the great liberator, the man who sets free the slave of the lamp, who emancipates vast numbers of his unfortunate fellow creatures from the task of struggling with problems which they do not comprehend and which they cannot hope to solve. In short, Dr. Watson's views are attractive to those who are born tired, no less than to those who are born Bolsheviks.[2]

Thirdly, Dr. Watson's views not only have the air of attractive simplicity, but also they claim to bring, and they have the air of bringing psychology into line with the other natural sciences and of rendering it strictly scientific.

Fourthly, Dr. Watson's cause has, on this occasion, the incalculable advantage of [p. 43] being presented by his attractive and forceful personality.

Fifthly, Watsonian Behaviorism is a peculiarly American product. It may even be claimed that it bears very clearly the marks of the national genius for seeking short cuts to great results. And if no European psychologist can be brought to regard it seriously, that may be accepted as merely another evidence of the effeteness of European civilization and the obtuseness of the

European intellect, beclouded by the mists of two thousand years of culture and tradition. Here, in this great and beautiful city, the capital of the proudest and most powerful nation in all the earth, this patriotic consideration can hardly fail to carry weight.

Lastly, Dr. Watson has the advantage of being in a position that must excite pity for him in the minds of those who understand the situation. And I will frankly confess that I share this feeling. I am sorry for Dr. Watson; and I am sorry about him. For I regard Dr. Watson as a good man gone wrong. I regard him as a bold pioneer whose enthusiasm, in the [p. 44] cause of reform in psychology, has carried him too far in the path of reform; one whose impetus, increased by the plaudits of a throng of youthful admirers, has caused him to overshoot the mark and to land in a ditch, a false position from which he has not yet summoned up the moral courage to retreat. And so long as his followers continue to jump into the ditch after him, shouting loud songs of triumph as they go, he does need great moral courage in order to climb back and brush off the mud; for such retreat might even seem to be a betrayal of those faithful followers.

Now, though I am sorry for Dr. Watson, I mean to be entirely frank about his position. If he were an ordinary human being, I should feel obliged to exercise a certain reserve, for fear of hurting his feelings. We all know that Dr. Watson has his feelings, like the rest of us. But I am at liberty to trample on his feelings in the most ruthless manner; for Dr. Watson has assured us (and it is the very essence of his peculiar doctrine) that he does not care a cent about feelings, whether his own or those of any other person. [p. 45]

After these preliminary observations, I will point out that Dr. Watson has shown serious misunderstanding of my position, and does me grave injustice in certain respects. Namely, he suspects me of being a sort of priest in disguise, a wolf in sheep's clothing, a believer in conventional morality, an upholder of exploded dogmas. He has announced in large headlines that "MacDougall Returns to Religion."^[3] I cannot stop to refute these dreadful charges. I must be content to assert flatly that I am a hard-boiled scientist, as hard-oiled as Dr. Watson himself and perhaps more so.^[4] In all this psychology business, my aim is purely and solely to approximate towards the truth, that is to say, to achieve [p. 46] such understanding of human nature as will promote for each of us our power of controlling it, both in ourselves and in others.

In spite of the clarity of Dr. Watson's exposition, I do not believe that he has made quite clear the nature of the issues between us. There are really two main questions in dispute, two fundamentals on which we disagree. These may be shortly defined as, first, Dr. Watson's Behaviorism, secondly, his acceptance of the mechanistic dogma. The second is the more important. I will say a few words about each of these topics in the order named.

There are, as I understand it, three chief forms of "Behaviorism," as the word is commonly used. First, there is "Metaphysical Behaviorism," which also goes by the name of "Neo-Realism." This is an inversion of subjective idealism. While the idealist says: "What you call the things or objects of the physical world are really your thoughts or phases of your thinking," the neo-realist says: "What you call your thoughts, or phases of your thinking and feeling, are really things or processes of the physical world." I need not trouble [p. 47] you by dwelling further upon this strange doctrine: for it is not the form of Behaviorism expounded by Dr. Watson.^[5] I will only say of it that it is the latest and presumably the last (because the only remaining) possible formulation of that most elusive of all relations, the relation of the mental to the physical. As a novelty (which we owe to a suggestion from the extraordinarily fertile mind of William James) it deserves and is enjoying a certain vogue.

Secondly, there is the true or original Watsonian Behaviorism. There is no "metaphysical nonsense" about this. In fact, it is its principal distinction, the principal virtue claimed for it, that it extradites from the province of psychology every question that may be suspected of being metaphysical, and so purges the fold of the true believers, leaving them in intellectual [p. 48] peace forevermore. The essence of this form of Behaviorism is that it refuses to have any dealings with introspectively observable facts, resolutely refuses to attempt to state them, describe them, interpret them, make use of them, or take account of them in any way. All such facts as feelings, feelings of pleasure and pain or distress; emotional experiences, those we

denote by such terms as anger, fear, disgust, pity, disappointment, sorrow, and so forth; all experiences of desiring, longing, striving, making an effort, choosing; all experiences of recollecting, imagining, dreaming, of fantasy, of anticipation, of planning or foreseeing; all these and all other experiences are to be resolutely ignored by this weird new psychology. The psychologist is to rely upon data of one kind only, the data or facts of observation obtainable by observing the movements and other bodily changes exhibited by human and other organisms.

Thirdly, there is sane Behaviorism, or that kind of psychology which, while making use of all introspectively observable facts or data, does not neglect the observation [p. 49] of behavior, does not fail to make full use of all the facts which are the exclusive data of Watsonian Behaviorism. This same Behaviorism is the kind of psychology that is referred to approvingly, by many contemporary writers in other fields, as "Behavioristic Psychology."^[6]

And now, trampling ruthlessly on Dr. Watson's feelings, I make the impudent claim to be the chief begetter and exponent of this sane Behaviorism or Behavioristic Psychology, as distinct from the other two forms of Behaviorism. I claim in fact that, as regards the Behaviorism which is approvingly referred to by many contemporary writers other than technical psychologists, I, rather than Dr. Watson, am the Arch-Behaviorist. Up to the end of the last century and beyond it, psychologists did in the main concentrate their attention upon the introspectively observable facts, unduly neglecting the facts of human action or behavior, and ignoring the need for some adequate theory of behavior and [p. 50] of character (of which behavior or conduct is the outward expression).^[7] This neglect is implied in the definition of psychology commonly accepted at that time, namely, the "science of consciousness," and it may be well illustrated by reference to two leading psychologists, one of the middle, the other of the end, of the nineteenth century. John Stuart Mill, after expending much labor in the endeavor to patch up the hopelessly inadequate psychology of his father, James Mill, and of the other British Associationists, seems to have realized that the psychology he had achieved by this patching process had little or no bearing upon the facts of conduct and of character; for he set to work to construct a completely new science, a science different from and independent of psychology, a science of behavior, of conduct, and of character, for which he proposed the name of "Ethology."

