

LECTURE XIV. EMOTIONS AND WILL

On the two subjects of the present lecture I have nothing original to say, and I am treating them only in order to complete the discussion of my main thesis, namely that all psychic phenomena are built up out of sensations and images alone.

Emotions are traditionally regarded by psychologists as a separate class of mental occurrences: I am, of course, not concerned to deny the obvious fact that they have characteristics which make a special investigation of them necessary. What I am concerned with is the analysis of emotions. It is clear that an emotion is essentially complex, and we have to inquire whether it ever contains any non-physiological material not reducible to sensations and images and their relations.

Although what specially concerns us is the analysis of emotions, we shall find that the more important topic is the physiological causation of emotions. This is a subject upon which much valuable and exceedingly interesting work has been done, whereas the bare analysis of emotions has proved somewhat barren. In view of the fact that we have defined perceptions, sensations, and images by their physiological causation, it is evident that our problem of the analysis of the emotions is bound up with the problem of their physiological causation.

Modern views on the causation of emotions begin with what is called

the James-Lange theory. James states this view in the following terms ("Psychology," vol. ii, p. 449):

"Our natural way of thinking about these coarser emotions, grief, fear, rage, love, is that the mental perception of some fact excites the mental affection called the emotion, and that this latter state of mind gives rise to the bodily expression. My theory, on the contrary, is that
THE BODILY CHANGES FOLLOW DIRECTLY THE PERCEPTION OF THE EXCITING FACT,
AND THAT OUR FEELING OF THE SAME CHANGES AS THEY OCCUR IS THE EMOTION

(James's italics). Common sense says: we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful, as the case may be. Without the bodily states following on the perception, the latter would be purely cognitive in form, pale, colourless, destitute of emotional warmth."

Round this hypothesis a very voluminous literature has grown up. The history of its victory over earlier criticism, and its difficulties with the modern experimental work of Sherrington and Cannon, is well told by James R. Angell in an article called "A Reconsideration of James's

Theory of Emotion in the Light of Recent Criticisms."* In this article Angell defends James's theory and to me--though I speak with diffidence on a question as to which I have little competence--it appears that his defence is on the whole successful.

* "Psychological Review," 1916.

Sherrington, by experiments on dogs, showed that many of the usual marks of emotion were present in their behaviour even when, by severing the spinal cord in the lower cervical region, the viscera were cut off from all communication with the brain, except that existing through certain cranial nerves. He mentions the various signs which "contributed to indicate the existence of an emotion as lively as the animal had ever shown us before the spinal operation had been made."* He infers that the physiological condition of the viscera cannot be the cause of the emotion displayed under such circumstances, and concludes: "We are forced back toward the likelihood that the visceral expression of emotion is SECONDARY to the cerebral action occurring with the psychical state.... We may with James accept visceral and organic sensations and the memories and associations of them as contributory to primitive emotion, but we must regard them as re-enforcing rather than as initiating the psychosis."*

* Quoted by Angell, loc. cit.

Angell suggests that the display of emotion in such cases may be due to past experience, generating habits which would require only the stimulation of cerebral reflex arcs. Rage and some forms of fear, however, may, he thinks, gain expression without the brain. Rage and fear have been especially studied by Cannon, whose work is of the greatest importance. His results are given in his book, "Bodily Changes in Pain, Hunger, Fear and Rage" (D. Appleton and Co., 1916).

The most interesting part of Cannon's book consists in the investigation of the effects produced by secretion of adrenin. Adrenin is a substance secreted into the blood by the adrenal glands. These are among the ductless glands, the functions of which, both in physiology and in connection with the emotions, have only come to be known during recent years. Cannon found that pain, fear and rage occurred in circumstances which affected the supply of adrenin, and that an artificial injection of adrenin could, for example, produce all the symptoms of fear. He studied the effects of adrenin on various parts of the body; he found that it causes the pupils to dilate, hairs to stand erect, blood vessels to be constricted, and so on. These effects were still produced if the parts in question were removed from the body and kept alive artificially.*

* Cannon's work is not unconnected with that of Mosso, who maintains, as the result of much experimental work, that "the seat of the emotions lies in the sympathetic nervous system." An account of the work of both these men will be

found in Goddard's "Psychology of the Normal and Sub-normal" (Kegan Paul, 1919), chap. vii and Appendix.

