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Behaviorism: An Exposition and Critical Examination

Philip S. Clapp

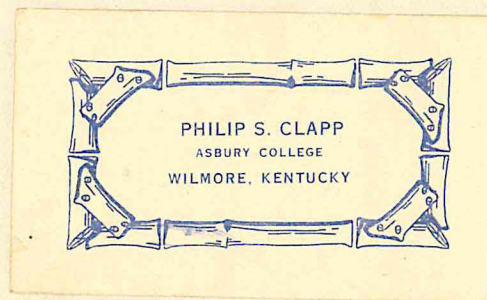
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BEHAVIORISM

AN EXPOSITION AND CRITICAL EXAMINATION



Asbury Theological Seminary

Wilmore, Kentucky

for

Professor Samuel Arthur Maxwell

by

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BEHAVIORISM

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CHAPTER I. THE FIELD OF BEHAVIORISM.

Behaviorism may be most easily defined after contrasting it with other forms of psychology. Until the advent of behaviorism in 1912, all psychology was built upon a subject matter called consciousness or mind, as definitions of psychology show: James: "Psychology is the description and explanation of states of consciousness as such."¹ Angell: "Psychology is commonly defined as the science of consciousness. . . . Consciousness we can only define in terms of itself."² Thorndike: "Human psychology deals with the thoughts and feelings of human beings and seeks to explain the facts of intellect, character, and personal life."³ Seashore: "Psychology is the science of mental life . . . the science of experience and behavior of the organism."⁴ Baldwin: "We may define psychology as the science of the phenomena of consciousness."⁵

The predecessors of psychology, the so-called "mental philosophers", dealt with the "soul", which term disappeared from most psychological circles in favor of the others above named, soon after the first psychological laboratory was established in 1879. However, the behaviorist claims that no real change was made, that one metaphysical term was replaced by another, and that for all these years psychology has been a pseudo-science dominated by a subtle religious philosophy.⁶ As the "soul" or "mind" or "consciousness" has never been touched, seen, or found in a test tube, as its existence is unproved and

1. Psychology, Briefer Course, p. 1.
2. Psychology, p. 1.
3. Elements of Psychology, p. 1.
4. Introduction to Psychology, p. 1.
5. Handbook of Psychology, p. 8.
6. Watson: Behaviorism, p. 5, 3.

unprovable, and as its only claim to acceptance is that based on the dogmas of former days, the behaviorist dismisses it from his reckoning entirely.¹

To show with what ease this idea of soul may be dispensed with in the light of modern scientific knowledge, Dr. Watson gives his theory as to the probable origin of the concept.² He suggests that it is an outgrowth of the general laziness of mankind. In primitive society certain individuals who were too lazy to partake of the manual labor of the group, made up for it by close observation of their fellows. They found that certain loud noises would produce fear reactions, and soon learned to control the behavior of the group by devising means for producing these noises. As they employed their knowledge, they established an elaborate system of signs, symbols, rituals, and formulas, and elevated themselves into a caste of medicine men, soothsayers, priests, prophets, or preachers. Their control has been through the fear element, which is the moving force in all religions, and has been introduced into modern thought under such terms as sin, evil, hell, devil, and the like. Each person born and brought up under the influence never questions their truth, and so the control is perpetuated.

Behaviorism was inaugurated by those psychologists who, tired of dealing in metaphysical unrealities, determined to make psychology scientific or give it up. Behaviorism is therefore defined by Dr. Watson as a natural science that takes for its field the whole range of human adjustments. It deals with the responses of the whole organism to various conditions in its environment. It is most closely related to physiology, and differs from the latter more in the grouping of its problems than in the fundamental principles of investigation. Behaviorism deals with that which can be measured and tested

1. Watson: Behaviorism, p.4.
2. Ibid., p. 3,4.

and compiles its data just as does any other physical science.¹

Just as any other physical scientist wishes to control the phenomena of his science, so the behaviorist's aim is to be able to predict and control human behavior, so that ultimately the well trained behaviorist can tell what response will come from a given stimulus, or what stimulus to provide in order to produce a desired response.¹

With a field of investigation very different from that of the old psychology, most of its terminology is discarded also, as well as the most popular psychological method, known as introspection, by which are derived our theories concerning sensations, perceptions, images, and the various workings of the mind or consciousness. The behaviorist has either dismissed from his vocabulary, or so radically changed in content, nearly all psychological language, that he finds it advisable to build up his own terminology. This is being done, although the process cannot be considered as completed. Therefore, if the more familiar terms of the old psychologies should be used inadvertently by the behaviorist, it does not indicate that he has relapsed from his behavioristic views, for he does not attach the same meaning to these terms that an introspectionist of the old school would.

Dr. Watson claims that the objective methods of behaviorism are causing a revolution among the so-called "mental sciences", and appends the following table to show the trend of development in various fields: 2.

Up to the advent of behaviorism: Now leaning toward:

- | | |
|------------------------------|--|
| 1. Introspective psychology. | 1. Behaviorism. |
| Functional psychology. | |
| 2. Philosophy. | 2. Gradually disappearing and becoming the history of science. |

1. Watson: Behaviorism, p. 11.
2. Ibid., p. 17, 18.

- | | |
|--|--|
| 3. Ethics. | 3. Experimental ethics based entirely upon behavioristic methods. |
| 4. Social psychology. | 4. Rapidly becoming a behavioristic study of how groups--family, village, national, church, and the like--build up habits in the individual during the formative period and thus maintain control of him throughout life. |
| 5. Sociology. | 5. Merging into behavioristic social psychology and into economics. |
| 6. Religion. | 6. Being replaced among the educated by experimental ethics. |
| 7. Psycho-Analysis. (Based largely upon religion, introspective psychology, and Voodooism. | 7. Being replaced slowly by behavioristic studies on the human child where scientific methods are being established for conditioning and unconditioning the child. When such studies are carried to an ideal state, there should be no reason for psychopathic breakdowns or disturbance in the adult. |

CHAPTER II. THE METHODS OF BEHAVIORISM.

The materials with which the behaviorist makes his scientific observations and experiments are stimuli and responses. Stimuli are all those external objects of the environment which influence one through the eye, ear, nose, mouth, or skin, and all internal conditions which influence the organism in any way, such as changes in the tissues of the body. Thus the organism is constantly being assailed by many stimuli from both without and within. Dr. Watson cautions us not to get the idea that the inside of our body is any different or any more mysterious than the outside. We are affected by changes in either our external or our internal environment.¹

The effect which these stimuli call forth is called by the behaviorist response. It may be a noticeable movement, or one so slight as to require delicate instruments for its detection; it may be merely a change in respiration or blood pressure, or a movement of the eye. The response to a stimulus usually, though not always, brings about an adjustment, which is to say that the organism alters its physiological state so that the stimulus no longer excites the response. For instance, the bright sunlight in my eyes may stimulate me, and I move about until I am out of its glare, when the stimulus is removed and the reaction ceases.

Responses are classified as (1) external or overt, by which is meant the ordinary visible action of the organism: eating, taking notes, attending a concert, going to church, etc., and (2) internal or implicit, which are the unseen glandular and muscular responses within the body, for the measurement

1. Watson: Behaviorism, p. 12.

of which delicate instruments must be used, when, indeed, they can be measured at all.¹

Another classification of responses is unlearned and learned; so many of the actions formerly thought to be unlearned have been found to be learned that the term "instinct" has nearly been discarded by the behaviorist. Still another classification of responses is according to the sense organ which initiates them, such as a visual unlearned response, as when a newly born infant turns its head toward a source of light; or a visual learned response, such as when I read the daily paper; or a kinaesthetic, or a visceral, learned or unlearned response.

In view of these definitions, let it be said once again that the goal of behaviorism is to be able to predict the response to a given stimulus, as in Fig. 1, or to tell what sort of stimulus produced an observed response, as in Fig. 2. A solved problem

of the behaviorist is illustrated in Fig. 3, where both the stimulus and its response are known, or more specifically in Fig. 4, where the stimulus, an electric shock applied to the hand, caused the response of drawing away

S - - - - - R
Given. ?

Fig. 1.

S - - - - - R
? Given.

Fig. 2.

S - - - - - R
Known. Known.

Fig. 3.

S - - - - - R
Electric Shock. Withdrawal of hand.

Fig. 4.

the hand. This is a sample of the type of reaction called unconditioned, which means that there was no training necessary to bring about the reaction, but the same stimulus applied to any untrained subject would produce the same

1. Watson: Behaviorism, p. 15.

response. It is an unlearned reaction. There are a great many of these unlearned or unconditioned reactions, but the number of conditioned reactions is many times greater.

What is a conditioned reaction? It is one in which, through training, a response is obtained to a stimulus which would not naturally call out that specific response. For example, the reaction given above may become conditioned. Ordinarily the sight of a colored light will not cause any specific response, but if the colored light is shown

and immediately afterward the stimulus of the electric shock is applied, (Fig. 5))the hand will be withdrawn as before,

	S- - - - - R
Colored Light.	Withdrawal of hand.
Electric Shock.	

Fig.5.

and after a number of such joint stimulations, the mere showing of the light will be sufficient to cause the withdrawal of the hand without the application of the electric shock. The light has become a substitute stimulus, and when this occurs, the reaction is said to be conditioned (Fig.6).1.

Reactions can be conditioned to many kinds of stimuli--tone stimuli, for instance, until a certain tone or noise only will call out a response, while even louder noises which would be more noticeable to a person not so conditioned, will have no effect. An example of this is the sleeping mother who wakes at the first sound from her baby, though many other noises may go on in the room without waking her.

The conditioning process is often very rapid, as in the case of the child who is burned once by a hot electric iron, and thereafter cries at the sight of it. Many of our actions are merely the result of these conditioned

1. Watson: Behaviorism, p. 21.

reactions, of which every individual has thousands.

The conditioned reaction plays such an important part in the work of the behaviorist that it will be well to linger on the subject for a moment. Experiments have shown that a great variety of reactions may be conditioned. An example has already been given of a conditioned muscular reaction. Another interesting reaction which is similar to the one given is the conditioning of winking. There are four unconditioned stimuli which will call out the rapid wink, one of the fastest of human reflexes, as follows: (1) bright light, (2) rapid approach of objects toward eye, (3) irritation of cornea or conjunctiva of eye, and (4) injury to lid itself (cutting, electric shock, etc.) The sound of a telegraph instrument will not ordinarily call out a wink reflex, but if a joint stimulation of a telegraph instrument and an electric shock to the eyelid is applied, after a time the click of the instrument will call out the winking response, and it is interesting to know that the conditioned response takes place even more rapidly than the unconditioned wink.¹

Not only muscular reactions may be conditioned, but glandular also. The salivary gland is one of the most popular and convenient for experimentation. It will be stimulated to secrete saliva ordinarily by the presence of food or acid in the mouth. The act of secreting may be conditioned so that it will occur in response to visual stimuli, such as the sight of the food or of the pipette with which the stimulating acid is applied. In animals it has been conditioned to tactual stimuli, such as stroking on any certain spot, to various kinds of visual stimuli, such as colored disks or geometrical forms, and to auditory stimuli such as pure tones and other noises.²

The action of the internal organs is likewise subject to conditioning.

1. Watson: Behaviorism, p. 32.

2. Ibid., p. 26-30.

For instance, if an infant is fed regularly at three hour intervals, the hunger contractions of the stomach will begin at the right time, and the infant will wake up and begin to fuss or cry. If the interval is changed to four hours, after a time of adjustment the infant will wake up promptly at the end of the fourth hour.¹

Whether or not ductless gland reactions can be conditioned is not known, as experimentation with these is very difficult. However, it has been found that emotional states, in which they play a very important part, can be conditioned. These involve the whole body, and if the organism as a whole is conditioned, it is a natural conclusion that the glands will have to follow suit.²

The importance of the conditioned reaction to the behaviorist cannot be overestimated, for upon it he builds practically his whole theory. Having thus examined these reactions, let us now examine the organism in which these reactions take place.

1. Watson: Behaviorism, p. 32.

2. Ibid., p. 31.

CHAPTER III. THE HUMAN BODY.

In all older systems of introspective psychology, the main emphasis is placed upon consciousness or mind. The body is frequently almost disregarded, except for the brain and nervous system, which they view, according to behaviorism, as a treasure house of mysteries and accord to them a sort of reverential superstition. The behaviorist, on the other hand, is interested in the total reactions of the whole organism, and for that reason studies the whole body; because of that he has found out many things which could not be learned by introspection in a lifetime. The behaviorist is interested in the nervous system also, but regards it just as he does any other part of the body, as a part of a commonsense kind of organic machine, though a very complicated machine it certainly is.¹ We find that it is composed of cells, which are made up into tissues and organs. We will notice three general divisions, the sense organs, the reacting organs, and the nervous system.

The sense organs are the organs through which the various stimuli produce their effects on the body. They are made of cells, of which some are of peculiar structure, and generally sensitive to one form of stimulation only. The organs included are: the eye, stimulated by ether vibrations; the ear (cochlea), stimulated by air waves; the nose, stimulated by gaseous particles; the tongue, stimulated by fluids; the skin, stimulated by warm or cold objects, contacts, cutting, burning, pricking, (through various end organs); the muscles, tendons, and semicircular canals of the ear, stimulated by a change in position of the parts where they are located.

Now what happens when a stimulus encounters one of these sense or-

1. Watson: Behaviorism, p. 42.

gans? There is a physical and chemical change in the cells composing the sense organ, which may be compared to the action of light upon a photographic film, or the sympathetic vibration of a piano string when the damper is removed and it reflects a tone sung into the instrument, etc. This physico-chemical process in the sense organ sets going a neural impulse which passes through the nerves to the central nervous system and thence to a muscle or gland somewhere.

