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THE TECHNE

Life without Labor is a Crime, Labor without Art
and the Amenities of Life is Brutality.—Ruskin

MAY-JUNE, 1928

A TEACHER'S DECALOGUE

Everything taught in school should have some positive justification for being taught.

Duty of the school is to teach to do better the desirable things pupils will likely do anyhow.

Ultimate aim of education is to make the state a better place to live in and a better place to make a living.

Consider the individual, always, as he is with reference to what he may become.

A school should be a place where pupils would rather be in preference to anywhere else.

The school exists for the pupil and not for the teacher or administrator.

Ideals, attitudes, appreciations, skills, and habits should hold a higher place in the aims of the teacher than unrelated bits of information and facts.

Objective of teacher and school is to open up avenues of interest to the pupil, not to have them pass tests.

No progress without open-mindedness, variation, experimentation, measurement, and selection.

EDUCATION demands a Golden Rule of teachers: "Do Unto Your Pupils as You Would Have Them Do for You."

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THE TECHNE

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MAY-JUNE, 1928

No. 5

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The Techne publishes, for the most part, papers on educational subjects, though articles on closely related fields are also used. Part of these papers set forth the results of research; others aim at interpretation of current developments. Though some of the discussions will interest the specialist, it is hoped that in every number there will be something useful for the average teacher.

The Techne is sent free to alumni, teachers, school officials, libraries, and, on request, to any person interested in the progress of education.

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THE WEAKEST LINK

By S. J. Pease, A. M., Professor of Foreign Languages

There is no question in the mind of anyone who has studied the problems of modern language teaching that the second year's work is the weakest part. We may indeed call it chaotic.

In the first year courses we may depend on:—(1) A fairly standardized active vocabulary of from five to six hundred words (about a thousand in college); (2) familiar use of from fifty to one hundred of the commonest idioms; (3) the forms of nouns, adjectives, pronouns, adverbs, regular and the most common irregular verbs; (4) the commoner principles of syntax; (5) a reasonable achievement in oral and silent reading, including a fairly correct pronunciation and fairly rapid comprehension.

In the second year, however, the Modern Foreign Language Study has found that aims, amount of material, and methods are by no means unified; indeed, they are not always clearly defined in the mind of the individual teacher. Teachers are too often content to let pupils drift when they should be driving ahead at full speed. The one exception is grammar, which is very well organized.

This situation has been found especially true for French in Kansas, as shown particularly in the scholarship examinations held in the spring of 1927 at the two larger teachers' colleges. So important did the problem seem that at the request of Professor Lillian Dudley, president of the Kansas Modern Languages association, the problems of the second year were the chief subject of discussion at the fall round tables of the Kansas State Teachers association.

But the problem of the second year's work is not confined to Kansas nor to French. It holds for all states in the Union and for all the languages, ancient and modern. It is essentially the same in high school and college, for pupils from the same or other schools, from the same or other teachers, for older or younger pupils. Latin alone seems in a measure to have solved the difficulties, thanks to the new world of attitudes and texts which have followed the conclusion of the classical investigation. But this world is hardly two years old, and has hardly reached Kansas yet, thanks to the Chinese wall of state text book adoptions. We may expect similar results from the modern language study, provided we can meet the rapidly changing conditions. In the modern languages, however, we shall have to choose from a bewildering variety of materials, such a variety that each school, each teacher, each pupil will have difficulty in keeping in mind what is basic, fundamental, and what is chiefly enriching.

In this brief article we may make only a somewhat detailed analysis of the situation, give a few fundamental principles and suggest some

ways and means, rather than give details of what work should be studied and what the detailed method. Indications point to the assumption that many of the texts required for our purposes are yet to be written—some of them, possibly, by Kansans.

Objectives

In the Bulletin of the Kansas Modern Languages association for October, 1927, Professor Algernon Coleman of Chicago gives the following revised list of objectives for a two-year course in a modern foreign language:

I. Immediate Objectives

1. The ability to read with increasing ease books, newspapers and magazines in the modern language within the scope of the student's interests and intellectual power.
2. Such knowledge of grammar as is required to read with fair rapidity and comprehension.
3. The ability to pronounce correctly, to understand, and to use the language orally within the limits of class materials.
4. The ability to write the language for class purposes with a relatively higher attainment in vocabulary and in idiom than in grammatical correctness.
5. A knowledge of the foreign country, past and present, and a special interest in the life and characteristics of its people.
6. A knowledge of the general character and the history of the modern language and its relationships with English.

II. Ultimate Objectives

1. Ability to read the modern language for pleasure or for vocational purposes.
2. Ability to use orally in an intelligible fashion, a small stock of foreign words, phrases and sentences.
3. A special interest in the history of the institutions and the ideals of the foreign country.
4. Increased ability to understand and enjoy the literature.
5. Greater interest in the accurate and intelligent use of English.
6. Increased ability to understand the development and the structure of the language.

In the first year we have measurably succeeded in teaching some grammar to grammarless youth, a number of useful conversational phrases and a reading knowledge limited by the ready use of some 500 words. But such is the loss suffered at the end of the first year of high

school work that in rare cases only is the pupil able to use his modern language in later years unless the second year immediately follows. So great is the summer loss, in appearance at least, that Dr. Coleman suggests that a single unit of a modern language be not counted for high school graduation. This problem has appeared also in Latin study; but Latin teachers have fitted their viewpoint to the situation and have developed methods and texts which give the maximum permanent value to even the scantiest rudiments. This proposal was made as early as 1916 by Dr. A. T. Walker of the University of Kansas, who proposed the slogan, "Every year on its own bottom." We shall discuss the problem further in the paragraphs on "Skills."

In the second year we too often "finish" the grammar, read three or four classics, give a little formal composition, but we do not prepare the pupil for increased or permanent ability to read with profit after class days are over. On the contrary, Professor Dudley's bulletin suggests a vocabulary of 1200 to 1800 words, more and harder idioms, more and more severe grammar, much greater achievement in speaking and reading, and all much more directly related to Kansas conditions.

It may be well, even at the risk of repeating facts already well known to all, to analyze in detail the whole matter of foreign language acquisition, so far as the mechanics are concerned, to the end that we may apply the analysis to the whole of the second year's work and more particularly to what seems to a teacher of nearly 'thirty years' experience the weakest link in the chain.

From this consideration we may omit the historical-cultural and general objectives and those permanent interests which only begin with the teacher and ultimately become an ineradicable part of the student's deepest and most permanent possessions. For these are deeply rooted in the attitude, personality and experience of the teacher, in a contagious enthusiasm that only the rare teachers attain.

Materials and Skills

From the mechanical standpoint, all language teaching deals with four materials and six skills, in all of which a satisfactory degree of attainment is sought. The four materials are vocabulary, idiom, form, syntax; the six skills are oral reading, silent reading, hearing, oral composition, written composition, independent thinking.

Vocabulary we may divide into five active and two passive phases—a distinction frequently obscured. Our active vocabularies are the all-purpose vocabulary, the speaking, writing, thinking, defining vocabularies; the passive vocabularies are those of hearing and reading. It goes without saying that the all-purpose vocabulary is the smallest, and that the silent reading vocabulary may be ten times as large without costing the pupil more than a small additional effort. Most partic-

ularly large can this last be, if learned on scientific principles—derivation and relationship—in Prehn's "German Vocabulary" and Ramsey's "Spanish Grammar"—but only if deceptive similarities are carefully distinguished, as in Ward's "Minimum French Vocabulary Test Book." The problem is the same in the study of English, but the foundations in this are laid in the pre-school age.

Idioms may begin with the simplest, but practice must be constant, as some idioms have hundreds of forms, each requiring attention. Here the important thing is to pick out the most important idioms, then practice—then practice some more.

Form and syntax are both adequately treated in first and second-year books, including the review grammars. The difficulty is to secure functional rather than formal grammar, without making the grammar less severely accurate.

It is in the acquirement of the six skills that we find the widest variation. Still, every phase of each demands its share of attention.

Oral reading is always a first step. Without pronunciation, phrasing, expression—emphasized from the very first, the pupil is helpless in the face of the more complex skills. Of course, as in English, there comes a time when reading aloud becomes a drag on the class, a point easily determined by the watchful teacher. What occurs in the fourth grade in English occurs about the middle of the first year in the foreign language.

