

harmony with the prevailing biological point of view. The new definition of the mental permits a restatement and solution of the mind-body problem more in accordance with common sense, the distinction of mind and body being regarded as "merely a distinction of two systems of organic function."

Carr remarks that the subjective conception of mental process constitutes an inadequate tool for the physician who attempts to comprehend physical disorder. To diagnose a case as "purely mental," and to give the impression that it could not in any way be stated in neural terms, is "a crude and preposterous conception." But, unlike Watson and other critics, Carr is inclined to put the blame less on medicine than on psychology. Medicine has merely accepted current conceptions set up by psychology, which has introduced into medicine old philosophical problems regarding the relations of mind and body. These old problems vanish at once if we assume that the disordered mental functions are in reality psycho-physical events.

This psycho-physical conception of mental process, the author claims, offers a mediating point of contact for the two extremes of subjectivism and behaviourism. It permits mental processes to be studied from the standpoint of immediate experience, or of objective observation, or of clinical data. It differs from subjectivism by allowing an objective method of approach. It differs from behaviourism by admitting that the study of conscious data can give much useful information. Behaviourism, logically defined, includes the whole field of organic function. But psychology should be content with a more modest programme, still allowing a place beside it to biology and physiology. The parallelism of mental and physical still remains as a working hypothesis, but it is the total activity that becomes the object of study; the dichotomy involved is not one of process but merely of method of approach.

There are no immutable boundaries between sciences. A science must take up whatever is pertinent to its primary interest. If mental acts are a means of organic adjustment they must be studied. If neural events are an essential part of the act, they, too, must be included.

HAVELOCK ELLIS.

2. Clinical Neurology and Psychiatry.

The Voltaic Vertigo Test in Epilepsy [*Le Vertigini Voltaiche negli Epilettici*]. (*Rivista di Patologia e Nervosa e Mentale*, October, 1917.) *Bonola, Dr. F.*

In epilepsy, the writer remarks, vertigo, as a subjective state, occurs rather frequently, either as the aura or as a symptom.

The vertiginous sensation represents an illusion of the failure of our static relations with our surroundings; a momentary suspension, in other words, of that complex of the sensations of the orientation of our body which is furnished to us principally by stimuli transmitted to us from the semicircular canals and the vestibule, and secondarily by visual sensations.

The very important part played by the semicircular canals and the vestibule in our static sense is proved by observing either the results

of direct stimulation of these organs, or the failure of specific reaction when they are imperfect. In fact, the compensatory movements (nystagmus, rotation, and inclination of the head), which are observed in men and animals undergoing the tests of rotary vertigo and of voltaic vertigo, are not observed in animals deprived of the semicircular canals, nor in men suffering from profound lesions of the labyrinth. The vertiginous sensations which are put in evidence by the rotary tests (Barany), or by tests in which the galvanic current is employed (Babinski), have, therefore, origin in an irritation of the semicircular canals, an irritation which translates itself objectively by the compensatory movements referred to above, and which Ewald has demonstrated to be of a purely reflex origin.

The nervous terminations in the semicircular canals and in the vestibule are stimulated in the ordinary way by displacements of the endolymph, and these stimulations are perceived by us as alterations of our position in space. In the case of rotary vertigo, the vertigo is also produced by movements of the endolymph; in the case of voltaic vertigo by the current; and in the case of the vertigo, which accompanies inflammatory conditions of the internal ear, by the propagation to the nerve of the pathogenic stimulus; in all cases the nerve responds to the stimulus by its own peculiar form of irritability, which is translated in its sphere of cortical projection by the sensation of movement, of vertigo. Experiment has demonstrated that the character of the vertiginous sensation varies with the localisation of the stimulus in the different semicircular canals and in the vestibule.

The commonest and safest methods of experimenting on the vestibular labyrinth are the test of rotation, and that of the voltaic vertigo of Babinski. The writer prefers the last, because it is easier and more sensitive than the other, and because the results are more sure, more constant, and more demonstrable. The technique is as follows: The electrodes (of 2 to 3 cm. diameter) are applied in front of the tragus, and the circuit is closed. If the labyrinth be normal, with a current of from 1 to 4 milliamperes, there is an inclination of the head constantly towards the positive pole, whatever be the direction of the current, a sensation of vertigo more or less intense, and often a rotary nystagmus directed towards the negative pole. If the current be increased, there is also an inclination of the whole body towards the positive pole.

If there are bilateral vestibular lesions, there is an exaggeration of resistance which may reach to 15 or 20 milliamperes, and may even surpass them, there is a remarkable delay in the appearance of the vertiginous sensation, there is a failure of the inclination of the head towards the positive pole, which is often replaced by a movement of the head backwards or forwards, and there is an almost constant failure of nystagmus. If the lesion be unilateral or chiefly on one side, one observes a constant inclination of the head to that side, whatever be the direction of the current. Also, after the test of voltaic vertigo, one often observes alterations in the test of the index of Barany, and lateral deviation of the body during walking, reactional movements caused by the cerebellum under the influence of labyrinthic excitement.