At the end of the century, or a little later, my lamented friend, Dr. Charles Mercier, repeated this significant attempt. [p. 51] He was an ardent disciple of Herbert Spencer, and had written several well-known and forcible expositions of Spencerian psychology. Then, seemingly in blissful ignorance of J. S. Mill's proposal, he also, realizing that his psychology threw little or no light upon human action, conduct or behavior, proposed to construct a new science of behavior. This time the name given to this new science was "Praxiology."

It was at this time that I was beginning to struggle with the fundamentals of psychology. And it seemed to me that both Mill and Mercier were in error; that what was needed was not a new science of behavior under a new Greek name, but rather a reform of psychology, consisting in a greater attention to the facts of behavior or conduct, in the formulation of some theory of human action less inadequate than the hedonism of Mill and Bain, the ideo-motor theory of the intellectualists, or the mechanical reflex-theory of the Spencerian psychologists. I gave expression to this view in my first book,^[8] by proposing to define [p. 52] psychology as the positive science of conduct. I further defended this definition and expounded the need of this reform in my "Introduction to Social Psychology" (1908). And in 1912 I published my little book entitled "Psychology, the Study of Behavior." I also proposed that distinction between psychology and physiology which Dr. Watson accepts, namely, that physiology studies the processes of organs and tissues, while psychology studies the total activities of the organism. Further, in the year 1901, I had begun to practice strictly behavioristic experiment upon infants, making a strictly objective or behavioristic study of the development of color discrimination in my children; by this means I was able to demonstrate for the first time the capacity for color-discrimination as early as the second half-year after birth.^[9] That is to say, I practiced with good results, as early as the year 1901, the principles which Dr. Watson began to expound and apply some ten years later. [p. 53]

Dr. Watson and I are, then, engaged in the same enterprise, the endeavor to reform psychology by correcting the traditional tendency to concentrate upon the facts of consciousness to the neglect of the facts of behavior. The difference between us in this respect is that I, unlike Dr. Watson, have not made myself at the same time famous and ridiculous by allowing the impetus of my reforming zeal to carry me over from one lop-sided extreme position to its opposite, from exclusive concern with the facts of consciousness to exclusive concern with the facts of behavior. Dr. Watson has been content, like J. S. Mill and Charles Mercier before him, to regard psychology as the science of consciousness and to set to work, like them, to construct a new and independent science of behavior. He differs from them only in denying that the older study (that of consciousness) has any scientific value or interest. I, on the other hand, maintain that the two sets of data, the facts ascertainable by introspective observation, and the objectively observable facts of behavior, are not data for two distinct sciences, but [p. 54] rather are two classes of data both useful and both indispensable for the one science of human nature properly called "psychology." Dr. Watson refuses to attempt to make use of the data of the former class, because from them alone, as he rightly insists, a science of human nature can never be constructed, and because the efforts of two thousand years along this line have proved relatively sterile: I, on the other hand, insist that the problems of human nature are so obscure and difficult that we cannot afford to neglect, or to throw deliberately aside, any available data, and certainly not the data afforded by one's own introspection and by the reports of similar introspective observations made by our fellow men; but that rather we need to make use of every available source of information and mode of observation. And here I would point out that there is a third great class of data which Dr. Watson's principles compel him to neglect, to repudiate; namely, the facts which we may observe as to the various conditions (external or bodily and mental or subjective) under which the various [p. 55] modes and phases of our conscious experience arise. Dr. Watson, then, deliberately restricts himself to the use of one of three great classes of data, refusing to attempt to make use of the other two great classes; while I claim that all three are useful and valid, and that to debar oneself from the use of two of these classes is to pass a self-denying ordinance of a peculiarly gratuitous foolishness.

Let me briefly illustrate this difference between us by a few samples of concrete psychological problems, problems of human nature. I place my hand upon the table, and Dr. Watson sticks a pin into the tip of one finger. My hand is promptly withdrawn; that is the behavioristic fact. I say that I felt a sharp pain when the pin was stuck in; Dr. Watson is not interested in my report of that fact. His principles will not allow him to take account of the fact, nor to inquire whether my statement is true or false. He repeats his experiment on a thousand hands, hands of babies, men and monkeys; and, finding that in every case the hand is promptly withdrawn, he makes the empirical [p. 56] generalization that sticking a pin into an extended hand causes it to be promptly withdrawn -- and that is as far as his methods and principles will allow him to go in the study of this interesting phenomenon. He maintains with some plausibility that my introspectively observed fact of painful feeling is quite irrelevant and useless to him as a student of the human organism. But now I ask Dr. Watson to repeat the experiment on myself. He sticks in the pin once more; and this time the hand is not withdrawn, but remains at rest; and I continue to smile calmly upon him. What will Dr. Watson do with this new fact, a fact so upsetting to his empirical generalization which appeared to be on the point of becoming a "law of nature"? He can do nothing with it. But if for a moment he will consent to use ordinary good sense and will listen to my "introspective" report, and if I report truly, he may be much enlightened; though, if I wish to mislead him and report falsely he may be deceived. There in a nutshell you have the difference [p. 57] between sane Behaviorism and Watsonian Behaviorism.^[10]

It is true that Dr. Watson declares his willingness to make use of the "verbal reports" of the subjects of his experiments; but, when such a report consists of statements of introspectively observed facts, Dr. Watson is not entitled (consistently with his principles) to take account of the meaning of the words his subject utters; his principles permit him only to observe and record the movements of his subject's speech-organs and the physical vibrations of the air set up by them. He cannot, consistently with his principles, raise the question whether his subject is reporting accurately or truthfully.

