

Some Recent Theories of  
Attention in American  
Psychology

by Alvin Leroy Babb

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Submitted to the Faculty of the Graduate School  
of the University of Kansas in partial fulfillment  
of the requirements for the degree of Master of Arts

SOME RECENT THEORIES OF ATTENTION

IN

AMERICAN PSYCHOLOGY

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SOME RECENT THEORIES OF ATTENTION  
IN AMERICAN PSYCHOLOGY

When the subject of "Some Recent Theories of Attention in American Psychology" was suggested, the author had no idea of its possibilities, nor of the difficulties that would be encountered. He had devoted most of his previous study in this subject to the so-called "facts of attention" and had paid very little attention to the theoretical aspects of the subject. However, after the full significance of the problem became apparent, the subject proved both fruitful and interesting.

The author found some difficulty in his work owing to the fact that the American psychologists seem inclined to lean upon the foreign psychologists, and to draw their conclusions with reference to them. Indeed, some of them, as for example, Münsterberg, have gone so far as to write their works in a foreign tongue. Even when they, themselves, wrote in English, their frequent references to these foreign authors, which the present author is unable to read, made the articles less profitable than they would have been had they been written as articles intended solely for an English reading public. This difficulty was not experienced in all, however, as

some of the authors, when they referred to a foreign psychologist, were careful to explain the foreigner's viewpoint so that recourse to the original, or knowledge of French or German was not necessary. Among these Pillsbury was very helpful, not only on his own account, but on account of the assistance which his explanation of foreign views gave in understanding the discussions of American psychologists who were less careful.

Another source of difficulty was encountered on account of a shifting and oftentimes obscure use of terms. It seemed as if the authors oftentimes were sacrificing clearness in an attempt to appear scholarly. In other instances, the authors, although trying to keep to a technical usage of terms, would allow themselves to drift into a more or less popular usage. This was especially true of the words interest and will.

Again, the same author apparently holds one view in one place and another view in some other article, or even in a different place in the same article. I will speak of this in reference to Angell. This made it hard to arrive at the exact theory which the psychologist advocated. Calkins seems to have encountered the same difficulty in her study for she says in her introduction to a discussion of the theories of attention: "It is almost

correct to say that no one theory has the undivided support of even any one scholar." That psychologists have had the same difficulty in declaring just what theory was advanced by foreign psychologists may be seen by a comparison of Baldwin and Pillsbury, for example. In his dictionary<sup>2</sup> Baldwin lists five theories of attention, among which are the "psychical energy and original activity theories", to which class he assigns Wundt, and as another class, the "inhibition theories." Pillsbury, on the other hand, would seem, in the opinion of the present author, to lay sufficient stress upon Wundt's theory of inhibition, as for example, when he says ".he inclines to the opinion that it is safer to regard the entire process as one of inhibition",<sup>3</sup> to warrant the assumption that Wundt would be placed in the class of believers in the "inhibition theories." In fact, when the author attempted to make a classification of theories into which he could fit those of the various authors, he found that he was unable to do so. There seemed to be to

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1. Calkins--Introduction to Psychology, p. 486.
  2. Baldwin--Dictionary of Psychology and Philosophy. Subject "Attention."
  3. Pillsbury--Attention, p. 241.

much overlapping ground. It was thought wise, therefore, to lay aside any such attempt and to take up the subject in the following manner: A number of the best known (the author will not take the responsibility of deciding who is the greatest) American psychologists, from William James<sup>1</sup> to Knight Dunlap<sup>2</sup> have been studied with reference to their treatment of the subject of attention and related subjects. In a separate chapter for each one, the author will attempt to present, as he understands them, the various theories of these psychologists, with some criticism or comment in each chapter. In a concluding chapter he will try to show, if possible, that the views of psychologists have been changing, and, in the main, along what lines, and as a final conclusion, he will present his own theory of attention. No definite conclusion can be reached, but a theory will be advanced which, in the opinion of the author, seems as well grounded as any so far studied.

The problem of attention, as the author views it, involves one large question around which center many

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1. James--Principles of Psychology. (1890).
  2. Dunlap--A System of Psychology. (1912).

smaller ones. This is the question of the nature of attention. All acknowledge that there is a state of clearness in attention, but the question as to whether this clearness is due to an increase in intensity, an inhibition of competing sensations or ideas, or a combination of both, is still an open question. Again, the relation of interest to attention is not decided. Is interest a condition of attention, or is it caused by attention? Or is it merely an accompaniment of attention? Similar questions may be asked in regard to the feelings, and the motor adjustments. Has attention a psychic or a physiological basis? These and other questions concerning the nature of attention are discussed by different authors, and will be treated in this paper.

An attempt has been made to roughly group the authors chronologically in order to see, if possible, if there is any growth in theories according to time. Since, however, the authors are all of practically one short period of twenty-five years, such grouping will doubtless seem arbitrary and of little value.

## WILLIAM JAMES

In a discussion of the theory of William James it is perhaps best to take up first his theory in regard to the clearness of attention. This, if the writer has interpreted him correctly, is believed to be due to a real increase in intensity. A few quotations will illustrate this: "It must be admitted that to some extent the relative intensity of two sensations may be changed when one of them is attended to and the other not"; "In the face of such facts it is rash to say that attention cannot make a sense impression more intense."<sup>2</sup> These quotations leave no doubt as to James' theory in this regard. As this question will be taken up as a general topic for discussion in the concluding chapter, any criticism of it will be deferred until then.

In regard to the place the muscular adjustments play in attention, there is little doubt but that James would consider them the accompaniments of, or an effect of attention. For example, he says: "Any object if im-

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1. James--Principles of Psychology, p. 426.

2. Ibid, p. 425.

mediately exciting, causes a reflex accommodation of the sense-organ, and this has two results--first, the objects increase in clearness; and second, the feeling of activity in question. But in intellectual attention similar feelings of activity occur." This quotation not only points out that these motor activities arise as a result of the excitation by the object or idea attended to, but indicates that James would make clearness not the attention, but an attribute of attention. In his view of the relation of the motor activities to attention James has, in the opinion of the writer, come very near the true relation. The return effect which the arousal of these motor activities has, however, should be included, and was by several writers who will be treated later.

James has not made exactly clear just what he means by interest. He says, "The things to which we attend are said to interest us. Our interest in them is supposed to be the cause of our attending"<sup>2</sup>; and again, "Voluntary attention is always derived; we never make an ef-

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1. James--Principles of Psychology, p. 416.

2. Ibid, p. 435.

fort to attend to an object except for the sake of some remote interest which the effort will serve", but he does not tell us what this interest is. He did, seemingly, give a hint as to its nature when he said: "the only things which we commonly see are those things which we preperceive"<sup>2</sup>, but he upsets this hint when he discusses the effect vs the cause theory,<sup>3</sup> and leaves nothing to take its place. Had he left this idea he would, as the present writer believes, have come very near the truth, and would have accorded very closely with the more recent psychologists. In fact, his discussion of the "enemy's" views in regard to the effect theory would lay a very good groundwork for a theory of interest, as, for instance, when he says, "the object again takes the initiative and draws our attention to itself, not by reason of its own intrinsic interest, but because it is connected with some other interesting thing. Its brain process is connected with another that is either excited, or tending to be excited, and the liability to share

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1. James--Principles of Psychology, p. 416.
  2. Ibid, p. 444.
  3. Ibid, p. 448 ff.

the excitement and become aroused is the liability to preperception in which the attention consists"; and, "We easily see now why the lover's tap should be heard--it finds a nerve center half ready in advance to explode."<sup>2</sup>

But these quotations are from a theory which James rejects. He does not give attention a physiological basis, but says there is a something, a "star performer", which decides what shall be attended to. This something he calls a spiritual force, concerning which he says, "I count myself among the latter (the believers in a spiritual force) but as my reasons are ethical they are hardly suited for introduction into a psychological work. The last word of psychology here is ignorance, for the 'forces' engaged are certainly too delicate and numerous to be followed in detail."<sup>3</sup> James thus places himself against the view which many recent psychologists hold and the one which will be advanced in the concluding chapter of this article. Indeed, he seemed to see the significance of a physiological basis, but was

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1. James--Principles of Psychology, p. 449.

2. Ibid, p. 450.

3. Ibid, p. 454.

unable to get away from his ethical theory and since it did not fit in with psychological arguments, he declares that "the last word for psychology is ignorance."

