

# THE PSYCHOLOGICAL REVIEW

---

MARGARET FLOY WASHBURN (1871-1939)

Miss Washburn is typical of what is best in American psychology. Her activity covered the span of the truly modern movement. She studied with Cattell in his first year at Columbia when strictly experimental psychology was just beginning to receive recognition. Her later work was with Titchener, who inspired a different approach, one that was central in the discussions of the early generations. Her publications covered many of the more important fields in American work. Beginning with sensation and perception she quickly developed an interest in animal psychology. *The Animal Mind* was the first comprehensive survey of experimental work in animal psychology. She participated in the discussion of most of the theoretical questions that were current through the growth of schools and developed a system of her own that was comprehensive and attracted much favorable attention. It was original in formulation and grew out of a thorough knowledge of the literature.

Miss Washburn was born in New York City, July 25, 1871. Her father's family was predominantly of American Quaker stock. Her maternal grandfather was from Devonshire. Her early education was by private tutors with attendance later at the public schools. She entered Vassar College at sixteen. Aside from the required courses she was most interested as an undergraduate in chemistry and philosophy. On the basis of her college training she was attracted to philosophy and science as a field of further work. She chose to devote herself to psychology as a subject that involved something of both, and sought admission to the graduate school at Columbia to further this purpose. At that time women were not admitted, but Professor Butler advised her

to apply to Cattell for admission as a hearer and she was accepted. She at once took full part in the seminary and experimental work. In addition she was encouraged to begin a piece of experimental work on Weber's Law as applied to the limen of twoness. Obviously she was accepted as a participant rather than as a hearer.

On Cattell's recommendation Miss Washburn became Scholar at Cornell the following year, the first year of Titchener's period at Cornell. Her thesis topic was an outgrowth of the study she had begun at Columbia and took the title 'The Effect of Visualization upon Judgments of Tactual Distance and Direction.' When completed it was translated into German with Titchener's aid and published in Wundt's *Philosophische Studien*. At Cornell she was interested in philosophy as well as in psychology and was perhaps as much influenced by the men in philosophy as by Titchener who was at the time the only psychologist on the staff. The two fields were much closer at that time and the contacts between students and members of the staff in the two subjects at Cornell were especially frequent.

The writer remembers Miss Washburn well from the Cornell period. He served as observer for her work on the skin and was led to a study of a related character probably as a result of the work and her suggestions. She was a brilliant conversationalist, inclined to be rather acid in her comments on men and things. Her keen sense of humor was fully developed at this time. To a shy youth impressed by her two years seniority as a student and one year in chronological age, she seemed somewhat reserved and aloof. As I look back I can see no specific occasion for the old opinion and it vanished completely as I came in contact with her in later years.

Miss Washburn's attitude towards Titchener and his theories offers some phases of interest. At first there was a close sympathy between them in point of view, possibly because neither had as yet developed the position that was later regarded as characteristic. Titchener had not formulated his structuralism at that time, although he followed Wundt's general course in his theorizing. His main aim was to estab-

lish psychology as a science. His main reaction was against the religious notion of a soul entity that still held over among psychologists with a theological background. Structuralism as a closed system developed later under the spur of criticism from the functionalists and others. It was the outgrowth of his defense of the implications of some of his earlier statements against the attacks of these critics.

When the more rigid system developed, Miss Washburn showed a lack of sympathy with the more extreme tenets. In several articles and in seminar discussion she indicated her scepticism of his formulation of the relation between sensation and attribute and also of the exclusive use of introspection as the method of psychology. In her autobiography she remarks: "It is worth while to describe conscious states, but not, in describing them, to turn them into something unrecognizable." They never came to a break but Miss Washburn published several articles which showed a divergence in the point of view. Personally also in her later period at Cornell she came closer to the men in philosophy than to Titchener. This may be seen in the estimate she gives of Titchener in her life of him in the *Dictionary of American Biography* which I should say was eminently fair but not enthusiastic.

After receiving her degree Miss Washburn accepted the professorship of philosophy at Wells College which she held for six years. During this period she spent regularly a day a week at Ithaca, using the library and taking part on occasion in seminar discussions. Following this for two years she was Warden of Sage College, the residence hall for women at Cornell. The second of these years she was also a lecturer in psychology, giving courses in animal psychology and in social psychology. During the eight years that succeeded bestowal of the doctorate, she was occupied more or less with research at Cornell. An important problem was a study of the flight of colors under the controlled conditions afforded by the physics laboratory. This period was a highly formative one in her general training.

