TWO UNUSUAL FORMS OF CLONUS: TOE CLONUS AND LATERAL ANKLE-CLONUS[1].

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A case of disseminated sclerosis under my charge at the Infirmary for Nervous Diseases presents two interesting forms of clonus which I cannot find described. The deep reflexes are all exaggerated, but very variable; no Babinski; no rectus-jerk; there is crossed knee-jerk, scanning speech, nystagmus, lateral head movements, some muscular wasting and general spastic rigidity. The case has been variously diagnosticated as cerebral diplegia, Friedreich's ataxia and multiple sclerosis. The ankle-clonus is very small, but prolonged and rapid. From the tracings which Dr. Eshner has made the rate is easily calculated as 7.2 per second. In taking the ankle-clonus, which can be brought out by a mere touch, I found that to push the foot a little to one side instead of upward produced a rapid lateral clonic movement, entirely in one plane. Its extreme excursion is not more than three-quarters of an inch, the speed being 6.5 per second. Both these rates are about the same as those of the ordinary ankle-clonus.

The lateral motion could usually be produced by giving the great toe a slight sharp inward push—and releasing it. The muscles being all in an unnaturally tense state and over-irritable, this starts the contractions, just as pushing the foot upward smartly starts some of the posterior leg muscles into clonic activity. But in ordinary ankle-clonus the opposing force is supplied by the hand, and in this side-wise movement this element of necessary opposition is wanting; the muscles themselves must supply it. The excursion is so short and the muscles which might produce it so small and deep-set that it is difficult to be certain of the special muscles concerned. At first we thought we detected movements of the anterior tibial,

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and in some later experiments this muscle appeared to contract, but not always. With the foot in the extreme flexion which was its usual position the tibialis anticus would share in the production of a lateral movement. The peronei are more certainly concerned, but whether all unite in it, or whether it is due to the peroneus longus alone, cannot be made out. Opportunity for further study of this may possibly be had, although the patient has left the hospital.

She presented another small point of interest. The toes, which are small and imperfectly developed, were always somewhat rigidly half-flexed, the ungual phalanges bent upon the pedal. In an effort to straighten them or to try whether they could be straightened, a toe-clonus was started. It was slow, not more than three to four times a second, and was exhausted by eight or ten contractions. If it was excited by carefully pushing up the ungual phalanges with a force too slight to alter the position of the foot, the clonic movement was limited to the toes; if the push were stronger so that the foot moved on the ankle, ankle-clonus appeared. The toe-motion was performed by the interossei, the flexor brevis and longus not coming into play.

Theoretically, any muscles may exhibit the phenomenon of clonus, which is only a rapidly renewed contraction of a muscle, induced by over-stretching it suddenly; but clonus at the ankle and at the wrist are the only forms in which the phenomenon has diagnostic value; the rectus and jaw clonus are too uncertain. But it is not altogether a pathologic sign, and a clonus can readily be started in any person, as Dr. Weir Mitchell has remarked, by putting a set of muscles into an unnatural tension and keeping them so. This over-tension is a necessary precedent. Muscles already in a greater state of tension than normal are, therefore, peculiarly liable to show it, and those groups where opposition is well balanced and where the sets of muscles concerned lie close enough together for both to be brought readily into action by one stretching motion are the best suited to exhibit it. The opposition at the ankle is, in diagnostic examination of the act, supplied by the hand of the investigator. In rectus-clonus this is not needed.