The reacting organs of the body will be considered in three parts, (1) the striped or skeletal muscular system, (2) the unstriped muscular system, and (3) the glandular system. The striped muscles are those attached to the bones, by which the principal bodily actions are performed. We are in the habit of calling these muscles "voluntary" muscles--subject to the control of the "will." It is considered noteworthy by the behaviorist that the subject does not "will" to move a certain muscle, as in the arm or hand, for instance, but to perform a certain act, and in the performance of that act, the muscles move. But more than that, the whole body takes part in the action, and the whole body must assume a different set or attitude before any act is performed.

In the unstriped muscular system are included the viscera, which term is used in behavioristic psychology to cover all the inside organs of the body: all parts of the alimentary canal, the heart, lungs, diaphragm, arteries, veins, bladder, sex organs, liver, spleen, pancreas, kidneys, and all other glands of the body. These are often called the hollow organs, as they are always filled or partially filled with some fluid: air, food, blood, waste products, etc. Their contents are continually in motion, and the motions produced may drive the whole body to action. For instance, when the stomach is empty, it begins to contract rhythmically, producing the so-called hunger contractions. These act as visceral stimuli, and send the one who receives them in search of food;

men have been known to steal or even to kill to get food, as Dr. Watson says.¹

The glands are also organs which stimulate and react to stimuli--organs with which we behave. They secrete fluids of various kinds and quantities--sweat, tears, saliva, bile, gastric juice, pancreatic juice, etc. These glands have great influence on our behavior; for instance, if they over-secrete or under-secrete, our whole conduct may be modified. Unruly glands may lead us to insult our friends, to lose our tempers or our jobs, and then leave us wondering what has gone wrong. The ductless glands, or endocrine organs, are vitally important for behavior; their secretions, called hormones, are closely connected with the emotional states of the human organism, commonly called fear, rage, pain, etc.

The third division of the body, the nervous system, is the telegraphic system of the body, by which stimuli are transferred from the sense organs to the glands and muscles which they cause to react. This system is also composed of cells; the nerve cells, called neurones, are composed of cell bodies with nuclei, and with long processes called axones and shorter processes called dendrites. These are linked together in series, with many cross connections. The dendrites act as receiving stations to pick up nerve impulses, which are conducted through the cell bodies along the axone to the dendrites of another cell. When I burn my finger, the impulse passes by such a connection to the spinal cord and back to the motor organs which draw back the burned finger at once. This is a short reflex arc, and is the fastest and simplest type of reaction. The long reflexes involve the afferent and motor neurones also, but are more complicated, passing not only through the spinal cord but through the brain as well, and often including not only the one organ involved, but the whole body. Since stimuli are constantly being received in countless numbers

from all parts of the body, both without and within, and since many of these stimuli produce actions in many parts of the body at once, it is plain that there must be a very complicated system of connections, which is furnished by the nervous system.

CHAPTER IV. BEHAVIORISM AND INSTINCT.

One of the ideas of the introspectionists' school of psychology which has been discarded by behaviorism as no longer necessary, is the subject on instinct. With the instincts have been put away such ideas as inheritance of capacity, talent, temperament, mental constitution, and mental characteristics. The behaviorist's view is that all the traits of more mature behavior which we have been calling inherited under the terms above given may be accounted for upon the basis of structure of a certain type, plus early training or slanting.¹

Dr. Watson is outspoken in his condemnation of instinct as treated by James and others of his type. James defines instinct thus: "The faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without previous education in the performance"². He lists the human instincts as follows: climbing, imitation, emulation, rivalry, pugnacity, anger, resentment, sympathy, hunting, fear, appropriation, acquisitiveness, kleptomania, constructiveness, play, curiosity, sociability, shyness, cleanliness, modesty, shame, love, jealousy, and parental love.³ McDougall's definition of instinct is, "An innate disposition which determines the organism to perceive any object of a certain class, and to experience in its presence a certain emotional excitement and an impulse to action which finds expression in a specific mode of behavior in relation to that object."⁴ He lists thirteen instincts, and links each to its corresponding emotion. His human instincts

1. Watson: Behaviorism, p. 74,75.

2. Psychology, Briefer Course, p. 391.

3. Ibid., p. 406, 407.

4. Outline of Psychology, p. 110.

are: parental instinct, instinct of combat, curiosity, food seeking instinct, instinct of repulsion, instinct of escape, gregariousness, self-assertion, submission, mating instinct, acquisitiveness, constructive instinct, instinct of appeal.1. Angell gives the following list of human instincts: fear, anger, shyness, curiosity, affection, sexual love, jealousy and envy, rivalry, sociability, sympathy, modesty, play, imitation, constructiveness, secretiveness, and acquisitiveness.2. Other writers speak of "instinctive behavior" but decline to name any specific instincts. Nearly all the later writers decline to give any specific number of instincts, and all who essay to name the instincts have a number of actions which they class as doubtful, wavering between reflexes on the one hand and purposive action on the other.

The position of behaviorism has already been briefly stated, namely, that so-called instinctive behavior can be accounted for upon the basis of physical structure, plus early training or slanting. The following analogies are presented: If I throw a boomerang into the air, and it returns to me, it is not because it has an instinct to return, but because it is built in such a way that it responds to the physical stimulus of being thrown by returning to the place from which it started. Similarly, a toy soldier mounted upon a loaded hemispherical base will always return to an upright position, no matter how it is tipped over, not because there is an instinct to stand upright, but because of its physical construction. But man is also built in a certain way, and the conclusion which Dr. Watson draws from many experiments is that he must act as he does act until learning has reshaped him, because of the way he is put together and the materials from which he is made.3.

1. McDougall, Outline of Psychology, Chap. 5.
2. Psychology, p. 349.
3. Behaviorism, p. 86.

Dr. Watson then devotes some twenty pages to accounts of experiments performed upon infants, in which it is shown that the infant at birth is provided with the physical apparatus for many of the so-called instinctive acts, which respond to the stimuli calling forth these acts in much the same way in which the boomerang responds to the stimulus of being thrown into the air, or in which the toy soldier responds to the stimulus of being tipped over by bobbing into an upright position again. For each of these acts there are certain stimuli which will call forth the response--the stimuli of the unconditioned reaction. For instance, crying is naturally produced by hunger and by noxious stimuli such as rough handling, or cutting of the skin, as when a boil is lanced. From a very early age, crying responses become conditioned, as it does not take the infant long to find out that when he cries he received attention. Some of the so-called instinctive actions do not appear until a few days, months, or even years after birth, and in these it is difficult to say how much of the reaction is due to training or conditioning, and how much is due to the growth changes of the structure.

Dr. Watson disposes of the "constructive building instinct" as follows: "Manipulation starts at 120 days, becomes smooth, sharp, and facile at six months. It can be built up in a thousand ways, depending upon the time allowed for it, the toys the infant plays with, whether the infant is hurt by any of its toys, whether it is frightened by loud sounds often at the time it is handling its toys. To argue for a so-called 'constructive building instinct' apart from early training factors is to leave the world of facts."¹

Many of us have thought of some as having an instinct to be right-handed, with others having an instinct to be left-handed. Yet Dr. Watson re-

1. Behaviorism, p. 104.

records studies upon infants which show the following: (1) There is no significant difference in the measurements of hand, wrist, palm, forearm, etc., between left and right, in hundreds of children so measured. (2) When objects to which the child has been positively conditioned, such as a stick of candy, are presented on a level with the eyes of the child and held on a line between the two hands, sometimes one hand is held out for them, sometimes the other, sometimes both, with absolutely no steady and uniform handedness. These tests were made upon infants five or six months old. The conclusion drawn by Dr. Watson is that there is no differentiation of response in either hand until society begins to condition those responses. But soon afterward society says, "Thou shalt use thy right hand"; and the child is taught to wave good-bye, shake hands, and to hold his spoon or fork in the right hand; this last is enough to condition the child to right-handedness.

It will be noted that in the older psychologies, instinct and emotion are closely related, or perhaps merely confused. Others of the so-called instincts will be studied in the next chapter in connection with the subject of emotion.

After comparing the writings of many authors representing many schools upon the subject of instinct, I have endeavored to formulate my own position in regard to it. Several facts present themselves from the reading which I have done upon the subject: (1) No two of the authors agree very well, either as to the definition of an instinct, or as to the number of instincts, or as to the distinction between actions due to instincts, and those due to reflex action, emotion, etc. (2) As opposition to the idea of instinct has increased, the later writers have listed fewer instincts than the earlier, or have declined to name specific instincts. (3) Certain later writers approach closely to the

behaviorist position, though still admitting instinct, as Seashore, whose definition of instinct is "an inherited mode of behavior."¹ (4) All of these writers grant some sort of an inherited basis for some acts.

This last fact seems to me to be the important thing, and if it be considered in connection with the general position of each writer as to the nature and construction of man, I see no reason for being greatly disturbed over the conflicts between the various writers. James and those of his time, while not teaching a soul as such in their psychology, did construct their theories in such a way that one who believed in a soul could predicate of the soul the things which James predicated of consciousness, or the self. James had no pre-conceived aversion to a large number of types of specialized action being inherited. For this reason he made no special attempt to keep the number of instincts low, or to criticise closely those acts which he so classified. From this it follows that he is apt to be nearly as unscientific as Dr. Watson declared him to be in his treatment of instincts. Dr. Watson, on the other hand, has his mind firmly made up against the existence of a soul or anything else which might take its place. He is determined to look upon man as a machine and nothing more. For this reason, he is interested in keeping the inherited actions to a minimum and in placing as much emphasis as possible upon training. He emphasizes the differences in the behavior of men in various parts of the earth in regard to actions commonly called instinctive.

For these reasons, the conflict over instinct appears to me as merely a question of a name. Old school psychologists say that certain things are inherited; they call these things instincts. They have been rather unfortunate or unwise in the past, in choosing for these inherited traits names which denote

1. Introduction to Psychology, p. 207.

complex mental states and actions, while they really mean that the mental equipment which may develop into these states and actions is what is inherited, not the states and actions themselves. The behaviorist likewise says that certain things are inherited, but as he has no use for mental states or processes, he shied off from any term that has been in such bad company, and therefore speaks on inheritance of structure instead of instincts. Whether or not he has a right thus to speak, depends entirely upon whether he can establish his position in regard to mind in general, and can prove man to be a mere machine. Were these to be definitely established, it would then be necessary to resort to some such explanation of instinct as behaviorism furnished. As these are not proven, no such necessity is laid upon us, and it is for those who admit all the psychological data to decide what actions they shall call instinctive and what they shall not. For myself personally, I am not disturbed in my mind over any theory of instinct so far advanced. No theory of instinct is any stronger than the foundation upon which it is built; if a man can furnish me a psychology which will stand coherently the tests of reason and experience, I am willing to accept it whether he has thirteen instincts, thirty-eight, or none at all. Whether or not behaviorism can pass the test here indicated will be considered in a later chapter.

CHAPTER V. BEHAVIORISM AND EMOTIONS.

Although the behaviorist laughs outright at the thought of the old school of introspectionists having a "theory of the emotions," still he gives them credit for this position, that to them the most noticeable thing about the emotions was the bodily changes occurring with the emotion. James stated his idea of emotions after a description of these bodily changes, as follows: "My theory is that the bodily changes follow directly the perception of the exciting fact, and that our feelings of the same changes as they occur is the emotions."¹ For proof of this formulation, he offers some introspection, which he follows by stating: "If we fancy some strong emotion, and then try to abstract from our consciousness of it all the feelings of its bodily symptoms, we find that we have nothing left behind, no 'mind-stuff' out of which the emotion can be constituted."² Dr. Watson comments on this, "According to James, the best way to study emotions is to stand stock still while having one and begin to introspect. . . . No experimental approach is possible. No verification of observations is possible. In other words, no scientific study of emotions is possible."³

Before leaving the above quotations too far behind, let me say that I think that both James and Watson mean the same thing (even though both should stoutly deny it), for when we take into consideration the philosophical backgrounds of the two men, "the feeling of bodily changes as they occur" means the same to James as the occurrence of bodily changes which may or may not be felt (as we have no scientific means of knowing) does to Watson. To the former this

- 1.
1. Psychology: Briefer Course, p. 375.
2. Ibid., p. 379.
3. Behaviorism, p. 111.

is an emotion; to the latter, it is merely a form of behavior which he refuses to call an emotion because the term emotion has been in the bad company of the introspectionists.

The behaviorist has endeavored to make an objective study of emotional reactions, endeavoring first of all to learn the origin of such behavior. He began his studies upon children three years of age and older. In such he found that there are many thousands of situations which call out emotional behavior, but that there is no uniformity of response to any certain stimulus, and that the same responses may be caused by many and various stimuli. The conclusion obtained from these facts is that these emotional reactions have been conditioned at an early age.

Passing to the study of very young children, he has established that there are a certain few stimuli which are the unconditioned provoking stimuli for the reactions or systems of reactions which we call emotions. For instance, the unconditioned stimulus which provoke the behavior called rage or anger is the hampering of bodily movements, and may be observed in infants soon after birth. When the head is held lightly in the hands, when the arms are pressed against the sides, when the legs are held tightly together, rage behavior begins. Among the elements of this behavior are listed a stiffening of the whole body, free shaking movements of the hands, arms, and legs, when permitted, and holding of the breath. These states can be brought on without pressure enough to cause the slightest injury: in fact, the pressure on the arms from a cord to which was attached a lead ball not over one ounce in weight, caused rage behavior in one case observed.¹

The average child of three years exhibits fear behavior in a great

1. Behaviorism, p. 122.

many situations, which has given rise to the fable that fear responses to furry objects, and to animals, are inherited, and to other theories equally unscientific. In studying very young children the behaviorist has found that there are just two types of stimuli which will call out fear responses, namely, loud sounds and loss of support. To these might be added noxious stimuli, with which it is not possible to experiment. These are the unconditioned stimuli of fear behavior. The unlearned responses to these stimuli are the checking of the breath, a jump or start of the whole body, crying, and other responses, most of them visceral. Not every type of sound will serve as a fear-provoking stimulus: pure tones from tuning forks are not very effective, nor are low, rumbling noises or extremely high tones. However, the sudden crinkling of a piece of newspaper nearly always produces fear reactions.