Silent reading, adequately tested, is the most rapid means of acquiring information and passive vocabulary, as well as an insight into the language and people. We have hitherto greatly neglected it, but must use it freely if our pupils are to make the most of their scant time spent with us. November in college and January in high school should see it at least begun. We may test it by requiring the answering of questions in English or the original, by requiring the gist to be given, by retelling in English or the original language, by careful criticism. From the list of skills I have purposely omitted translation, crude or literary, which is vital in giving an exact rendering of the original, sometimes necessary or most convenient in showing complete mastery of the thought. But in the hands of an incompetent teacher or in crowding out the attainment of a more important skill, it is an abomination.

Hearing involves careful imitation of the teacher's pronunciation, the ability to understand a question, dictation, conversation, lecture. In other words, the requirement is to turn the strange sounds into comprehension at conversational speed.

Oral composition may be formal or free. It converts passive vocabulary into active in the quickest and readiest way. Combined with hearing it is used in question and answer and in conversation. Nothing is more important than conversation in the attainment of fluency and ease of utterance.

Written composition is the chief means of securing accuracy. It, too, may be formal or free. One especially valuable use is in free reproduction.

The severest skill is active or creative thinking in the foreign language. Thinking is of course involved in comprehension of what is read or heard, and in the oral or written summary or narrative, but active thinking enters the creative field with analysis, criticism, "explication de textes" and original work. Of course, creative thinking is limited in second-year courses.

The National Modern Foreign Language Study, following upon many years of scattering research and experiment, is giving us definite goals and many definite helps for each of the materials and abilities. Many of the questions raised will require years of further experiment and investigation before yielding a satisfactory solution.

We already have abundance of helps for our four materials, but the study will furnish us scientific lists of words, idioms, form, uses. Comprehensive tests have been prepared for the materials, and for two of the skills—silent reading and written composition. Oral reading and aural skills are still left with the teacher, for the most part, although some progress has been made here also. Thinking skill in its higher, creative forms, comes only in the later years, and is hardly measurable.

The Summer Slump

Aside from a changing emphasis on the purpose and consequently on the content of the second-year course, which results in much confusion because of varying viewpoints of teachers, there is a still greater loss and confusion from another source, which we may well call the weakest link in foreign language achievement—the first summer's slump. During their summer vacation, regardless of their attainments during the first year, our pupils have lost a considerable proportion of each of the four materials and of each of the six skills. Each fall we must get our classes working together more evenly by bringing up the deficient points, a process which sometimes takes as much as two months, if it does not result in a permanently slower rate of progress. The one certainty is that at the beginning of the second year no two pupils will stand at precisely the same level of achievement in any two of the ten points.

This summer slump is practically universal and often very great, amounting in some one or more of the ten points to as much as fifty per cent. Experience has shown that the greatest loss of all usually occurs in that point on which the foreigner naturally lays greatest stress, aural skill; so that our pupil who has proudly completed his first year (sometimes second or tenth!) is entirely at a loss for an answer if addressed in the language. Perhaps the next greatest loss is in oral skill, which by fall is confined to a few of the phrases most frequently

repeated. On the contrary, the loss in understanding of grammar is comparatively slight, and passive vocabulary is very readily refurnished. The loss therefore is usually much greater in skill than in materials—greatest of all in those skills hardest to measure.

The cure for the situation has perhaps five phases.

1. We may point our work in April and May in such a way that it will result in the least loss in summer, by special attention to fascinating oral work, such as plays and programs, and to extensive reading, thus creating interest, increasing facility, and permanently fixing vocabulary in the pupil's minds.

2. We may inspire our pupil to replace the slump with noteworthy progress by suggesting easy, fascinating reading during the long vacation. This will greatly broaden his passive vocabulary. If the student can travel abroad, his summer will be worth fully as much from the linguistic standpoint as a second year in school.

3. In September we can find out by standardized tests, with added oral and aural tests, the accomplishments of the pupils in each of the ten points. Only thus can we take immediate and adequate steps to strengthen the weakest spot.

4. Immediately after our fall testing we can do rapid individual and group work directly on our materials, by using check lists for the four materials, and drilling in groups, with daily quizzes. Even the entire class may be drilled orally at the same time, in groups of three or four, on vocabulary study, oral reading, paradigms. We might call this "Babel mass drill." It is very quick and effective and will not be abused if pupils are sufficiently interested.

5. We can start our classes in the fall with rapid, extremely easy reading, until through with our moulding process, which should not take over three weeks. Then with a comparatively small amount of work carefully checked, perhaps by Dr. Bond's method, we can introduce the pupil to the unlimited field of individual endeavor.

This will mean an entirely new conception of the function of the second-year modern language reading book, for it must grip the attention, contain worthwhile subject matter, be fitted to the student and very, VERY EASY. Instead of straining the intellectual powers and destroying interest by requiring constant thumbing of notes and vocabulary, we can be giving an impetus that will carry our students far ahead. It should not be impossible to give our second-year pupils a knowledge of a foreign language nearly as great as French or German boys and girls acquire in three years in their native elementary schools.

Back of all linguistic knowledge and skill, however, our pupils should gain a variety of knowledge and interests, a sympathetic understanding of the people, and an adequate means of comparing the details of life at home with those abroad. And perhaps we can also inculcate that deeper patriotism that is convinced that America has yet much to learn, by enabling our pupils really to think as do their neighbors.

THE BEHAVIORISM OF J. B. WATSON*

By C. B. Pyle, Ph. D., Professor of Psychology

What Singer began from the philosophic side, Watson continues on the psychological side. Both represent the extreme type, and have contributed an undue share in giving to behaviorism its real orientation. Watson regards psychology as a "purely objective experimental branch of natural science."¹ It may be completely defined in terms of stimulus and response. It is a science of organic response to internal and environmental stimulation, whereby human activity may be predicted and controlled. Singer conceives of behavior as grouped movements of atoms; Watson locates responses in the muscles and glands of the biological organism.

If muscles and glands seem at first sight to belong entirely to the province of physiology, we are reminded that physiology studies the organism by parts; while psychology studies the reactions of the organism as a whole. When man reacts, he reacts throughout the organism. "If he only raises his finger, or says the word 'red,' his whole body is involved." Watson aims at a "unitary scheme of animal response."² The complete cycle of animal activity is brought within the circuit of stimulus and response.

Another important consideration for Watson, as for all behaviorists, is that of method. If we are to render psychology scientific, we must open its subject matter to the public gaze. This can be done only by applying to psychology, as to all other sciences, the objective method of observation. What can be observed in animal behavior falls within the realm of psychology; what can not be, and is but a "private" experience in the so-called mind of the subject, shares the unreliability of introspection, and therefore, can never become a part of our science. Consciousness and its contents can not be observed, and are no legitimate part of the subject. "The time seems to have come when psychology must discard all reference to consciousness; when it need no longer delude itself into thinking that it is making mental states the object of observation."³ Psychology can be defined as a "science of behavior" and we need "never go back on the definition; never use the words consciousness, mental states, mind contest, will, imagery, and the like."⁴ These are empty terms for Watson, nor does he know anyone who "uses them consistently." This represents his most drastic icono-

¹ Behavior, p. 1.

² Psychology from the Standpoint of a Behaviorist, p. 488.

³ Behavior, p. 1.

⁴ Ibid., p. 7.

⁵ Ibid., p. 9.

* Copyright, 1928, by C. B. Pyle.

clasm. He does retain the old-fashioned terms "thinking" and "memory"; the former, he identifies with implicit language reactions, and the latter with biological retentiveness.

Personality is another interesting feature of Watson's psychology. After rejecting the mind as a psychological luxury, we wonder what import Watson could give to personality. He defines it as the biological organism, with its hereditary and acquired reactions integrating as a whole. "Personality is what we start with and what we live through."⁶ The biological organism functions as a machine, though far more complex, with its linked formation of "interlacing systems" and "inter-dependent functions," wound up and ready to be sprung by the first stimulus that arrives. Watson would accept Descartes' notion of the body as a "machine of clay" whose life and function can be understood by the mechanical movements of its parts. Descartes outstrips Watson only in his picturesque description of the flight of Diana, and her shy concealment among the reeds, or in his description of Neptune confronting her curious pursuer with a menacing trident.

