

# Current Literature

## I. VEGETATIVE NEUROLOGY

### 1. VEGETATIVE NERVOUS SYSTEM.

**Egger, M.** THE STATIC TONE AND ITS RÔLE IN NERVOUS PATHOLOGY.  
[Schweiz. Arch. f. Neur. u. Psych., Vol. I, No. 1, 1917.]

Egger attempts by these studies upon tonus to obtain light upon the slipping of the knee in tabes. He believes this cannot be due, as has been supposed, to the fact that conscious sensibility of the knee has been lost, because slipping is observed in a number of ataxics where such sensibility is intact. But in the thalamic syndrome where it is completely abolished, neither ataxia nor the slipping exist. Incoördination is evident at the attempted voluntary movements but while walking no ataxia is evident. Neither can the Charcot-Leyden theory that conscious sensibility directs the movement be held, since that follows rather than precedes the movement. Therefore an attempt is made to find some explanation in peripheral phenomena. In the erect position the musculature is more active than in the recumbent position. There is a peri-articular muscular contraction which prevents our falling as certain tabetics and cerebellar cases do. Certain experiments with the subject in various positions show that the increase of tonus of certain of the muscles of the erect subject permits of less ample excursions. Furthermore the muscle-joint sensibility is the factor which directs the centers to the various positions, for in spite of absence of vision or of orientation the tonus persists. Further simple experimentation reveals the fact that it is this muscle-joint sensibility which stimulates the increase of tonus. Traversing a soft or even terrain after climbing makes it difficult to prevent the failure of the knee or the turning of the foot, but tonus is restored and position controlled when one begins to remount. Not only articular pressure but the extension of the muscles plays an important part. The fibers are then very easily excited and contraction is stimulated, which principle is well utilized by nature. Egger believes that the motor mechanism for walking is not situated in the cortex. Only the incitation for the beginning of the action starts from there, but the development of the dynamic motor formula falls upon the cerebellum and at the tegmentum of the mid-brain where the excitants of the tonus reflex arrive. He then proceeds to prove that two excitants of different natures, such as an extension provoked in the muscle and the volitional incitation. This, through the position of muscles and joints which it

instigates, tends to diminish the tension, but the latter is increased in turn by the articular pressure. This shows how two excitants of a diverse nature compensate each other and produce the one result, the tonicity of a dynamic muscle. The same principle is manifested in a person in the squatting position, or raising himself from it and in walking. In the latter the author explains at length the working of the different factors of the process. Walking thus appears to be a mechanism of autoregulation comparable to respiration, which is under control of the vagus. The writer cites at length several cases which confirm these conclusions. They were patients who, because of infantile paralysis or other lesions, manifested varying degrees of motor difficulty, some very severe. In all there was an element of surprise to the physicians in the unexpected movements or complicated set of movements they were able to perform. These showed themselves dependent upon the principle of autoregulation and pressure stimulus which the author has described.

In cerebral hemiplegia the static tonus seems to be always preserved. One patient with an unusually complete hemiplegia was yet able by altering his position to use the affected limb to some extent in the movements of walking through the principles stated. With subjects apparently incapable of the smallest degree of flexion, in an upright position they can raise themselves upon the extremity of the feet and the tibial tarsal articulation again proves itself possible and an often considerable excursion is made. It is usually only with the sound foot that the first position is assumed, the action of the static tonus is however responsible for the movement secured and its action is bilateral upon the soleus of the paralyzed leg.

The conclusions which the writer reaches from this study are:

1. The upright position differs from the recumbent by an increase of tonus in the musculature.
2. The tonicized muscle produces a less ample excursion but a greater force.
3. The static tonus is regulated by articular pressure and the extension of the muscle.
4. The two inciting agents, even if they act only on one side, produce a homologous and bilateral tonicity.
5. Two energy factors have part in this attempt, the volitional and the reflex.
6. In the mechanism of the lower limbs the reflex energy preponderates over the volitional.
7. The dynamo-motor effort of walking seems to be regulated by the two excitants of tonus, muscular extension and articular pressure.

What may be drawn from a study of the upper limbs is left for a further report.

JELLIFFE.