After devoting some paragraphs to the most recent views of the anatomy of the vestibular nerve, its origin, and connections, the writer proceeds to speak of the results of his experiments.

The test of voltaic vertigo was applied to thirty-two patients suffering from so-called essential epilepsy, and in five cases opportunity was taken of repeating the experiment within six hours of an epileptic attack.

The writer employed the following as control cases.

Three patients suffering from cranial injuries without osseous lesions, but who suffered from epileptiform attacks and vertiginous sensations.

Two patients suffering from convulsions of a clearly Jacksonian type.

Two suffering from uræmic intoxication with convulsive attacks.

Twenty soldiers, sixteen of whom suffered from attacks of what the writer has elsewhere described under the name of "convulsive states of neuropathics," and four of whom suffered from typical hysterical convulsions.

The test in the control cases gave the following results :

(a) In two of the three patients suffering from cranial injury there was a remarkable increase of the vertigo, and a very great resistance to the appearance of the compensatory movements, accompanied in one by a constant inclination of the head to the right, and in the other of the head backwards.

(b) In the two uræmics and in the two patients suffering from Jacksonian convulsions (without any sign of intracranial injury) the vertigo was normal.

(c) In the cases of the sixteen soldiers suffering from organic convulsive attacks, but not epileptiform (convulsive states of neuropathics), the sensation of vertigo was rather accentuated.

(d) In the four hysterical cases the vestibular reaction was normal.

With regard to the thirty-two epileptic patients, the writer gives a very careful account of his observations, which are arranged in seven categories. Briefly, it may be said that in no case was the reaction to the voltaic vertigo normal. In the epileptics with a vertiginous aura, the vertigo was very much stronger than in the other subjects. In the hours immediately succeeding (within six) an attack the voltaic test produced a sense of vertigo much less accentuated than at a later period. In no case did the voltaic test produce an attack of epilepsy. It may be added that none of the thirty-two patients presented any alteration of any importance of the cochlear labyrinth or any other parts of the ear.

The writer considers that the alterations, which he has observed in the vestibular labyrinth of epileptics, are very difficult of interpretation. They may be interpreted as phenomena of pathological hypo-excitability, materialising, perhaps, in sclerotic processes, which the writer can only associate with the disequilibrium of the blood-pressure and that of the cerebro-spinal fluid so frequent and so serious in epileptics. This disequilibrium, through the communications existing between the cavities of the labyrinth and the intra-arachnoid spaces, and through the vessels of the membranous walls of the labyrinth, may have a

dangerous *contre-coup* on the delicate terminations of the crests and acoustic maculæ of the vestibular nerve, and go a long way to produce the sclerotic processes, of which very likely the alterations of the voltaic vertigo are the exponents.

J. BARFIELD ADAMS.

Emotional Hysteria [L'Isterismo Emotivo]. (Annali di Neurologia, Anno xxxiv, fasc. 3.) D'Onghia, Dr. Filippo.

At the commencement of his paper the writer draws the reader's attention to the fact that Neri did not meet with any of the ordinary phenomena of hysteria among the 2,000 survivors of the earthquake at Messina whom he examined.

Very often, he remarks, hysterical manifestations are caused by trifling emotions and even every-day annoyances. The lady, who will fall into convulsions on account of some miserable quarrel with her husband, will very likely the next day, when something really tragic occurs in her life, find all the energy that the situation requires, and will put aside her hysteria.

An earthquake occurs unexpectedly. Frequently it arouses an individual from his sleep, and permits only of one thought, that of saving himself. Nothing artificial can prevent the accomplishment of this one aspiration. It is not possible that the nervous energy, which is absolutely necessary to the organism at that supreme moment of peril, can remain useless in a paralysed limb which prevents the individual from saving himself, or in a tongue dumb and silent, which prevents him from crying aloud for assistance. "It is not possible, above all, that another personality, an inferior and encumbering personality, should substitute itself for, or overcome the first and true (personality) and subdue it."

"War, on the other hand, and especially the war of to-day, is such that the nervous resistance of the individual is put to a very hard proof."

"During the long hours in the trenches, with limbs cramped by the uncomfortable position and suffering from excessive cold or excessive heat, when the surrounding silence is only broken by the distant roar of cannon and the nearer rattle of musketry, by the groaning of the projectiles of the former and the whistling of the bullets of the latter, and finally, by the moans of a comrade, who, while moving to satisfy some need, has been wounded to death by some invisible enemy sharp-shooter, that is the time and the manner in which the nervous tendencies of an individual acquire consistency and colour. And when, at an ill-omened moment, the cannon thunders louder, and the roaring is followed by a howling that shakes and overturns everything, what marvel that this latent tendency, this potential neurosis, I might say, is translated into an actual neurosis?"

"Here, also, the danger is imminent, and no one, unless he be in the fulness of health and strength, can sustain it; but, contrary to what happens in an earthquake, the neurosis itself may be the means of the salvation of the individual, by bringing about his removal to the rear."