The direct method of the elimination of consciousness is by the way of the substitution of bodily responses. Watson exchanges consciousness for language reactions. His fundamental proposition is that thought results from the formation of word habits. By proper "conditioning," words come to be responded to in the same manner as the objects which they mean. When the child is socialized, that is, forbidden to speak the words aloud, he reduces them to a whisper; and when further penalized, he speaks them silently to himself. This "implicit behavior" is "thinking." Thought is identified with "implicit behavior" as set in the integration of the organism as a whole, "a constituent part of every adjustment process. . . . It is not different in essence from tennis playing, swimming or any other overt activity except that it is hidden from ordinary observation and is more complex and at the same time more abbreviated so far as its parts are concerned than even the bravest of us could dream of." These implicit processes, incipient muscular and glandular movements constitute "thinking" or sub-vocal talking, and are intensely operative even when the body as a whole is apparently quiet. In answer to Miss Washburn's question, Watson substitutes for Singer's "Passive Thinker" unobserved tremors of the laryngeal apparatus. For he says, "When one seems to sit quite still, thinking, his muscles are really as active and possibly more active than if he were playing tennis."⁷

Thought also has an objective side, which is called "explicit" and "laryngeal," involving the larynx and muscles of the neighboring parts,

⁶ Psychology from the Standpoint of a Behaviorist, p. 488.

⁷ Psychology from the Standpoint of a Behaviorist, p. 325.

⁸ Ibid., p. 15.

such as the pharynx, palate, tongue, teeth, lips, and "speech muscles generally." The entire organism is involved, of course, since the body is unitary; but certain special parts are involved more than others. Watson, for the most part, thinks of the hidden processes as thought.

The plain implication of this type of behaviorism is materialism. It is obvious that the behaviorists who have striven so hard for monism recognize but one principle; and that the materialistic, however strenuously that may disavow it. Lashley declares that behaviorism is not materialistic, only in so far as physics and physiology are materialistic. Doubtless physics is tending toward idealism, but the material "particle" is still retained. Even though Eddington⁹ may reduce material substance to an expansive series of energetic radiations (series of events), the material nature is retained with only a change of form. And though the "particle" were gone and only energy remained, it would still be physical energy as understood and applied by the average scientist. In Watson's thinking, nature is naively realistic, all the external stimuli are purely physical, and the responses of the organism are physical. Mind has no place in the finite realm or in the cosmic order. Matter in motion is all the universe contains. It is called energetic behavior in the organism; it is energetic stimulation in the environment. Since both organism and environment belong in the same category, they constitute a completely materialistic world.

Materialism means a universe of matter in some form. There are varieties of materialism depending upon how matter is conceived. Philosophy began with the world of nature which lay at hand to the senses. It sought a unifying principle. For Thales, it was water; for Anaximenes, it was air; for Heraclitus, it was fire; and for Democritus, it was atoms. For each, it was material, but even the term "material" has a history. Where once matter meant an undifferentiated mass, or "potentiality" awaiting the illumination of mind, it was also conceived as atomic structures of substance. Now the solid walls of substance have yielded to the dynamic flow of electronic and radiating energies. Matter is no longer a huge, static mass, but it is a series of events in a vast system of change. Matter has been refined more and more toward the ideal and mental until it is becoming customary to speak of the ideal trend of physics. Nevertheless, materialism regards matter in this refined form as the sole reality, and conceives of the universe as constituted of matter in motion in space and time operating mechanically under inexorable law.

That Watson subscribes to this definition there can be no doubt. While he would accept the conclusion of modern physics that matter is energy or can be transformed into energy, he certainly would not accept the conclusion of Eddington: "Mind filters out matter from the mean-

⁹ Space, Time, and Gravitation.

ingless jumble of qualities, as the prism filters out the colors of the rainbow from the chaotic pulsations of white light. . . . The conclusion is that the whole of those laws of nature which have been woven into a unified scheme—mechanics, gravitation, electro-dynamics and optics—have their origin, not in any special mechanism of nature, but in the workings of the mind.”¹⁰ Mind ignores the transitory and seeks the permanent, and so selects “matter” as the really permanent substance distributed in space and time and subject to the laws of mechanics, geometry, and gravitation. The mind’s search for the permanent has created physics. That mind has constituted “matter” and written its laws therein is a conception repugnant to Watson, for it savors of metaphysics. For Watson, the world is a mechanism, and each biological organism is a machine mechanically responding to mechanical stimuli with no intrusion of consciousness whatsoever. Though he attempts to shun metaphysics, Watson presents us with a full-orbed philosophy of the universe—a philosophy which merits the name of the philosophy of a Hobbes or La Mettrie, a philosophy of materialism.

Behaviorism is not without merit. Its insistence upon the method of objective observation is a strenuous attempt to become scientific. It intends to bring all the facts with which it deals within the range of scientific observation, and therefore within the range of all investigators. The subject matter must be common to all. It is not to be concealed within the private thought of any single individual. It must suffer neither the shifting of thought nor the defect of linguistic utterance. It must not be subject to the unreliability of solitary interpretation. It must lie open and exposed to the eyes of all gazers—the public property of a vast array of inquirers. Behaviorism lends fresh impulse to the method of observation and experimentation which has yielded such splendid results in comparative and human psychology.

Behaviorism escapes the difficulties of the mind-body problem by resolving it into a purely body problem. The outstanding theories concerning the relation of the mind to the body, which have sprung up along the course of psychological development, have proved distasteful to great numbers. With a gesture, behaviorism sets them all aside with the insoluble problems (as they think) that are inevitably attached to them. This is an easy way out of the difficulties, provided no violence is done to the facts. Above all, behaviorism seems to escape the most difficult problem of all, namely, that of consciousness itself. A mechanism runs smoothly until some “spooky” intrusion from the “supernatural” realm is thrust within the cogs of natural causation. Then all is confusion and disorder. There can be no comprehension of our world until all forms of the spirit and mental vanish like “fluttering forms of vapor.” Behaviorism promises to substitute for these “ejects,” “myths,” and

¹⁰ *Sermons of a Chemist*: Slosson, p. 217. Quoted from *Space, Time, and Gravitation*: Eddington.

"mysteries" a solid, explicable organism which stands forth before the clear gaze of all robed with its natural powers, and responding as a total unit to definite, material stimuli which may be predicted and controlled. Biological functionalism is an attempt at synthesis, and it represents a distinct advance beyond sensationalism. It is to be commended for what it includes, but it must be criticised for its omission of the facts of consciousness with which our world-building must begin and end.

Let us consider the difficulties that are attached to the viewpoint of the extreme behaviorist. First of all, Watson finds it difficult to identify consciousness and bodily action. He speaks of thoughts issuing into action as though action were not thought, but its expression.¹¹ Again, thought is not "transcendental" but "immanent," a "constituting part of bodily organization and integration."¹² Possibly in this instance, thought might be a distinct reality, though immanent in the bodily activity. Especially does Watson seem to distinguish "purpose" from mere physical action in his statement, "When we study implicit bodily processes we are studying thought; just as when we study the way a golfer stands in addressing his ball and swinging his club we are studying golf."¹³ The behavior is not thought and purpose, but it reveals thought and purpose. Unless Watson has chosen an ill-fitting simile, he means we are studying "thought," not when we are studying bodily movements but when we are studying bodily movements set to a certain task. Bodily movements in swinging an axe instead of a golf club—movement employed to cut down a tree for railroad ties or winter wood, reveal "thought" of another task. No revelation could come directly by observing the bodily movements, but it could come only by inference based upon the past observation of a similar game or labor. Purpose then need not be identified with the behavior, but it may be expressed through the behavior. If this interpretation of Watson at this point is permissible, he approaches Singer's view that mind can be measured by what it does. Of course, both mean to identify the "expression" and the "nature." However, this question of identification is the real point under dispute.

It seems that Watson has touched upon the behavioristic notion of purpose, though he is reluctant to employ the term even in its emasculated form. A further proof that Watson favors purpose may be found in the unction with which he greets Holt's conception of purposive behavior as elaborated in his Freudian Wish, especially in his illustration of the man purchasing a railway ticket, etc. But only upon the assumption of an "observer" who draws the inference, could we ever conclude as to the thought or purpose involved in any bodily action.

¹¹ Psychology from the Standpoint of a Behaviorist, p. 327.

¹² Ibid., p. 326.

¹³ Ibid., p. 326.

If purpose, in any sense of the word, is to be allowed here, it is only because some "conscious observer" reads the purpose into the action. In this instance, Watson himself is the conscious observer.

Though Watson would be reluctant to admit it, he constantly assumes the role of a conscious observer. If Watson himself is a conscious observer, he must admit that other investigators are also conscious observers. Therefore, consciousness exists in finite human beings at least. But this conclusion controverts Watson's fundamental proposition that consciousness does not exist.

