

The Psycho-Physiological Theory of Right-handedness [*Théorie Psycho-Physiologique de la Droiterie*]. (*Revue Philosophique, June and July, 1916.*) Mlle. Ioteyko.

The writer commences her article by enunciating the doctrine that the normal human being is asymmetrical. "In 1903," she says, "I expressed the opinion that the normal man is asymmetrical. The principle of the bilateral symmetry of the organism, established until recently in biological sciences, is replaced to-day by the idea of asymmetry, which, far from being an abnormal or pathological phenomenon, is, on the contrary, the expression of the natural state. One of the halves of the body is more developed than the other from an anatomical and physiological point of view. In the case of the right-handed man, it is the right side which is favoured; in the case of the left-handed man, it is the left. Now, each half of the body being dependent on the hemisphere of the opposite side, one sees that in the case of the right-handed man it is the left brain which is most developed, whilst in the case of the left-handed man a greater development of the right brain is assumed." This thesis is supported by references to the works of many observers.

The author then proceeds to consider the various theories which have been put forward to explain the origin of right-handedness. They are numerous and ingenious, and some of them, particularly those advanced on anatomical grounds, deserve far more attention than has been given them in the paper. Herber's theory, which approximates most closely to the writer's, is fully discussed.

In the statement and explanation of her own hypothesis, Mlle. Ioteyko is very diffuse. The proposition may be epitomised as follows: Among the influences of muscular work, that which it exercises on the heart is the most important. Overwork of the heart is often determined by physical labour. Death from fatigue, which one observes in exceptional cases, is due to stopping of the heart. Fatigue of the heart is then the rock to be avoided in muscular movement. It is natural to admit that some form of auto-regulatory mechanism must exist in man, some mechanism which exercises a protective action with regard to the heart. And the writer supposes that it is this defensive action which incites man to use by preference in hard work either the right hand alone or the two hands at once, but always avoiding the use of the left hand alone, because by its situation in the neighbourhood of the heart it finds itself in closer connection with that organ than the right hand. Finally, muscular work executed by the left hand ought to react more violently on the heart than work done by the right, and to prove the truth (or otherwise) of this proposition the writer carried out certain experiments in the psycho-physiological laboratory of the University of Brussels.

The experiments were made on 32 students (22 males and 10 females), æt. about 20. The work imposed on each arm was as follows: The forearm being flexed on the arm, each subject was given a weight of 2.50 kgrm. to hold in the hand. The subject, in a standing position, had to raise the weight every two seconds above his head to the complete extension of the arm. The men were required to raise the weight thirty times, the women twenty. When the subject entered the labora-

tory, he remained at rest for several minutes. After this period of repose, the rapidity of the pulse was observed and noted down as the normal state. The work, mentioned above, having been executed with one hand, the pulse-rate was again observed. Half an hour later, the same experiment was performed with the other hand. And later again it was carried out by the two hands simultaneously, each hand being laden with a weight of 2.50 kgrm.

Taking the average of all the experiments, which included right- and left-handed men and women, the writer considers it was demonstrated that the fatiguing work of the left hand produced a more intense effect on the heart than the same work performed by the right. In examining the results by groups (right- and left-handed, males and females) this conclusion was not so clearly demonstrated. It is interesting to observe the enormous gain for the heart when one works with both hands simultaneously. The mechanical work is doubled, and the cardiac beats are not proportionally accelerated.

Applying her theory to the explanation of the causation of right-handedness, Mlle. Ioteyko considers that the right hand has developed greater strength than the left for the reasons enumerated above (saving the heart from overwork and consequent over-fatigue). Right-handedness is then an acquired superiority in phylogenetic development. The work of the right hand has reacted on the left hemisphere and produced its supremacy, and that not only from a motor point of view, but also from that of sensibility, address, and intelligence, because of the connections existing between the different centres. Thus the difference between the two hemispheres, at first physiological, has become psychological in the course of time.

In discussing the subjects of the education of the left-handed, ambidextrous education, etc., the writer refers at length to a system of reform of reading and writing proposed by Mlle. V. Kipiani.

In reading, this lady wishes to avoid the fatigue to the eyes in passing from the end of one line back to the beginning of the next, which requires constant change of accommodation. She thinks that this asymmetry of reading, which is performed always from left to right, and the abrupt and oblique movements imposed on the eyes at the end of each line, are the principal causes of many of the abnormalities of the eyes found among readers.

In order to remedy these inconveniences, Mlle. Kipiani proposes that books be printed in the following fashion: One line to be printed in ordinary characters and read from left to right in the ordinary way; the next line to be printed *en miroir* (each letter being reversed laterally), and read from right to left, and so on. In this way continuity of seeing will be assured, and the abrupt movements of the eyes will be avoided.

With regard to penmanship, Mlle. Kipiani advocates ambidextrous writing. Taking into consideration that the natural movements of the two hands are divergent from the middle line of the body, the right hand will write on a sheet of paper placed on the right side, and the left on one on the left side. In each case, the act of writing is to be performed as follows: The first line is to be written in the ordinary fashion; the second *en miroir*; the third in the ordinary way, and so

on. The sole difference between the two hands will be that each follows its natural slope; the right will slope from right to left, and the left from left to right.

Mlle. Kipiani also makes certain statements with regard to the orientation of children's drawings and of the figures in the pictures of ancient and modern artists. I have examined the correctness of these statements in an article on "The Orientation of Human and Animal Figures in Art," which appears in the present number of the Journal.

J. BARFIELD ADAMS.

2. Clinical Neurology and Psychiatry.

On the Mentality of those who Commit Suicide [*Sulla Mentalità dei Suicidi*]. (*Il Manicomio*, April, 1916.) Prof. Francesco Del Greco.

Sadness, or rather melancholy in the common acceptation of the word (I hardly think the word depression quite conveys the writer's idea), *tedium vitæ*, and impulse, appear to Prof. Del Greco to be the most important elements in the mentality of an individual about to commit suicide.

Impulse alone explains some unusual cases of suicide, especially those in which prisoners who have failed to prove themselves innocent kill themselves, or those in which people destroy themselves in anger, pain, or anguish.

After excluding other causes, such as imitation, suggestion, intense love, etc., the author returns to the consideration of sadness and *tedium vitæ*, which, linked together and overlapping, become a sentiment of profound weariness, loneliness, and desolation. The sufferers say themselves that life is not worth living, that life has no value. To this mental condition the author applies the term *vuoto dell'animo*, which may be translated as emptiness or loneliness of the mind. The idea, as developed in the paper, appears to be that of an intelligent being who is, or becomes, conscious of being absolutely alone in infinite space. There is something of the sublime in the idea, particularly if one accepts Ribot's theory that fear is an essential element in the notion of the sublime.

The writer points out that the part played in the causation of self-destruction by this loneliness of mind is illustrated by the rise and fall of the suicide rate as revealed in history, and as found among the various states and conditions of mankind.

Suicide, he says, is less frequent among barbarians than among the civilised, less frequent among those living in rural districts than among those dwelling in cities, less frequent among Catholics than among Protestants. Suicide is a black shadow which follows the culminating moments of civilisation.

The barbarian is altogether ruled by customs, superstitions, and moral ideas coming from without himself. With him collectiveness is at the maximum; individualism at the minimum. There is not enough autonomy in the barbarian or primitive man for him to torment himself about the value of his own being in the world. The collective aspect of the mind dominates him. It is not possible for him to experience