From these beginnings, fear is conditioned in many ways; for instance, a young child not conditioned will not be afraid of a dog, but if the dog barks at him, the sound will provoke fear, and when the dog next appears, the child is conditioned so that fear behavior is manifested when the dog is first seen. Then not only the dog, but all animals resembling it may provoke the same fear behavior. In one observed case, fear of a white rat conditioned with a loud noise by the experimenters made the child afraid of a rabbit, dog, sealskin coat, cotton wool, human hair, and a false face, though he had not feared any of them before. A barking dog or other noise out of doors at night may serve to condition the child to fear darkness, though many tests show that the child is not naturally afraid of the dark.

These studies by the behaviorist on the emotional reactions of young children are very useful, and serve to show the reason that many children exhibit fear behavior in so many different situations. They also teach that fear reactions can be built up by those who know how so as to produce aversion to

harmful things, as Dr. Watson did toward a flame. The evidence seems to be against the inheritance of a large number of complicated behavior patterns called emotions, just as in the case of instincts. What has been demonstrated is that certain types of stimuli produce certain general types of response, that the responses are very largely glandular and visceral, and that both stimuli and responses can and do very rapidly become complicated by conditioning.

One of the greatest problems of the behaviorist in this field is that of removing fear responses which have already been developed, either by accident or by wrong training. In the tests made, the fear responses were located and also the stimuli which called them out, after which five methods of treatment were given: (1) The provoking stimuli were removed for a length of time (disuse); this method was of little value as the fear reaction persisted after a long time. (2) Verbal organization, including stories and conversations about, and models of, the stimulating object (a rabbit) proved equally unfruitful; the verbal and visceral organizations appeared not to be coordinated in this instance. (3) The frequent application of the stimulus, while sometimes stopping the negative responses, did not bring about any positive ones. (4) Social factors, such as a group in which the one showing fear would be called a "fraid cat", etc., were not successful, and Dr. Watson fears that their use may do more harm than good. (5) After these unsuccessful methods, the method of unconditioning was tried with success, as follows: The child which was afraid of the rabbit was fed daily in a room about forty feet long; as he began to eat the rabbit was introduced in a cage far enough away not to disturb his eating. Day by day the rabbit was brought closer and closer; it was first tolerated, then the positive reactions set in, and the child would eat with one hand and stroke the rabbit with the other, which showed that both manual and visceral habits had been unconditioned, and the old fear was gone. After

that it was also found that fear responses to cotton, a fur coat, and feathers, had also disappeared at the same time.¹

Thus it is shown that fear behavior can be both built in and removed. Why cannot rage and love behavior, as well as that of other emotional organization, be similarly dealt with? Dr. Watson believes they can, and looks upon this field as one of the most interesting and promising in behaviorism. He says that it is conceivable that some day we may be able to bring up the human young through infancy and childhood without their crying or showing fear reactions except when in the presence of the unconditioned stimuli calling out these responses, which means practically never. An infant has a right to cry when it has colic, is stuck with a pin, is hungry, is scratched by the cat, or falls down and catches its head in the slats of the bed, but most of the hundred and one occasions of crying are just examples of conditioned behavior due to wrong training, and are really unnecessary. As Dr. Watson says, "Owing to our unsatisfactory training methods in the home, we spoil the emotional make up of each child as rapidly as the twig can be bent."

While speaking of negative reactions, Dr. Watson makes the interesting assertion that society is built upon negative reactions, upon don'ts and taboos of every kind. Many kinds of behavior which might otherwise be common are held to the minimum because of the penalties of society, which serve to condition negative responses. Even suicide is as rare as it is because of the negative reactions conditioned by society. Why should an individual go on living when he is continually hungry, cold, deserted, maltreated, misunderstood, in grief or in pain? He does it because he has been taught from infancy that to commit suicide will condemn him to eternal punishment hereafter--because all

1. Behaviorism, p. 136-138.

of us have negative reactions continually being built in against all objects and situations which might cause injury or death, such as sharp instruments or poisons; because we have so many conditioned responses built in around the act of death that the very word is enough to paralyze any positive response that an individual might make to bring death about. These negative responses, says Dr. Watson, are the things that keep our life going; man lives because he is afraid to die. The behaviorist hopes that some day a more positive justification of living may be provided.¹

The discussion of negative reactions is not complete without the behavioristic view of punishment: Punishment is a word which should never have been admitted into our language. As usually administered, by whipping, beating, or incarceration, it is highly unscientific and often does more harm than good. This is because it is usually administered hours, in the case of children, or even years, in the case of criminals, after the act calling for the punishment has been committed; because it cannot be regulated according to scientific dosage, and because it frequently serves as an emotional outlet for the one doing the punishing. The behaviorist's view is that the child or adult does what he does because he has to.² The way to make him act differently is to untrain him and retrain him. Negative reactions can and should be built into the lives of children, provided that the child is caught in the act, and that the stimulus is applied at once and in an objective way. As far as possible, the objects and situations of life should be made to build in their own reactions; for instance Dr. Watson suggests a table top electrically wired so that when the child reaches for a glass or a delicate vase he will be shocked. In this way the negative response can be implanted without the child acquiring fear or hatred

1. Behaviorism, p. 148.

2. Ibid., p. 144.

of the one administering punishment.

For criminals similar methods are proposed by the behaviorist, which will eventually make him fit to reenter society. For those whom it is impossible to so retrain, it is suggested that they be kept for life in vast agricultural or industrial institutions managed by behaviorists where they may have air, sunshine, food, and exercise, the latter in the form of twelve hours daily of strenuous, productive work.

The insane should be kept in non-political institutions in medical hands, and those who are curable should be dealt with according to the principles already advanced. As to those who are hopelessly insane, Dr. Watson says that the only reasons why they should not be etherized are those of exaggerated sentiment and medieval religious mandates.¹

1. Behaviorism, p. 146.

CHAPTER VI. BEHAVIORISM AND EMOTIONS: CRITICISED.

In the preceding chapter I stated my view of behaviorism's contribution to the theory of emotions, namely, that both behaviorism and the older psychologies were trying to describe the same thing in different aspects. As the chief difficulty which the older psychologies faced was in relating the work of mind and body in emotion, the behaviorist position of denying the existence of mind does not solve, but only ignores, that difficulty. Again the behaviorist position is just as strong as the premises on which it rests; if they are established, his view of emotions is perhaps as good a one as we can find, but they are not established; he has merely ignored that part of the facts from which the problem arose.

There are some real contributions, however, which have arisen out of the study of emotions reviewed above, and it is only fair to give behaviorism credit for what it has done. First of all, by an insistence on scientific studies of emotion, I believe that behaviorism has done much toward eliminating statements based on pure guesswork or on insufficient study. I do not mean by this that we are justified in throwing out all introspective data; the validity of introspection as a source of scientific knowledge will be discussed in a later chapter-- but I do mean that there is a danger of generalizing too soon on insufficient knowledge. The behaviorist is to be commended for his methods of study and observation, for his case studies on children, for the numerous experiments which have been performed. These studies are not without a real value, and if wisely used, can be made of great service in the training of children. I do not believe that the advantages of behavioristic rearing are so great that all children should be turned over to the behaviorists at birth,

as seems to be implied by Dr. Watson.¹ But everyone will be in sympathy with the idea of bringing up children without any more crying than necessary, and without developing many of the unnecessary and harmful fears of childhood. We have all observed children who showed great fear when there was absolutely nothing to be feared, and it is plain also that if children were taught to fear firearms, fire, and other dangerous articles and situations, that accidents would be fewer. If these beneficial effects can be produced by the parents, by the avoidance or wise use of conditioning, it is only the part of common sense to do so, and thereby to make life surer, pleasanter, and more profitable, for both the child and those who live with it. The experiments performed in removing a fear which had already been established may likewise be profitably used in correcting the results of mistakes or accidents of the past.

There is one fact to be noticed, however, which is that the use of these good results of behavioristic studies does not necessarily involve an acceptance of the behaviorist theory. That these methods work does not mean that they prove the human being to be a mere animal or an automaton. Indeed, it is very doubtful in my mind whether the methods outlined above, which seem to be effective with very young children, will work as well when applied to older people. 2. The fashioning of the emotional behavior in more mature man must take into consideration his thinking and reasoning habits, and the mechanical varieties of stimuli which are used with success upon infants are plainly not adapted to dealing with a man who can at once see through the purpose of the experimenter. In this connection the behaviorist's denial of the existence of such processes as thinking and reasoning is utterly without point, for in the examples given, the stimuli applied to adults in dealing with their emotional

1. Behaviorism, p. 7, 8, 37.

2. See below, p. 77.

situations are plainly adapted to the action of such processes.¹

I should like to offer a few words of comment on Dr. Watson's position with regard to society as built upon a basis of negative reactions. There is a sense in which his statement is correct, for indeed, many forms of crime are held to a minimum by the fears which society, through penalties of law, has kept before its members. I do not see what objection Dr. Watson can offer to this. Such legislation on the part of society is necessary to its self-preservation, and where the individual does not know enough to choose the right for himself, it is best that society should condition him to right choices, as far as is possible. However, I believe it will be found true that for every negative reaction implanted by society through penalties, there will be found a corresponding positive reaction made more desirable by some reward. For instance, the same law which endeavors to prevent robbery by holding the penalty of incarceration as a result of such acts, implicitly offers the reward of free movement in society and under its protection, to the one who lives an honest life; and the very law which will revoke a man's driving license who persistently disobeys traffic laws is the guarantee of safe and pleasant driving to the careful and conscientious driver. Whether Dr. Watson recognizes these as positive conditioning reactions or not, they appear to me to be such.

With regard to suicide, the question is not so easily disposed of. If we take the position above given, we may say that every influence which works to prevent self destruction is the counterpart of an incentive to a positive good, namely, that of living. But Dr. Watson is not of the opinion that life is a positive good to the one who is "continually hungry, cold, deserted, maltreated, misunderstood, in grief or in pain."² With him there is no moral issue involved in self destruction, for he has no belief in a God of judgment, or in

1. Behaviorism, p. 39, 40, 156.

2. Ibid., p. 147.

a soul which such a God might judge, or in any continuation of life beyond the limits of our earthly existence in which such a judgment might take place. If these things should be true, and there is no possibility of removing the persistent unpleasant circumstances which outweigh the joys of living, the conclusion of suicide is the logical one. In such a case we must appeal to behaviorism to furnish us the "more positive justification of life" for which they are hoping.¹ Granting their premises, the only basis on which such could be provided is that of removing all unpleasant circumstances which tend to physical (since there is no mental) discomfort, and providing a life of purely sensual enjoyment for everybody. This, it will appear, is a big contract even for behaviorism, but it is the only thing to be hoped for when all is removed which makes the trials of this life worth enduring.

However, I am not ready to accept their view of life, and for myself I find that I have many positive values in life which would make me strive toward self-preservation even if I should have no negative reactions against death in itself or its consequences. And beside these I have a firm confidence that a God exists, that He holds suicide to be a high crime, and is not averse to using a "negative stimulus" to enforce this idea on man, that I must stand before Him for judgment concerning both my bodily acts and the attitudes of my mind, that He has so constituted me that I shall have a continuous existence after death, that He has provided a society for that future time in which there will be no such irremediable unpleasant circumstances as those mentioned above, and in which there will be the greatest positive justification of existence. For the sake of this hope, I can willingly endure such unpleasant things as come my way in this life; indeed, with Paul I can say, "I take pleasure in weaknesses, in injuries, in persecutions, in necessities, in distresses for Christ's sake,

1. Behaviorism, p. 148.

for when I am weak, then am I strong."1. This, I think, as much as a mere slavish fear of death, has been the means of keeping many people in this world in spite of adverse social conditions. But even ~~if~~ we should grant that many people live only because they are afraid to die, behaviorism itself must admit that many times this serves a good purpose in preventing a permanent destruction because of temporary bad circumstances, and that when in the natural course of events these are removed, the person is very glad he is alive.

There are also some things to be said concerning the behaviorist position on punishment. Here, as before, I think the quarrel is more one of terminology than of real fundamental disagreement. Dr. Watson, with perhaps a desire to be sensational, says, "Punishment is a word which ought never to have crept into our language."2. Yet he also says, "There is a certain amount of sentimentality going the pedagogical rounds in this country to the effect that no negative reactions should ever be forced on the child. I have never been very much in favor of this propaganda. In fact, I believe that certain negative responses should be scientifically implanted as a matter of protection to the organism. I don't see any other way out of it."3. From these two quotations and their contexts, it appears that Dr. Watson's chief objection to the term punishment is that it has certain religious associations against which he is prejudiced. He is really in favor of punishment but wants to see it made more scientific, a procedure with which no one can have any quarrel.

His first objection to punishment is that "very often the deviating act occurs many hours before father or mother comes home to engage in the act of chastising."4. This is a good argument for prompt chastening where possible, but with children old enough to understand why they are being punished, the

1. II Corinthians 12:10.
2. Behaviorism, p. 144.
3. Ibid., p. 142.
4. Ibid., p. 145.

time element is of less importance. A sure punishment, even though necessarily delayed, will provide a much more effective restraint than none at all. In criminal procedure the case is the same, and the weakness of delayed punishment for crime is not as much in the delay as in the continued hope that punishment will be escaped altogether, as frequently happens. We can heartily agree that prompt and certain punishment, both of youthful miscreants and of criminals, is highly preferable to long delay, but this is no argument against punishment.

