which afford expression to the different affectional and emotional states. Pagano adds that many clinical observations have confirmed this view. Bechterew's researches have also shown that the posterior corpora quadrigemina have to do with the expression of emotional states. Their destruction is followed by deafness, aphonia, and paralysis of muscular exertion in standing and walking, while their excitation provokes the emission of vocal sounds, movements of the eyes and of the limbs of the opposite and then of the same side with elevation and pushing forward of the ear of the opposite side. WILLIAM W. IRELAND.

On the Left Hemisphere and Motor Actions [*Die Linke-Hemisphäre und das Handeln*] [*original articles in the Münch med. Wochenschrift, Nos.* 48 *and* 49]. (*Cbl. für Nervenheilkunde u. Psychiat., July* 15*th,* 1906.) *Liepmann.*

Dr. Liepmann, in a series of observations on ninety paralytics in the Infirmary of Berlin, has sought to ascertain how the power of movement was affected on either side. This examination was comprehensive. He took note both of the performance of voluntary actions, such as knocking at the door, ringing a bell and swimming, and movement expressions, such as snapping the fingers, beckoning and warning, as well as the rehearsal of these movements from memory. He tried to exclude cases in which the internal capsule was implicated, limiting his studies to the effects of the lesions of the cerebrum.

Dr. Liepmann found that in 20 out of 41 cases of left-sided paralysis movements were duly performed with the unaffected right arm, while in right-sided paralysis the motor functions of the left arm were also impaired, although in a lesser measure. In other 21 cases, the motions were not sufficiently precise to allow conclusions to be drawn therefrom. In 20 patients, with paralysis of the left side, 14 had also motor aphasia with injury to the performance of movements of the left arm. In the remaining 21 cases, there were only 4 in which the use of the left arm was noticeably impaired. The author took precautions not to confound cases of helplessness of the hands with sensory ataxia or with deafness. He found that in his cases the memory of the movements, as tested by rehearsals, was also affected. In four cases, where an examination was held, the author could find no changes in the area assigned for the left-hand centre nor in Broca's convolution. In these four cases examined, there are no lesion of the cortex noted in two of them; there was extensive injury to the corpus callosum. The author is disposed to place the lesion on one side of the centrum ovale through which the projection centre (Flechsig's) and the fibres of the trabs going to the right sensomotorium should be interrupted.

Dr. Liepmann comes to the conclusion that, in those motor impairments which followed the lesion in the left hemisphere, the movements of expression, as well as the performance of actions by the hand, are both affected. The rehearsal of movements is also impaired, but the understanding of symbols may remain. In the case of sensory aphasia, however, the awkwardness of movements may be owing to the impairment of the conceptions of time and space. This impairment of motor power in the left side following right-sided paralysis displays the pre-

eminence of the left hemisphere consequently on the preferred use of the right hand. The left hemisphere is taking a greater part in the motions of the left side of the body than is generally thought. Dr. Liepmann considered that, through a greater practice in the use of the other hand, the right hemisphere would be less dependent upon the lead of the left one, which would be an advantage to patients affected with lesions of the left brain. Moreover, it appears from the author's experiments, that the loss of motor impressions is an important deficiency in dementia. It is also conceivable that the possession of motor images in both hemispheres might heighten their liveliness, or that the relief of work thrown thereon on the left hemisphere, by the increased cultivation of the right one, might allow of the performance of higher functions.

WILLIAM W. IRELAND.

2. Physiological Psychology.

The Mechanism of Attention [*Le Processus et le Mecanisme de l'Attention*]. (*Rev. Scient., April 7th*, 1906.) *Nayrac.*

The author appears to have made no experiments of his own, but attempts to explain attention on the basis of recent researches (especially those of François Franck) concerning the organic phenomena which accompany attention. There are four theories of attention—(1) the motor theory (Ribot, Ward, Stout, and most contemporary psychologists); (2) the sensorial theory (Bastian); (3) the mixed or sensori-motor theory (Waller); (4) the theory of reduction or simplification (James, Richet). It is the last which Nayrac accepts and seeks further to develop. According to this theory attention is mainly central; it is "a general tension of mental activity," "a unique force determined by the combined play of all the energies of the individual." It is thus a general property of the nervous system, to be assimilated to effort and to will; "there is no will without attention, and there cannot be attention without will." The question of the mechanism of attention is also thus found to be the same as that of the mechanism of the emotions, which the author resolves in a contrary sense to James and Lange. The brain, according to Nayrac, is the first agent of attention, and the peripheral phenomena follow the central. This is the theory usually termed "idealist" or "psychological," but Nayrac argues that it is just as physiological as the peripheral theory. The author's main point, however, is that attention cannot be regarded as an isolated phenomenon, but rather as "our great faculty of mental adaptation, which as soon as it wishes to come into action makes an appeal to the whole of our organism." It adapts its forces to the end to be attained and cannot be adequately explained unless we admit that the preponderant part in it is played by the brain in general and the cortex in particular. He further considers whether attention obeys a motor or an inhibitory mechanism, and finally concludes with the following provisional psycho-physiological definition of attention: "The feeling of psychic tension which arises in part from the action of cerebral phenomena and in part from the general tonic contraction, voluntary or in-