

rest and in cold weather, decided thickness of speech for a few moments, due to stiffness of the extrinsic tongue muscles and those of lips and mouth. In singing there is at times difficulty in getting a full note or tone, a difficulty which is associated with a feeling of something amiss with the laryngeal muscles, and wearing off, as usual, very rapidly on persistence of the attempt—this point is not, however, easily demonstrated.

*Micturition*, like all the organic reflexes, is said to be never affected. If, however, the stream be stopped by voluntary contraction of the sphincter the fleeting spasm and slow relaxation is easily appreciated in the present case.

Though aggravated by emotion ("nervousness") it often occurs when this can be excluded. It is only the voluntary muscles concerned that are involved. It is to be noted that, in any particular group, it is often the *second* movement of a similar kind that shows the disability most markedly, this is easily understood if it be borne in mind that the *prolonged relaxation* after any contraction is the most serious trouble.

As regards the effect of cold, emotion, etc., on the severity of the tonic cramps, the writer finds himself at variance with some other observers; thus Hale White, who has gone into the subject so thoroughly, states (Albutt's System), that these peculiar arrests of movement are affected (in his case) neither by cold, by direction of attention to them, by mental excitement, by time of day, by alcohol, by meals, nor by temperature; but that sometimes fatigue will bring them out with unusual prominence. The writer is convinced that the following factors are important, as Thomsen, Blumeau, Dana and others have remarked in the past.

(a) *Prolonged rest of the muscles.* This is the most important factor. The longer any particular group of muscles is kept at rest, the more severe and prolonged is the tonic spasm when they are put into contraction.

(b) *The suddenness and force of the contraction that the patient wills.* A sudden and strenuous attempt to "drop-kick" a football will be followed by a severe extensor spasm, whilst the act may be performed with comparative ease, if a few gentle preliminary kicks are taken to "limber up" the muscles involved. Instances might be multiplied.

(c) *Mental excitement and emotion. Direction of attention to it.* The writer's case shows marked aggravation under these conditions. As a schoolboy he was a distance runner. When the pistol was fired for the start of a race, the strong attempt to rapidly innervate the leg muscles was accompanied always by a momentary and indescribable