After a year as assistant professor of psychology at the University of Cincinnati, Miss Washburn was given

the rank of associate professor of philosophy at Vassar, the institution with which she was identified until her death in 1939. Her title was changed to Professor of Psychology in 1908, a chair which she held until her retirement in 1937. From this time on she was a prominent figure in American psychology. At Vassar she was an inspiring teacher in the best sense of the word. The courses were always popular with the students, quite as much for the solid character of the content as for the temporary interest. She took nothing for granted even in related sciences, but taught as much of them as was necessary for an understanding of the use she would make of them. Many students were drawn to the courses and sufficiently impressed with the subject to make it their life work.

An important part of the undergraduate training was the investigation of some small problem within the range of ability of the student, that might afford an initiation into research. In many cases these proved worthy of publication and were printed as one of the *Minor Studies from Vassar College*. Sixty-seven of these were published over the years in the *American Journal of Psychology*. They constitute probably the longest series of studies from any of the American laboratories. All were worth while and many were valuable contributions.

Miss Washburn's contributions to the literature of psychology were many. Possibly the best known is *The Animal Mind*, which was first published in 1907 and was thoroughly revised three times—in 1917, 1926, and in 1936. It was an admirable compilation of the experimental work that had been done in animal psychology and contained many original suggestions for organization and interpretation. Through it one can follow the changes in theory that developed from the different schools and from the changing character of the experimental work. The first edition was the earliest attempt to collect and organize the scattered work in the field. In addition to the compilation and organization of the material, important contributions were made in the interpretation of results. Now and again a suggestion would be made that

later was published by an experimental worker without recognizing its source. Miss Washburn once remarked that it was too bad to publish a new result in a general work only, for it would probably be overlooked, or if noticed, it was likely to be regarded as part of the general literature and not as the contribution of the author of the book.

It is interesting to note some of the changes that were made in the different editions. The first devoted a good deal of space in the introductory chapters to a review of the results and position of the early anecdotal school in animal psychology and opposed to it the advantages of the experimental method. In the later editions less space was given to this material but it was not entirely omitted from the last edition, long after psychologists in general had ceased to think of anecdote as a real method. The nonprofessional reader still needed the warning.

A second point of general interest was the rise and fall in the emphasis placed upon mental states in the interpretation of animal behavior. In spite of the growing scepticism in Titchener's structuralism, Miss Washburn always spoke of animal responses in terms of human consciousness. This emphasis is seen most clearly in the fact that she devoted the second chapter in each edition to a discussion of the criteria for the existence of mind as consciousness. It was admitted that consciousness could be demonstrated only in man. Still arguments were arrayed as to what functions and what structures might be accepted as evidence of the existence of consciousness. The essentially negative conclusion was unchanged in the later editions. It was nevertheless repeated that consciousness must be assumed in the higher animals and must be lacking in the lower and that none of the criteria were sufficient to determine at what point mind or consciousness first appeared.

The omission and reinstatement of chapters show the influence of the dominant schools. In the second edition, published in 1917 when the behaviorist movement was at its height, several pages are devoted to the behaviorist's position. After the discussion, the explicit statement is made that "we

shall be interested in what animals do only as it throws light upon what they feel." Nevertheless that edition omitted the chapter on 'The Memory Idea' that had been contained in the first one. Much of the material of the chapter was included in a second chapter under the general head of learning by experience, but the omission of the chapter title may be significant.

In the fourth edition this subjective material was again made part of a new chapter on the 'Higher Mental Processes' which gave much space to Köhler's work and other studies that were developed under its influence. Miss Washburn rejoiced in the rise of the Gestalt school that again made mental processes an important factor in animal psychology. The fourth edition also introduced another new chapter, The Affective Factors in the Animal Mind, Drives, Incentives, and Emotions. Some of the material of the chapter had been discussed elsewhere, but the necessity for a new chapter indicated the great number of experiments that had been devoted to the drive, as well as the importance the term had taken in general psychological theory.