On the other hand, if we take Watson as he intends, consciousness does not exist. There is only the physical organism set in its realistic environment. The first fundamental fact that the behaviorist accepts is that he himself is an organism. The second is that there is an environment that stimulates the organism. And finally, the organism thinks of, perceives, and observes objects in that environment. How does the organism accomplish this? It does it by muscular movements in the larynx and neighboring parts. But if thinking is only muscular movements in the throat, "thinking" must be confined to the throat of the thinker. How then could his thinking reach objects external to the organism? Muscular movements and thinking can not be described in the same terms; for the former are confined to an individual organism, the latter refers to objects outside of the organism. No detailed account of the size, shape, or number of muscular movements in the larynx is comparable to the description of the thought of Hannibal crossing the Alps, or of what is likely to be our social and financial status twenty years hence. To know the objects of environment which exist before their perception is certainly not equivalent to displaced and shifting molecules of the larynx.

Moreover, Watson has no ground for saying that there are muscular movements in the larynx at all. Even if observation were reliable, he could speak only of muscular movements in the larynx of some other organism, for observation is objective. He can not observe his own larynx. He can not observe even his "overt" behavior, some other observer must do that. Unless Watson is conscious of "implicit behavior" he has no reason for claiming it at all. But consciousness of the muscular movements is a fact distinct from the movements themselves. Without the admission of the fact of consciousness, Watson has no right to distinguish between "overt" and "implicit" behavior. Watson does make this distinction in his contribution to the "Oxford" discussion when he says, "The subject himself could observe during the apparently immobile period that he used words and sentences."¹⁴ "Observing" or thinking is the movement of the larynx. Uttering words and sentences

¹⁴ "Psychology as a Behaviorist Views it," *Psychological Review* (1913), p. 174.

is the same movement of the larynx. We should have the movements of the larynx observing themselves move which is a highly grotesque if not an impossible performance. No unity or multiplicity of language mechanisms could amount to thought or perception. Therefore, behaviorism ends in total ignorance of both environment and organism. Despite his boasted power to explain all the facts of conventional psychology by behavioristic principles, the behaviorist can not explain his own propositions with all his cherished tenets.

Furthermore, a little reflection will reveal to us the flaw in the genesis of thought through language mechanisms. A most extreme and questionable proposal concerning "thought" is that it is an external importation through the medium of explicit language habits. The genesis of explicit and implicit language habits and their relation to thought constitute one of the most interesting features of Watson's discussion. After consciousness is abandoned, it is interesting to note how "thinking" and "memory" continue to operate. Habits are built upon original reflexes, as are instincts also. The difference is due altogether to the fact that the stimulus has changed from internal to environmental. It is a question how instincts, being hereditary, can operate after birth, if they differ from habits only in regard to their stimulus. They could not be said to operate after experience begins in the environment, that is, after birth because they are habits then. But most of the instincts have not yet begun to operate soon after birth. There is an alternative. We may say that instincts and habits are identical, since they are "undoubtedly composed of the same elementary reflexes."¹⁵ Both are equally affected by environment. Watson justifies his conclusion by his own confession, "It would follow from this definition that so far as the observance of a single adult performance is concerned we should not be able to tell an instinct from a habit."¹⁶ By reverting to the genetic method, Watson has not made clear how any distinction between habit and instinct can be made. Moreover, the method of observation, which is the only reliable method, does not see the difference. With instinct and habit identified, we are forced to the proposition that habits are original reflexes modified by experience. Therefore, there are no habits; there are only original reflexes, and reflexes modified (the same ones) in experience. By this time, we begin to see the utter mechanical nature of the procedure that would construct, by substitution, through conditioned reflex, explicit habits, and then turn them back into the integrations of the organism as "implicit processes" which are to be identified with thought.

Language habits arise out of bodily habits, and these arise out of original reflexes. Therefore, language habits should be identified with

¹⁵ Psychology from the Standpoint of a Behaviorist, p. 272.

¹⁶ Ibid., p. 273.

original reflexes, and the child would be expected to talk at birth because original reflexes are operative then. At any rate, language habits are to be identified with "original reflexes modified by experience." With this conclusion Watson agrees; for he says that early "word habits" begin instinctively like bodily habits, except that imitation plays a greater part. The child utters some instinctive sound somewhat like the articulated speech of the parents, who in turn utter the word nearest like the vocalization of the child; thus modifying the vocal mechanism of the child until, through repeated effort, the child bears more or less the accents of the parents. Three children, ranging from two and a half to four, and eight years of age, rush into the house to attract mother's attention to some interesting event outside, by exclaiming respectively, "Dook!" and "Look!" These exclamations may be said to represent the respective stages of development of their language habits with the degree of modification within this period of years. These language habits are integrated with the muscular and glandular activities of "arm, hand and leg," and are substituted for them.

Briefly, this means that after the child has learned from the parent or nurse the name of its toy dog, which it calls "goggie," it continues to use the word, associating it with the bodily movements to which it is accustomed when handling the toy. Should the "goggie" be beyond reach, the child enunciates the name vigorously. The channel of action that ordinarily streams through hand, arm, and leg movements, now moves to the surface through larynx, lips, teeth, etc., in the form of the spoken word. This is the genesis of a true explicit language habit. These overt language habits are rapidly multiplied; they are gradually subdued to a whisper; and they are finally integrated with bodily movements in the form of implicit language habits which constitute thought. Thought does not rise subjectively, but is imported ready-made from the looms of social custom. It bears no impress of the thinker's personality. This roundabout method through the social and back to the implicit processes seems needless, since the implicit processes are assumed as instinctive at the outset. If they are instinctive, and help to create explicit language habits, then, thought is prior to language, and can not be identified with it. If thought is the outcome of language habits, then, the behavior of the child, prior to its formation of explicit language habits, is without thought; for the child behaves before it thinks. If it behaves before it thinks, that is, before it talks, behavior can not be identified with thought.

Much of the behavior of the child before it arrives at the stage of explicit language habits indicates that it somehow understands what it is about. At fifteen months, the child picks up its father's rubbers, when he takes them off; it carries them across the room to a door opposite leading into another room; it turns about and looks at the father who remains at the other side of the room. The child is restless, and utters a vocalization (not a word) like "Ugh." The father walks to the

door, opens it, and the child throws the rubbers into the other room and seems satisfied. The child seems to understand what it is about, and how? Watson would say, "By association the rubbers somehow got tied up with the activities of the body." How easily he glides right over the whole problem, with the apparent innocence of a child, not even suspecting that a problem exists. What can association mean apart from some element of consciousness? Do the rubbers associate themselves with the activities of the body? Or does the body, stripped of all conscious elements, associate itself with the rubbers? Or does association associate itself with the rubbers or the rubbers with the body? Watson might say that the child saw the rubbers, that is, received a stimulus, and by habitual reactions under like conditions immediately performed the act. But this was the first time the child performed the act. Then he did it by imitation of the father's act by association. But Watson would have yet to explain how a father's habit can work in a child bereft of any conscious content. He must explain how a habit of one person can be bodily transferred to another person and be in good running order immediately. Imitation and association are empty terms disassociated from one who associates and imitates.

Watson's conditioned reflex (borrowed from Pavlov), which provides a basis for habit, depends upon a substituted stimulus that can not be operated without considerable intelligence, especially on the part of the experimenter. Is education and learning so unnatural that nature must be led from her true path? His entire learning process, which Watson regards as the chief problem of psychology, is built upon a system of substitution which presupposes the operation of the psychical an extended period before the formation of language habits. The child develops quite an extensive set of meanings before it can talk at all. A child under sixteen months was told to look into a mirror as it stood with its back to the mirror. It turned and looked into the mirror as though it understood the command. It was told to place its hand on its face; it did so repeatedly as though it understood it was to do that specific thing and not something else. It was in the kitchen and was told to go into the living-room and get into a big chair, and it did so without being accompanied or further directed. Watson himself says, "If we examine the bodily habits of any child just prior to the beginning of true language habits, we find that it can respond appropriately to hundreds of objects and situations, for example, to its doll, bottle, blocks, rattle, and many other things."¹⁷ We can not imagine a child doing all these things and doing them appropriately without the exercise of conscious activities, without the presence of something we call mental. Could it do all these things blind folded or unconscious? Must the child not perceive before it acts? Besides, if it does all these things before it talks, it behaves without thought. Hence, thought is not behavior.

¹⁷ Psychology from the Standpoint of a Behaviorist. p. 319.