JAMES MARK BALDWIN

While Baldwin asserts that intensity of stimulus tends to draw attention, he also asserts that "attention directed to a sensation increases its intensity."<sup>1</sup> He further says that "attention has the same intensifying influence upon the affective states in general as upon sensation."<sup>2</sup> There seems to be no hint of any play of inhibition of any kind. The clearness would seem, then, according to his theory, to be wholly one of intensification and better adaptation.

We find in Baldwin a very interesting view in regard to the part motor activities play in attention. The motor activities seem to be aroused or initiated by the attention, but when once initiated, they, in their turn, react on the attention so that it becomes more intense. He has very well summed up his theory in this regard: "It is easy to see that, when I turn my attention to a sensation, I in so far start into more vigorous existence the motor ingredients and associations of that sensation. This in turn tends to bring out more intensely the sensory ingredients."<sup>3</sup> This

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1. Baldwin--Handbook of Psychology, p. 73.
  2. Ibid, p. 76.
  3. Baldwin--Mental Development, p. 462.

theory of a circular action has found a prominent place in many later theories. For Baldwin it gives the ground for a very interesting theory of reflex attention. "The reflex attention which follows upon increased intensity of sensory excitation may be considered, therefore, in conformity with what has already been said, the return wave of revived motor associates; and the increased intensity which follows the direction of the attention is due to the direct influence of this return wave, by the reverse association." We see that Baldwin places much emphasis on the motor aspects of attention, but only as an accompaniment or reinforcing factor and not as a cause. In this he seems to agree with the majority of American psychologists, although the theory of the circular activity of the motor aspect of attention is not advanced by a great many. It has, however, formed a part of the theories of others.

Baldwin, like James, tells us that interest plays an important part in determining attention, as for example, when he says, interest "gives a spontaneousness and ease to the attention which renders the latter more effective and less wearisome to the inner life. Attention to that

which interests us does not demand the outgo of mental effort," but, like James, he does not state what this interest is.

Baldwin seems to belong to the class who would explain attention as arising out of associative activities in the brain; as the outgrowth of experience. For example, he says "Attention is not a fixed thing"<sup>1</sup>; and, "Why should not attention, like everything else, be subject to the changing effects of habit and accommodation"<sup>2</sup>; and, "Attention begins to appear about the end of the first quarter year, appearing first in response to bright lights and loud sounds, and being for a considerable time purely reflex, drawn here and there by the successive impressions which the environment makes. With light and sound, however, movements also attract the infant's attention very early; and the passage from reflex attention to a sort of vague interest seems to arise first in connection with the movements of the persons about

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1. Baldwin--Handbook of Psychology, p. 774.
  2. Baldwin--Mental Development, p. 468.
  3. Ibid, p. 471.

him." <sup>1</sup> This would seem to indicate a psychic growth; an increase in attention as the association paths become fixed. It is true that Baldwin places much stress upon the motor activities, but according to his own discussions they are accompaniments and not conditions. One more quotation may be profitable in this regard: "Now we know that the exercise of attention involves a large amount of motor process; its constant and necessary accompaniments are motor." <sup>2</sup> The real condition would seem to be the "set" of the mind or brain, due to previous experience.

There seems to be no definite recognition of the "Spiritual force" which James advocates, although he does say that voluntary attention "may be defined as a state of active consciousness due to voluntary mental exertion or effort," <sup>3</sup> and again, "Upon observation of ourselves we find that attention may be stimulated either from some foreign and unexpected source or from the will." <sup>4</sup> Just what this will is he does not say, but the writer would not interpret

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1. Baldwin--The Story of the Mind, p. 76.
  2. Baldwin--Mental Development, p. 462.
  3. Baldwin--Handbook of Psychology, p. 71.
  4. Ibid, p. 70.

his discussions to imply a "spiritual force" apart from the body. A theory of the will in connection with attention, will be advanced in the final chapter, and it should suffice at this point to say that we found nothing which would not fit in with this theory. It is significant, however, to note the emphasis which these earlier psychologists place upon a something which they call the "will" but which they do not explain, while a little later the problem of choice is attacked and forms an important topic of psychological discussion.

## JOHN DEWEY

Dewey makes a change from the two psychologists just treated in regard to his theory of the clearness and intensity. He says, as do the others, that the things in attention are more clear, but he makes it merely a focusing of consciousness. "So the mind, instead of diffusing consciousness over all the elements presented to it, brings it all to bear upon some one selected point, which stands out with unusual brilliancy and distinctness." But this distinctness is not one of increased intensity for Dewey for he says: "The distinctness of mental content must be separated from its intensity." In fact, if the author interprets Dewey correctly, it is more a matter of inhibition. The mind selects the essential and the unessential are not vivid because there is no adjustment to them. In this regard the author thinks Dewey has come much nearer the truth than the two previously considered.

In the discussions read Dewey says very little of the motor activities, but from what he does say, it is to be

1. Dewey--Psychology, p. 134.
2. Ibid, p. 147.

assumed that he would consider them as very important activities accompanying attention, and possibly as conditions of attention.

Dewey, like James and Baldwin, lays much stress upon interest as a condition of attention, but he discusses it so that we may understand more fully what he means. He defines interest as "primarily a form of self-expressive activity--that is, of growth that comes through acting upon nascent tendencies"; He also says: "Whatever furthers action, helps mental movement, is of interest"; and, "Genuine interest is the accompaniment of the identification through action, of the self with some object or idea, because of the necessity of that object or idea for the maintenance of a self-initiated activity"; "The genuine principle of interest is that of the proposed with the growing self, that it lies in the direction of the agent's own growth, and is, therefore, imperiously demanded if the agent is to be himself." Interest, then, would seem to arise out of the fact that the sensation or idea is of concern to the individual. This theory fits in

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1. Dewey--Interest and Effort in Education, p. 21.
  2. Ibid, p. 20.
  3. Ibid, p. 14.
  4. Ibid, p. 7.

very nicely with Dewey's theory of attention.

Dewey defines attention as "that activity of the self which connects all elements presented to it into one whole, with reference to their ideal significance; that is with reference to the relation which they bear to some intellectual end. The essential characteristic of attention is, therefore, activity directed towards some end. Ultimately this end is the self. The various activities of attention are based in the interests of the self, and directed towards ends that will satisfy the self, by fulfilling those interests." This definition should be contrasted with such a definition as that given by Titchener and Dunlap, discussed later. Attention, for Dewey, is a forward looking adjustment. But the ability to form these adjustments depends on past experience.<sup>2</sup> Of the nature of the adjustments he says: "The process of adjustment consists in bringing the past experiences to bear upon the present so as to unify it with those ideal elements which resemble it, and separate it from those which are unlike."<sup>3</sup> The words of Dewey are so clear on this subject that we can hardly do better than to note an-

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1. Dewey--Psychology, p. 133.

2. Ibid, p. 140.

3. Ibid, p. 147.

other quotation from him: "The final fact we learn about attention, therefore, is that it is a relating activity, and that since there is no knowledge without relation, there is none without attention. Attention cannot cease until all relations have been perfectly developed, that is, until all objects, events, and minor relations stand out clearly defined in a final unity, and are recognized as members of one whole--the self. The self constitutes the ultimate unity of all. We end, therefore, as we began, with the statement that attention is a self-developing activity."

As to the developing nature of the self which is being related, and how it is built up, he says: "In attention, as soon as the mind is brought to bear upon the sensation so as to read itself into it and give it meaning, the apperceived content becomes a condition which determines how the mind shall act in the future. Every element apprehended and absorbed into the mind gets an ideal existence, and becomes the means by which future idealizations, that is, acts of attention, are executed."<sup>2</sup> This, then, far from making attention the product of a "spiritual force" such as James

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1. Dewey--Psychology, p. 148.

2. Ibid, p. 150.

advocates, makes it the activity of a growing self. This theory of making the attention the act of relating the present to the evergrowing self is, in the opinion of the writer, a decided advance over the theories advanced by the two psychologists previously discussed, and Dewey's theory of interest and attention must play any important part in any pedagogical study of the subject. Much of Dewey's theory will, therefore, find a place in the theory which the author will advance in concluding this paper.