Undoubtedly the *Leitmotiv* of Miss Washburn's theoretical thinking was the importance of motor processes on conscious processes. It creeps out in the discussion of the animal mind where the burden of the argument demonstrates the existence of consciousness in animals. In her autobiography she traces the beginning of her interest in that point of view to about 1901. The first explicit formulation of the theory was in a contribution to the Hall *Festschrift* in 1903. In that article she maintained that the feeling of sympathy was dependent upon the excitation of slight movements which, if they were executed in full, would help the sufferer. The kinæsthetic sensations from these slight movements were the basis of the feeling we call sympathy. Between 1909 and 1914 three papers were written that advanced the theory in different ways. The position was fully formulated and justified in 'Movement and Mental Imagery' published in the Vassar Semicentennial Series in 1916. One of the last papers was a study of the participation of motor processes in the perception

of depth by the aid of double images read before the National Academy of Sciences.

The importance of motor processes in consciousness had been recognized and formulated in different ways by Ribot, Stricker and many others. Miss Washburn related her theories to Münsterberg's presentation in his *Grundzüge* of which she spoke with approval in her autobiography. Nevertheless she opposed her theory to his in one major point. Münsterberg held that consciousness accompanies the free discharge of motor neurones, and the greater the discharge, the more intense the consciousness. When it was pointed out to him that habitual movements were unconscious or only slightly conscious, he asserted in rejoinder that habitual movements were transferred to subcortical centers, and that only the cortical motor cells were accompanied by consciousness. Miss Washburn recognized that this could not easily be brought into harmony with known neurological facts, and opposed to it her own theory that consciousness arose only when a movement or tendency to movement was partly inhibited by a tendency to make another movement. After comparing her statement that consciousness accompanies inhibited motor discharges with Münsterberg's statement, she reaches a compromise in the statement that "consciousness accompanies a certain ratio of excitation to inhibition in a motor discharge, and that if the amount of excitation either sinks below a certain minimum or rises above a certain maximum, consciousness is lessened."<sup>1</sup>

This principle was applied to each of the main groups of psychological phenomena. Perception depends upon the movements that are evoked by the presented object. Perception involves possession of a movable sense organ that can organize an object into a reversible series of sensations. Perception also implies a movable grasping organ that can take an object apart and respond to each portion separately. To appreciate the object as a whole, it is necessary to make movements to the whole as opposed to the parts. In this way

<sup>1</sup> *Movement and mental imagery*, Boston and New York: Houghton, Mifflin, 1916, p. 25.

"Motor psychology can explain the facts of perception which the configurationist merely describes," to quote from the *Psychologies of 1930* (p. 88). Similarly one part of a visual field becomes 'figure' and the rest 'ground' if it seems easier to pick up than the rest.

"The very same process which, on our hypothesis, when added to the effect of an outside stimulus makes that effect conscious, will, when it occurs in a sensory centre that is not being externally excited, be accompanied by the type of consciousness that we call 'centrally excited,' the consciousness that occurs in mental images and thoughts. Whenever a motor pathway is at the same time excited by a sensory pathway and partially inhibited by an antagonistic motor excitation, a process occurs in all sensory pathways connected with the motor pathway by low synaptic resistances, including the sensory pathway that is exciting the motor pathway in question. This process is accompanied by consciousness."<sup>2</sup> Thus memories as well as perceptions were connected with the activity of motor paths. Similarly associative revival depends upon the sensori-motor connections and not upon sensori-sensory paths. Thus "each movement arouses kinæsthetic sensations, these then excite the second motor center." During any delay that occurs in the discharge of this center, the sensory center that belongs to it is centrally excited, and there occurs an image in consciousness. A chain of ideas is at basis a chain of movements.

The more complicated mental processes are given an explanation upon the same basis. The *Aufgabe* or problem idea that looms so large after the work of Külpe and Ach finds its physiological and truly causal explanation in the movements of a tentative character which persist during the pursuit of an end. These correspond apparently to the posture of a dog as he watches at the hole of a coyote. There is tension but little movement. Attention depends on the closely related action systems, or more definitely of the inhibitions of action systems that precede the presentation of the stimulus. The increased consciousness that is the core of attention is

<sup>2</sup> *Ibid.*, p. 30.

due to the inhibitions that must be present in the appropriate degree. Many of the detailed facts of learning and forgetting, among them the effects of distributed as compared with accumulated repetitions, the different forms of inhibition, the differences between primary memories and memory images are explained ingeniously by slight modifications of the general theory.