Professor Otis expresses his astonishment that one should dispense with such concepts as perception, attention, will, etc.¹⁸ He shows conclusively that much thought is carried on without expression through language mechanisms at all, but is done quietly without reaching the stage of enunciation. "Meaning may exist entirely independent and apart from any utterance," he says. The meaning of a "sunset," an exalted spiritual mood, some sacred joy, we may never be fully able to frame into speech. No amount of "sub-vocal" talking will enable us to understand a problem beyond our depth; yet our appreciations often overflow the bounds of language. Language is only symbolic, while meaning springs from intelligible experience. What we call "red" would be the same conscious impression whether we called it red or green or blue.

Miss Calkins points out the fact that the same stimuli may call out different responses.¹⁹ If one should stimulate the retina of a Frenchman, German, and American with monochromatic light from 586 mm, the reaction would be, respectively, "jaune," "gelb," and "yellow," each enunciation involving a different set of "implicit processes"; yet we can not assume that the sensation is different in each case. Nor can we think that the "thought" is changed with the linguistic form. Hence, thought and language can not be identified.

Muscio has shown with a good deal of force the inconclusiveness of Watson's attempt to identify thought and implicit language habits. Its success rests upon the substitution of speech movements for other bodily behavior. Such substitution is carried out on the principle of the "conditioned reflex." The behaviorist does not insist that the substitution shall necessarily involve the speech muscles, but that it may be any substitution of one set of muscular activities for another. Accordingly, Muscio has offered a parallel to Watson's proposition by substituting the activities of the left leg for those of the right as generated by the conditioned reflex method. The behaviorist must admit that his formula of substitution is faulty or that the movement of the left leg is a case of thought. Indeed, there is no more reason why thought should be located in the larynx than the left leg or the sole of the foot. But even Watson would be slow to identify the movements of the leg with thought. But, as Muscio says, the latter alternative is not acceptable because "We are acquainted with thinking, experiencing it as directly as we ever experience muscle-movement; and when we compare what we are acquainted with as thought with what we are acquainted with as muscle movement substitution, we see that the two are not identical, no

¹⁸ "Do We Think in Words?" *Psychological Review*, Volume XXVII (1920).

¹⁹ "The Truly Psychological Behaviorism," *Psychological Review*, Volume XXVIII (1921).

more identical than the muscle movement of the right fore-arm flexor and the left thigh abductor."²⁰ In each case, the evidence is gathered from direct experience. The behaviorist rests his claim on the reality of muscular substitution, and carries substitution into a realm where it does not occur. He says, for example, if one thinks of putting on his hat there is substitution; but there is no evidence of muscular movement in my right arm, which would execute the act of putting on the hat. One may think of putting his hat on, but make no move to do so.

To consider the probable rise of language among primitive peoples will seriously undermine Watson's view of the genesis of language habits. If it be true that we began, not with a highly developed language, but with simple symbols of communication, how could the primitive race ever rise above its first language forms? From whom would the children hear elegant speech? While it is true that we learn to speak the environmental language, it is not true that we get ready-made from the environment the ability to speak. If speaking words rests entirely upon hearing them in the environment, then the master's dog would soon learn to swear. But this is not confirmed by our observation.

Moreover, Watson claims that his theory of thought is the only reliable one because it is scientific. When we look for evidence for this view, there is very little, if any, forthcoming. Watson admits that the identification of thought with "implicit processes" is "largely an assumption."²¹ It is true that all scientific discoveries have issued from assumption, but an assumption backed by little or no evidence is greatly weakened, if it does not fall to the ground entirely. "The experimental evidence for this view is slight,"²² says Watson. Besides, when we attempt to collect the data of behavioristic psychology they are all out of sight, except the tongue and laryngeal movements. Evidence for existence of these is negative and inconclusive. For when experimenters have attached tambours to the neck, and have "set their subjects such problems as silent reading and sub-vocal arithmetic or the recall of a poem learned in childhood," they found the processes "so evanescent" that they really made no discovery at all concerning identification of thought and language. Moreover, these "implicit processes" occur, if at all, in a mysterious realm, the manner of which Watson is not "brave enough to dream of." But we must not carry scientific assurance beyond the frontiers of mystery. The behaviorist adheres to the objective viewpoint exclusively. He can observe explicit behavior only. But thought is implicit behavior. The objective method so far has yielded no tangible results. Therefore, we can not resort to the scientific support of behaviorism. It stands upon the questionable observation "that orderly move-

²⁰ "Psychology as Behaviorism," *Monist*, Volume XXXI (1921), pp. 182-203.

²¹ *Psychology from the Standpoint of a Behaviorist*, p. 326.

²² *Ibid.*, p. 326.

ments similar to those in speaking are found."²³ But often these "fail to appear," even when all the scientific conditions are fulfilled. The "processes are so evanescent and slip from one motor region to another so rapidly" that only negative results obtain. Thus Watson, who so thoroughly scores the metaphysical assumptions and theories of conventional psychology, is found at last standing squarely upon a lowly and despised assumption. It would not be unfair to say that there is not a single shred of positive evidence in support of this particular view according to Watson's own representations.

Since other behaviorists borrow rather heavily from Watson or rally lustily to his support, these admissions weaken, if they do not altogether destroy, the entire structure of behaviorism as espoused by its many advocates. Even if, by more delicate and exact instruments, it could be established that for every explicit process there is a corresponding implicit process, it would not necessarily be proved that thought is identical with implicit processes. It would prove only that explicit processes begin before they end, that is, begin in implicit processes, and that these are more remote than the explicit. They must work themselves out to the surface by a spread through the organism or through the particular organs they affect. From the viewpoint of the organism as completely physical, such discovery would be no more significant than to ferret out all the roots of the incipient muscular and glandular activities that start and support a sneeze. After the full discovery by observation, we should have to prove that sneezing is thinking. Likewise must we prove that implicit processes are thinking. However, if we start with the assumption that thought is not identical with the physical, such discovery would prove that all thinking involves the physical activities because the mental and physical aspects constitute the complete organism. Yet thinking is not identical with the physical activities because it involves them.

If little plausibility attaches to the behavioristic doctrine of mind as the immediate response of the organism to the stimulating environment, its difficulties mount when we consider a delayed reaction. If a response is immediate, it seems to be the result of a present stimulus; but if it is delayed for hours or days, the stimulus and response lie too far apart—some links are lost from the chain. The behaviorist has not made clear what has transpired in the interim. He has left hiatus, which needs to be filled. At this point, Angell took exception and demanded that introspection be employed to account for what occurs in the gap. One gets scolded, and laughs at the time, but in thinking it over he grows angry, returns, and demands a settlement. Such experience, the behaviorist has not explained. Nor does he explain the situation, when a response is in the process of execution, but is checked and another course is taken.

²³ Psychology from the Standpoint of a Behaviorist, p. 326.

It is strange that Watson should cite the work of Angell and Fernald to buttress his courage that he might dismiss imagery from psychology altogether.²⁴

Squarely in the way of behaviorism, to obstruct its advance, lies the "image." To surmount this difficulty of "centrally aroused" products, Watson substitutes kinaesthetic movements. "If thoughts go on in terms of centrally aroused sensation, as is maintained by the majority of both structural and functional psychologists, we should have to admit that there is a serious limitation on the side of method in behaviorism."²⁵ Cattell admonishes behaviorists to include "image" in their scheme; but Watson sees that the inclusion of the image will weaken the whole structure, and so casts it out deliberately and decisively.

Watson's illustration is worth repeating here. Some one suggests that you borrow \$1000 and go abroad for a year. You think over the situation and are in a brown study for four days to decide. "The train of thoughts going on in your mind according to the upholders of the image, has no adequate behavior counterpart while it is in transit," says Watson. But the behaviorist sees that you have lost appetite and are smoking and drinking more than usual. Experimental tests might disclose bodily weakness, lack of coordination, etc. But the introspectionist says these tests can not get the secret mental content and tell whether one is grieving over his sins or trying to reach a decision. "If we grant this," says Watson, "and the impulse is very strong (he is almost persuaded here), the behaviorist must content himself with this reflection: I care not what goes on in his mind; the important thing is, given the stimulation (the suggestion of a friend) it must produce a response or modify responses already initiated. This is the all-important thing and I will be content with it."²⁶ Watson cares only for what goes on in the open, that is, the stimulation and the reaction. He does not know what goes on in the interim, as in case of the chewing-gum machine at the railway station, where we may observe the penny put in and later the gum come out; but we know not what takes place within the machine. Watson will concede no thought in the form of an image, and no conscious content in form of affective states.