GEORGE TRUMBULL LADD

Ladd would make it plain that for him, there is an increase in intensity with attention, for he says: "In general, attention intensifies and clears up the content of our sensations, ideas, and feelings; and conversely, the more intense and clearly discriminated are our sensations, ideas and feelings, the more do they attract or compel attention"; and, "The focussing of attention and its consequent redistribution changes the relations between the amounts of psychic energy spent in feeling, discrimination, and conation"<sup>2</sup>, but on the other hand, he would also seem to believe in an inhibitory effect. In this belief he coincides closely with the view of Pillsbury, although Pillsbury says that the question is still unsettled. Two more quotations bearing on the subject immediately in hand may be of interest. He says: "Attention, focussed in obedience to suggestion, actually creates the sensations"<sup>3</sup>, and "If we abstract attention, or the atten-

1. Ladd--Psychology, Descriptive and Explanatory, p. 75.
2. Ibid, p. 74.
3. Ibid, p. 76.

tion is forced to be withdrawn from any particular sensation or feeling, the latter, by virtue of this withdrawal, suffers in strength and clearness of content." Ladd, then, would seem to advance the theory that the increase in clearness is due both to an increase in intensity and to inhibition.

In regard to the part motor activities play in attention, Ladd makes it clear that he does not consider motor activities as conditions of attention, but recognizes their importance. There is also much similarity between his theory and that of Baldwin in that he believes in an attention initiated motor activity which, when once initiated, reacts to reinforce attention. Two quotations bearing on this topic may be worth while: "The feeling of holding our organs steady seems to form no unimportant part of the support which the mind receives in its effort to give fixed attention. Now, it is by fixation of attention that the striated muscle connected with the organs, both of sense and of motion, is put into this condition of physiological tension. It is the return feeling of this tension which defines still further the character, and serves as the continuous support of our act of attention",<sup>1</sup>

1. Ladd, -Psychology, Descriptive and Explan., p. 76

2. Ibid, p. 67.

and "If it be pressed so as to mean that attention is only the psychological equivalent of muscular strains, the passive resultant of the sensations which vary in intensity as the action of the muscle rises and falls, the statement (that every volition acts only upon muscles and through muscles) may well be denied. But if it means that in every act or state of attention, of whatever kind and in whatever degree, motor elements connected with the changes in the muscular fibre play an important part, then there is little doubt of its truthfulness." These quotations leave little doubt as to his opinion of the motor theory of attention. As it appears to the writer, the important step which he and Dewey have made in this part of the theory of attention is an emphasis upon the return element from the motor activities which attention initiates.

Ladd, too, makes interest one of the conditions of attention. For instance, he says:"...it is also the acknowledged universal rule that men attend with ease and effectiveness to what interests them, but only with difficulty and reluctance, or not at all, to what does not<sup>1</sup>

1. Ladd--Psychology, Descriptive and Explan. p.69.
2. Ibid, p. 79.

interest them." This interest he would call a feeling. "The word interest is indicative of feeling. To be interesting is to excite feeling. The form of feeling excited and connoted by this one word are, however, themselves very diverse,"<sup>2</sup> and "All excitement of feeling, wrought by whatever object of sense or idea in the mental train, tends to render such object or idea a matter of interest."<sup>3</sup> In this respect, then, Ladd contributes another element to the theory of attention--i.e. that interest is a feeling.

In regard to the activity of the will, Ladd, too, differs from James in that he would not have our choice the result of a "spiritual force." He says: "All acts of attention are indeed acts of the will, but we find nothing of an external being directed, as it were, of attention"<sup>4</sup> What does act upon the attention is the ever-growing self that we have spoken of before. Although he lays much stress upon the words "will", and "voluntary", and "con-  
ation", and "self", there seems to be very little differ-

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1. Ladd--Psychology, Descriptive and Explan., p.79
  2. Ibid, p. 79.
  3. Ibid, p. 79.
  4. Ibid, p. 64.

ence between his views in general and those previously expressed of a psychic self which is the outgrowth of experience, which determines the course of attention. Its forward looking nature is expressed in his discussion of interest: "If we temporarily or habitually exclude these things from our attention because we will to take no interest therein, then our will and feeling have been disciplined to a somewhat 'unnatural' activity in the interest of higher ideals." That this will is merely the ever-growing self in its changing aspects is expressed as follows: "When it is affirmed that all attention, even the most primary, is influenced by conation, it is meant that attention rises and falls, is distributed and redistributed, in constant dependence upon the varying amounts of psychical selfactivity which characterizes the different mental states."<sup>1</sup>

Ladd makes another advance over the theories previously discussed in his attempt to connect the physiological and the psychical activities. Ladd calls primary attention "a form of psychical energy"<sup>3</sup>, but on the next page

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1. Ladd--Psychology, Descriptive and Explan., p.80
  2. Ibid, p. 83.
  3. Ibid, p. 65.

he enters into a discussion of the physiological conditions of attention. He says they "consist in the concentrated expenditure of nervous energy in certain forms of nervous processes to the relative withdrawal of energy from other forms. In other words, just as conscious attention in its most primary form appears as a focusing of psychical energy upon some phases, or factors, or objects of consciousness, and the relative withdrawal of such energy from other phases, factors or objects; so do the physiological conditions of all attention seem to involve the focusing of physiological functions in some of the cerebral areas, or forms of nerve-energy, and the withdrawal of such function from other areas of the brain or forms of its energy." This, as it seems to the writer, is the greatest advance over the theories previously discussed. It does not seem possible to promulgate any adequate theory of attention from either angle alone, nor to do as Pillsbury does-- treat them as entirely independent of each other. More will be said of this when we come to Pillsbury. The growing character of attention is expressed thus: "It is a progressively acquired mental function, involving intellect-ion, feeling, conation."<sup>2</sup>

1. Ladd--Psychology, Descriptive and Explan., p.66
2. Ibid, p. 61

Ladd, then, is in some respects similar to Dewey. His "interest" is a feeling, while that of Dewey is a feeling of concernment. He has offered a motor theory very similar to that of Dewey and his psycho-physical theory offers nothing but what could very well fit in with that of Dewey. It is Dewey's theory carried a little farther.

## JOSIAH ROYCE

Royce speaks of the clearness of the content of the mind during attention: "If our attention succeeds in any case--i.e. if our passing feeling of current interest is furthered--the object of interest grows clearer in our minds," but he is not explicit in his explanation of how this clearness is brought about. However, a few pages farther on he says: "Active attention is always a highly inhibitory function",<sup>2</sup> and "The physiological accompaniments of attention seem to be...(3) the assumption of a 'set' of brain which tends to inhibit all movements and habits such as would interfere with the satisfaction of the ruling interest",<sup>3</sup> from which we would infer that his theory is that of inhibition.

Royce lays very little emphasis upon the motor side of attention. He does speak of the adaptive nature of the motor activities,<sup>4</sup> but they seem to be only a minor issue with him.

1. Royce--Outlines of Psychology, p. 261.
2. Ibid, p. 264.
3. Ibid, p. 264.
4. Ibid, p. 263.

Interest and feeling are closely connected in Royce's theory of attention. For him interest is a feeling of restlessness with regard to an object or idea. As Royce puts it: "the interest is not a feeling of satisfaction or of dissatisfaction with what the mental state in itself alone chances to contain, but with its relation to other states or to one's habits." In this respect interest is a condition of attention. We may, then, say that for Royce feeling--the feeling of interest--is the condition of attention. "The difference between attention and inattention seems to be one that is largely determined by feeling."<sup>1</sup> That this feeling is distinct in its character is expressed thus: "If both pleasure and displeasure tend to make us actively attend, what kind of feeling is it that makes us inattentive? From our point of view, the explanation lies in the fact that active attention involves feelings of restlessness, while feelings of quiescence tend to the cessation of active attention"<sup>3</sup>, and, "we often find present in ourselves feelings of satisfaction and dissatisfaction in the very fact that given present states have some

1. Royce--Outlines of Psychology, p. 261.
2. Ibid, p. 191.
3. Ibid, p. 191.

sort of relation to former states (e.g. are novel or familiar, are puzzling or comprehensible, have obvious relation to our past habits, or need new adjustments, etc.)" It may be either a feeling of restlessness or of quiescence, if the former, active attention follows, if the latter, passive attention.