The second objection advanced, that "whipping is used more often than not to serve as an emotional outlet for parent or teacher"¹, is very evidently an exaggeration, as all more enlightened parents and teachers use punishment as consequential rather than as a matter of personal retaliation, and so explain it to those who receive it. Where this objection is true, it is valid, and should serve as a warning to all who must punish to make the punishment as objective and as impersonal as possible.

The third objection is that punishment as commonly administered to children "is not and can not be regulated to scientific dosage."² This is true in the sense that nobody has ever invented a "correctometer", but it is not so true as to prevent a parent or teacher wisely administering punishment, neither too much nor too little. It contains a caution which should be observed, but is no reason for abolishing punishment altogether.

To sum up, I believe that Dr. Watson has laid down some principles which, if rightly applied, will not abolish punishment, but will make it swift, sure, and effective. But by his attitude toward the subject, he is in grave danger of having these contributions overlooked in the cloud of opposition against abolishing punishment entirely. His findings, rightly applied, will give us "more and better punishment", and will not do away with it. He is

1. Behaviorism, p. 145.

2. Ibid., p. 145.

right in pleading for objective punishment, and also right in saying that much of the present day punishment of criminals fails to correct or reform them, but in making this assertion he neglects to consider that if such are turned loose by society, because it cannot make them over, every such procedure is a stimulus to any other criminally inclined person which would quickly lead to a crime wave of great proportions.

The difference between the application I am trying to make of Dr. Watson's findings and the application he makes of them is due to my rejection and Dr. Watson's acceptance of determinism. This principle I shall not discuss in the present chapter, but will devote a part of chapter XII to its consideration.

CHAPTER VII. BEHAVIORISM AND HABIT.

Heretofore in the development of behaviorist theory we have considered only a single stimulus and its response, but it must be remembered that many stimuli are exerting their effects on the organism at all times, and that no sooner has an adjustment been made to one stimulus by some action when another is brought into play and produces other actions. When the same stimulus has been met many times, the response to it becomes more rapid and efficient. For instance, if a piece of candy or food is held before a very small child, it will not only reach with its hands, but will also squirm and wriggle, extend its feet and legs, and go through all sorts of antics. As the process is repeated day by day, all the useless motions are gradually eliminated, and the habit of reaching for the object and carrying it to the mouth becomes perfect. This has then become a conditioned reflex, and the sight of the object becomes the stimulus which produces the action mentioned. But the conditioned reflex, says Dr. Watson, is the unit out of which the whole habit is formed, and by analysis the most complicated habits will be found to be made up of these conditioned reflexes.¹

This principle is illustrated by Dr. Watson as follows: Suppose a being which has been conditioned to respond to the sight of a circle by walking forward four steps, to the sight of a square by walking to the right five steps, to a triangle by walking to the left three steps, etc. A situation could then be arranged so that after the first stimulus, the reaction to each stimulus will bring him to the location of the next, so that he will go through the whole series without interference from the experimenter and finally return

¹. Behaviorism, p. 166.

to the place he started from. To the objection that somebody has to arrange the stimuli, Dr. Watson replies that society arranges stimuli for everybody all the time, and that we have all been conditioned to respond to given situations in certain ways.¹

At first the individual stimuli which call out each step of any process are very important and necessary; if one stimulus fails anywhere along the line, the performance is broken up for that time. But as progress is made, any habit becomes more and more independent of the visual, tactual, and auditory stimuli. What is the explanation? At each step, the movement in response to one stimulus directly precedes the application of the next stimulus; moreover, as the muscles themselves are sense organs, through their kinaesthetic nerves, each motion becomes a stimulus also. This is precisely the situation used in conditioning; there is a joint stimulation with each motion and the unconditioned stimulus for the next motion; as time goes on, the response to the second stimulus is linked up to the response to the first stimulus, and finally the first motion will bring about the second; the second, the third, and so on, until the habit is established as a series of conditioned reflexes.

In order to make a strong contrast between the behavioristic explanation of habit and that of the old psychologies, Dr. Watson writes, "Only a few psychologists have been interested in the problem. Most of the psychologists, it is to be regretted, have even failed to see that there is a problem. They believe habit formation is implanted by kind fairies . . . They speak quite volubly about the formation of new pathways in the brain, as though there were a group of tiny servants of Vulcan there who run through the nervous system with hammer and chisel, digging new trenches and deepening old ones."² Of course this shows a great contrast, but I do not see

1. Behaviorism, p. 167.

2. Ibid., p. 166.

how Dr. Watson has much that is better to offer as an explanation of how the process is carried out; that is what the passages to which he refers are attempting to explain, and Dr. Watson does not make it any plainer to me by throwing it back on conditioned reflexes, which in turn go back to some vague references to physics and chemistry, the validity of which may be questioned, and will be considered in a later chapter.

If Dr. Watson invites comparison with the older psychologies, let his explanation of habit formation be compared with the following from James, and it will be seen at once that both are stating the very same thing, when allowance is made for differences in terminology and background. James says, "In action grown habitual, what instigates each new muscular contraction to take place in its appointed order is not a thought or a perception, but the sensation occasioned by the muscular contraction just finished."¹. This is no different at all from saying that ~~the~~ the response to one stimulus serves as a kinaesthetic stimulus for the next. whose terminology of habit formation we are to accept depends entirely on whether we accept a mind or consciousness with James or deny them with Watson.

1. Psychology, Briefer Course, p. 140.

CHAPTER VIII. HOW THE BEHAVIORIST TALKS AND THINKS.

The sub-title of a most interesting chapter by Dr. Watson on "Talking and Thinking" is "Which, when rightly understood, go far in breaking down the fiction that there is any such thing as 'mental' life."¹

In line with the suggestions of the above title, Dr. Watson aims to establish the continuity between muscular habits as explained in the last chapter and the habits of speech. He says, "Language as we ordinarily understand it, in spite of its complexities, is in the beginning a very simple type of behavior. It is really a manipulative habit."² The apparatus with which the manipulation is performed is the voice box, a tube of cartilage across which are stretched two simple membranes, the edges of which form the vocal cords; the manipulation is carried on by means of the attached muscles which tighten or loosen the vocal cords. As we blow through the voice box with the breath, the cords vibrate and make sounds, which are modified into speech by the positions of the muscles in the throat, and by the tongue, lips, and teeth.

Beside the apparatus of speech, there is also a certain amount of unlearned material, the sounds which a baby makes at birth and afterward, which correspond to the unlearned manual movements of a baby as noticed in the preceding chapter. And just as the infant reaching for the bottle formed a habit by perfecting the action of the right response and eliminating the useless ones, so the verbal mechanism can be similarly conditioned, as the following experiment proves: An infant of five months with the usual verbal organization was daily shown the bottle from which it was fed, and with the sight of the bottle, the word "dada" was repeated several times. In the midst of the random sounds

1. Behaviorism, p. 180.

2. Ibid., p. 181.

which the child made, the word "dada" would now and then appear; whenever it appeared, the bottle was given to him. In less than a month he would utter the word whenever the bottle was shown to him if the experimenter repeated it first, and in less than a month and a half, the stimulus of the bottle alone was enough to call out the vocal response. The formula for this conditioning might be given as follows: 1.

Unconditioned:	Conditioned:
S - - - - - R	S - - - - - R
Some intraor-	Sight of
ganic stimulus.	"dada"
	Bottle.

This is a simple and elementary verbal reaction, but it is the unit upon which our most complicated speech is made up. Says Dr. Watson, "It is my belief that in the unlearned sounds made by the infant we have all the units of response which when later brought together (by conditioning) are the words of our dictionaries."2.

Verbal habits are formed in exactly the same way as manual habits. If one desires to learn a verse of poetry, at first it is necessary to see or hear every word as a separate stimulus. Soon that is not necessary, because each word serves as the kinaesthetic stimulus to the vocal organs to produce the next word, which in turn stimulates the organs to produce the third, and so on until the whole can be repeated from end to end without a mistake.

Having laid this foundation in the subject of speech, the next point in the development of behaviorist theory is the subject of thinking. Thinking, according to behaviorism, is sub-vocal talking, or talking to ourselves, and is performed not only by the larynx, or voice box, but also by the cheek, tongue, throat, and chest muscles. For this view two lines of positive evidence are advanced, which I shall quote from Dr. Watson's interesting presentation:2.

1. Behaviorism, p. 184.
2. Ibid., p. 193.

"Some positive evidence for the behaviorist's view.

"(1) Our main line of evidence comes from watching the child's behavior. The child talks incessantly when alone. At three he even plans the day aloud, as my own ear placed outside the keyhole of the nursery door has very often confirmed. Aloud he voices (may I use literary terms and not psychological ones?) his wishes, his hopes, his fears, his annoyances, his dissatisfactions with his nurse or his father. Soon society steps in, in the form of nurse and parents. 'Don't talk aloud--daddy and mother are not always talking to themselves.' Soon the overt speech dies down to whispered speech and a good lip reader can still read what the child thinks of the world and of himself. Some individuals never even make this concession to society. When alone they talk aloud to themselves. A still larger number never go beyond even the whispering stage when alone. Watch people reading on the street car; peep through the keyhole some time when individuals not too highly socialized are just sitting and thinking. But the great majority of people pass on to the third stage under the influence of social pressure constantly exerted. 'Quit whispering to yourself', 'Can't you even read without moving your lips?' and the like are constant mandates. Soon the process is forced to take place behind the lips. Behind these walls you can call the biggest bully the worst name you can think of without even smiling. You can tell the female bore how terrible she really is and the next moment smile and overtly pay her a verbal compliment.

"(2) I have collected considerable evidence that those deaf and dumb individuals who when talking use manual movements instead of words, use the same manual responses they employ in talking, in their own thinking. But even here society forces minimal movements so that evidence of overt responses is often hard to obtain. To Dr. W. I. Thomas I am indebted for the following ob-

servation: Dr. Samuel Gridley Howe, Superintendent of the Perkins Institute and Massachusetts Asylum for the Blind, taught the deaf, dumb, and blind Laura Bridgman a hand and finger language. He states (in one of the annual reports of the Institute) that even in her dreams Laura talked to herself using the finger language with great rapidity."

I have quoted Dr. Watson at some length in order that his arguments may be given full credit. He holds that there is some bodily action in all thought, as is shown by comparison with the following statement: "The alternative process sometimes advanced to this theory is that so-called central processes may take place in the brain so faintly that no neural impulse passes out over the motor nerves to the muscle, hence no response takes place in the muscles and glands."1. It is also explained that thinking has always been regarded as something uncorporeal and peculiarly mental "on account of the concealed nature of the musculature with which it is done."2.

Thinking takes place in the form of vocal or sub-vocal talking at first, but after language habits have been formed, any bodily response may become a conditioned word substitute, as for instance a shrug of the shoulders, or a response in the muscles, or even in the retina of the eye.

Before the study of thinking is complete, it must be noticed that no kind of habits--verbal, manual, or visceral, is formed wholly by itself without reference to other systems. When a man responds to stimuli, it is not just one of these systems of his body, but the whole organization, which responds. As a rule, no one system reacts by itself very long without calling the others into action; often all are reacting at once. The illustration is given of two men walking through the woods who come upon a snake which coils itself in their path and rattles.3. Both of the men jump, spring back, turn pale, their

1. Behaviorism, p. 192.

2. Ibid., p. 191.

3. Ibid., p. 202.

hair stands up, their mouths fly open, their breathing stops; one yells "Snake"; the other yells, "Rattler"; both cry "Kill it" and rush for sticks and stones. It is evident that the one stimulus arouses verbal, manual, and visceral reactions. In acquiring skill in language, the segments of the body which undergo the most active training are the mouth, neck, throat, and chest; in acquiring muscular skill the most active segments are the trunk, legs, hands, and fingers; in acquiring emotional organization, the visceral segments are most active. But in all of these, while one type may be dominant, the others enter in, and the stimuli and responses may pass from one to the other in all possible combinations (see Fig. 7, and Dr. Watson's comment on it.¹)

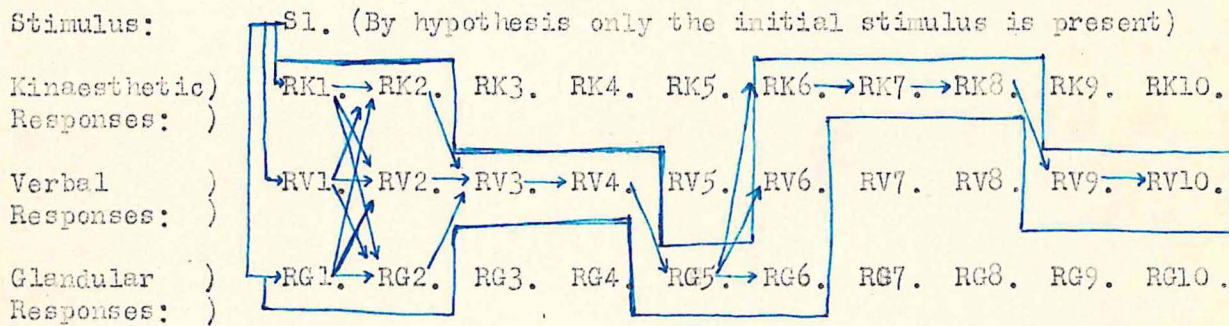


Fig. 7.