Let me enforce this last important point with another instance. You call on a friend and ask her

to accompany you to a theater. She refuses, alleging a headache; and you go away crestfallen, in an agony of doubt, asking yourself: Was she telling [p. 58] the truth about that headache, or was it merely an excuse for getting rid of me? Would the most scientific Behaviorist be proof against the weakness of raising in his own mind this baffling question? Be it further noted that the Behaviorist, even if he (being so inconsistent as to wish to inquire into the truth or falsehood of the statement) were given the fullest opportunity to apply a battery of his most delicate instruments to the person claiming the headache, would obtain no satisfying answer; his instruments could wring no answer from the Sphinx, and he would continue to be tortured by that baffling question. In passing I will point out that here we are close to the problems of malingering; and that, among the symptoms claimed by malingerers, the commonest are subjective symptoms, accessible only to introspective observation, headaches, pains, feelings of fear, of fatigue, of dizziness, of unreality, or moral unworthiness, hallucinatory voices and images, delusions and amnesias. Assertions of such subjective symptoms constitute very real and practically important problems for [p. 59] medical men, and especially for medical officers in the Army. During the late war I had to face such problems in thousands of instances. And sometimes on the question of truth or falsehood of the introspective report there hangs the possibility of the severest penalty, even the death penalty. Yet by the Watsonian Behaviorist such questions of truth and falsehood must be sternly put aside as of no interest to him.

Again, there is a large class of problems of great interest, problems of the borderland between physiology and psychology, which the consistent Behaviorist must forever pass by as a *terra incognita*: a very large proportion of the fascinating problems of sense-physiology belong here, such problems as the issue between the color theories of Hering and of Helmholtz and the problems raised by thousands of facts, such as after-images, color-contrast, harmony of colors and of tones, the effects of brain-lesions on sensory experiences, and so forth. I will mention specifically only one very simple example of such problems. If you give me a dose of a certain drug [p. 60] (santonin) I soon afterwards begin to observe that all the white and gray surfaces of this hall appear to be no longer white or gray, but tinged with violet color. The drug has produced a chemical change in the substance of my cerebro-retinal tract which in turn produces this curious subjective effect. Now the man who shall explain this effect will have added greatly to our knowledge of the human organism. Yet, if we all were consistent Behaviorists, we should never come within sight of this problem, much less solve it; or at least, though purely objective observation might discover that santonin has some peculiar effect upon the retino-cerebral tract, it is highly improbable that the fact would be discovered until after some further centuries of progress in the science of physiology.

Another type of problem insoluble for the Behaviorist. I meet a stranger and feel a strong aversion from him, for which feeling I cannot account. The Behaviorist may notice my cold aversive behavior; and he will say that my report of my feeling does not interest him. Well and good, so [p. 61] far. But later in the day I remember a horrible dream of the foregoing night in which has appeared a sinister figure; and now I recognize a subtle likeness between the stranger and this figure; and recognize also the similarity between my emotional experiences before this figure and before the stranger. Do not the introspectively reported facts throw some light on my reaction to the stranger? Do they not in a sense explain it? Are they of no interest to the student of human nature? Yet Dr. Watson's principles forbid him to take account of the meaning of the words in which I report the dream.

In this connection I would point out that some bold physicians, caring nothing for logical consistency and everything for the appearance of being up-to-date and "in the swim," proclaim allegiance both to Dr. Watson and to the principles of psychoanalysis. But psychoanalysis relies very largely upon the analysis of dreams reported by the patient; and dreams are forever a closed book to the true Behaviorist. He may listen to your long-winded descriptions of your amusing or terrifying [p. 62] or absurd dream-experiences; but for him your words are merely so many physical vibrations; the meaning of your words reporting these experiences he cannot consistently take into account. It is all one to him whether your description is approximately truthful, or a mere fable concocted on the spur of the moment for his edification.[11]

Day-dreams also are forbidden ground to the Behaviorist; yet we have recently begun to realize

that the sympathetic uncovering of the fantasies and day-dreams of children may be in many cases of the utmost importance to the educator or parent who would wisely guide the development of the child. One more instance. I come into this hall and see a man on this platform scraping the guts of a cat with hairs from the tail of a horse; and, sitting silently in attitudes of rapt attention, are a thousand persons, who presently break out into wild applause. [p. 63] How will the Behaviorist explain these strange incidents? How explain the fact that the vibrations emitted by the catgut stimulate all the thousand into absolute silence and quiescence; and the further fact that the cessation of the stimulus seems to be a stimulus to the most frantic activity? Common-sense and psychology agree in accepting the explanation that the audience heard the music with keen pleasure, and vented their gratitude and admiration for the artist in shouts and hand-clappings. But the Behaviorist knows nothing of pleasure and pain, of admiration and gratitude. He has relegated all such "metaphysical entities" to the dust heap, and must seek some other explanation. Let us leave him seeking it. The search will keep him harmlessly occupied for some centuries to come.[12]

Some of you may suspect that I am seeking [p. 64] to discredit Dr. Watson by exaggerating grossly the preposterousness of his doctrine. I will therefore conclude this section of my remarks by referring to the most famous and most explicitly formulated article of his creed, one which puts all the others into the shade. It runs: All that is called thinking is merely the mechanical play of the speech-organs. In his excess of zeal Dr. Watson (in a manner strongly reminiscent of the late lamented Dr. Jacques Loeb) overshoots his own mark and tries to show that this view is plausible, even if by "speech-organs" we denote only the peripheral organs, the muscles, etc., of lips, tongue, and larynx. But I do not wish to take advantage of this incautious slip on his part; and I will give Dr. Watson's view the benefit of the assumption that the internal or cerebral organs of speech may operate without innervating the peripheral organs. Even under this less extravagant form, this view of the thinking-process is rendered untenable by a multitude of familiar facts; for example, if I keep my speech-organs cleared for action, I can think no better [p. 65] than if I am sucking a pipe (some of us even find that sucking a pipe is an aid to thinking), chewing a mouthful of food, or whistling or humming a familiar tune. I ask you to examine the question in the light of your own experience. Do such activities of the organs of speech interfere appreciably with such thinking as planning a move on the chess-board? Again, there are many cases on record of patients rendered aphasic, that is speechless, by injury, not of the peripheral speech-organs, but of the cerebral speech-organs; yet many such patients think very well; they know very well what they want to say, but cannot say it. Some patients can play such a game as chess, even though their cerebral speech-organs are so far destroyed that, as well as finding it impossible to utter coherent speech, they cannot understand written or spoken language.