The question of will is one of attention for Royce: "To attend to any action, or to any tendency to action, to any desire, or to any passion, is the same thing as 'to select'.....just that tendency or deed. Such attentive preference of one course of conduct, or of one tendency or desire, as against all others present to our minds at any time, is called a voluntary act;"<sup>2</sup> "The will is, in its more complex manifestations, the attentive furthering of our interest in one act or desire as against another.... If we attend to this act or desire, we further our interest in it"<sup>3</sup>; and "The furthered interest, if intense enough therefore, means on the physical side, that the form of activity in which we are interested gets an actual outer

1. Royce--Outlines of Psychology, p. p. 259

2. Ibid, p. 368.

3. Ibid, p. 368.

expression just as soon as our attention sufficiently prefers the thought of this act to the thought of any other act"; and "actually to will a given act is to think attentively of that act to the exclusion or neglect of the representation or imagining of any and all other acts."<sup>2</sup> That this will is dependent on the growing self before alluded to, is expressed in the following quotations: "We can never consciously and directly will any really novel course of action. We can directly will an act only when we have before done that act, and have so experienced the nature of it. The will is as dependent as the intellect upon our past experience";<sup>3</sup> "What can be done for us is to organize our planlessly numerous inherited instincts in such fashion that there shall result valuable and consciously directed habits";<sup>4</sup> "The involuntary conduct must precede the voluntary; but the right sort of involuntary conduct can only be established through appeals to the feelings, and through fitting objects of knowledge to the intellect."<sup>5</sup>

1. Royce--Outlines of Psychology, p. 268-9.
2. Ibid, p. 369.
3. Ibid, p. 369.
4. Ibid, p. 373
5. Ibid, p. 374.

This theory of the will is of great pedagogic value as it points out to the teacher the line of approach to his pupils.

Going back to the nature of attention, it, for Royce, is a process of adjustment or relating. Interest arouses the need of this function, attention is the performance of it. Royce has expressed this in a rather compact way:

"When I attend to a thing I either try to recognize or to understand it, or I take contentment in an already existent recognition or understanding of it, and dwell on it accordingly. Attention is called active in so far as the feelings of restlessness which accompany our trying to recognize or to understand predominates, or are at any rate prominent, amongst the feelings present at the moment of attention. But when the other phenomena of attention are present, while the predominant feelings are those of quiescence, the attention is called passive." This, then, would explain why active attention may become passive. Whenever the restlessness passes over into a feeling of satisfaction or quiescence, the passive attention will follow. This theory is valuable as leading up to the adjustment theory of Judd which will be discussed later.

1. Royce--Outlines of Psychology, p. 261.

Royce treats of the physiological conditions of attention as follows: "The physiological accompaniments of attention seem to be of three sorts: (1) Adjustments of a motor type" (Adaptive) "(2) The assumption of a 'set' of brain that tends especially to favor those cerebral habits which are of most use to us in our efforts to comprehend objects of the kind wherein we are interested.....(3) In close connection with (2) the assumption of a 'set' of brain which tends to inhibit all movements and habits such as would interfere with the satisfaction of the ruling interest."

Royce makes attention dependent on the association processes of the brain<sup>2</sup>. Its relation to the growing self is thus expressed: "The organic conditions which accompany active attention tend toward the persistent bringing before consciousness of certain ideas. The result of the continued influence of such a process is the constant moulding of our relations to our environment and of our habits, in such wise that certain mental combinations appear, which would otherwise have been impossible."<sup>3</sup> Royce,

1. Royce--Outlines of Psychology, p. 263-4.
2. Ibid, p. 329.
3. Ibid, p. 330.

in the opinion of the writer, has come closest to the true theory of attention of any studied up to this point. He has possibly not placed sufficient stress upon the motor aspect, but that he has recognized it has been noted. This much of Ladd's theory could be placed in Royce's theory without change in other respects.

## MARY WHITON CALKINS

Calkins does not make clearness and intensity synonymous. "The truth is, therefore, that intensity is not identical with clearness, that is with elemental attention," "and sense intensity differs utterly, as we have seen, from clearness, the attention element."<sup>2</sup> But she does not explain how the clearness is brought about.

In regard to the motor activities she considers them as accompaniments of attention and not in any sense its condition. In introducing her discussion of a number of theories among which are the motor theory and the affection theory, she says: "The theories of attention which will next be considered are alike in that they mistake--in the opinion of the writer--the frequent accompaniment or result of attention for the attention."<sup>3</sup> That the motor activities are important she expresses thus: "The constancy of the motor accompaniments of attention makes it highly probable, also, that outgoing fibres function in attention." But these statements also leave clear the fact that she makes them only the accompaniments and not the conditions of attention.

1. Calkins--Introduction to Psychology, p. 142.

2. Ibid, p. 143.

3. Ibid, p. 487.

Interest, for Calkins, is not a condition of attention, but is made synonymous with it. A few quotations to this effect are here given: "The term 'interest' is best used as a synonym for involuntary attention"; "The term 'attention' is a psychological synonym of the expression 'interest'. To be attended to means precisely to be interesting. The common theory, that uninteresting things may be attended to is, therefore, in the opinion of the writer entirely erroneous."<sup>2</sup> In this last statement, while her conclusion that the uninteresting cannot be attended to seems to be correct, she has, it seems, missed the true cause--i.e. interest as a condition of attention.

Again, Calkins would not make affection a condition of attention. She renounces the affective theory in at least two different places. In the quotation above quoted<sup>3</sup> she says that those advocating the affective theory have mistaken an accompaniment, or result, of attention for attention. In another place she says, "It is fair, then, to conclude that clearness, or attention in the narrow sense, is not identical with pleasantness or unpleasantness, that

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1. Calkins--First Book in Psychology, p. 103.
  2. Calkins--Introduction to Psychology, p. 137.
  3. This paper, p

is to say, that it is no affective experience"; "In the opinion of the present writer, it is untrue to introspection to insist that the attended to is invariably pleasant or unpleasant, though it is unquestionably true that attention is often affectively toned."<sup>2</sup>

Calkins advocates the association theory of attention. Stated briefly in her own words it is as follows: "attention not as due to the functioning of sensory or motor cells and fibres, but as due to the activity of the cells and fibres in the so-called association centres"<sup>3</sup>; "The theory of this book belongs, in a general way, to this third group--that is to say the conception of a relational attention element, clearness, implies as corollary the hypothesis that one of the association centres of the brain is excited in attention. The constancy of the motor accompaniments of attention makes it highly probable, also, that outgoing fibres function in attention. In the opinion of the present writer, our knowledge of brain conditions warrants only some such tentative and general the-

1. Calkins--Introduction to Psychology, p. 488
2. Ibid, p. 490.
3. Ibid, p. 491.

ory of the cerebral conditions of attention." In this we believe that Calkins has correctly diagnosed attention when she connects it with the association processes, but if the writer is not mistaken, she has missed the true theory of attention as an adjustment activity.

1. Calkins--Introduction to Psychology, p. 491

## JAMES ROWLAND ANGELL

Angell does not commit himself on the question of the nature of the clearness in attention. He does say: "This fact that consciousness always has a focal point which reveals the momentary activity of the mind, is what is meant by the fact of attention", and, "Apparently the psychophysical organism selects from the wide range of potential objects, those special ones which shall receive attention and so come to consciousness."<sup>2</sup> But he does not say whether this will result in a difference in intensity or not. If we were to make our own inferences from these quotations, however, since it is a concentration on certain factors, we would assume that his view would be one of reinforcement or increased intensity.

Concerning motor activity he says: "In normal sensory attention muscular movements seem always to be concerned. These movements are accommodatory";<sup>3</sup> "Psychologists have observed a similar kind of muscular accommodation when our attention is directed to intellectual processes";<sup>4</sup> "The

1. Angell--Psychology, p. 81

2. Ibid, p. 84.

3. Ibid, p. 99.

4. Ibid, p. 100.

motor activities which accompany processes of attention necessarily, at least in the case of the voluntary muscles, send back to the cortex sensory impulses which may then enter into the general field of consciousness to modify its complexion and tone"; "After what has been said it is, perhaps, unnecessary to insist that motor processes are bound up in an inextricable way with the movements of attention, both as leading up to its effective activity and as secondary consequence of its operation." From these quotations it is to be inferred that Angell would look upon motor activities as initiated by attention, but when once initiated, as having a return effect upon attention. In this his theory very much resembles that of Baldwin previously discussed, and seems to be as near the truth as Angell gets in his theories of attention.