Cannon's chief argument against James is, if I understand him rightly, that similar affections of the viscera may accompany dissimilar emotions, especially fear and rage. Various different emotions make us cry, and therefore it cannot be true to say, as James does, that we "feel sorry because we cry," since sometimes we cry when we feel glad. This argument, however, is by no means conclusive against James, because it cannot be shown that there are no visceral differences for different emotions, and indeed it is unlikely that this is the case.

As Angell says (*loc. cit.*): "Fear and joy may both cause cardiac palpitation, but in one case we find high tonus of the skeletal muscles, in the other case relaxation and the general sense of weakness."

Angell's conclusion, after discussing the experiments of Sherrington and Cannon, is: "I would therefore submit that, so far as concerns the critical suggestions by these two psychologists, James's essential contentions are not materially affected." If it were necessary for me to take sides on this question, I should agree with this conclusion; but I think my thesis as to the analysis of emotion can be maintained without coming to a probably premature conclusion upon the doubtful parts of the physiological problem.

According to our definitions, if James is right, an emotion may be

regarded as involving a confused perception of the viscera concerned in its causation, while if Cannon and Sherrington are right, an emotion involves a confused perception of its external stimulus. This follows from what was said in Lecture VII. We there defined a perception as an appearance, however irregular, of one or more objects external to the brain. And in order to be an appearance of one or more objects, it is only necessary that the occurrence in question should be connected with them by a continuous chain, and should vary when they are varied sufficiently. Thus the question whether a mental occurrence can be called a perception turns upon the question whether anything can be inferred from it as to its causes outside the brain: if such inference is possible, the occurrence in question will come within our definition of a perception. And in that case, according to the definition in Lecture VIII, its non-mnemic elements will be sensations. Accordingly, whether emotions are caused by changes in the viscera or by sensible objects, they contain elements which are sensations according to our definition.

An emotion in its entirety is, of course, something much more complex than a perception. An emotion is essentially a process, and it will be only what one may call a cross-section of the emotion that will be a perception, of a bodily condition according to James, or (in certain cases) of an external object according to his opponents. An emotion in its entirety contains dynamic elements, such as motor impulses, desires, pleasures and pains. Desires and pleasures and pains, according to the theory adopted in Lecture III, are characteristics of processes, not

separate ingredients. An emotion--rage, for example--will be a certain kind of process, consisting of perceptions and (in general) bodily movements. The desires and pleasures and pains involved are properties of this process, not separate items in the stuff of which the emotion is composed. The dynamic elements in an emotion, if we are right in our analysis, contain, from our point of view, no ingredients beyond those contained in the processes considered in Lecture III. The ingredients of an emotion are only sensations and images and bodily movements succeeding each other according to a certain pattern. With this conclusion we may leave the emotions and pass to the consideration of the will.

The first thing to be defined when we are dealing with Will is a VOLUNTARY MOVEMENT. We have already defined vital movements, and we have maintained that, from a behaviourist standpoint, it is impossible to distinguish which among such movements are reflex and which voluntary. Nevertheless, there certainly is a distinction. When we decide in the morning that it is time to get up, our consequent movement is voluntary. The beating of the heart, on the other hand, is involuntary: we can neither cause it nor prevent it by any decision of our own, except indirectly, as e.g. by drugs. Breathing is intermediate between the two: we normally breathe without the help of the will, but we can alter or stop our breathing if we choose.

James ("Psychology," chap. xxvi) maintains that the only distinctive

characteristic of a voluntary act is that it involves an idea of the movement to be performed, made up of memory-images of the kinaesthetic sensations which we had when the same movement occurred on some former occasion. He points out that, on this view, no movement can be made voluntarily unless it has previously occurred involuntarily.*

* "Psychology," Vol. ii, pp. 492-3.

I see no reason to doubt the correctness of this view. We shall say, then, that movements which are accompanied by kinaesthetic sensations tend to be caused by the images of those sensations, and when so caused are called VOLUNTARY.

Volition, in the emphatic sense, involves something more than voluntary movement. The sort of case I am thinking of is decision after deliberation. Voluntary movements are a part of this, but not the whole. There is, in addition to them, a judgment: "This is what I shall do"; there is also a sensation of tension during doubt, followed by a different sensation at the moment of deciding. I see no reason whatever to suppose that there is any specifically new ingredient; sensations and images, with their relations and causal laws, yield all that seems to be wanted for the analysis of the will, together with the fact that kinaesthetic images tend to cause the movements with which they are connected. Conflict of desires is of course essential in the causation of the emphatic kind of will: there will be for a time kinaesthetic images of incompatible movements, followed by the exclusive image of

the movement which is said to be willed. Thus will seems to add no new irreducible ingredient to the analysis of the mind.