The full import of Watson's humor is not disclosed until we descend to the footnote²⁷ where he says, "There are probably in most cases kinaesthetic substitutes for imagery." "Concurrently with the faintly articulated word 'apple' there arise associated kinaesthetic impulses in eye muscles," which give rise to the fiction of verbal imagery. How the

²⁴ Behavior, p. 18.

²⁵ Ibid., p. 16.

²⁶ Ibid., p. 17.

²⁷ Behavior, p. 18.

articulation of the word "apple," faintly or otherwise, could affect the eye muscles would require for explanation more even than the ingenuity of Watson can provide. Watson does grant a few images, however. For he says, "I may have to grant a few sporadic cases of imagery to him who will not be otherwise convinced, but I insist that the images of such a one are sporadic, and as unnecessary to his well-being and well-thinking as a few hairs more or less on his head."²⁸ Here Watson seems to have come to a sudden realization of the extremity of his position, which now vents itself in an appropriate burst of frivolity. McDougall would call Watson's procedure here an instance of the mythology of kinaesthetic sensations, which has been entirely overworked by the behaviorists. We may find solid reason for the rejection of this theory from the fact that Stratton showed, by photographs of the eye movements during perception, that the movements sustain little correlation either to the shapes of geometrical figures or to the nature of illusions. McDougall has shown the same thing in his study of the reversible perspective.

Despite the fact that Watson has ruled out the "image," he retains the old-fashioned word "memory" which means that bodily habits, once regnant but now quiescent, will be reinstated with "undesirable additions" (errors). But Watson does not make clear in what form the retention is realized. Since his major conception treats of muscles and glands, these habits must somehow be retained in the muscles and glands. Are the "habits" things in addition to muscles and glands? How are they related to the muscles and glands? If we should cut into the structures, would we find the habits concealed there? If so, when they are reinstated, would they not be in the original form without "undesirable additions" (errors)? When we recall a stanza of poetry, how could the old habit make known to the new one that the poem now being repeated is the same poem which had been formerly learned? If one habit can pass its content on to the next, it must be endowed with the intelligence of a person. Memory can never be deduced from material particles in motion.

Nor does it improve the situation when Watson defines memory as a "habit-function" retained as a part of the individual's organization. Much of our ignorance is concealed by the word "function." We say that breathing is a "function" of the lungs. But what reality is there besides the lungs breathing? Is there a "function" in addition to the lungs, which is retained in the lungs as they breathe? There should then be a "function" retained for every sort of stimulus. Therefore, the muscles and glands are full of extra entities (function). But these carry Watson outside of the real, for there are no extra entities beyond the bounds of the physical organism. "Explicit bodily habits, explicit word habits, implicit word habits," if considered anything more than muscles

²⁸ "Image and Affection in Behavior," *Journal of Psychology*, Volume X (1913).

and glands acting in specific ways, are subject to the same stricture as "function," which is a thin substitute for them.

Watson's view of the retention of "function" will take the form of modifications of the organism as represented by the advocates of organic memory. But the same difficulties must be met in this view. Modifications mean change if they mean anything. Therefore the organism, after modification, must not be identical with the organism as it was before the modification; and so the unity of the organism would be lost. What ground is there for this modified organism to respond in precisely the same way to the same situation as the differently modified organism responded? To make sure of steadfast responses to the same stimuli, we demand the same identical organism. Moreover, how could a changed organism recognize an event, which occurred in the organism before it was changed; and, especially, how could it recognize it as its own experience? Can modifications recognize one another? Can a physical modification in a muscle or gland or any combination of them recall an event long since gone? Or can it plan to build a house, or perform the preliminary imaginative work essential for some invention or creative piece of literature? If modifications possess such powers, they might well be called a succession of selves. If we are to secure unity of experience by means of the impressions or tracks or pathways which are actually made in permeable matter, how can we bring the separate modifications together so they might know one another? If a track is made in the nervous system today, on this theory, we must assume that an experience or stimulus tomorrow, which is supposed to arouse the track, actually makes a new track. If we do not assume this, then all experience does not make tracks, but this is contrary to the theory. If it does make a track, it is a new one. And unless we identify the new one with the old one, there could be no unity of the experiences of today and yesterday. If the identification of the two were thinkable, we should have only one experience. It would still be a question of which one, today's or yesterday's. Moreover, there could be no experience or knowledge arising from crevices in the nerves because the nervous system, without consciousness, is but dumb, blind matter like grass-blade or tree. Besides, when we revive an old impression by placing a new one down upon it, why do we not revive all of the old, that is, why do we forget so much and revive only here and there along the stretches of the tracks? And why does the old reaction rise with "undesirable additions" (errors)?

There seems to be no solution to the problem so long as we blot out consciousness by identifying it with the activities of the physical organism. A conscious person can never be formed from the material elements. If these, mechanically, produce effects, they could never be more than a sum; they could never be a unity, certainly not a conscious unity. Brain atoms in motion, upon which this theory is based, are but conscious creations. Shall we employ the product of consciousness to rule

consciousness out? If there are molecular movements in the brain, it seems that the brain having them would know of them most certainly and directly. But the behaviorist finds a more reliable way to the discovery through the experience of an outside observer. He forgets that an outside observer is fully conscious. If the behaviorist, as an outside observer, is conscious, why deny consciousness to the introspectionist? A succession of molecules in perpetual motion could produce only successive effects; it could not produce the experience of unity and succession. Memory is possible only on the assumption of a conscious person who can identify his successive experiences as belonging to himself, and who can distinguish and compare the particular experiences, and relate them in a rational whole.

Behaviorism denies the fact of consciousness which makes all psychologizing, even behaviorism itself, possible. It makes no provision for the unity of personal experience. The organism can possess no sense of orientation, no power of initiation or selection; but it is at the mercy of the specific stimuli that throng the sense organs. There can be no unity among the stimuli, for we never can be sure what stimuli may affect us next. Therefore, there can be no unity of response, for the response is mechanically governed by the stimuli. Contrary to Watson, the body does not act as a whole; but it operates mechanically in a succession of sectional bodily acts each provoked by disconnected, chance stimuli. Therefore, there is no unity in the separate bodily acts; and, certainly, there is no causal connection among them because they do not depend upon one another, but they depend upon the character of the stimulation. We encounter the same objection here as in Hume's succession of sensations, and as in James' succession of conscious states. In neither case could there be any consciousness of succession. In Watson, we have a succession of bodily acts instead of sensations or conscious states; but the same principle is at stake—the principle of unity. There is no bond of union between the several acts, and therefore no explanation of how or why we behave as we do.

The method of introspection is especially obnoxious to the thoroughgoing behaviorist. With introspection gone, Watson's "verbal report method" would scarcely be reliable; for it depends upon the interpretation of the subject. Besides, if there is no introspection there is no direct access to reality. The behaviorists overlook the fact that every observation is the observation of some one person. The observation is always private and personal. A community of understanding must be established by means of a system of descriptive symbols. The facts of my consciousness and yours may be understood through the descriptive medium. There is perhaps more liability to error in the description and exchange of mental facts than in physical; but the physical sciences often disclose variation and mistakes. If we can not trust our retrospection, we can not see how the behaviorist can speak so confidently of objects to which he is not now responding, that is, that are already past or

included in an anticipated future. The stimulus to the past act is no longer present. Hence, if we respond to the past, it must be without a stimulus unless it be a thought-stimulus, which Watson, of course, would not admit. Or, how could one respond to an invention, which has, as yet, not been realized except in mind? If the behaviorist will not admit a thought-stimulus (and he will not), he can not say that an inventor can invent because there is no stimulus anywhere in the universe to which he can respond.

Watson's theory becomes plausible only because he, himself, unwittingly, becomes the conscious observer. Casting out introspection, he turns introspectionist. He even surpasses the conventional psychologist. For by his introspective imagination, he posits "implicit processes" beyond the scope of scalpel, lens, and tambour. He even establishes a world of real movements beyond the edge of dreams. Are these movements in a vacuum? And, are they movements of muscles and glands of such nature that Watson is unable to conceive, that is, beyond his dreams? What sort of physical movements in the body can he identify with "implicit processes" (thought), which have, up to date, remained unobserved? Can a psychology of observation be based upon unobserved movements? Can physical movements imagine, as Watson does, and that without images? Can Watson's organism, which is mere physical movement, posit a world of reality beyond the imagination to conceive? Where will the fulcrum of the stimulus lie? Watson's method of observation has stretched far beyond the objective, discoverable world; for his psychology rests upon imagination and what lies beyond it. If it rests upon the unobserved, how can it be called scientific? If it does not rest upon the objectively unobserved, that is, the mental, how can it be called psychology? Roback is justified in choosing the title of his book, "Psychology and Behaviorism," as though the terms represent separate treatments. In an unwarranted endeavor to become scientific, the behaviorist has ceased to be psychological.