Again, some musicians of very limited powers of vocalization can read the score of a complex orchestral composition. And some of them tell us that they prefer to sit at home and read the score of a great symphony rather than go to the concert-hall [p. 66] to hear it performed; because when they read it in silence, they can appreciate it and enjoy it to the full, whereas, when they listen to the orchestra, they are annoyed by the errors and short-comings of the performers. The only answer Dr. Watson can make to these facts (his only response to these "stimuli") is to ignore them entirely, or to assert that, when he says "thinking," he means verbal thinking. If he takes the second line, I reply that of course verbal thinking is by definition thinking by the aid of words, and of course cerebral speech-organs are involved in it. No one doubts that. My point is that much thinking, for instance, chess-playing, planning a house or garden, inventing a machine, reading or composing music, dreaming, building castles in the air -- all these and many other important kinds of thinking do not necessarily involve any play of the speech-organs, whether peripheral or cerebral, and often go on without such accompaniment.

I turn to consider very briefly the more important question at issue between us, namely, the truth or plausibility of the [p. 67] mechanistic dogma. This, I say, is more important because, unlike Watsonian Behaviorism, it is not merely a passing fashion of a group of pundits, cloistered in psychological laboratories. It is a metaphysical assumption which has been of great influence ever since the day when Democritus first clearly formulated it. It has reappeared as the determining factor in such different philosophies as the materialism of Hobbes and La Mettrie, the pantheism of Spinoza, and the idealism of Bernard Bosanquet. And it is accepted

to-day by a larger number of biologists as an unquestionable first principle and a necessary foundation of all science. As applied to human nature, to human conduct, it may be and commonly is stated in two ways, a narrower and a wider way. The narrower formulation runs: Man is a machine and his every action is the outcome of mechanical processes that in theory can be exactly calculated and foretold according to strictly mechanistic principles. The wider formulation runs: Every human activity and process, like every other process in the world, is strictly determined by antecedent [p. 68] processes, and therefore, in principle, can be predicted with complete accuracy.

The only test which we can usefully apply to this mechanical assumption is the pragmatic test. Does it work? Is it a good working hypothesis, that is, one which fruitfully guides our observation and our thinking? Well, in the sphere of the inorganic sciences, it has worked very well until recently; it has proved itself a good working hypothesis. But recently some physicists (I have in mind especially Prof. Bohr and his theory of the structure of the atom) have found that they can make better progress if they reject this mechanical hypothesis and make non-mechanical assumptions; and I understand that this new fashion is rapidly gaining ground among the physicists.

In the sphere of human nature and conduct, this mechanistic assumption has never shown itself to have any value or usefulness as a working hypothesis. Rather, it has in very many cases blinded those who have held it dogmatically to a multitude of facts, and has led to various extravagant [p. 69] and absurd views of human nature, which views Watsonian Behaviorism one.

I submit to you the proposition that any psychology which accepts this mechanistic dogma and shapes itself accordingly is useless, save for certain very limited purposes, because it is incapable of recognizing and of taking account of the most fundamental facts of human behavior. I may best illustrate this fact very briefly by pointing out that, for any such psychology, certain words that are indispensable for the normal conduct of life lose their meaning entirely and have to be dropped: for example, all such words as "incentive," "motive," "purpose," "intention," "goal," "desire," "valuing," "striving," "willing," "hoping," and "responsibility."^[13] Now I put it to the practical men among you, to the educators, the business-men, the personnel-managers, and especially to the men [p. 70] of law, the eminent jurists here present: have you any use for a psychology from which these words and all words of similar meaning are extruded, because deprived of all meaning? Of course you have no use for it. To adopt such a psychology is to paralyze yourself in all practical affairs, if you consistently apply it. Consider the case of a judge or jurymen set to try a case of murder and prohibited by his principles from inquiring into the intentions, the motives, and the responsibility of the accused. It cannot be done: such a judge would be useless, such psychology will not work in practical affairs.^[14] Putting the case more broadly, I say we are all bound to believe, and (so long as we are efficient members of society) we show by our acts that we do believe, that human efforts, human desires, human ideals, human strivings do make a difference to the course of events. If we do not believe this it is futile and inconsistent to talk of and to strive after self-discipline, or the [p. 71] moral training of our children, or social betterment or the realization by our efforts of any ideal whatsoever.

At the present time in all parts of the world all men and women of good will and public spirit are seeking and striving to find some way to prevent the outbreak of a new world war. But if the mechanical psychology is true, if all human action as well as all other events are strictly predetermined, it is perfectly futile for us to think, to plan, and to strive to prevent war; for the war is either coming or not coming, regardless of what men may strive to do to prevent it or to incite it. All of us may just as well relax our efforts; eat, drink, and be merry; for our thinking out plans, our Leagues of Nations, our World Courts, our disarmament treaties, our most strenuous efforts to realize the ideal of peace by aid of such plans -- all alike are perfectly futile. If all men believed the teachings of the mechanical psychology (and only beliefs that govern action are real beliefs) no man would raise a finger in the effort to prevent war, to achieve peace or to realize any other ideal. So I [p. 72] say that the mechanical psychology is useless and far worse than useless: it is paralyzing to human effort.

And it flies in the face of fundamental and obvious facts. The most fundamental fact about human life is that from moment to moment each one of us is constantly engaged in striving to bring about, to realize, to make actual, that which he conceives as possible and desires to achieve, whether it is only the securing of his next meal, the control of his temper, or the realization of a great ideal. Man is fundamentally a purposive striving creature. He looks before and after and longs for what is not. And he does not merely long; he strives to achieve that which he longs for, to bring about what is not yet actual, what he judges and desires should be; sometimes he succeeds, sometimes he fails, and sometimes he makes some progress towards his ideal goal. Any psychology which refuses to recognize the reality of this longing and striving and which denies all efficacy to such striving is useless and worse. Like Behaviorism, it is a mere [p. 73] fad of the academic mind that bars the progress of our knowledge of human nature. As the late Professor Münsterberg so strongly and repeatedly insisted, this elaborate academic fiction which is the mechanical psychology has no bearing on the practical problems of human life.

