

Swimming shows the muscular disability very markedly, for here two contributing factors which the writer regards as important aggravate matters, viz., cold, and the nervous anticipation of the general spasm which follows. The movements are very stiff and sluggish, and co-ordination very poor for an appreciable time until he gets into the stroke. The large number of co-ordinated muscular groups brought into play results in so much spasm, that he may at times get a "ducking" before he can get sufficiently "limbered up" to get going.

In stooping, the back is stiff, partly from the lordosis and partly from the apparently hypertonic condition of the erector spinæ. If attempts to touch the toes with the knees straight be repeated he can reach a little nearer the toes each time, but never as far as the normal range of spinal flexion.

The *jaw* muscles are affected, for it, after rest, he attempts to open and shut the mouth rapidly the spasm and slow relaxation of the masseters and interal pterygoids may cause an appreciable delay in getting the mouth fairly open. Difficulty in chewing movements may thus result.

The extrinsic muscles of the *tongue* also show the defect—if rapid protrusion and retraction be attempted. All the facial muscles are involved, but, as the spasm seems everywhere in proportion to the bulk of the muscles, the defect is not so noticeable in the face as in limbs and trunk, still, if he laugh or make any facial gesture after rest or exposure to cold, he is often conscious of a stiffness about the face and a smile may take on the sardonic type and possibly require explanation. The spasm has been noticed in the frontalis. The rarely involved *eye muscles* are decidedly affected. Sudden lateral movements of the eyes cause a spasm which cannot at once be overcome, resulting in phosphenes momentary diplopia and dizziness—the patient relieves this by stroking down the closed lids for a moment or two to help relaxation.

Grafe's sign may at times be elicited, and is to be attributed to contraction of levator palpebræ superioris. (Raymond).

Movements made at command sometimes end in contracture, especially upwards.

When the eyelids are forcibly closed, there is at times, sluggishness in opening them until the act has been performed a few times.

At times there are phosphenes on head movements, as in a case of Raymond's (quoted by Knics). This he ascribed to pressure on the globe by the extrinsic muscles or of the muscles of the neck on the aorta.

In rare instances, the laryngeal muscles have been stated to be involved. In the writer's case there is at times, but only after prolonged