GEOGRAPHY IN THE JUNIOR HIGH SCHOOL

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Report of the National Council Committee on High School Geography

I

The New Curriculum

An examination of the literature, ever increasing in volume, on the curriculum reveals the fact that there is a new spirit at work in our schools, a spirit that is a response to the many problems growing out of our tremendous industrial development, the rapid growth of urban industrial centers, the increasing utilization and rapid depletion of many of our natural resources, out of the wonderful improvement in transportation and communication, the expansion of our overseas commerce, our increasing participation in international affairs, and the tremendous expansion of our mental horizon.

The schools must ever reflect the trend of the times, for how else can they perform the duties imposed upon them? Modern life is quite different from life in pioneer days when the child was from birth in direct contact with the environment from which he later must attempt to wrest a living and play his part as a citizen. The pioneer's world was a crude farming world, in which local economy prevailed. Economic, social, and political life was simple. School life did not need to imitate the everyday life of the world for the child participated freely in his out-of-school activities in the affairs of his neighborhood. He attended threshings, barn raisings, logging "bees," town meetings, and even business meetings of the church fathers. He was in close touch with practically every phase of community life. The "three R's" then taught might suffice; but now we are living in a world of machines which multiplies man's power many fold. Production, transportation, communication are now almost entirely machine performed. The child of today even in the most favorable environment comes in contact with only such specialized forms of activity that a highly complex industrial civilization permits. A new type of education is therefore needed. It must be an education that will aid the developing child to understand and participate in the work of the every-day pulsating world. It must do something more. It must with specific knowledge—information and sources of information—specific procedures, and successful practice in self-expression and self-sacrifice (the essentials of strength of character in a democracy) educate the child to feel the zest of search and responsibility for choice in the changing civilization. Both the cultural, or avocational, and utilitarian, or vocational, aims must therefore be realized through the course of study.

II

The "Claims" of Geography as a Junior High School Subject

Within the last decade or two a new spirit has been at work in shaping the content of elementary and secondary school geography—a spirit of the practical. In all our better schools today the geography curriculum presents usable information that deals with the experiences of men and nations in their economic and political adjustments to their physical environments. Geography today is essentially an interpretative study of:

1. The great industries of continents and regions: agriculture, lumbering, fishing mining, manufacturing;
2. Of trade and transportation;
3. Of the need and the methods of conservation of our natural resources: waterpower, minerals, forests, soil, and human life and property;
4. Of the ideals, aspirations, and problems of nations;
5. Of the geographic factors at the basis of the international problems of today;
6. Of the political, economic and commercial ties that bind the nations into a world family;
7. And because it is geography—traditionally a study of the earth and man—it discusses each of these in their specific physiographic and climatic setting. It aims at the establishment of principles that underlie these economic and political activities of man and at the development of a geographic "spirit" that utilizes facts and principles in the solution of problems in the field of economic, political, and social geography. It takes first rank as a high school subject in teaching human adjustment to the present day social, economic, political, and international conditions, and in demonstrating the laws of geographic adaptation, i. e., the utilization of the resources of the earth.

Altho geography has a place in the elementary school, its field is so large, its material so valuable and so closely linked with the present ever-day changing world, it should have a prominent place in the high school.

Geography, because it presents interesting up-to-date practical information, offers opportunity for good straight thinking on problems of effective citizenry. Because it deals with natural resources and their conservation, because it reveals our potentialities as an agricultural nation, as a manufacturing nation, and as a world power, and because it interprets the economic activities and opportunities of the various sections of our country, it should be accorded an impor-

tant place in Americanization work. The vast majority of immigrants seek America because of economic motives. Why not point them to some of our potentialities and accomplishments thru the avenue of Economic Geography? Other aspects of geography, that is, social, regional, physical, mathematical, will function in classifying the analyses stimulated by the economic theme.

In progressive schools today the better type of teaching—problems, problem solving, dramatization, socialized discussion—are to be found in geography classes in both the elementary and secondary schools. Geography, because it simulates real life, lends itself to all modern methods of instruction. Geography expands the mental horizon, deepens the sympathies by revealing the relation of one's work to the remainder of the social process, develops intellectual hunger, stimulates the imagination, broadens the general understanding, creates many-sided interests in direct and vicarious experiences, and encourages co-operation with the whole.

Geography as a "Core" Subject

Geography has long been recognized as a synthetic subject because of its intimate relation to the social, biological, and physical sciences. It is rooted in so wide a variety of interests that its facts and principles may be used as the "core" in the solution of many of the vicarious problems and in the organization of studies that deal with industries, trade and transportation, and international affairs.

III

Objectives in Junior High School Geography

Grouping objectives under Knowledge, Habits, and Appreciation is for the convenience of adult analysis of the teaching-learning process. "Knowledge Objectives" are listed first only because they furnish raw material out of which the habits and appreciations are built.

Knowledge Objectives

1. Knowledge of the economic activities of the pupil's own community and his country at large.

2. A knowledge of the major economic activities of the various peoples of the world, stressing the relations of the work of the individual to the world's work, thus dignifying work and assisting the child in his choice of a life career by helping him to find his own personal interests.

3. Knowledge of the immense potentialities of our country and of the numerous opportunities which it offers for vigorous, thoughtful men and women.

4. Knowledge of the extent and ways in which environment promotes well being.

5. Knowledge of the nations of the world, of their interdependence and of the necessity of their living together as a world family.

6. Knowledge of world happenings.

7. Knowledge of the specific usefulness of the various maps employed in school work, home, public libraries and the business world.

8. Knowledge of the sources of first hand geographic data, with specific usefulness of each type, and of the important centers conducting geographic investigation, exploration, and publication.

Habits

1. The habit of "sizing up" situations with an interest in discovering their geographic aspect.

2. The habit of using geographic tools, such as books of reference, pictures, maps, verbal material, specimens, in seeking information on the topic at hand, and to develop the ability to assemble data, weigh facts, draw conclusions, and express opinions.

3. The habit of applying geographic principles whenever practicable, in the interpretation of problems and events of current interest.

4. The habit of suspended judgment.

5. The habit of reading geographic literature in leisure time.

Appreciations

1. An appreciation of the fact that we are living in an age characterized by rapid changes in man's relation to his physical environment, to society, to the state, and to the world.

2. Sympathetic appreciation of the elements of the physical environment which help to explain the work and play activities of man in specific environments.

3. An appreciation of the fact that in a country as large as ours with problems peculiar to sections playing a large part in national politics, a spirit of tolerance is essential to state and national stability.

4. An appreciation of how the physical environment necessitates the interdependence of people and nations as man's wants become more numerous.

5. An appreciation of the way in which the physical environment may handicap or significantly encourage a country to take its place in world affairs.

6. An appreciation of the interest geography gives to one's reading.

7. An appreciation of our resources and potentialities in comparison with those of other nations, of our accomplishments with theirs, of our economic and social conditions with theirs.

8. An appreciation of the great need of the conservation of our natural resources, and our co-operation with other nations in establishing a world conservation policy.

9. An appreciation of the value of good government as a factor in the utilization of the resources of an environment.

10. An appreciation of the obligations the United States as a world power and a member of the great family of nations has to all peoples.

11. An appreciation of the great value of geography in making travel interesting and profitable.

IV

The Junior High School Curriculum

The committee recommends two years of geography in the junior high school as the minimum to carry out the objective listed above. We suggest two major fields of study for these two years of work as here listed under A and B.

A. Resources and Industries of the United States and Their World Relations

This group of topics is intended to give an understanding of the varied natural environments of the United States, the human adjustments to each, and need of adjustment as the population increases. The beginning of an understanding of geographic laws and principles should come about as a natural result of the study and interests and activities of man in these environments. This unit should also develop an appreciation of the interdependence of peoples within a national group, and an appreciation of the interdependence of nations through a knowledge of the social and trade relations of the United States and the rest of the world.