Angell does not speak of interest as a condition of attention. In fact he constantly shifts his ground. It seems as though he is tied down to the popular idea that there is a will which determines our attention. He is very emphatic in his advocacy of a voluntary and involuntary ~~and involuntary~~ kind of attention, yet when he discusses

1. Angell--Psychology, p. 102.

2. Ibid, p. 102.

attention he seems to be unable to get away from what, to the present writer, seems to be the true state of affairs. The following quotations taken alone would make us think that Angell whole-heartedly adopted the popular conception of a will controlling everything: "A more satisfactory division, which we shall adopt, adds one more class and recognizes (a) voluntary, (b) non-voluntary, or spontaneous, and (c) involuntary attention"; "Whenever we attend to anything because we explicitly will to, we are exercising voluntary attention"; "That we are capable, within certain limits, of thus directing our mental activity wherever we will is one of the easiest facts to verify introspectively"; "Meantime, we must admit that it is in voluntary attention that consciousness raises the human being into the greatest freedom from mere routine, with the greatest independence from mere temporary surroundings." On the other hand, if we take the following quotations as expressing his theory we have him falling very closely in with those theories which we have, in the main,

1. Angell--Psychology, p. 85.
2. Ibid, p. 85.
3. Ibid, p. 85
4. Ibid, p. 90.

endorsed: "To direct one's thoughts involves the possession of purposes and plans, however rudimentary, and these are the outgrowth of experience and relative maturity"; "Apparently the psycho-physical organism selects from the wide range of potential objects, those special ones which shall receive attention so that they come to consciousness"; "That is to say, the organism contains within itself certain ends to be attained in course of development by adjustive means"; "The statement is often made that the development of volition is neither more nor less than a process of reducing our impulses in order, and that a mature character is simply one in which the impulses are thus subordinated to some systematized principle...This view is unquestionably correct in its general implications"; "Indeed, volition as a strictly mental affair is neither more nor less than a matter of attention." These quotations, then, leave us in the dark as to his real theory. Taking everything into consideration, however, it seems as though he is merely slipping back into a popular theory of will when he emphasizes his volitional theory and that he

1. Angell--Psychology, p. 85.

2. Ibid, p. 84.

3. Ibid, p. 92

4. Ibid, p. 430

5. Ibid, p. 402.

should be given credit for his more modern conception of will as merely an expression of the growing self. This fits in more closely with his theory of attention as a relating activity.

Angell's theory of attention is perhaps best expressed in his reason for fluctuations of attention. In this he says: "In short, so far as attention is really an activity of the relating, adjusting kind, its work is done when the relation between the mind and the thing attended to is once established. This is the mental as distinct from the physiological part of the adjustment, and attention must go elsewhere, because it is intrinsically the adjusting act itself, and other things are demanding of the organism the same energies of adjustment." He also says: "In all forms of attention, then, we find selective activity revealed. Selection always implies a purposive, forward-looking type of action, and this is precisely what attention is in all its forms. It stands for the fact that the organism is teleological in its very constitution. That is to say, the organism contains within itself certain ends to be attained in course of development."<sup>2</sup> But in

1. Angell--Psychology, p. 95.

2. Ibid, p. 92.

in the face of this theory, which borders on the true one, what are we to do with such a statement as this?-"And we must accordingly conclude that attention is a rudimentary form of conation, or will? This is unquestionably true". In fact, we must leave Angell with the statement that we would class him among those who are so closely tied to popular and older beliefs that, although they are on the verge of conversion, are as yet unable to take the final step which Angell outlines but spoils by contrary statements.

## HUGO MÜNSTERBERG

Münsterberg, although a professor in an American university, has written most of his psychological works in German, and therefore any thorough study of his works by the present writer, was impossible. However, in his "Psychology and the Teacher" he has advanced some ideas which will warrant his being placed in this article.

He distinguishes very distinctly between vividness and intensity. "We said that the idea becomes more vivid. We must sharply separate that from the greater intensity. We may listen to the faintest tone of a violinist, a tone which is hardly audible, and yet which fascinates us and takes hold of our minds most vividly, without its becoming in the least more intense."

In regard to the motor activities, Münsterberg makes them very important. He even goes so far as to say: "The shiftless mind can be most directly forced into service by a systematic control of the motor response." And again, "The careful adjustment of the motor organs reinforces the vividness and clearness of the ideas and the suppression of the opposite actions secures the inhibition of the int-

1. Münsterberg--Psychology and the Teacher, p.159
2. Ibid, p. 167-8

erfering thought." Motor activity, then, would seem to be a condition of attention. In this respect, if the present writer is not mistaken, Münsterberg is on the wrong track.

Münsterberg, in this book, lays little stress upon interest. He hints at its nature in the following: "That which is needed is an engagement of the attention by material which becomes attractive through that which the pupil's own mind furnishes,"<sup>2</sup> but this he does not define as interest. Moreover, he makes attention wholly subservient to the will and says in regard to interest:<sup>1</sup> "...must sometimes appeal to the voluntary effort of the pupils to focus their attention on something which has not become at all interesting."<sup>3</sup> This, then, instead of making interest a condition of attention, would make it only a secondary element which need not even be always present. In this view, in the opinion of the writer, Münsterberg has either lapsed into a popular use of words which is unjustifiable or is far behind the other psychologists of the same date.

1. Münsterberg--Psychology and the Teacher, p.167.
2. Ibid, p.
3. Ibid, p. 166.

In regard to will and attention, Münsterberg reverses the statement made by most of the best modern psychologists, and instead of making will a matter of attention, he says: "Attention is thoroughly a will act." Other statements of the same general import are: "The need of a training of voluntary attention is the one demand which must be common to all"; "Attention grows only through systematic and careful training"; "If I try to remember the name of a bird which I see and it finally comes to my mind, I feel its appearance as the result of my will effort; I was seeking the name and secured it by my own volition." Such a view of attention controlled by a "will" would imply that more modern pedagogical methods are wrong.

Münsterberg, too, would make the act of attention a circular activity. In this regard he says: "That adjusting activity which we feel is not only accompanied by greater vividness, but leads backward to a sharper and clearer view of the object. This clearer view, again, reinforces the impulse to the adjusted activity. Moreover, it is the clearness and vividness which secures those as-

1. Münsterberg--Psychology and the Teacher, p. 186.
2. Ibid, p. 171.
3. Ibid, p. 171
4. Ibid, p. 183.

sociations in which the idea develops itself. And the richer this development, the more all the opposite ideas must be inhibited and crowded out of the mind. But the more the opposite ideas are suppressed, the greater the opportunity for the attended idea to control our reactions. And in this way we have a circular movement by which our attention grows from its own resources." In this paragraph Münsterberg offers the best contribution to the psychology of attention, which we found. This circular activity, the idea of placing attention in the association centers, and the growth of attention through experience are all hinted at, and as has been intimated, the writer believes these belong to the true theory. His main divergence from our theory is in his views of will and of interest.

1. Münsterberg--Psychology and the Teacher, p. 161.

CHARLES HUBBARD JUDD

In his "Psychology", which was the book investigated, Judd did not state his views as to the nature of the clearness of attention. The only hint which was found was in regard to the focus of attention. He says: "There may be a focus of high attention, or there may be a scattering of attention over a wide field without emphasis of any special contents." But this "emphasis of any special contents" really tells us nothing.

In regard to motor activities he says: "No man ever gave attention without giving active signs of the concentration of his bodily activities on the object of his attention." But these activities for him are initiated by the attention and are in no way conditions of it.

Although he does not specifically define interest it is made sufficiently clear that for him interest is found in the associations which experience has built up and that it is a condition of attention. This is brought out in the following quotation: "The outcome of such a comparison will be very largely controlled by the total group of

1. Judd--Psychology, p. 190-91.
2. Ibid, p. 190.

interests which he has built up in his individual life as representing the sum total of his personal relations to the world."

Very closely connected with this is his view of will and self. In this matter he offers a sharp contrast to the one previously discussed, i.e. Münsterberg. While Münsterberg would make attention the product of a will, Judd would make it wholly dependent upon experience. A few quotations expressing his views may be profitable: "Perceptual attention may seem to be a matter of the moment and a matter of individual control, but the complete study of its character makes it evident that such attention is not a matter of individual choice"<sup>2</sup>; "The truth is that the explanation of volition as a part of self-consciousness can be given only by a recognition of those processes of organization which have entered into the elaborate construction of the concept of the self"<sup>3</sup>; "The individual self is clear and definite in its apparent influence upon the situation, just because it embodies in such a compact form all that has entered through development into the organized nature

1. Judd--Psychology, p. 329

2. Ibid, p. 326

3. Ibid, p. 329.

of the self"; "...we see again the impossibility of explaining thought and conduct...without direct reference to the total development of the individual."