"This diagram shows the behaviorist's theory of thinking. Sometimes we think by using manual, verbal, and visceral organizations simultaneously. Sometimes only the verbal, sometimes only the visceral, and at other times only the manual. In the diagram the organization taking part in the whole thinking process is enclosed between the two continuous solid lines. This diagram shows clearly that thinking involves all three sets of our organized reaction systems."¹

1. Behaviorism, p. 214.

Especially do verbal organizations accompany most of our acts, though they are usually sub-vocal (thinking). There are two noteworthy exceptions to the latter: (1) organization put on during infancy, before verbal habits have been formed; and (2) organization put on all through life where visceral segments are dominant. The reason for the latter is that society makes no demand on us to verbalize our visceral processes. In these cases thinking may be said to go on without words, and it is this thinking without words which Dr. Watson believes makes up the "unconscious" of the Freudians.

The position of behaviorism on talking and thinking has aroused perhaps the greatest opposition of any part of the theory. Some of this grows out of the denial of an immaterial part of man (soul, mind, consciousness) and will be considered in a later chapter dealing specifically with these subjects. There are some difficulties, however, which are bound to arise even if man is as much of an automaton as Dr. Watson believes him to be.

Thought, to accept the behaviorist position, is merely sub-vocal talking, and talking has been placed on the same plane as any other muscular habit. Therefore, thinking is reduced to muscular behavior, or the motions of certain particles in space, which are the observable motions of speech, or are reduced to minimal movements under social pressure. A difficulty now arises, which is stated by Dr. James Bissett Pratt as follows: "Every new language one learns gives one a new vocal process for a given meaning. We have as many different bodily behaviors for an identical idea as we have languages. We have, of course, many more. Within a given language any idea may be expressed by, or correlated with, a large number of processes of the language mechanism. Dr. Watson himself tells us that 'one can take his pen in his right hand and write any given word by using thirty or more different finger and palm combinations.' Dr. Lashley, (a colleague of Dr. Watson) gets

a different tracing every time his subject thinks over a given sentence. The musculature of the larynx and throat, Dr. Watson assures us, are so varied that 'we can think the same word by many different muscular combinations.' Fifty or a hundred different linguistic ways of expressing an idea, fifty or a hundred different forms of behavioristic thought, may thus all mean the same thing. But how can the one thought be identical with each of the fifty or one hundred processes? Conversely, the same word, produced by the same vocal or the same manual activity, may mean two or more quite different things-- as for example, well, sound, lark-- any word with a double meaning. It would seem that in these two sets of cases we have what Professor Perry might well call 'independent variability' of thought and of linguistic process.

"The only way out of this difficulty for the behaviorist, so far as I can see, is flatly to deny that we do or can mean the same thing in any two cases where the bodily processes are at all different; and conversely to assert boldly that in cases where the bodily processes are the same we mean the same, regardless of the mental images or the consciousness of meaning which we may find by introspection; that, for example, when I incipiently speak the word boom I mean the same thing whether the linguistic activity be accompanied by a visual image of part of a sailboat or by an auditory image connected with a cannon. I do not think this answer from the behaviorist would be very persuasive to anyone outside the fold. But on the other hand I have no hope that the argument I have suggested will have any effect upon the behaviorist. For, after all, the very question at issue is whether such things as mental images, ideas, meanings, exist at all."1.

Beside the obvious difficulty given above in the words of Dr. Pratt, there are two other questions concerning thought which occur to me. The first

1. Matter and Spirit, p. 123-125.

is, if when I write or speak a word with any two of the many possible muscular combinations, the "thought" is different (as it must be since the motions are different), how is it possible that all these various ways of expressing the same object should be developed? For instance, I may see an object for the first time in my life, and be told its name only once, yet I may express that object by its name in hundreds of different ways. I do not see how behaviorism can account for the possibility of all these arising from one stimulation without an independent thought activity going on somewhere. I do not see how one set of finger or laryngeal motions can be the efficient cause of another and totally different set of such motions. How and when does the conditioning take place, and what causes it to come about?

The second question which arises is in accounting for the difference in the motions between vocal speech and sub-vocal speech or thinking. It is all very well to say that society forces speech to go on sub-vocally, but it is plainly observable that the motions are not and cannot be the same when the process goes on sub-vocally as when it goes on overtly. How then can the thought be the same in the two cases?

There is still another objection to the behaviorist view of thinking which I should perhaps not have noticed if Dr. Watson had not brought it up himself. In the introductory chapter he makes this assertion: "The behaviorist claims that there is a response to every effective stimulus and that the response is immediate. By effective stimulus we mean that it must be strong enough to overcome the normal resistance to the passage of the sensory impulse from sense organs to muscles. Don't get confused at this point by what the psychologist and the psycho-analyst sometimes tell you. If you read their statements, you are likely to believe that the stimulus can be applied today and produce its effect maybe the next day, maybe within the next few

months, or years. The behaviorist doesn't believe in any such mythological conception. It is true that I can give the verbal stimulus to you 'Meet me at the Belmont tomorrow for lunch at one o'clock.' Your immediate response is 'All right, I'll be there.' Now what happens after that? We will not cross this difficult bridge now but may I point out that we have in our verbal habits a mechanism by means of which the stimulus is reapplied from moment to moment until the final reaction occurs, namely going to the Belmont at one o'clock the next day.¹

There are difficulties with this position. First it may be said that Dr. Watson does not, as far as I can detect, make any further attempt to "cross this difficult bridge" in any later chapter, though since he has brought up the subject, such an attempt might reasonably be expected. We must then deal with it on the basis of the paragraph above quoted. What is the mechanism by which the stimulus is reapplied from moment to moment? It must evidently be a form of thought. But thought is the motion of the laryngeal mechanisms. Now suppose the subject speaks or thinks about something else for a minute between the time the first stimulus is applied and one o'clock the next day. He will be using his laryngeal mechanism for something else, and unless we say that the same organs are making two different motions at once, we must say that the stimulus is interrupted. How then can it be started again without outside stimulation? It will not do to say merely "it is preserved," for it is the very means and process of that preservation which is here interrupted. Yet we know that in such a case we may talk and think about many things in such an interval without disastrous effects to our future engagements. Dr. Watson's explanation seems to have as many difficulties as the "subconscious mind" which he is trying to get along without.

1. Behaviorism, p. 14,15.

CHAPTER IX. THE METAPHYSICAL BASIS OF BEHAVIORISM.

At this point in the discussion it is necessary to back up a little and start over. The work of this chapter has been anticipated somewhat in preceding chapters in order to develop the whole behaviorist theory without a break. A number of points have been left unsettled with this comment, that they stand or fall with the premises on which the behaviorist theory is based. In this chapter we shall try to find out what those premises are, after which we shall deal with them one by one.

No distinction has been made heretofore between the two kinds of behaviorism. These are known to philosophical writers as methodological behaviorism and metaphysical behaviorism. Methodological behaviorism is "the method which refuses to make any use of introspection or any reference to consciousness, and which insists that as psychologists we should study only bodily reactions and physiological processes."1. Another definition is that "a study of behavior is our only method of gathering data about the consciousness of other people."2. Metaphysical behaviorism means "that consciousness is behavior, and that in any other sense it simply does not exist."1. "Metaphysical behaviorism is the view which asserts that consciousness is behavior; that our sensations, our thoughts, our feelings, and all that we have called our conscious life are, (in so far as they are at all) simply physiological reactions of our organism, adjustments to environment; or, to put it bluntly, consciousness is the motion of matter in space."2. Dr. Pratt says concerning these two uses of the term behaviorism: "Because of the ambiguity of the term, the critic of behaviorism is constantly in danger of doing injustice to the behav-

1. Matter and Spirit, p. 115.

2. Brightman: Introduction to Philosophy, p. 183, 184.

iorist. The accusation is sometimes made against an individual behaviorist that he is denying the existence of consciousness when as a fact he means by his expressions merely to assert that for purposes of scientific description one should avail oneself only of the facts, objective facts, of observable behavior. On the other hand, the behaviorist himself is quite as likely as his critic to be seduced into a misleading use of this rather slippery term. He has been known, in fact--and not infrequently--to take advantage of the ambiguity so as to swing back and forth between methodology and metaphysics in such a fashion as to baffle pursuit; to appear to be talking metaphysics and when threatened with certain unpleasant metaphysical consequences of his view to cry out indignantly that he meant nothing but methodology, and then when the danger was over to slide back once more into statements which must be taken metaphysically if they are to have any special significance."1.

In order to do justice to Dr. Watson, we must determine from his own writings whether to class him as a methodological behaviorist or a metaphysical behaviorist. There are limitations to the former position, and difficulties with the latter, which of course includes the former also. If Dr. Watson is only a methodological behaviorist, he will not need to face the difficulties of metaphysical behaviorism, but if he goes beyond the field of methodological behaviorism, he cannot be allowed to dodge them.

How then shall we tell the difference between a methodological and a metaphysical behaviorist? We find that every psychologist makes some use of behaviorism as a method, that is, of the observation of responses to given situations. This is the method which is in use in all animal psychology; it is the source of all data on learning curves, of all objective tests both in general intelligence and in subject matter. No sane man can object to the

1. Matter and Spirit, p. 115, 116.

scientific observation of behavior. At the same time many psychologists find abundant use for introspection as a source of data about consciousness. All that a real methodological behaviorist can claim, therefore, is that he is not interested in consciousness. He must not make any statements either explicit or implicit concerning consciousness. He may then offer his explanation as a partial explanation of human psychology, saying that there may or may not be such a thing as consciousness, but it is outside of his field of study. No one can object to such a claim, for indeed, nobody is forced to study consciousness if the subject is distasteful to him. This is the limitation of methodological behaviorism, and must be accepted by anyone who is to remain a methodological behaviorist. This Dr. Watson seems to do, for he says, "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 those things. Now what can we observe? Well, we can observe behavior--what the organism does or says."1. "You will find, then, the behaviorist working like any other scientist. His sole object is to gather facts about behavior--verify his data, subject them both to logic and to mathematics (the tools of every scientist.)"2. From these quotations it would seem that he is a methodological behaviorist, pure and simple, and we see also that he agrees to limit himself to things that can be observed. As long as he does this, behaviorism and introspective psychology can live together in peace and harmony.

But does he so limit himself? A few quotations will prove the contrary. "All schools of psychology except that of behaviorism claim that 'consciousness' is the subject matter of psychology. Behaviorism, on the contrary, holds that the subject matter of human psychology is the behavior or activities

1. Behaviorism, p. 6.

2. Ibid., p. 7.

of the human being. Behaviorism claims that 'consciousness' is neither a definable nor a usable concept."1. In this quotation Dr. Watson claims that his part of the field is the whole field, and casts consciousness boldly out of the science of psychology. In this he has not only placed himself in the class of metaphysical behaviorists, but he has gone beyond the limits which he set for himself in the previously quoted paragraph. "It is a serious misunderstanding of the behaviorist position to say, 'Of course a behaviorist does not deny that mental states exist; he merely prefers to ignore them.' He ignores them in the same sense that chemistry ignores alchemy, and astronomy horoscopy. The behaviorist does not concern himself with them because as the stream of his science broadens and deepens such older concepts are sucked under, never to reappear."2. This quotation is a similar denial of the existence of consciousness. In differentiating his science from physiology, Dr. Watson says: "Behaviorism, on the other hand, while it is intensely interested in all of the functioning of these parts, is intrinsically interested in what the whole animal will do from morning to night and from night to morning."3. He must therefore claim that his method is adequate to give knowledge of the "whole animal" and that therefore there is no such thing as introspective knowledge. These quotations should be sufficient to place Dr. Watson definitely in the class of metaphysical behaviorists. Indeed, he makes no attempt to escape most of the consequences of this position, but it seems best to clear the field before considering them.

Dr. Watson is a metaphysical behaviorist; he must therefore not only defend his theory against objections based on his own premises, but he must

1. Behaviorism, p. 1.

2. Watson: Reply to his critics in the Symposium at Oxford in 1920, quoted by Pratt: Matter and Spirit, from British Journal of Psychology, 1920.

3. Behaviorism, p. 11.

also establish his premises , either by his own arguments or by quoting suitable authority; or else he must admit that they are not established and that his theory is dependent for its validity on some future justification of the premises on which it is based. When Dr. Watson denied the validity of introspection and the existence of consciousness, he is taking a metaphysical position just as truly as any introspectionist or philosopher ever did.

What then are the promises and metaphysical foundations of Dr. Watson's behaviorism? The first is that of philosophical materialistic monism, or cosmical mechanism. Dr. Watson immediately links up all psychology involving consciousness with the idea of the soul or supernatural, and claims that they go together.¹ The same ideas are the source of the philosophical platform called dualism, he says, and "all psychology except behaviorism is dualistic."² Dr. Watson takes the opposite position from all these, which is materialistic monism, and involves atheism or agnosticism, and mechanism. While the establishment of these is in no sense the work of psychology, still any psychology which is based upon them can be no stronger than its foundation. The second premise of behaviorism is psychological mechanism, the explanation of man by means of the principles of physical science only, that is, by the laws of matter and motion.³ Says Dr. Watson, "Because behavioristic psychology deals with tangibles, the reader sees no break between his physical, chemical, and biological world and his newly-faced behavioristic world."⁴ Indeed, this is merely the psychological aspect of the above named first premise. A corollary of psychological mechanism is determinism, the denial of freedom of the will or choice. Dr. Watson makes no attempt to dodge this part of the doc-

1. Behaviorism, p. 1.

2. Ibid., p. 2.

3. Brightman, Introduction to Philosophy, p. 251.

4. Behaviorism, Preface.

trine, and frankly admits that he is a determinist.¹ Dr. Watson may be satisfied merely to assume these premises of cosmical and psychological mechanism, with its kindred determinism, without any attempt to justify them. If that meets the requirements of his own mind, I cannot offer any objection to his acceptance of them. But the blind acceptance of these premises is far from satisfactory to me, and if Dr. Watson is to give me the same liberty which I give him, he cannot object if I examine the evidence for and against these positions before I accept the psychology which he has built upon them.

[Cushman: History of Philosophy. Vol. II, p. 143: "If an epoch refuses to discuss metaphysical questions, it is because it assumes some metaphysics as true."]