As this is a personal debate, I will illustrate the fact in this way. Since the publication of my *Introduction to Social Psychology* in the year 1908, some scores of books, I think I might safely say some hundreds, have been published, dealing with problems of applied psychology, and founded avowedly or actually on the teachings of that book of mine. On the other hand, I ask what social application in education, in medicine, in industry, in politics, can the mechanical psychology claim? The answer is: None. And one of the surest predictions we can make about human affairs is that it never will.

To this prediction I add another, namely, that in proportion as psychology resigns its pretensions to be an exact science based on mechanical principles and [p. 74] frankly accepts purposive striving as a fundamental category -- as fundamental as the law of conservation of momentum in mechanics -- in just such proportion will it gain recognition as the indispensable basis of all the social sciences. This prediction is not without foundation in past experience. We have had already in the field of mental medicine an impressive demonstration of the truth I am insisting on. The mechanical psychology, the intellectualistic psychology, and the hedonistic psychology, these three psychologies, which were the prevailing fashions of the nineteenth century, were of little or no use to the students of mental disease. In consequence mental medicine, or psychiatry, was at a standstill. The genius of Freud, disregarding all these traditional psychologies, introduced a psychology of which the keynote is purposive striving, a hormic psychology which operates not with mechanical reflexes, and not with such vague inert abstractions as sensations and ideas, but with active purposive tendencies, impulses, desires, longings and strivings; and [p. 75] psychiatry at once began to make, and continues to make, great strides.^[15]

Descending from the most complex to the simplest forms of behavior, I may point out that the mechanical hypothesis fails to explain the very simplest instances of animal learning or adaptive behavior. I have shown^[16] that Dr. Watson's pretended explanation of such instances is entirely fallacious, and I have asked in vain for an answer. In the same book I have shown that the homing of animals cannot be explained by either of the only available mechanical hypotheses (that of reflexes and that of tropism), but only in terms of intelligent learning similar in nature to our own acquirement of knowledge; and I have in vain held up this very widely exhibited type of behavior as a challenge to the mechanists.

Dr. Watson and those who think with [p. 76] him are apt to regard a person like myself as an old fogey, a survival, a fossil, a figure that has stepped right out of the eighteenth or seventeenth or perhaps the fifteenth century, where he properly belongs. They think that we are medieval metaphysicians rather than men of science. But in reality it is Dr. Watson and Professor Loeb and their fellow mechanists who have the closed mind, who, without clearly knowing it, start out with a metaphysical assumption or prejudice which colors and shapes and limits all their thinking. It is they who are belated and befogged in the metaphysics of a bygone century. They commonly assume that they have behind them all the great force and authority of the physical scientists. But in this they are mistaken. It is not the physical scientists who are guilty of the error of trying to bring human nature within the narrow bounds of mechanistic science. It is

biologists and psychologists without first-hand knowledge of physical science who do this. The great pioneers and leaders of modern physical science from Faraday to Clerk-Maxwell, Kelvin, [p. 77] Rayleigh and Einstein have avoided this error.

Professor Frederick Soddy, of Oxford, is one of the youngest and most distinguished of those physical-chemists who are exploring the structure of the atom and promising, perhaps one should say threatening, to release and harness for human purposes the vast stores of energy which they tell us reside within the atoms. He writes:[17]

"I have no claim to call or express an opinion on the reality of the existence of intelligence apart from and outside of life. But that life is the expression of the interaction of two totally distinct things represented by probability and free-will is to me self-evident, though the ultimate nature of those two different things will probably remain, a thousand years hence, as far off as ever."

It is noteworthy that Professor Soddy speaks of the physical world, not as the realm of strict mechanical determination and of exact predictability, but rather as the realm of "probability."

He goes on to say:

"It is simple now to indicate what to my mind are the two errors that hinder progress. Both are monistic obsessions due to the mind, in its innate [p. 78] desire to reduce everything to its simplest terms, ending by trying to reduce everything to its simplest terms. The first [error][18] links up the two ends of the chain running in diametrically opposite directions into a grand circle, and so gets the sublimated conceptions of the mental world inextricably mixed up with the physical. . . . The second error is perhaps more common in the sphere of economics. It may be called 'Ultra-Materialism,' and is the attempt to derive the whole of the phenomena of life by continuous evolution from the inanimate world. We begin with a nebula of primordial material condensing into ever more complex forms, first to the light and then the heavy elements, then to chemical compounds up to the complex colloid. By a continuation of the same processes such a complex results that it is continually decomposing and as continually regenerating itself. The inanimate molecules begin to live, and life then runs through its course of evolution up to man. This may satisfy a biologist, but it fails to satisfy me as a chemist. I cannot conceive of inanimate mechanism, obeying the laws of probability, by any continued series of successive steps developing the powers of choice and reproduction, any more than I can envisage any increase in the complexity of an engine resulting in the production of the 'engine driver' and the power of reproducing itself. I shall be told that this is a pontifical expression of personal opinion. Unfortunately, however, for this argument, inanimate mechanism happens to be my special study rather than that of the biologist [or psychologist][19]. It is the *invariable characteristic of all shallow and pretentious philosophy to seek the explanation of insoluble problems in some other field than that of which the philosopher has first-hand acquaintance*. The biologist has first-hand knowledge of animate [p. 79] mechanism and seeks the origin of it in colloid chemistry. The test of the hypothesis is not so much what the biologist as what the chemist has to say about it. The difference, to my mind, between dead and living matter is much like that between Niagara Falls thirty years ago and now (between the water falling according to the laws of mechanism or of 'probability,' and the water falling as directed and controlled by human purpose, human needs, desires, and strivings), and is not to be explained by the laws which Niagara formerly obeyed, by the laws of pure probability, but by their opposite, the operations of intelligence, as typified in their most rudimentary form by Clerk-Maxwell's conception of the 'sorting-demon.' . . . Life, or animate mechanism, is essentially to my mind a dualism, and any attempt to subordinate either partner is fatal. But the economist is peculiarly liable to mistake for laws of nature laws of human nature, and to dignify this complex of thermodynamical and social phenomena with the term 'inexorable economic law.' Is it any wonder that such

crude confusions, such triumphs of mental instincts over reason, experience, and common-sense, have produced a general sterility of constructive thought."