This question of the self is closely wrapped up in his theory of attention and hence more information will be given in discussing it. For Judd, attention is an adjusting, relating activity, connecting the object or idea of attention with the experience of the individual. In his own words: "Enough has been said to make it clear that attention is merely a name for various phases of selective arrangement within experience. The further discussions of the organization of experience may, therefore, all be regarded as discussions of attention and will serve to define in full what the term means"; "To say that attention is a force capable of making a perceptual selection is to fail to recognize the fact that the selection is in itself an expression of individual organization and dependent upon the individual's past history." As to his theory of the cause of attention the following paragraph may be worth quoting: "Neither attention nor bodily movements can be used to explain the other factor of the situation be-

1. Judd--Psychology, p. 329.

2. Ibid, p. 332.

3. Ibid, p. 193.

4. Ibid, p. 323.

cause, as we have seen, attention is always related to the organization of behavior, and behavior is, as we find in many cases, related in some way to attention. The two must be accounted for by some more ultimate fact of organization which precedes both. If this more ultimate explanation is neglected, the whole process may take on the appearance of an event without antecedent conditions. The introspection of the ordinary observer carries him no farther back than the first stages of attention, and this seems to him to be an uncaused beginning. He overlooks the fact that the tendencies of his attention are determined by the organization of his whole life...He will find unlimited evidence which goes to show that the individual is not at the beginning of causes when he commences to pay attention and consequently is not justified in attributing his behavior to attention as the sole or adequate cause"; "It must be recognized that attention is explicable only in terms of development, and that consequently its influence upon behavior must be explained ultimately by reference to the relation of organization to behavior";<sup>2</sup>

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1. Judd--Psychology, p.

2. Ibid, p.

"Attention is not something which is determined by external conditions. The individual attends because of inner impulses--The strong impression is a favorable condition for attention, but the act of attention is an internal response."

The theory as above outlined seems to coincide quite closely with the facts as the writer sees them. A little more elaboration of the subject of interest would have helped out the discussion, but there seems to be no reason to think that Judd's theory of interest, if expressed, would not be in accord with our own theory.

WALTER BOWERS PILLSBURY

Pillsbury says in his "Essentials of Psychology" "this quality of clearness is, however, different from intensity." And in his larger work on attention, he says: "Nowhere, then, can we be sure that we have a case of mere increase in intensity rather than an increase in clearness, which gives one of several equally intense sensations an advantage over the others",<sup>2</sup> but he concludes: "On the whole, then, there seems to be no very satisfactory outcome to the discussion of the relation between clearness and intensity."<sup>3</sup> He says in another place in the same book: "Whether the change in clearness is identical with or dependent upon change in intensity is as yet open to controversy."<sup>4</sup> He does, however, seem to incline to a belief that there is an increase in intensity in the idea attended to, and also an inhibition of those not attended to. Titchener seems, also to so interpret Pillsbury, for he says in this regard: "The tendency seems to be toward middle ground. Pillsbury, while stating it as undecided, seems to take this ground."<sup>5</sup>

1. Pillsbury--Essentials of Psychology, p. 106.
2. Pillsbury--Attention, p. 7.
3. Ibid, p. 9.
4. Ibid, p. 11.
5. Titchener--Psychol. of Feeling and Attention, p. 212.

In regard to motor activities Pillsbury takes great pains to make it clear that he does not in any sense consider them as conditions of attention, but as following, or concomitant phenomena. He says: "That adaptation and attending are concomitant processes is a fact of which each one can convince himself upon the slightest observation;" "It can easily be seen from introspection, that these adjustments follow the attention in order of time"; "These movements are all initiated as a result of attending, and many, if not all, of the movements can be made in no other way than by attending to some stimulus." These quotations leave no doubt as to his theory in this matter. That this view coincides with that of the writer has been expressed so often that it needs no further expression. Other quotations could be added, but as they all merely reaffirm what has already been stated, they would be superfluous.

Feelings, likewise, Pillsbury would make as following or concomitant with attention. He says: "We see the thing

1. Pillsbury--Attention, p. 13.
2. Ibid, p. 13.
3. Ibid, p. 18.

fully before it can give us a feeling tone of any kind, and by that time of course the attending is complete" and "Feeling does not seem a necessary condition of attention."<sup>2</sup>

Interest, Pillsbury defines thus: "Interest, then, is but the objective way of looking at the conditions of the attention. It is merely ascribing to the objects processes and qualities that have their real origin in the man himself. Things are interesting because we are likely to attend to them; we do not attend to them because they are interesting." So defined, we hardly understand just what is meant by interest. If it is the peculiar state of the mind so that "we are likely to attend" then it seems as if it would be a condition of attention. For the present writer it would coincide with what Pillsbury calls the conditions of attention--i.e. "The conditions of any act of attention are to be found in the present environment and in the past experience of the individual."<sup>3</sup> However, it is merely a matter of definition. Pillsbury seems to have hit the nail on the head when he gives the conditions of attention. More will be said of this later in discussing his theory. In fact, he, himself, says later on: "In the

1. Pillsbury--Attention, p. 57.

2. Ibid, p. 287.

3. Ibid, p. 52.

first use interest is the equivalent of condition of attention, and would therefore be cause, attention effect."

His view of will and attention must be discussed in connection with his theory of attention. In the first place he defines the conditions of attention as found in the present environment and in the past experience of the individual.<sup>2</sup> Will he defines as a selective, forward looking, activity. "We must be careful to insist that will is no thing or force, but merely a convenient term to designate the fact that the early and general social influences hold attention, thought and action, towards things that are permanent rather than to those things that are transient. It seems that the problem of voluntary action is largely, if not entirely, a problem of attention, and a complete understanding of attention with its nature and conditions will also imply an understanding of movements."<sup>3</sup> That the self, which is usually thought of as doing the willing, is not a mind apart is expressed thus: "Taken together, the self and attention are so closely related as to be scarcely distinguishable. Conditions of atten-

1. Pillsbury--Attention, p. 293

2. Ibid, p. 52.

3. Ibid, p. 164.

tion and what we know as the self are for practical purposes identical. The self is an organization of experiences as a dynamic whole;" "The idea of a self, has usually been introduced to explain the fact that mind shows a unity and self identity, and that mental states do not exist merely but are known. These facts cannot be satisfactorily explained on the assumption of a mind apart from the states, but are perfectly explicable if we regard the interacting mass of experience as the self."

His theory of attention is based upon the associative relations. He says: "In the circumstances of the hour, the general setting of the mind at the time, we have merely a whole system of paths connecting various nerve cells in a condition of tonus, of slight excitement, that makes anything which tends to excite any one member of that group take preference over all stimuli which are entirely unrelated"; "We are compelled to assume, then, from our present day knowledge of the nervous action and from psychological facts, that attention physiologically, is due to the reinforcing and inhibiting effect of one group of nerve cells upon another group, which makes this group af-

1. Pillsbury--Attention, p. 217

2. Ibid, p. 217-8

3. Ibid, p. 252.

fectured more easily by impressions coming in from the external world or from other cells in the cortex." A more psychological explanation is thus expressed: "...apperception is the name for the fact that any event in consciousness is different in some degree from what it would have been had the preceding history of the individual in question been different, while everything else in his present environment remained the same. Apperception would, then, be merely the general name for condition of attention, the name for one relation between observed facts." The above deals with attention from the standpoint of its conditions which to Pillsbury seem to be the chief point of discussion. One paragraph should be quoted, however, concerning its effects: "What, then, from the psychological side is an action of each experience upon every other, is from the physical side, a modification of the brain tissue affected in such a way that there is not only a present effect, but that those tissues will be forever different because of that impression, and because of that earlier impulse will always exert a different impression upon whatever part of the cortex may be at that time in action."