1. Behaviorism, p. 144.

CHAPTER X. MATERIALISM EXAMINED.

The first premise noted in the last chapter as one upon which behaviorism is built is philosophic materialism, or cosmic mechanism. Such a materialism is "any theory which considers the facts of the universe to be sufficiently explained by the existence and nature of matter."¹ Dr. Watson's theory of the origin of the concept of the supernatural was given earlier in this paper;² from this it is evident that he finds no need in his scheme for such a concept, and is therefore a philosophical materialist. Since the acceptance of his theory involves the acceptance also of his philosophical materialism, the following objections are valid against behaviorism and any other theory built upon a materialistic monism.

The truth of such a theory is not demonstrated and cannot be demonstrated. It is just as much an article of faith and hope on the part of Dr. Watson as the belief in an eternal, spiritual, personal God is on my part. It is true that some realms seem to be explained by matter and the laws of physics, but materialism as faith about the universe cannot lay claim to the certainty of materialism as verified law about some system in a part of the universe.

The second grave objection to cosmic mechanism is that there is no explanation or sufficient cause for the existence of the universe. As a good physical scientist, Dr. Watson doubtless believes that every phenomenon and event must have an efficient and sufficient cause. What then is the cause of this universe and all it contains? How did it come into being? It is evident that it cannot have existed from eternity in its present state, for all sci-

1. Webster's New International Dictionary.

2. Supra, p. 2.

entific theories, including the evolutionary hypotheses, which Dr. Watson accepts, give man, animals, plants, and even the world itself, a temporal origin. There was a beginning back somewhere. What caused it? Dr. Watson is left to choose between two equally absurd and impossible alternatives, that the universe came into its present state without anything causing it to do so, or that there has been an eternal series of cosmic evolutions. The former is unthinkable and the latter is merely a begging of the question, as there is still no cause for the existence of the universe. Yet the acceptance of this theory in some form is necessary, if one is to be a consistent behaviorist. I am justified in using caution about accepting such a theory; ^{until} ~~one~~ one can be found which is psychologically adequate and which does not destroy my philosophical foundations, the ^{opposite} ~~one~~ has strong presumptive evidence in its favor.

It may also be objected against materialism that without a mind back of the universe we have no explanation for its present orderly progression. Dr. Watson accepts the laws of physical science and uses them, but what possible explanation can such laws have outside of a thinking Mind to plan them? From whence do we have the exact mathematics of the stars, the definite mathematical relations of the elements and their combinations in chemistry, the regular geometrical figures of the crystals of the rocks, or the intricate symmetries of the snowflakes? How is it that scientists are able to make such predictions as they do, and find that the forces of nature act in accordance with the laws which have been discovered? A fortuitous concourse of atoms is insufficient to explain either the existence of the operation of any of the intelligent laws of nature. The underlying philosophy of behaviorism must say that the unintelligent has produced the intelligent, that the purposeless has brought forth the purposive, that a blind force has been working in each of the various parts of nature without any reference to any of the others, and yet has succeeded in making from the world of nature a harmonious whole. True, this is not psychol-

ogy, but other things being equal, in choosing between psychological theories it will be more sensible for me to choose one which does not give me a distorted view of the universe. Were the sole object of my life simply the attainment of a rational psychological position, I might be satisfied to stop thinking about these other things, but such a short range view is not intellectually satisfying to me. If I must have a mental conflict, I should prefer to take it in the realm of psychology, where admittedly all is in the theoretical stage, rather than to accept an untried psychological theory which involves philosophical objections as grave as any Dr. Watson has brought against the introspective psychologies.

There are other grave philosophical objections to materialism which appear as soon as man is considered. Whence came the physical organism of man? (since Dr. Watson is not convinced that there is anything else to him). Man represents a complication of structure that has never been equalled in the mechanical world--as Dr. Watson himself says, "The human body . . . is a very commonsense kind of organic machine . . . something many millions of times more complicated than anything man has yet succeeded in making."¹ To behaviorism, any invention or machine man has made is simply a lucky step in a trial and error process, but will behaviorism say that man himself is also just a lucky trial? To deny this is to bring in a planning and purposive mind back of man's whole existence, from which step it is logical to say that man has the same kind of mind; to accept such a position as behaviorism builds upon requires greater faith than I can muster.

We find in man a combination of many delicate parts. He has seeing organs of tremendous complexity, which would plainly be useless for anything else. He has hearing organs of similar complexity which would be useless in

1. Behaviorism, p. 42.

themselves aside from the man who possesses them. He has the organs of the other senses, each of marvelous design, fit for its own work, unfit for any other. Every system of the body has its own function, but so interdependent are these bodily systems that scarcely a one of them can be subtracted from the organism without causing instant death. In their totality, they are explainable; separately, they constitute mystery only. In no one of them is the idea of man comprehended. How then should the whole being man have come into being, requiring a multitude of heterogeneous parts united into a unitary whole? Nothing but the blind action of physical forces, themselves unexplained as to origin, is materialism able to offer, and yet materialism must be accepted if behaviorism is true. Behaviorism is simple, in many ways; its explanations are easy to understand; it avoids many of the embarrassing problems which have occupied the minds of men for centuries.¹ It saves one from the perplexities of many knotty problems, but the price of all this simplicity is the acceptance of a fragmentary theory which cannot yield a sound philosophy, which considers only certain parts of human experience without reference to other parts of his life, which demands one to simply stop thinking along these troublesome lines, and to give up any attempt at a unified view of life. Such a price is too great; simplicity is good, but any simplicity which blinds one to the complexity of real life is not a boon but a handicap. Behaviorism, then, is objectionable because of its materialistic foundation.

1. Pratt: Matter and Spirit, p. 113-116.

CHAPTER XI. CAN PSYCHOLOGY BE MADE A PHYSICAL SCIENCE?

In the preceding chapter various objections of a philosophical nature were considered, the discussion being limited to those which might be brought against any materialistic theory. The objections advanced in this chapter will be more specifically in the field of psychology, and will deal with the positions that man is a machine, and that psychology can be formulated as a physical science. That the former is the position of behaviorism has been abundantly proved by quotations in the last two chapters. The claim that psychology can be stated as a physical science appears (1) in the statement of behavioristic problems in the form of a reaction from stimulus to response, much as a chemical reaction might be stated; (2) in the steadfast denial of any other force (mental or spiritual) than those of physics and chemistry; and (3) in the following specific statements quoted from Dr. Watson.

"The reader sees no break between his physical, chemical, and biological world, and his newly-faced behavioristic world."1. "If your skill in physics and chemistry had gone far enough and you were called upon to build a human body what different kinds of cells would you use and into what kinds of patterns would you weave these cells?"2. "What happens when the appropriate stimuli strikes or impinges upon a given sense organ? Some kind of physical and chemical change takes place in the epithelial cell. Let us look upon these cells constituting the sense organs then as physico-chemical workshops. There are lots of simple things in your own experience that may help to make this clear: When light strikes a photographic plate it (the silver salts) turns black. When you take the damper off the strings of your piano and sing middle

1. Behaviorism, Preface.

2. Ibid., p. 44.

C the middle C string begins to "speak" without your having to touch the keyboard (so-called sympathetic vibration). This physico-chemical process set going in the sense organ by the stimulus, starts another process going."1. What is it that passes over the neural pathways? A neural impulse that starts in the chemical workshop of the sense organ. By nature it is something like a series of local electric currents (one would scientifically describe it as a rapid passage of a wave of chemical decomposition essentially electrical in nature). We know that it travels at a rate of about 125 metres per second. We know further that if the nerve elements are deprived of oxygen they will not conduct the impulse-- we know that when the nervous elements are actively at work they give off carbon dioxide more rapidly than when at rest, etc. While we do not know everything about the nature of the nervous impulse we know enough to be sure that it is a normal physico-chemical process that is rapidly losing its mysteriousness by being brought under laboratory control."2.

We have quoted at length; we must ask the reader to be patient and to notice the number of stimuli (to speak behavioristically) that Dr. Watson is applying to his hearers in order to convince them that man is just a complicated machine entirely explainable upon the principles of physics and chemistry. From the article in the Encyclopedia Britannica written by Dr. Watson we quote the following also: "Behaviorism can be observed like the phenomena of all other natural sciences, e.g., chemistry, physics, physiology, or biology. The same general types of methods used in the natural sciences can be used in behavioristic psychology. . . . In every human reaction there is a behaviorist's problem, a neuro-physiological problem, and a physico-chemical problem."3. This last

1. Behaviorism, p. 53, 54.

2. Ibid., p. 72.

3. Encyclopedia Britannica, 13 Ed., 1926, item "Behaviorism."

he defines as "the determination of the physical and chemical nature of the neural impulses, amount of work done in the reaction, and the like."

In the above paragraphs behaviorism's claim to be considered as a physical science has been stated. Dr. Watson could hardly be expected to establish this premise by any lengthy reasoning in a volume as brief as the one under consideration, and yet if he has real scientific authority for such a claim, he might have indicated it. As it is, these claims are made almost without support, either by authorities quoted or by experiments bearing on the subject (Dr. Watson's experiments assume the truth of this position, and attempt to prove additional behaviorist doctrine upon it). Since it is to Dr. Watson's interest to establish these positions, and he has failed to do so, the natural inference is that proof is lacking. And we find that other writers declare the scientific proof to be against rather than for his position, as a quotation will show:

"We must not conclude that all science is antagonistic to the purposive interpretation of human conduct. It is not our ablest physiologists who are putting forth the mechanistic interpretations of conduct, but certain physiological psychologists, men who are primarily interested in physiology and only indirectly concerned with psychology. One of the leading physiologists of our country was asked concerning the 'bond' which connects the incoming sensory nerve currents with the outgoing motor nerve currents, and he replied, 'You will have to ask the psychologists about that; we know little about it as yet, but some of the psychologists seem to know all about it.' It is not from our greatest biologists that the mechanistic interpretation of conduct is receiving support, but from certain biological psychologists, men who are concerned first of all with a study of psychology and only indirectly with biology. It is well to remember that the psychologists who are supporting the mechanistic interpreta-

tion of conduct are not specialists in physiology and biology. In these fields they do not speak with authority, and yet they draw from these fields conclusions which specialists in these fields do not consider well established. This type of psychology . . is therefore not fully sustained in those fields from which it pretends to draw the data on which its claims to authority chiefly rest."1.

Along with the scarcity of authority for such a position as that which behaviorism takes, we may name some men who have begun with the same assumptions, and who through study and investigation have become convinced of the untruth of mechanistic theories. William McDougall gives his own testimony, "Having begun in this way myself, and having slowly and painfully extricated myself and found what seems to me a much more profitable attitude toward psychological problems, I hold that the path of the student may be made smoother by setting before him at the outset the alternative routes, . . (1) that of mechanistic science, which interprets all its processes as mechanical sequences of cause and effect, and (2) that of the sciences of mind, which have purposive striving as a fundamental category, which regard the process of purposive striving as radically different from mechanical sequence."2. McDougall says further, "Hugo Münsterberg began as a forceful, brilliant, and dogmatic exponent of the mechanical psychology. But more and more, as he became increasingly interested in the practical applications of psychology, he recognized the claims of the purposive psychology. And, in his later works, he may almost be said to appear as a self-made convert to this way of thinking."3.

Perhaps the chief reason that Dr. Watson does not back up more effectively his claims to a physical science basis for his psychology, is that

1. Squires, *The Pedagogy of Jesus in the Twilight of Today*, p. 185, 186.
2. *Outline of Psychology*, Preface, p. vii.
3. *Ibid.*, p. viii.

there are many things which still need to be known before such a position can be established. I quote again from McDougall: "Our knowledge of the functions of the nervous system is very rudimentary, and as regards many of those of greatest interest to psychology we are still entirely in the dark."¹ "As our knowledge of living things grows, the problem of life and its evolution appears more, rather than less, resistant to mechanical principles. The same is true within the narrower field of general physiology. The researches of the last one hundred years have brought us a vast mass of knowledge about the physical and chemical processes that go on within the body; but each new step reveals more problems of regulation and adaptation than it solves. We are told by some of the more philosophically minded leaders in physiological research, e.g., Dr. J. S. Haldane, that we seem to be moving ever further from the goal of the mechanistic program, rather than approaching it. Again, within the still more special field of the physiology of the nervous system, our knowledge is astonishingly defective in view of the confidence with which it is put forward as a substitute for psychology. We do not know the nature of the change which propagates itself along the nerve fibers, as the so-called nervous impulse; and opinion is acutely divided as to whether this is of one kind only, or of two, or of many kinds. We know nothing whatever about the nature of the inhibitory process which is involved in all coordination of nervous activity. We know next to nothing of the peculiar constitution and processes of the all important synapses."² It can be seen from the above quotation that other men are not as sure of themselves as Dr. Watson in these fields which form the underlying basis of Dr. Watson's psychology, but in which he can hardly claim to be an authority.

There remains one other consideration, which, I believe, will effect-

1. Outline of Psychology, Preface, p. xi.

2. Ibid., p. 31.

ively dispose of the claim of behaviorism to be considered a physical science. This arises from a consideration of what a physical science really is. A physical science is one which deals with non-living matter, as physics or chemistry. If a physical science deals with organic matter, it is after the life has been destroyed from it, which leaves the definition just the same. A physicist who speaks with authority, Dr. Louis Trenchard More of Cincinnati University, says, "The physicist rigorously excludes from his field all problems which involve life. For example, if he investigates the motion of a horse drawing a wagon he does so by assuming that the earth pushes the horse forward; in other words, the horse is moved by an external mechanical force. He assumes that a horse cannot by his will bend his legs and push against the earth, and he refuses to consider whether it is alive or whether it is a hobby-horse pushed by a child or by a clock mechanism. If he finds such a mechanism inside the horse he can investigate that mechanism, but he has found no mechanical mechanism inside the living organism which he can describe as physical. The physicist has found no difference between the chemical constitution of matter when it is living and when it is dead; he has found no relation between mechanical energy and what we call life; he has found no way of measuring thought or cell activity; for these reasons he excludes all life, and works with a lifeless world."¹.

