tions which, it will be remembered, the author either defines as emotions 'in the strict sense' or declares to be emotions of peculiar intensity. The doctrine, then, that emotions consist in these sensations is purely verbal and nothing is gained for it by exhibiting a patient who is without them. What was wanted was evidence to establish the view that these sensations, severally or combined, constitute, along with other elements demonstrably non-affective, the feeling of, say, love or fear. But of this we have not a trace; all that we have, besides a definition in which the question is virtually begged, is a simple collocation of two facts, the absence of certain organic sensations and the absence of strong emotions. It never seems to occur to the author to ask whether this concomitance may not be due to a common cause, *e. g.*, some sort of central inhibition. It would have been more to the point had a case been presented of the reverse type, one namely in which the patient was completely anæsthetic as regards all the external expressions of an emotion while retaining full sensorial consciousness of the internal changes. If such a patient declared that she experienced the emotion with the same intensity as before the anæsthesia, something could indeed be said for connecting the feeling with the internal bodily changes alone. But even so the evidence would be inconclusive as regards the constitution of the emotion apart from the introspective analysis which is the strength of James's theory, but of which in this modification of it nothing is made at all.

As to the author's doctrine of inclination, it is clearly subordinate to his doctrine of emotion, and the only remark that it perhaps calls for here is that while it seems desirable to think of the more or less durable dynamic formations that determine the life of consciousness under a common term, the term 'inclination' hardly appears the one best suited to the purpose. 'Psycho-physical disposition' is doubtless more cumbrous, but it is at any rate freer from objectionable associations.

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TOUCH AND MUSCLE SENSE.

Le toucher et le sens musculaire. VAN BIERVLIET. Année Psychol., 1907, XIII., 114–121.

This article describes some preliminary experiments and conclusions in a general study of the extent and character of the relation between muscular movement and the tactual sense. Starting from the general conclusions of Vierordt, which the author wrongly attributes

to Weber, that the sense of touch of an organ is finer the greater the natural mobility of that organ, Van Biervliet conducted a series of experiments to show a more intimate relation between mobility and keenness of touch. The first experiments comprised a study of the tactual sense of the forehead in twenty individuals who moved this part in a greater or less degree. The subjects were arranged in groups according to the mobility of the forehead. The relative mobility of the forehead was determined by observing its movements during conversation and by counting the number of wrinkles found in it. Æsthesiometer tests were used and the forehead was compared with the tactual sense of the back of the most used hand. The subjects were men of intellectual pursuits who had not trained their hands to any great degree of dexterity in special manual work or in music. The results showed a fraction of $\frac{99}{100}$ for group 1 — that is, for those having the least movable forehead. The coefficient decreases gradually to $\frac{25}{100}$ in group 10 — those having the most movable forehead.

That the relative sensibility of the forehead increases regularly with the greater mobility of the frontal muscles would seem to indicate that the fineness of the tactual sense corresponds not only to the natural mobility of the organ, but to the mobility acquired through exercise. The mobility of a part, therefore, seems to be in some way a 'determining cause and an essential condition' of the sense of touch.

In order to determine if possible how these movements aided the judgment of distance on the skin, æsthesiometer measurements were taken for three regions: the back of the most used hand, the anterior surface of the upper forearm two centimeters above the bend in the elbow, and the forehead. The results show clearly that adding movements increase the fineness of the sense of touch of the organ explored. In the forehead, for example, the sensitiveness for simultaneous contact was 7, for successive contacts 4 and when the subject moved his head 2.

The author concludes that no part is absolutely immovable when being explored. The hand affords an excellent example of this. It is more movable than the arm and perceives more points of contact when apparently unmoved, and when allowed to move it becomes more sensible to points of contact. Furthermore, changes in muscular tension are often observed in the organ explored. All these facts, the author believes, indicate a very vital connection between the tactual and the muscle sense.

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