1. Pillsbury--Attention, p. 259

2. Ibid, p. 279.

3. Ibid, p. 319.

Attention, for Pillsbury, seems in one place to be, not an activity, but a preparedness for activity. He says: "Attention means, then, neither the clearness of consciousness, nor the movements that accompany the clearing up of a conscious state, but fundamentally the condition of preparedness of the individual and the organism that gives rise at once to the change in consciousness and to the movements." Yet, taking his discussions as a whole, especially considering his theory of fluctuations as due to fatigue and the breaking over into new association systems,<sup>1</sup> we would hardly be justified in taking this as his definition of attention. Its exact nature as he sees it is perhaps best expressed in his criticism of Kohn's theory. He says of it that it "is to the effect that attention and consciousness are identical. This is not far different from the conclusion that we have reached in so far as it must be admitted that attention is involved in all consciousness, and that degree of consciousness and degree of attention amount to the same thing. This seems to be the main point upon which Kohn insists. If he means, however, to do away with the word attention, we should be compelled

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1. Pillsbury--Attention, p. 121.
  2. Ibid, p. 77ff

to take issue with him. There are peculiar concomitant phenomena of the attention process, strain sensations, feelings of interest, etc. which are definitely marked off from the other conscious process and are bound to receive a distinctive name."

The main criticism to make on Pillsbury is that he does not lay enough stress upon the function of attention. He seems to represent a half way mark between the theories of attention as an activity and the theories of attention as a state of consciousness. In so far, it seems to the writer as if he is headed in the wrong direction. Pillsbury seems to be very close to the truth when he gives the conditions of attention, and when he assigns it to the associative processes, but it seems as though, if he believes in it as having an adjustment or relating function, he should have placed more emphasis upon it; and if he does not so consider it, which he seems to do, he would throw himself open to criticism, whether just or unjust. At any rate, its function, if it has one, should have been more definitely stated. His conception of the self seems to be the more generally accepted one, and certainly the one most useful pedagogically.

EDWARD BRADFORD TITCHENER

Titchener says that "clearness is an intensive attribute in the sense that it shows degrees of more or less, but it is altogether different from intensity proper....Indeed, there is no difficulty, whatsoever, after a little practice, in distinguishing introspectively between the clearness and the intensity of any given mental process" and also that "in the writer's judgment the view that intensity is raised along with clearness is the most probable."<sup>2</sup> This increase in intensity must contribute in some degree to the clearness. The two quotations above given make Titchener's view on this matter of whether attention increases intensity, quite clear.

For Titchener the motor and kinaesthetic activities are not negligible, although they cannot be essential either as conditions or as accompaniments. Two quotations make this clear: "Looked at from the outside, attention consists of a certain attitude of the body"; and "Is the consciousness kinaesthetic? Again, not necessarily. There may be a widespread arousal of kinaesthetic sensations, or there may be no sensible change in the muscular system";<sup>3</sup> and "I

1. Titchener--A Textbook of Psychology, p. 279.
2. Ibid, p. 279.
3. Ibid, p. 288.

have always regarded and I shall probably always regard the motor interpretation of attention as one-sided."

Interest for Titchener is an affective state which is always present. He says: "It is quite true to say the interesting thing is the thing that attracts attention, just as it is quite true to say that the thing which fits in with our mental constitution is the thing that attracts attention."<sup>1</sup> This would make interest arise out of the fitting in with our experience. As further defining interest we will quote: "What is a thing that interests us? It is a thing the idea of which is overlaid with affection. The affection may be pleasantness or unpleasantness";<sup>3</sup> "Affection and attention come together in consciousness; they are back and front of the same state. We do not first feel and then attend, we feel and attend together";<sup>7</sup> "A thing which follows the lines of our nervous tendencies is a thing-to-be-attended-to; at the same time it is a thing-to-be-felt. But a felt thing is an interesting thing. Hence, the thing that we attend to is from one point of

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1. Titchener--Psychology of Feeling and Attention, p. 30.
  2. Titchener--Primer of Psychology, p. 82.
  3. Ibid, p. 82.
  4. Ibid, p. 82.

view a thing that follows the lines of our tendencies, and from another point of view a thing that interests us";<sup>1</sup> "But I cannot grant that we feel without attending. I incline rather to find a fairly close parallel between degrees of clearness and degrees of pleasantness and unpleasantness";<sup>2</sup> "Attention is, then, that state of consciousness that degree of being consciousness, which guarantees the best results of mental labor. When I am keenly attending, I am also keenly interested; and interest is a mode of affective experience."<sup>3</sup> But what does this last quotation mean? He says that attention is a state and yet speaks of "attending" which would imply activity. As it seems to the writer, the true conception of attention is as an activity, and when Titchener tries to define it as a state he contradicts himself. Titchener's discussion of "will" involves statements that seem to imply that attention is an activity.

Titchener says that attention may be voluntary, but he makes it clear that this volition is merely the triumph of one set of impulses over another, the resources for

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1. Titchener--Primer of Psychology, p. 82.
  2. Titchener--Psych. of Feeling and Attention, p.32
  3. Titchener--Textbook of Psychology, p. 266.

which victory are within the organism itself. He says: "Our nervous tendencies, inherited and acquired, decide what we shall attend to, or (in other words) decide what we shall feel"; Active attention "is simply a conflict of primary attentions"; "The making of a choice means, of course, that the stronger of the two conflicting forces, the rival excitatory processes has won the day; and the traces of the struggle that persist after the choice has been made means that the victory has not been absolutely complete"; "The conflict between working and going to the fire may lead to a victory for work in spite of the fact that consciousness is more fully occupied by fire ideas than it is by work ideas. The nervous system, in virtue of its own bias or leaning, has brought up further reinforcements on the side of work and these reinforcements have directed or guided consciousness although they are not themselves represented in consciousness." Titchener has, it would seem, hit the nail on the head when he would make will a matter of stronger impulsive tendencies

1. Titchener--Primer of Psychology, p. 85.
2. Titchener--Textbook of Psychology, p. 272.
3. Ibid, p. 273.
4. Ibid, p.274.

triumphing, but it is hard to understand how he would reconcile this to a view of attention as a mere state of consciousness. In fact, if the present writer has correctly interpreted him, he does not seem to hold to this view consistently himself.

Attention is best defined by Titchener from a physiological standpoint as follows: "Attention to an idea probably means, on the physiological side, that the lines running to and from the area in which that idea is excited and the other areas functionally connected with it are open, whereas the lines of intercommunication throughout the rest of the cortex are more or less effectually blocked"; and, "Neurologists are agreed that one nervous excitation may influence another in two opposite ways; by helping and by hindering, or in technical terms, by facilitation and inhibition....It seems plain that the conditions of attentive consciousness are of these two kinds. The clear processes, at the crest of the attention wave are processes whose underlying excitations have been facilitated. Similarly the obscure processes at the lower level

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1. Titchener--Primer of Psychology, p. 90-91.

of consciousness are processes whose underlying excitations have been inhibited. The attentive consciousness is thus conditioned upon the interplay of cortical facilitation and cortical inhibition."

1. Titchener--Textbook of Psychology, p. 300.

## KNIGHT DUNLAP

Dunlap says unambiguously: "Vividness is sometimes confused with intensity. Hence it is necessary to distinguish carefully between the two"; "Changes in intensity, if they occur, are purely accidental, and are due to such factors as change in position of the ears, or in the tension of the ear muscles."<sup>1</sup> This leaves no doubt as to his view in this connection.

The subject of interest is given considerable emphasis by Dunlap. In fact it would seem to be a condition of attention if we interpret him correctly. "Interest is sometimes named among the conditions of attention. That the feeling we have earlier referred to by the name of interest does predispose to vividness the content associated with it is indisputable. The same is true of any emotion or emotional factor";<sup>2</sup> and, "A certain amount of what, for want of a better term, we may call interest, may attach to the object. These factors--pleasure, pain, desire, repugnance, interest--constitute the affective

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1. Dunlap--A System of Psychology, p. 295.
  2. Ibid, p. 296.
  3. Ibid, p. 301.

tone of the object in so far as they are present." This would make interest a kind of affection and also would imply that the affections play an important part in attention, whether or not they are conditions of it.

The exact nature of attention, according to Dunlap, is hard to arrive at. Like Titchener, he starts out with the statement that "The term attention properly signifies a condition or state of consciousness itself";<sup>1</sup> but he connects attention with association: "The whole matter of the rise of ideas through association is one of vividness. One percept or idea occupying the focus of consciousness tends to bring in its associates";<sup>2</sup> "The firmer the association between the intrinsically interesting factor and other factors, the more these share in the interest."<sup>3</sup> That the interest, and hence the attention, are not the product of a will, but of the associative centers in the brain is expressed in: "But don't forget that admiration and interest, to whatever activities they may lead, are factors in the content of your consciousness, and not anything supplied by your consciousness or your ego. Voluntary action

1. Dunlap--A System of Psychology, p. 242.
2. Ibid, p. 294.
3. Ibid, p. 299.
4. Ibid, p. 252.

consists in holding the attention on a certain content to get the maximal effect from consciousness." One more quotation bearing on Dunlap's view of the nature of attention will be given, then we shall leave this division, with a realization that we have offered little real information concerning Dunlap's views, but that it was as much as we could get. "Consciousness varies in degree. One extreme of the range of variation is commonly known as a high degree of attention, or concentration of attention. The other extreme is inattention, to which the term of subconscious is also applied. The general designation of attention is thus given only to the higher degrees of consciousness. If referred to the content, the degrees of consciousness are degrees of vividness, which is sometimes called clearness."