Doctor More gives also an explanation which may account for the rise of such claims as Dr. Watson's, and which likewise shows some of the limitations of behaviorism. "Now the biologists have invaded the world of the physicist. They have invented a family tree, connecting themselves genealogically with the physicist. They call themselves biophysicists and biochemists and claim a blood relationship. But they are not so related; when they are studying living phenomena, they are biologists; and when they are studying the same

1. Dogma of Evolution, p. 248.

bodies from which life has been killed they may be physicists; but they cannot be both. The burden they are trying to put on physics and chemistry is too heavy to be borne. The physicists use the word energy and they mean just one thing, the combination of matter and motion, and they measure it in foot-pounds; the biologist has violently, and against their protest, seized on the word, energy, and it sounds the same in our ears, but it is not matter in motion, and it is not measured in foot-pounds, or in any other physical units; it is not conservative and it cannot be predicted. No biophysicist can examine a horse and tell us when it will move, how fast it will move, or where it will move; but a physicist can answer these questions about a hobby-horse containing a clockwork mechanism. And to make matters worse, the vicious use of the word, energy, by the biologists has encouraged the psychologists to go a step further and to use energy as an explanation of thought and emotion; and in this connection the word loses every particle of its original significance. I have never met the physicist who would admit the least connection between "physical" and "psychological" energy."1.

Dr. Watson, it seems to me, has committed a gross error of the same sort as the one charged to the biophysicists and biochemists in the above paragraph; he uses the terms of physical science, but their meaning is not the same as when a physical scientist uses them. His "scientific" explanation of neural impulse as "a wave of chemical decomposition essentially electrical in nature" may mean something to him, but it means nothing to a physicist or a chemist. It is certainly neither physics nor chemistry in any sense of the term. It is a great mistake to seize upon certain attendant physical effects of nerve action, such as changes in temperature, electrical charges, or

1. Dogma of Evolution, p. 248, 249.

mechanical and chemical properties of the nerve tissues, and claim that these effects are nerve action. Behaviorism, since it deals with living beings, should forever lay aside its claim to be considered a physical science, and will find itself in a much better scientific position if it will accept, in word and deed, Dr. Haldane's theses that "our working conceptions (in science) of what we regard as physical, biological, and psychological phenomena are not only different, but irreducible to one another."¹.

1. Quoted in Dogma of Evolution, p. 294.

CHAPTER XII. CONDITIONED REFLEX OR PURPOSIVE ACTION?

The importance of the conditioned reflex in behaviorism has already been stressed. It is the unit from which the whole behaviorist psychology is builded. In developing this theory the behaviorist uses a method analogous to that by which he tries to make his science appear as a physical science; that is, he begins with the most simple and mechanical processes which are properly called reflexes, and proceeds by gradual steps to the most complicated processes which man carries on. In all this development more stress is laid on the similarities of the processes rather than on the differences, and the natural conclusion which is reached is that a purely mechanical reflex is sufficient to account for all human behavior, even in its most complicated forms. It is our belief that this method is fallacious and the result which it gives is untrue. There are certain marks of a reflex action which show it to be nothing more than a reflex action, and certain other marks of purposive behavior which must necessarily place it on a different and higher plane.

By purposive behavior is meant that which is made "for the sake of attaining its natural end, which end is more or less clearly anticipated or foreseen."¹ We can be aware of such an end in ourselves by means of consciousness and introspection, but as no behaviorist would be willing to admit that we have such things, we may reach the same conclusion without their use, by the good behavioristic method of observation. Now behaviorism cannot grant the existence of any such thing as purpose or foresight without abandoning its whole hypothesis, for purpose requires a thinker and necessarily involves mental activity of some sort. The only way in which behaviorism could justify a purely mechanical explanation of human behavior would be to show instances in

1. McDougall: Outline of Psychology, p. 47.

inanimate nature where similar purposive action takes place. If the behaviorist should point to a complicated machine as fulfilling this requirement, let it be noted that the purposiveness of the machine is not its own but that of the man who invents it. Let the behaviorist find a purposive machine which no living being has intervened to make, and he will have gone far to justify his theory.¹

Professor McDougall gives a comparison of reflex action and purposive behavior from which the main points in this discussion will be taken.² From these it will be seen that the conditioned reflex, properly so called, is utterly inadequate as an explanation of behavior, and that many of the responses to certain situations which Dr. Watson has been calling conditioned reflexes are not reflexes at all, and to the extent that he makes use of these, Dr. Watson deserts his own platform.

The first point of difference between purposive behavior and reflex action is that the former has a certain spontaneity of movement which is lacking in the latter; behaviorism has avoided some of the difficulties of this difference by saying that where the behavior appears to be spontaneous and there is no assignable stimulus, some intra-organic stimulus has caused the movement, as in the case of the baby learning to talk. This is an unproven assumption on the part of the behaviorist; that it could ever be established on a reflex basis is extremely doubtful, but if it should ever be established, he would be in line with his own theory this far at least.

Purposive behavior exhibits a persistence of activity independent of the continuance of the stimulus which may have initiated the activity. This may be demonstrated even in lower animals, as in the case of the dog who is

1. Outline of Psychology, p. 50.

2. Ibid., p. 43-46; 53-56.

thrown into a prolonged outburst of excitement and activity by a single word from his master. Reflex action lacks this persistence; it continues only while the stimulus is being applied. The chain reflex is no exception to this rule, for each motion of a response supplies the stimulus for the next motion, which takes place immediately. Dr. Watson is inclined to straddle the fence on this point; he says, "Usually the response that the organism makes to any stimulus brings about an adjustment, though not always. By an adjustment we mean merely that the organism by moving so alters its physiological state that the stimulus no longer arouses reaction."¹ This can only be taken to mean that "usually" he is talking about a reflex action, "though not always." And on just the next page he gives the example referred to, in which one who receives a verbal stimulus today responds tomorrow at one o'clock by going to the appointed meeting place. Even this early in his volume does Dr. Watson prepare to desert his own platform of purely reflex action.

Purposive behavior exhibits a variation of direction in persistent movements; these movements are not predictable, as the stereotyped movements of reflex or mechanical action are. This has been brought out in a preceding discussion in Dr. More's treatment of the horse's behavior compared to the mechanical action of a clockwork horse. For an example of this mark of purposive behavior, I do not have to go outside of Dr. Watson's volume: "Individual X is lying on the bed trying to get to sleep. The arc light on the street shines through a crack in the shade. He wriggles around a bit. It still strikes the eye. He wriggles about some more. Again it strikes the eye. He puts his head under the covers. There the stuffiness and the heat soon make him put his head out. Again the insistent light strikes him. Then he gets up and does the one sensible thing--he pins a piece of heavy paper over the break

1. Behaviorism, p. 14.

in the shade."1. Only on the basis of purpose can one account for three different responses appearing in answer to the same stimulus from the light. In this and every other such example which Dr. Watson uses, he departs from the premises on which his own theory is built up.

Then also, purposive behavior differs from reflex action in that it comes to an end when it has brought about a particular kind of change in the situation. This is more than a mere cessation of the stimulus, as in the case of the reflex; it frequently involves some positive novelty in the total situation. For example, if a dog lying in the sun should get up and wander about, we might say that the sun's rays had stimulated him to reflex walking, but if we should see him walk to a patch of shade and there lie down again to sleep, we should confidently say that his action was that of behavior with a goal in sight. Such behavior is unexplainable on the premise of mechanism which Dr. Watson has given as the foundation of his work.

Purposive behavior frequently involves some degree of preparation for the new situation which that behavior will bring about in the future, which preparation is totally lacking in mere reflex action. For instance, a dog shut in a room, upon hearing his master's voice, may rush to the window or door, or keep scratching the door or looking at it, in evident anticipation of the master's opening the door.

A sixth mark of purposive behavior is that of improvement in the process with time and repetition. This is not always observable, and where the preceding five marks are present, purposive behavior with some degree of mental or instinctive activity is definitely established thereby. However, this mark is a strong evidence where it can be observed. A mechanist might object that some machines show this mark, as an automobile which works better after it has

been run a while and the parts become adjusted to one another, but if the behaviorist would use this we must remind him that no amount of scratching or irritation on the body of a brainless dog will improve the accuracy of the scratching reflex evoked thereby. Dr. Watson makes considerable use of this mark of purposive behavior in his explanation of manual habits, but accounts for the improvement on a recency and frequency basis: the right movements in a series of trials come only once in each trial, and the right movements are always the final ones. The tendency will be for the right movements to come earlier and earlier until finally all unnecessary movements have been eliminated. It may be questioned ^ewhether his frequency and recency basis will give him an adequate explanation in line with his own mechanistic premises, and even if it should, his series of movements of which one only is the right one is still unaccounted for except as purposive behavior, under the third mark noted on pages 66 and 67 above.

There is a seventh mark of purposive behavior which finds a prominent place in Dr. Watson's volume, and which really means a total abandonment of his own mechanical principles. This difference is that in reflex actions the responses are local reactions, while in purposive behavior the whole organism is involved. Many minor reflexes may be going on at one time, if they do not interfere with one another in the parts of the body involved, but if such a situation comes up as to call forth purposive action, the ordinary stimuli of simple reactions which are reflexes become ineffective, and the whole organism is concentrated upon the new situation. Dr. Watson so frequently stresses the fact that it is the whole organism which reacts, that it is unnecessary for me to give quotations from his work to prove his position. This seems to me to be another instance of proceeding from a simple mechanical fact to a complex reaction which cannot be considered as mechanical, though without making any

difference in the explanation of the process.

From the considerations of the preceding paragraphs, it seems plain that behavior as commonly observed is purposive, and more than that, Dr. Watson's behaviorism is purposive in all but the most elementary of its examples. We find that its author deserts a premise as soon as he gets it established, by advancing to a complicated field where its truth does not hold good. Why should he do this so persistently, if there is any possibility of building up an account of human actions on the basis of the premises he has laid down? In the absence of any rational explanation, the reasonable and natural conclusion is that mechanism cannot yield such an account of observed behavior. And indeed, when we examine mechanism a little, such is seen to be the case.

Any system of thought that man has ever advanced has had a purpose; on the principles of mechanism honestly accepted and rigidly adhered to, no system of thought could ever have arisen having any purpose at all: a system of thought might conceivably have arisen by the mere fortuitous concourse of material elements, if thought be conceded to be material, but such a system could have no purpose and must be regarded as a result, not an end. Mechanism as a system is no exception to this rule, and behaviorism is likewise included. Therefore, if the premise of Dr. Watson is correct, he cannot help having been a behaviorist, any more than a man of any other belief can help having the particular belief to which he holds; Dr. Watson is foolish to condemn those who hold to opposing systems if they can't help it, and beside that, one set of atomic motions is as "true" as any other set. But most of all, there can be no purpose at all to Dr. Watson's writings or his system of psychology. If he should say that his purpose is to attain to a true or rational or scientific explanation of human behavior, he talks foolishly, for behaviorism cannot be consistent with purposive action, and to carry out a purpose is to react to a

non-existent stimulus. Dr. Watson must take the choice between this limitation and a gross inconsistency. Which does he choose? It is the latter, for we find that after "dropping from his vocabulary all subjective terms" including purpose,¹ he states in the same chapter that the goal of behaviorism is to be able to predict the response to a given stimulus and to tell what stimulus it was that caused a given reaction.² He also states that the behaviorist wants to control man's reactions as physical scientists want to control the other natural phenomena of their sciences.³ And after recounting the way in which he was able to change the whole course of one man's day by applying the right stimuli (purposive behavior on the part of Dr. Watson) he asks, "Would you think it strange if I said that the behaviorist by training him both in principles and in particulars, could almost remake this very intelligent individual in a few weeks' time?"⁴ This, too, demonstrates Dr. Watson's practical realization of the value of purpose, though it is all out of harmony with the principles of his psychology. He commits the same inconsistency every time he speaks of arranging stimuli for the affecting of the conduct of anyone else, as when he claims that he can take any healthy, well formed infant and his own specific world to bring him up in, and will guarantee to train him to become any type of specialist he might select;⁵ or when he advocates the turning over of criminals to the behaviorists for training.⁶ It is impossible to reconcile these declarations of purposive action by Dr. Watson with the premises on which his psychology is constructed, or with the conclusions he draws from these premises in regard to thought. For behaviorism there is no such thing

1. Behaviorism, p. 6.

2. Ibid., p. 16.

3. Ibid., p. 11.

4. Ibid., p. 40.

5. Ibid., p. 82.

6. Ibid., p. 146, 147.

as thought per se-- it is merely sub-vocal talking, a response to stimuli, and yet we find that the behaviorist thinks quite as much as any introspectionist (though perhaps not as accurately as some have). The thinking behaviorist might well be added to the collection of psychological monstrosities which Dr. Watson has been collecting so industriously from among his predecessors.

With one more point the discussion of purpose may be terminated. It may be made in the form of a question: If Dr. Watson allows himself the freedom of purposive action, can he logically deny the same freedom to others? Of course not. Then what becomes of the strict determinism which he so openly avows in regard to moral conduct? This, of all conclusions he might draw, depends most completely upon the premises of an absolute materialistic mechanism. If man is a machine and nothing else, of course his conduct is determined for him, and it is a gross error either to ascribe to him moral responsibility for his conduct, or to punish him when he does wrong. But with the definite overthrow of these philosophical positions, which we think has been abundantly brought out in the preceding chapters, mechanism is left without a foundation, and with the use of purposive action by behaviorists themselves, surely they will grant that others may use the same kind of purposive action, and that it may take the form of a purpose to conform to moral standards or to disregard them.