Professor Soddy adds:

"It is perhaps fortunate that we know nothing about the ultimate nature of the fundamentals of either the physical or mental worlds. We have pursued each so far as to know that both alike lead away from rather than toward the solution of the problems of life. The sublimated theoretical concepts in either case have long ceased to possess actuality. We have rather to find the interaction between their commonest forms, matter and energy on the one hand, and will and direction on the other." [p. 80]

I recommend these reflections of a great physicist to the attention of Dr. Watson and his fellow mechanical psychologists; and especially the passage on "shallow and pretentious philosophy" and that on the "general sterility of constructive thought." Let them, reclining in their armchairs, put them in their pipes and smoke them. So long as we think as though our thinking were the mere play of language mechanisms, so long will our thinking be shallow and pretentious, sterile and lacking in constructive quality. For language mechanisms are as sterile, as incapable of constructive or creative efforts, as all other mechanisms. No, it is not the great physicists that mistake their working hypotheses for ultimate laws of the universe. It is biologists and psychologists of the type of Dr. Watson who do that, and who dogmatically deduce from them the laws and limitations of human nature.[20] [p. 81]

Dr. Watson asks: Suppose that presently a biological-chemist should put some [p. 82] inorganic matter into a flask and produce from it a living organism, what then will I say? I might fairly be content to reply that it will be time enough to deal with this case, when the feat shall have been accomplished. But I will go further. I will say, as Lotze said half a century ago, that the accomplishment of this triumph would not essentially alter the case. To suppose that it would do so shows logical incompetence. The achievement would merely show that the chemist had succeeded in bringing about such a collocation of matter and energy as is necessary for the manifestation of life.

Secondly, you will notice that Dr. Watson continues to harp on his main string, namely, his handling of young children. It is in the nursery that he claims the main triumphs of Behaviorism. Dr. Watson has made some valuable observations on the behavior of infants. It is on record, I believe, that he carried his infant to the zoölogical gardens, and there introduced him to each of the wild beasts in turn. And the baby merely stared and continued to suck his thumb, And, even when [p. 83] brought before the lion's den, the baby, although it was a true-born American baby, showed not the least trace of an innate tendency to twist the lion's tail; its *supinator longus* muscle showed never a quiver.[21]

I do not wish to belittle these observations on infants which Dr. Watson has so faithfully made and reported, and on which his great reputation largely rests. They are important contributions to knowledge. But I would insist that they have no essential relation to the mechanistic dogma, and that Dr. Watson was by no means the first to make use of such methods. To say nothing of Charles Darwin, and of Preyer, and of Miss Shinn and of many others, I would point out that, after spending two years in Behavioristic observations of savage men in the jungles and on the coral islands of the Pacific, I retired to my own nursery and there spent the best part of ten years in making observations [p. 84] (mainly Behavioristic) on my children. The results of those observations were presented in generalized form in my *Introduction to Social Psychology*, a book which was published when the Watsonian comet was still but a speck on the horizon.

It is natural enough that Behaviorism should claim its triumphs chiefly in the nursery; so long as we are dealing with young infants we are necessarily confined to Behavioristic methods of observation, because the child is unable to aid us with introspective reports. But that surely is a poor reason for refusing to make use of that aid when, in the course of development, it becomes, accessible to us. I am moved almost to break into song, to exclaim: "Oh! Mr. Watson,

what a funny man you are!"

Let me say one last word. If you are moved by a natural impulse of pity for Dr. Watson, as he continues to repeat his ineffective formulae and to butt his poor nose against the hard facts of human nature, if you are moved by the admiration due to the gallant leader of a forlorn hope, [p. 85] the stubborn defender of an indefensible position, then, I say, do not behave like mechanisms, but rather yield to these natural human impulses and vote for Dr. Watson, for Behaviorism, and for man as a penny-in-the-slot machine. Further, vote for him now; for you may never have another chance. After a few years, if my reading of the signs of the times is not wholly at fault, the peculiar dogmas for which he stands will have passed to the limbo of "old forgotten far-off things and battles long ago"; they will have faded away like the insubstantial fabric of a dream, leaving not a wrack behind.

Footnotes

[1] I have here embodied the substance of remarks made in a debate before the Psychological Club of Washington, D.C., on February 5th, 1924.

[2] In reviewing my *Outline of Psychology* in the pages of *The New Republic* Dr. Watson has asserted that it represents a lazy arm-chair type of psychologizing. The ground of this charge seems to be that it requires of the student a certain amount of hard thinking in the intervals between his bustling activities in the laboratory. Since such thinking may best be carried on in an arm-chair, I submit without reserve that more arm-chair work is the greatest need, not only of Dr. Watson, but also of very many other American students of psychology at the present time.

[3] In making this charge in the pages of *The New Republic*, Dr. Watson seems to ignore the fact that I argued (in the pages of *Mind*) for the dualistic view of human nature as long ago as 1898, and again in my first book (1905), as well as in my *Body and Mind* (1911). I may add that for nearly twenty years I have been a member of the Council of the Society for Psychical Research, and have thus publicly and shamelessly avowed my leanings towards "superstition."

[4] One of Watson's most vigorous disciples, Dr. K. S. Lashley, taking his cue from his leader, has recently described me as "bouncing back and forth between accurate description and the exhortations of a soap-box evangelist."

[5] Watson's followers do not seem to be quite sure whether he more recently has meant to accept this Metaphysical Behaviorism. Dr. Lashley, for example, suspects him of having abandoned his original position in favor of this view ("Behavioristic Interpretation of Consciousness," *Psychol. Rev.*, 1923). In using the unqualified word "Behaviorism" I shall hereafter mean to denote the original Watsonian variety, the second of the three forms distinguished in the text.

[6] One of the grounds of the very remarkable popular success of Dr. Watson's crusade is the fact that every approving reference to Behaviorism of any one of these three kinds is popularly put to his credit.

[7] As I have put it elsewhere, conduct is character in action, and character is the organized system of tendencies from which action issues.

[8] *Primer of Physiological Psychology* (1905).

[9] "An investigation of the Color Sense of Two Infants," *Brit. Journ. of Psychology*, vol. I.