B. The Interdependence of Nations and Regions

The purpose of the geography work in the second year is to assist the junior high school child to investigate the relation between life and the natural environment in the various regions and countries of the earth in order that he may come to see that man's economic activities are largely adjusted to the physical conditions and that nature affects the interdependence of nations and regions.

This two year curriculum may be simplified to fit into the second cycle of the "Eight-four Plan."

V

A Suggested List of Topics

The committee believes it advisable to present a tentative list of topics that school administrators can better understand the value of the curriculum suggested.

**A. Resources and Industries of the United States and Their
World Relations**

In so far as possible each unit should be based on local industries as offering concrete, accessible types.

1. The Wide Variety and Wealth of our Resources.
Rank among nations in a few products as types.
Per capita wealth of nations.
Importance of resources.
The inventive genius and working efficiency of Americans.
Our rank among nations.
2. The Physical Basis of our Wealth and Power.
Large area—its effects.
Wide extent of usable land.
Favorable and stimulating climate.
Fuels and other minerals.
Natural transportation facilities.
Location for foreign commerce.
3. The Distribution of Population in the United States.
Part played by geography in the movement of frontiers.
4. Transportation in the United States.
A century of improvements in transportation.
From trail to railroad and auto track.
Canoe to ocean liner and tramp steamer.
The conquest of the air.
5. Our Ability to Produce and Distribute Foods.
Geographic factors in the production of foods.
The movement of foods to markets.
6. United States as a Manufacturing Nation.
From handwork to machine.
Use of tools, implements, and machines.
7. Sources and Uses of Power.
Man, animal, fuels, wind and water.
8. The Iron and Steel Industry.
Mining.
Metal manufactures.

9. Our Ability to Clothe Ourselves.
10. Our Forest Resources.
The lumber, woodworking and paper industries.
Conservation of forests.
11. Building Materials and their Production.
12. Commerce of the United States.
The chief railway systems.
Our use of the waterways.
Coastwise traffic.
Some of the more important ports of our country.
13. Our Independence of and Dependence upon other Nations, largely a review.

Suggestions for Interpreting Above Topics

1. The topics in this section are not to be considered in detail; they are to serve rather as an introduction to the course. They are intended to motivate the pupils in their choice of problems. Graphs which portray relative rank among nations are to be preferred to the study of exact figures.

2. These topics are to be considered in a broad and general sense; they must serve to give the pupils a background of the country as a whole, upon which further topics may be elaborated.

3. Study of population maps will introduce the problem "Why do many people live so close together here and so far apart in other places?" The solution of this problem will involve the consideration of living conditions in mountains, deserts, etc. Causes of fluctuation in population are involved.

The study of population maps of 1790, 1850, etc., will show the spread of population westward. The influence of passes and natural waterways will explain the movement of the frontier and the directions of the movements. The influence of discoveries, inventions, in opening up new territories, must be considered.

4. Transportation of commodities across the United States is not to be considered here, because centers of production and markets have not yet been definitely located. The emphasis is to be placed rather upon modern means of transportation by land, water and air. Brief historical sketches of the growth of these means should be introduced.

5. This topic calls for a study of the production of certain important food crops, as fruits, wheat, etc., as well as fish and cattle, the choice of which is left to the discretion of the individual teacher. The influences of such geographic features as surface, soil, climate, etc., upon the production of the product is to be considered, as well as man's adaptation to the environmental factors such as irrigation, drainage, etc., which make possible increased production, and produc-

tion under unfavorable conditions. Specific routes of trade between the producer and consumer in dense population centers are to be studied.

6. Graphs and charts will show the present importance of the United States as a manufacturing nation, centers of dense population being also manufacturing centers. Present day machinery, such as looms, the cotton gin, farm implements, the work of necessity and genius should be studied. Pupils should be led to appreciate the comforts over older hard methods, which have been brought about thru these inventions. Since the teacher is at liberty to choose his topics according to individual need, or child interest, it is suggested that perhaps this topic might be more profitably deferred until later, when all the elements necessary to a manufacturing community have been studied, these elements being: presence or accessibility of raw materials, ready market, power, labor, means of communication with market and with fertile hinterland.

7. Topic 7 involves a study of the means by which work can be done in the United States. Foremost is man power, and without delving too deeply into the realms of sociology and economics, pupils should realize and appreciate the initiative, energy and creative genius of Americans, and the influence of climate upon these characteristics, encouraging or discouraging as it does, certain types of immigrants. Animal power in certain agricultural and forest regions should be noted as a natural adjustment to geographic conditions. Wind mills of the prairies, the recently invented rotorship, the importance of wood as a fuel in certain sections, then the great stores of water power among our mountains, our gas, coal and oil resources should also be studied.

8. The centers of iron production and the comparative value of the iron mines of the United States and other countries should be studied and drilled thru the use of maps and graphs. Processes of iron mining, its dependence upon coal mining; the manufacturing processes and centers of steel and machinery manufacturing, should receive only brief consideration. A study of social conditions among miners in mountain sections will lead to a sympathy with these laborers and an understanding of their problems.

9. This topic should be treated in a way similar to topic 5. Manufacturing and routes of trade can be more fully treated here, however, because of the accumulated background.

10. Forest areas of the United States and the principal types of trees should be located in the United States. The dependence of forest growth upon surface and climate should be stressed, as well as different ways of lumbering for different sections of our country. Hardwoods, naval stores, paper pulp, nursery plants, dye woods should all be stressed as forest products. The belief in the necessity of farming tree crops rather than in mining forests should be inculcated. The necessity of forest conservation as a means of influencing our

climate and preserving our soils should be indelibly impressed. Pupils should feel it their patriotic duty to transmit their forests "not only not less, but greater, better and more beautiful than they were transmitted to them." Foreign markets for United States lumber and large lumber ports should be included.

11. Areas of building stone production should be studied, using maps. Methods of quarrying, use of various stones in building should also be used. This topic includes also such manufactured materials as brick, concrete, pottery and glass.

12. Having studied the resources and industries of the United States, this consideration of the means of transporting raw and manufactured material comes more as a summary and application of what has been previously studied. Note that topic 4 deals with general means of transportation and with historical changes in method, whereas topic 12 deals with actual commercial facilities as they exist today in our country.

13. At the conclusion of the course, the teacher should be able to judge of the child's appreciation of our great and necessary dependence upon other nations for a market for our goods, and for a source of raw materials as well as their dependence upon us. A knowledge of facts alone will not suffice; understanding and appreciation of world interdependence must have been inculcated. Specific cases should be stressed and cited. The child should feel the same appreciation toward different sections of our country and toward all people engaged in different industries.

B. The Interdependence of Nations and Regions

1. Many Lands Supply Our Needs (Products used in our community).

Why there is commerce.

Magnitude of present day commerce.

Major products of commerce.

2. Studies of a Few Typical Products of Commerce.

Production (primary and secondary) and movement of rubber, sugar, leather, vegetables, oil and railroad equipment.

3. World Commerce.

Products of modern commerce.

Commodities and traffic routes of the past.

Traffic routes of today.

4. The Machinery of Commerce—Transportation and Communication.

Human portage and pack animals.

Evolution of ships.

Railroads, distribution as to continents and countries, their efficiency.

Work of consular service.
Postal, cable and wireless service.
Coaling stations.
Government aids to navigation.
New York as a modern port and its equipment.
Story of the growth of manufactures, source of raw products, capital.

5. Type Regions and Countries.

Great Britain (and Northern Ireland) as modern manufacturing and commercial nations.

Textile industries, iron and steel, machinery, ship building.

Agricultural conditions at home.

Commerce in foods and raw products.

Britain's investments in opening undeveloped regions.

British Dominions and Colonies—interrelationships.

London as an entrepot port.

Position of coal in foreign trade.

Relation of navy to commerce.

How war disturbs British industry and trade.

Russia—an agricultural country of the temperate zone.

The Philippines—tropical lands, how used by man.

Persia—land of little rain.

Amazon Basin and Arctic Lands—regions of little commerce and development.

India—an old, densely populated and retarded country.

6. A Study of Selected Regions and Countries.

The following list of regions and countries should be considered as the maximum.

Canada—Our Northern Neighbor.

Mexico and the Caribbean Lands.

The Andean Countries.

The Temperate (intermediate) Zone Countries of South America.

The Coffee Region of Brazil.

France and Belgium.

The Scandinavian Countries.

The Western Mediterranean Lands.

The Balkans.

Central Europe.

Undeveloped Siberia.

Southwest Asia.

China and Manchuria.

Japan.

The suggestions following part A are, in the main, applicable also to B.