CHAPTER XIII. CAN WE DISPENSE WITH INTROSPECTION?

The simplicity of behaviorism has always been one of its most obvious and most advertised advantages, and behaviorists frequently enlarge upon the incomprehensibility of the earlier psychological writings. This simplicity has been attained by the elimination of consciousness as a part of the subject matter of psychology, and by the ruling out of introspection as a psychological method in favor of observation only. The reason that this is done, according to Dr. Watson, is that introspection can yield only the knowledge of the most elementary types of response, that there is no way of making introspection scientific.¹ Dr. Watson admits that consciousness and introspection go together: "This thing we call consciousness can be analyzed only by introspection--a looking in on what goes on inside of us."² From this admission it is a logical conclusion that if consciousness can be demonstrated to exist, introspection is absolutely necessary as a psychological method for the attainment of Dr. Watson's goal, the understanding of the whole field of human adjustments.

The most fundamental form of consciousness is self-consciousness, the ability to say and mean "I am." When I say "I am" two very definite ideas are expressed, (1) that someone (myself) exists, and (2) that that someone knows that he does exist. If you believe that there is such a thing as consciousness, the above formulation is sufficient proof to you that consciousness exists in the speaker. You can understand his declaration of self-consciousness, not because you can have any direct knowledge of his self-consciousness, but because it is the same in its principle as the self-consciousness which you find in yourself, and of which you do have direct knowledge. Now here is the point of difficulty, in attempting to prove the existence of con-

1. Behaviorism, p. 10.

2. Ibid., p. 5.

sciousness to a behaviorist: your speech is, to him, not a declaration of an observation which you are making, but is merely a response, a certain type of behavior. He cannot admit that you are telling him about a real experience in your own mind. You may be satisfied that he must experience within himself the same self-consciousness which you experience because universal testimony proves it to be a common possession of all mankind, but if he is consistent enough to regard his own self-consciousness as behavior just as he does that of other people, there is nothing that can be done to dislodge him from the position. He can have direct knowledge of none but himself; he bars all indirect knowledge by saying it is just behavior; the only thing left for him to do is to make his own self-consciousness behavior also. The trouble is that here is where the behaviorist falls down, in deed at least if not in word. He asserts that he observes, and he commands other people to observe those around them. This process of observation demands an observer, and if the word observer is to have any meaning at all, it denotes a person who is aware of what goes on about him, who is able to differentiate what is about him from himself, and which is therefore self-conscious. It will not avail our behaviorist friends to say that their own self-consciousness is behavior, as long as they persist in observing: their actions belie their words. But without observation, their psychology has no method left at all, and could never accomplish anything.

The question, then, of whether there is any such thing as consciousness, is one which must be settled by each man for himself. As far as direct knowledge goes, one may easily identify the consciousness of anyone else with behavior; his direct knowledge must be that of himself alone. However, if it were left to a majority vote, for each to answer for himself whether he finds within his own experience such things as conscious pains and pleasures, pur-

poses, thoughts-- conscious ones, not to be identified with either physiological processes or with subvocal laryngeal vibrations, there is no doubt in my mind that most of the votes would be in favor of a real consciousness, as opposed to behaviorism's view. A denial of consciousness was never heard of until behaviorism's advent, and is never heard of now from a person uninstructed in the faith. Moreover, the vast majority of psychologists have steadfastly agreed that there is such a thing as consciousness. "At a Symposium on this subject held at Oxford in 1920 all the English psychologists who participated, without a single exception, put themselves on record as unalterably opposed to any attempt to identify consciousness with behavior."1. Most of us are firmly convinced that there is such a thing as our conscious life, that we feel in certain ways about it, and that this consciousness and feeling cannot be identified with any subtle kind of muscular motion.

We shall from this point on assume that there is such a thing as consciousness, for indeed, we are personally convinced of its existence, and while we have no expectation that our "behavior" will change the opinion of a good behaviorist, neither do we propose to react to his stimuli by casting overboard that upon which all our knowledge depends.

Now assuming the existence of consciousness, introspection is a necessary method, by Dr. Watson's own admission quoted in this chapter. Dr. Watson's method of finding the facts is not complete, and his objections to introspection are insufficient to throw it out, if, as we find, there is a large part of psychology in which it is the only method available. To discard introspection because there has been some unscientific introspecting done is as foolish as to discard observation because it is sometimes done unscientifically. We must guard against unscientific procedure as much as

1. Pratt: Matter and Spirit, p. 123.

possible, and strive to use the method scientifically, but should not throw away a tool because some people do not know how to use it.

How can introspection be made scientifically correct? By recognizing the limitations of the method, for one thing. We find that many of the experiences which we desire to study introspectively cannot be induced at will, except possibly in very slight degrees. Again, when such experiences are occurring, the subject is often attending to the events of the world around him, and does not think about introspecting to observe his own experiences until they are past. Also the very act of introspection must modify the experience observed in some slight way, so that it is somewhat different than it would have been if not introspectively observed. A further difficulty which may be noticed is that since we are not called upon to verbalize our own experiences for ourselves, except when we attempt to describe them to others, we often find language inadequate to describe to others an experience which may be clear to ourselves.

In spite of these limitations, which it is better to face frankly than to minimize, introspection has yielded some noteworthy results in the psychological field. When it is conducted with a due regard to the limitations previously noticed, when the introspections, reflections, and descriptions of many people are compared, and when the conditions under which the described events take place are controlled or otherwise noted, there is no reason why this method of introspection, working hand in hand with the method of observation, should not continue to yield even greater results than heretofore.¹

1. McDougall: Outline of Psychology, p. 3-5.

CHAPTER XIV. BEHAVIORISM AND EDUCATION.

In the preceding discussions the argument has been largely concerned with the theoretical aspects of the question under consideration, but to end the discussion without a brief reference to the practical questions involved would be to leave the subject unfinished. Behaviorism is a theory; it is open to so many objections that I am firmly convinced that it should never have come into being in its present form even as a theory, and that it will never progress beyond the theoretical stage. The fact remains, however, that its practical consequences do not depend on its objective truth, but on its influence and the extent to which it is accepted. For this reason it will not do to sit back and say, "If it is wrong it will fail, so why worry?" Error, as well as truth, can have a tremendous influence, and the most superficial survey of present day education, both secular and religious, shows that behaviorism is indeed exercising an influence entirely out of proportion to its validity.

"Behaviorism", says Dr. Pratt, "originated as a method in animal psychology."¹ The truth of this assertion seems to be borne out by the large space given to animal experiments in Dr. Watson's earlier volumes. Dr. Pratt goes on to say, "Out of patience with the futile attempts to tell what the animal was thinking about or how it was feeling when put through various experiments, the investigators in this field at length said, Why bother our heads as to this unanswerable question? The important thing for science is to know how the animal reacts in the presence of various stimuli. Let us, therefore, frankly make the object of our study not the animal's hypothetical

1. Matter and Spirit, p. 112.

consciousness but its actual behavior. So successful was this reorganization of method in getting results that were truly objective, verifiable, and scientific, that certain of the bolder spirits proposed it should be applied also to human psychology; and applied it has been."1.

It is easy to see why this should be the successful method in animal psychology, for in the very nature of the case, animal consciousness, if it exists, can never be verified until some animal is able to tell us about it, which no one expects to see in the near future. But men and animals are not the same thing, as far as consciousness goes, for men are able to recognize consciousness in themselves and to tell others about it. But if observation be the sole method to be used in human psychology, as behaviorism would make it, man and beast are placed in the same class, without any difference at all, except that man is more complex and able to react in more complex situations.

Of course, this is the opinion of the behaviorist and of many other psychologists. But is it a proven position, and if it is not proven, is it right to organize education upon it as though it were proven? These are two questions which have tremendous practical significance.

The continuity of kind between man and beast, as the behaviorist understands it, rests upon the positions of materialism and mechanism which we have already weighed and found to be wanting. It rests further upon his denial of introspection and his refusal to make use of the concept and facts of consciousness. As one writer has expressed it: "Beginning with the lower animals, this theory has been extended to include the life and conduct of man, but it maintains that position only by a narrowing of the field of psychological investigation which largely eliminates the distinguishing differences between man and beast. . . . When the adherents of this theory thrust the findings

1. Matter and Spirit, p. 112.

of biology in the lower forms of life into such prominence as to displace from consideration the distinctive characteristics of man, they are indulging in a most unscientific procedure. They evidently do this very thing when they exclude from consideration human consciousness."1. We may confidently say that the assumption of continuity of kind between man and beast is no more than an unproven hypothesis.

3 Since this position has not been established, is it right to make use of it as though it were a fact? A glance at the consequences of the position will help to answer this question. It is found that the most effective work in animal training is accomplished on the basis of the pleasure-pain theory, also called the annoyer-satisfier theory. This is a use of conditioning as previously explained, by which negative reactions are built up to harmful or undesirable actions, and positive reactions are encouraged in connection with the forms of conduct which are desirable in the eyes of the trainer. If man is only a more complex animal, and the theory of behaviorism is true, the annoyer-satisfier theory is the proper one to use in his education. But the use of this theory and its methods gives a distorted view of education which should suffice to expel the whole teaching from practical use until some remote time when it shall justify itself on scientific grounds.

The annoyer-satisfier theory proceeds on the basis of a materialistic universe, an atheistic religion, a mechanistic pupil to be taught, and with it is strictly deterministic in regard to the moral responsibility of the pupil, and of all other human beings. The materialism we have already noticed in a previous chapter; an atheistic religion is a contradiction of terms, yet such is the contradictory position of religious teachers who proceed on the basis of the annoyer-satisfier theory. If the pupil is a mechanism, the only way in

1. Squire: The Pedagogy of Jesus in the Twilight of Today, p1 190,193.

which character can be built in him is by leading him through certain experiences which will give him satisfactions when he does right acts, and through certain annoyances which will act in a negative way to keep him back from undesirable forms of conduct. But if this theory is true, there is no possibility of a purely altruistic choice in a pupil, no chance of spontaneity in taking either the right or the wrong course. "If even young children begin to do things out of love for other people and without any conscious, subconscious, or unconscious reference of their acts to themselves, the annoyer-satisfier theory is defective. If a man is capable of altruistic choice, the use of annoyers and satisfiers is of only minor importance, and their use is of diminishing value as you ascend the scale of life and conduct. The theory that annoyers and satisfiers control conduct works remarkably well in the training of the lower animals. All wild animal trainers make large use of it. In the case of young children it works quite well, but its use becomes more and more questionable with advancing age. A desire to secure satisfaction for himself and a desire to escape personal annoyances never made a man a martyr for a great and worthy cause. The annoyer-satisfier theory runs counter to human experience in its highest ranges. The highest satisfactions of man do not come to him who sets these experiences as his goal and who strives to attain them. They come as a sort of glad surprise to the man who forgets self in noble devotion to some worthy cause or in self-effacing love and devotion to his fellow man. Altruism is not sublimated and unconscious egoism."¹.

With this excellent criticism of the annoyer-satisfier theory, the same author states the difference in the task of the teacher under this theory and under a theory of purposive psychology in the following form: "The two interpretations are perfectly statable in so far as the pupil is concerned. Teachers following one interpretation conceive of the child as a mechanism to

1. The Pedagogy of Jesus, p. 193, 194.

be modified through suitable manipulation. Teachers following the other interpretation think of the pupil as a spiritual personality with a thought life to be enriched, emotions to be nurtured, and a will to be developed into right habits of choice."1. The latter view of teaching, while perhaps not so easy as mere mechanical stimulation, is without controversy a much more inspiring view of the work. The teacher under a behavioristic view of training is bound to be as mechanical as the theory itself.

Right here a word might be said on the position of the minister under a theory of behaviorism. The first ministers and their predecessors, as Dr. Watson tells us so scientifically, were only a set of lazy though brainy shy-sters,,who set out to control the behavior of their fellows through judicious conditioning of the fear responses. The modern ministers he would probably divide into classes, one set the lineal descendants of the former, and the other class, those who are really honest in what they are trying to do, a set of blind leaders of the blind, dupes themselves and leading a similarly deceived following to conform to the dictates of society. We may take our choice between the positions of enlightened deceiver or deluded victim. There is no place in behaviorism for the God we serve, the Bible He has given, or for the patient, humble, self sacrifice which has characterized the lives of many soldiers of the cross.

As a final point of criticism, we must notice the practical consequences of the determinism which is a necessary part of behaviorism and is accepted in the annoyner-satisfier theory in education. To state the position is to make plain its dangers. To the determinist there is no human responsibility for conduct. No one can help doing the evil he does, nor is a man entitled to

1. Pedagogy of Jesus, p. 178.

any credit for the good he may do. This position may explain the prominence with which Dr. Watson has paraded in his volume the subject of sex in its less wholesome aspects, in such a fashion as to cause reactions of repulsion in the minds of most of those who read his work. As he is a determinist, and has been stimulated so to think and write and could not help it, I suppose we must not blame him. However, to those who do not accept his deterministic views, the widespread teaching of any theory which absolves a man from all moral guilt and responsibility for whatever acts he may commit is a most dangerous thing. History and human experience agree with the prophet who said, "The heart of man is deceitful above all things and desperately wicked," and we have not by any means progressed in this twentieth century to the point where man may safely be given an unbridled license to do whatever his appetites and passions dictate. This, in my opinion, constitutes one of the greatest dangers of behaviorism: a theory is taught on a supposedly scientific basis, affording to any moral weakling a rational justification for any indulgence he may desire to go into, an anaesthetic for his conscience, and a sedative to lull to sleep any will power he might otherwise have used to keep him in the way of righteousness.

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