[10] Although I here use the expression "sane Behaviorism" to denote the type of psychology

for which I stand, I urge that the word "Behaviorism" should be used henceforth only to denote Watsonian Behaviorism. Any other use of the word leads to confusion and misunderstanding.

[11] This very natural inclination to run with the hare and hunt with the hounds, to do lip-service to the two most fashionable fads of the moment, is not confined to physicians. I find it, for example, expressed in a recent work by an economist, Prof. A. B. Wolfe, *Conservatism, Radicalism, and Scientific Method*.

[12] I note in passing that Dr. Watson's principal hook contains no mention of pleasure or of pain, or at least I fail to find any. This is evidence of praiseworthy effort after consistency on his part. It should be noted that even the search for the neural correlates of pleasure and pain is a closed route for the Behaviorist, just as much as the search for neural correlates of the sensory qualities.

[13] I notice that Dr. Watson in his later book (*Behaviorism*, 1926) consistently avoids using these words, with the exception of "incentive." In using this word "incentive," he is guilty of a logical lapse; for in any mechanical psychology there is no meaning to the word "incentive," there are only stimuli and mechanical reactions.

[14] I refer the reader interested in this aspect of the question to an excellent article by S. S. Glueck, *Journal of Criminal Law*, 1923.

[15] Let no one infer from this passage that I am a Freudian. Though you cannot be both a Freudian and a Watsonian Behaviorist, you are not compelled to choose between these two doctrines. Fortunately, if you have the courage to stand up against the journalistic current, there remains open to you a third possibility, namely, Psychology.

[16] *Outline of Psychology*, 1923, Chapter VI.

[17] *Cartesian Economics* (1922).

[18] *Classics* Editor's note: MacDougall's insertion.

[19] *Classics* Editor's note: MacDougall's insertion.

[20] Not all physiologists subscribe to these delusions. In saying that the basic conceptions of psychology have as good a right as those of mechanics to be regarded as fundamental to all science, and that perhaps the time may come when psychology will absorb physics, I am not talking through my hat. Nor do I stand alone in this, I would point to two of the ablest working physiologists of the present time, the Haldanes, father and son. Dr. J. S. Haldane's views are well-known. Mr. J. B. S. Haldane in his recent book, *Daedalus, or Science and the Future*, tells us that materialism has now become so mysterious as to be unintelligible, and that for the next few centuries we shall be explaining matter in terms of mind. The position is well stated in a recent article of the *London Times*, reviewing two books on psycho-analysis: "Both Dr. MacBride and Dr. Wohlgemuth," remarks the reviewer, "adopt the theory that every thought is a function of the brain in the sense of being the product, ultimately, of electrotonic [*sic*], atomic, or molecular movements. Memory is accounted for in the usual way by 'traces' left by previous stimuli in parts of the brain. In the present state of physiology this is doubtless a good working hypothesis. It indicates certain lines of research, and is thus an excellent servant in the laboratory. But both our authors seem unaware how exceedingly mysterious a theory it is, considered as an explanation of consciousness. It is more than ever mysterious now that modern physics suggests that the concepts of matter, and even the concepts of space and time, are merely what the mind has found it convenient to introduce in its attempt to understand the world. An explanation of mind in terms of matter and energy has nowadays a distinctly old-fashioned ring. If the theory be treated purely as providing a scheme according to which experiments may be planned, well and good. But it is much too mysterious to be regarded as a valuable contribution to the philosophic discussion." As Prof. Graham Kerr has said in a recent

article: "It is of the very essence of scientific method that a working hypothesis must never be allowed to crystallize into dogma. There is always a danger of this, for the mind of the investigator tends to be dominated, instead of being merely inspired, by the working hypothesis of the day." Dr. Watson and his like are dominated by the working hypotheses of yesterday, or rather of the nineteenth century.

[21] If Dr. Watson had really made this particular observation, it would deserve to rank as evidence against the Lamarckian theory, alongside Weismann's famous experiment in cutting off the tails of white mice through several generations.

POSTSCRIPT

By William MacDougall (1929b)

The demand for the reprinting of the foregoing discussion affords an opportunity to add a few remarks, an opportunity which, I feel, should not be allowed to slip by. For the years which have elapsed since Dr. Watson and I undertook to debate our differences before a large and distinguished audience in Washington, have shown that the forecast with which my remarks were brought to an end was too optimistic; it was founded upon a too generous estimate of the intelligence of the American public. The world outside the United States, that barbarian world which America regards with an increasing disdain, has continued to smile with an indulgent toleration at the antics of the thorough-going Behaviorists, a fact which was clearly illustrated at the recent International Congress of Psychologists at 1 September, [p. 87] Groningen. But in America Behaviorism pursues its devastating course, and Dr. Watson continues, as a prophet of much honor in his own country, to issue his pronouncements. The vote of the audience taken by sections after the Washington debate showed a small majority against Dr. Watson. But when account is taken of the amusing fact that the considerable number of women students from the University voted almost unanimously for Dr. Watson and his Behaviorism, the vote may be regarded as an overwhelming verdict of sober good sense against him from a representative American gathering. Yet it is the success of his appeal among young students that is the disturbing fact for those who hope much from the splendid development of American universities now going on so rapidly.

Dr. Watson, consistently pursuing his wise policy of abstaining from all attempt to reply to criticisms, has issued a new book[1] a restatement of his views as bald as the palm of my hand, and more bare of any indications of regard for reason and [p. 88] good sense.[2] The foundation of all the negations, which constitute the chief substance of the book and its chief claim to originality, is the denial of the fact of post-natal maturation of inborn tendencies of human nature. No one, says Dr. Watson, can prove to me that human nature comprises any tendencies which are not manifest in the earliest period of infancy and which become operative through a gradual process of maturation; therefore I deny the existence of all such tendencies, and assert that the human being is endowed by Nature with no more than the beggarly array of reactions which I have observed in very young infants.

In this and other ways the book goes far to justify Dr. Watson's contention that his thinking processes are nothing more than the mechanical play of his speech-organs. It might have been hoped that the weakness of its reasoning and the inconsistency of its dogmas with many evident [p. 89] natural phenomena, especially the multitudinous facts of the maturation of organs and functions, would be obvious to the meanest intelligence. Yet, as I am credibly

informed, the book is enjoying a great success in America.