The phenomena associated with reasoning also were made to fall neatly within the rubrics of the motor theory. A concept, e.g., is the accompaniment of a single response to a number of stimuli. The single response groups all the members of the class into a unity, and the consciousness that accompanies it is the general idea. A very interesting and plausible explanation is given of the imageless thought processes that were emphasized by the Würzburg School and by Woodworth and Binet. These were related to partially excited movement systems. Each situation evokes its own tentative or partial movement. These give each its own kinæsthetic sensations and these sensations in turn constitute the basis of the certainty that accompanies an intellectual state without specific images. Thus 'but' is represented by two incompatible movement systems which by their mutual inhibitions prevent movement but give a mass of kinæsthesia that constitutes the 'but' consciousness.

Dissociation also is explained by incompatible movement systems one of which represses the other. The importance of emotions in producing dissociation and the suppression of complexes is ascribed to the highly complex masses of movements that accompany or constitute the emotions. The motor systems that are not compatible with those developed by the emotion are inhibited during the emotion, and the conscious processes connected with the motor systems are repressed with them. Explanation of the more lasting forms of dissociation of personality follows the same lines.

On rereading *Movement and Mental Imagery* the writer was impressed anew with the erudition of the writer, the wide range of literature that was taken into account, and the skill with which it was incorporated in the main outline of the argu-

ment. It is the work of a master of the detailed facts of psychology and an artist in exposition. It is too early to pass a final judgment on the truth of the conclusions, but the system certainly stands high among the many attempts to bring all the known facts into a unitary statement and to formulate an explanation of them.

The wide-spread character of Miss Washburn's interests is shown clearly in the great variety of topics that were covered in the *Minor Studies*. In the early years many of them deal with the ways feeling and emotional processes affect memory and perceptual processes. In the later years different forms of animal experimentation have a prominent place. Some of the studies bear upon the motor theory but on the whole the theory plays a minor rôle. Various tests, and perception and sensation were all well represented. Most of the topics treated were important. All the papers show great care in the execution of the experiments, and ingenuity in the interpretation of the results.

The mass of Miss Washburn's published writings is impressive. Including the Vassar Studies more than 130 articles came from her pen and approximately seventy reviews. *The Animal Mind* had four editions and was translated into Japanese. *Movement and Mental Imagery* was the major theoretical work. In addition she translated Wundt's *Ethical Systems* and her thesis was published separately as a book of sixty pages. As further evidence of her wide participation in the life of psychology, she was associate or cooperating editor at one time or another on six of the periodical journals. Her closest connection was with the *American Journal of Psychology*. She had long been cooperating editor and when Titchener resigned the editorship in 1925, she with Bentley and Boring shared the editorial work with Dallenbach.

Miss Washburn had received most of the honors that can be given in recognition of psychological achievement. She was one of the two women to be elected president of the American Psychological Association. She was President in 1921; Miss Calkins had been President in 1905. She was a member of the National Academy of Science, also one of two women

members, Dr. Sabin being the other. In 1926-27 she was vice-president of the American Association for the Advancement of Science and chairman of Section I (psychology). She was also a member of the Society of Experimental Psychologists and of the International Committee of the International Congress of Psychology. An honor quite unique was the presentation to her of a commemorative volume of the *American Journal of Psychology*. It is a work of nearly 450 pages, containing contributions from thirty-two American psychologists and men of related fields. The volume was prepared and presented to her at the Columbus meeting of the Association in 1927.

Miss Washburn had an important place in the social and official life of psychology. She was frequently called upon to function on committees of the Association and in these capacities always showed great initiative, good taste, and tact. She was a faithful attendant at the meetings of psychological groups and had an unusually wide circle of friends. Her death is a great loss to psychology. She contributed much personally and professionally, and represented a unique point of view. All will regret the loss of a sympathetic, always genial and witty companion and a sane advisor on matters theoretical and practical.

W. B. PILLSBURY

UNIVERSITY OF MICHIGAN