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1. Dunlap--A System of Psychology, p. 293.

## CONCLUSION

### I

As was stated in the introduction, the author has found it impossible to classify the psychologists studied under any classification such as the one proposed by Baldwin and others. It seems, however, as if it might be profitable to take a final survey of the whole field before entering into a discussion of our own theory of attention.

In regard to the nature of the increase in clearness we find among the earlier authorities much more assurance that it is an increase in intensity or that it is an inhibitory process. The later psychologists seem more inclined to say with Pillsbury, that the question is still undecided. In fact, so far as laboratory methods have progressed, there seems no way of getting at the exact truth with any degree of certainty. Any conclusion must therefore be largely a matter of conjecture.

In regard to the place the motor activities have in attention, we find that only one (or if we include Dewey, two)--Münsterberg--is willing to make them a condition of attention. If we consider, therefore that Münsterberg is a foreigner and writes and reads in foreign literature on the subject so much that he has hardly acquired the right

to be called an American psychologist, we may say that the American psychologists are against the motor theory of attention. A theory has been advanced, however, which seems of great importance to us. This is the return effect theory of Baldwin. This theory would seem to account for the phenomena which have been observed by the motor theory adherents, and is the form in which the motor theory finds itself in American psychology. It is to be noted, however, that none of the ones who have been treated as most recent, have advocated this theory, although why they have departed from it is not explained.

Interest has been defined in almost as many<sup>n</sup> ways as there are authors. The majority of them consider it either as a condition of attention or as a necessary accompaniment, and most of them have in some way connected it with the ever-growing self. With a few exceptions the psychologists have agreed that its importance to attention is such that it must be cultivated, and that this is done by forming wider associations. Pillsbury seems to have come close to the true meaning of interest when he says that "it is merely ascribing to the objects processes and qualities that have their real origin in the man himself." As such it is a condition of attention and seems to be so re-

garded by most of the men studied.

The question of affection seems to take two phases. On the one hand there are those who interweave interest and affection, either by making interest an affection or by making it conditioned by affections, and on the other hand there are those who have declared positively against the affective theory of attention.

The will and the self seem to have been a question on which many have failed to get at the true facts in the case. In fact the popular conception of will is that there is a something, a "spiritual force" as James terms it, which oversees our activities and controls them. This will seems to be the self. For instance in popular terms we can say "I will to do a thing." On the other hand, the majority of the psychologists studied would make the self but the organization of the experiences of the individual and the will merely the assertion of the stronger impulses within the organism itself. Such an explanation seems to work in better with the other theories and the psychologists who still held to the popular conception of will had a tendency to adopt this view when they undertook to explain some of the phenomena of attention. Angell has al-

ready been cited in this regard. James held to this view, while Baldwin, who was the next one discussed, seems undecided in the matter. Whenever this view is adopted we seem to find contradictions.

As to the nature of attention, we find that most of the psychologists have connected it in some way with the association processes. The adjustment theory, after its expression by Dewey, seemed to gain favor and was expressed in different ways by several. However, the most recent of the psychologists seem to abandon the idea, or try to, of calling attention an activity, and try to make it appear to be merely a state of consciousness, but, as has been pointed out, whenever they attempt this they fall into contradictions with themselves which seem to argue for the theory advocated by the earlier psychologists. It is easier to think of attention as an activity than as a mere state. This is largely a matter of definition, but as the earlier definition seems to fit in better with the general conception of the term and as the newer definition is no more serviceable, it seems to the writer, that there is not sufficient justification for the change in the use of the term.

## II.

We are now ready to advance what seems, in the light of the study just made, the most reasonable theory of attention. It should go without saying that while the question is still in its theoretical stage with psychologists who have spent a lifetime in psychological study, that any theory which we can advance will be but a theory, and cannot be established by evidence which is in any way conclusive. It must be advanced, then, merely as that theory of attention which seems to the writer to be most near the facts.

In regard to the nature of the clearness of attention, it seems to the writer as if it were a matter of inhibition. When we look at a mass of lines which contain a picture puzzle, for example, we see all of these lines with the same degree of intensity. When we find the picture, however, the lines which are irrelevant seem to fade away, leaving the lines of the picture clear and distinct. But so far as we can observe, they have not increased in intensity. They are no darker or brighter--they are merely clearer, due to the fact that the competing lines have left the attentive consciousness--i.e. have been inhibited. The same effect may be observed at night when all sounds are subdued. A sound which could have been heard only a

short distance will carry a long way. In the state of attention, in our theory, we have a mental state corresponding to this. The idea or sensation attended to does not increase in intensity, but the competing ideas or sensations are inhibited, leaving the content of attention standing out in relief, as it were.

To us, the motor activities seem to be initiated by the attention. In fact it would seem as though there could be no such activities unless the attention were first gained. There seems no doubt, however, as the writer observes the facts, but that the motor activities are always present in some degree. They may never become known in consciousness, but it seems that they are always there. In regard to the return effect of these motor activities, we do not find sufficient evidence in our introspective observations to justify us in either advocating or contradicting it. In view of the James-Lange theory of emotions, however, it would seem as if this effect might be present to a certain extent, although we must confess that we would make the emphasis upon this part of the theory very slight.

Interest, we hardly know how to describe. James says: "the only things which we commonly see are those things which we preperceive." All along emphasis has been placed

on the fact that the immediate attention was based on the experience of the individual. Attention, in the theory of the present writer, is the activity of relating the content of attention to this organization of experience, but interest is the relation already existing, considered as pertaining to the object or idea. For the writer it is easiest to consider attention as an associative process. But there must already be systems of association present. When we say, then, that an object possesses interest, we mean that it is related to one of these associative systems.

The place of affection seems to be secondary. We cannot conceive of feeling before we attend, and hence cannot see how feeling can be a condition of attention. If feeling is present in a majority of cases, or even if always present, it is because those things which fit in with our associative systems are nearly always, if not always, overlaid to a certain extent with affection. Again, we have said that attention is an activity. Activity of any kind, if successful, may give rise to pleasure, if unsuccessful, to displeasure. In this way the very activity of attention may give rise to an affection, but we cannot in any way see how it can be conditioned by it.

The will and the self are bound closely together in our theory. The self, as we define it, is the sum total of the past experience of the individual. Each experience alters the organization in a certain degree and in so much the self is changed, and as this self is changed the future activities of the individual will be different. In our theory, will does not imply competition of impulses, although it is doubtful if any activity ever occurs in which there are no competing impulses. The stronger impulse may be so strong, however, that the competition will be negligible. At any rate the will, for us, is the assertion of some impulse to its right to control the action of the individual and there is just as much will where there is a minimal amount of competition as when the competition is great. When there are competing impulses, a psychic and physiological struggle ensues and when one triumphs the impulse which is strongest asserts its control.

As has been said before, attention is an activity concerned with associative systems. The object which is able to gain attention must in some way be related to the associative systems which have been built up by experience. It seems easiest for us to consider attention as the process of adjusting the self, as above explained, to this new idea or sensation. As a result, it becomes bound closer

into the system of associations which claim it. This activity of fixing it in the system is what we choose to call the act of attention. In doing this, there seems to be a discharge along the motor nerves which result in the motor accompaniments of attention. When two objects or ideas claim attention at once, there are competing motor activities, which may account for the fatigue resulting therefrom.

This theory of attention is of pedagogic value because it lays such stress upon the associative systems. The teacher who believes in it will not try to teach the child to attend, but will organize the material so that it will fit in with the associative systems already formed in the child's mind. Any attempt to make the child study because the things are things he ought to know will be abandoned, and the teacher will try to establish a connection between the child's experience and the material to be learned. The attention will follow as a result. The interest is this connection and as such is the condition of attention, but is itself conditioned by the experience of the individual.