DISCUSSION.

THE INHIBITORY FACTOR IN VOLUNTARY MOVEMENT.

Apropos of Langfeld's recent article in this REVIEW (November last) on voluntary movement a few remarks seem not untimely.

In the first place, as every research-report known to the present writer seems to strongly indicate, we are wasting not a little time and query over the matter of imagery in studying voluntary movement. The reason that we are still doing so probably lies in our persistent ignoring of the inevitable action of the habituation-process, for an important part of this process is the sinking into the subconsciousness of movement-sensations, visual and kinesthetic, for every movement not truly voluntary, that is, really new and difficult and, as I think, inhibitory. Langfeld himself bears witness to this in his sixth 'conclusion': "There were subjects who required imagery, visual and kinesthetic, in order to carry on the movement. There were also those who needed only the instruction verbally and at times not even that." But no one, I take it, believes that the actual neural mechanism of two persons of like age and general motor efficiency is as different as the empirical difference in imagery would imply if the latter be at all really determinant in the performance. This seems to be the general attitude of these 'conclusions' as further inspection thereof would show.

Why, then, does Langfeld say (in conclusion second) "It would be absurd to suppose that the negative [attitude], not to touch the sides, could produce the movement down the board"? In a literal sense, too literal to be more than a quibble, this may be true, but the general consent of the performer to make the experiment at all is what 'produces the movement down the board,' and, actually making it, the intention 'not to touch the sides meanwhile,' is just precisely what does, as a neural mechanism, guide the movement, since to carry out this intention as long as possible is the entire purpose or volition of service as subject. Were not this intention, be it imagery (conscious) or subconscious, the guiding part of the employed neurokinesis, somehow, of course the stylus would most always go anywhere but 'down the board.'

All this seems puerile, almost, in the saying, and it would be so

indeed were it not still the rule for psychologists to strangely enough ignore the inherent inhibitory phase of our motor ideas and with it the whole *inhibitory kinesthetic nature of the great cortex*. But when this is taken into effective account (as it surely will be universally before long) the ingenious discussion about ideomotor action will join the multitude in the limbo of outgrown ideas. For it is *not* the imagery that determines the actual behavior whether the imagery be terminal, that is visual, or kinesthetic, that is current, save *at first*, when that particular coördination of that particular action-system was early in life perhaps being acquired by the psychomotor grey of cord and cortex. One man sees the javelin's mark, the next man perceives the inherent kinesthesia—both meanwhile must keep their consciousness somewhere!, while the ingrained and long-habitual mechanism of receptors and afferent strains and adjustors and efferent strains and effectors hurls the wearied and worn javelin more or less near its goal.

None the less, it is interesting, to me at least, to observe that of Langfeld's five subjects that one ('D') who alone had consistent kinesthetic imagery made the best record, a fact Langfeld fails to note in his conclusions! although obvious in the protocols. His average for the positive instruction with the right hand was 11.2 and with the left 12.9, and for the negative instruction 10.3 with the right hand and 13.2 with the left, as compared with the other four subjects' respective 7.1, 7.0, 7.3, 8.1 and 5.4, 7.7, 11.0, 10.9, 7.2, 8.8, 8.7, 10.1 and 8.5, 8.8, 10.6, 11.8. The figures, then, suggest that, ideomotor action or none, the only subject here who had conscious kinesthetic current control was more skilled at his motor job than the others. Whether cause or effect we need not surmise (unless we presume that it was both), but no one would believe that it was 'chance.'

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