In connection with this topic of maturation, I would draw attention to the recent work of Dr. Charlotte Bühler.^[3] She has reported observations of the behavior of infants, made with delicacy, precision, and insight, which seem to reveal clearly the maturation and coming into play of inborn tendencies that have escaped the rough and ready methods of Dr. Watson; especially those two tendencies which I have long ago described as playing a fundamental rôle in all social intercourse, namely, the submissive and the self-assertive tendencies. It is to such fine observational work, rather than to hasty denials based on oversights induced by theoretical prejudices, that we must look for the true answer to this fundamentally important question, the question of the nature and [p. 90] extent of the inborn or native tendencies.

I, for one, have foresworn all further effort to combat the essential absurdity of strict or Watsonian Behaviorism, namely, the proposal to ignore completely all introspectively observed facts. But the other feature of the Behaviorist creed as defined in my foregoing remarks, namely, the mechanistic assumption or dogma, is of more general and enduring interest; and I am glad of this opportunity to draw the attention of readers of this booklet to several of my more recent publications on this topic.

In an article in the *Psychological Review*, of 1922 ("Mechanical or Purposive Psychology") I showed how the late Prof. Münsterberg, after figuring for many years as a leading exponent of mechanical psychology based on the mechanistic dogma, revoked in a thoroughgoing manner in his last book, and openly espoused a purposive psychology, freely recognizing that the mechanical psychology he had formerly expounded was incapable of being applied to the practical and urgent problems of human life and society. [p. 91]

In my Presidential Address to the Psychological Section of the British Association (Toronto, 1924) published in *Science* under the title, "Purposive Striving as the Fundamental Category of Psychology," I urged that psychologists should boldly assert the autonomy of their science, should cease to feel themselves restricted to the categories current in the physical sciences, and, while reserving judgment on the ultimate or metaphysical questions of monism, dualism, or pluralism, should frankly recognize that it is the nature of man to strive towards ends or goals, and should cease to feel themselves under obligation to explain away this fundamental feature or aspect of human life, as a mere appearance, a disguised manifestation of mechanical causation.

In two Powell lectures (published by Clark University in the volume entitled *Psychologies of 1925*) I endeavored to show that it is impossible, not only to interpret, but also to describe intelligibly and profitably, the behavior and bodily movements of men or animals, without using language which implies its purposive [p. 92] or goal-seeking nature, and without conceiving it in a manner that is rendered possible for each of us only by his own private experience of purposive striving, of intentional effort directed towards some goal.

I now realize, in a much clearer and more vivid manner than I did when I wrote my *Body and Mind*, that this question of mechanical causation versus purposive striving is fundamental in all the psycho-physical problems, and, in fact, in all biology, and even, one might add, in all philosophy.^[4] For it is the concrete form of the question of the reality of Mind or Spirit in the Universe. If all the actions of man are mechanically determined, then we have no tenable ground for believing in the reality of spirit, of mind, of teleological guidance anywhere in the universe; and mankind is the helpless victim of some remote, fortuitous, and wholly unintelligible concatenation of events, a rigid chain within which he is but an insignificant link. But if we have good reason to believe that his strivings towards goals are effective in [p. 93] however slight a degree, then we may hope that mankind carries its destinies in its own hands, and that by the application of more knowledge and more intelligence it may yet raise itself above the dust.

Lastly, in my recently published *Outline of Abnormal Psychology*, I have endeavored to show that only a thoroughly purposive and hormic psychology is of an value as an aid to the

interpretation, treatment, and prevention of mental and neurotic disorders. Here is the pragmatic test of our theories, the supreme test, ultimately the only test that we can apply when we seek to determine their relative values. In face of this test the atomistic mechanical psychology that operates with discrete sensations and reflexes stands utterly condemned.

It is interesting to note that German psychology is moving rapidly away from the mechanical dogmas of the nineteenth century and its early experimental period. The movement represented by the school of *Gestalt* is somewhat timid and ambiguous in this regard. But there are other movements and other schools arising; [p. 94] that of the *Geisteswissenschaftliche Psychologie*, especially, proclaims the autonomy of psychology; as also the *Verstehende Psychologie* and the *Personalistische Psychologie*. And within the more strictly academic and experimental psychologies there are influential workers among the younger men who are breaking away from the older traditions and ceasing to ignore or belittle the purposive aspect of all our mental life.

Meanwhile in America the tide of Behaviorism seems to flow increasingly. The press acclaim Dr. Watson's recent volume in the most flattering terms. One leading daily says: "Perhaps this is the most important book ever written"; and another asserts: "It marks an epoch in the intellectual history of man." In England, on the other hand, the press is content to note that here is a system which claims "to revolutionize ethics, religion, psychoanalysis -- in fact, all the mental and moral sciences." It might have gone further and noted that it claims, not merely to revolutionize, but to abolish, all these august things. [p. 95]

Dr. Watson knows that if you wish to sell your wares, you must assert very loudly, plainly, and frequently that they are the best on the market, ignore all criticism, and avoid all argument and all appeal to reason. The response of the American press to his new book shows how sound these methods are. The susceptibility of the public to attack by these methods in the purely commercial sphere is a matter of no serious consequence. When the same methods make a victorious invasion of the intellectual realm, it is difficult to regard the phenomenon with the same complacency.

We have to face the prospect that in a few years' time many thousands, perhaps even millions, of young victims of this propaganda on behalf of crass materialism will be bringing up their families without other guidance than their blind faith in the Behaviorist's formulae. Having learned that all such words as effort, striving, ideal, purpose, will, are entirely meaningless, they will be seen throughout broad continent striving to form the character of their children by "conditioning" [p. 96] their reflexes" and pathetically endeavoring to gain their affection by stimulating their "erogenous zones"; for according to the gospel of Dr. Watson, that is the one and only way.

Footnotes

[1] "Behaviorism."

[2] He has also flooded the popular journals with articles which, in the reckless dogmatism of their denials, outrun even that book. By a skillful flourishing of Prof. Pavlov's term "conditional reflex" he introduces just enough plausibility to deceive hosts of young Babbitts.

[3] *Soziologische und Psychologische Studien über das erste Lebensjahr*. Jena, 1927.

[4] This is a problem which, as it seems to me, is neither solved nor illuminated by the utterance of the now fashionable formula, "Emergent evolution."

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