

as in the previous case; but the tremors of contraction are now no longer at the rate of nine per second: they correspond beat for beat with the interruptions of the electrical current. That is to say, the muscle is responding separately to every separate stimulus which it receives through the nerve; and further experiment shows that it is able thus to keep time with the separate shocks, even though these be made to follow one another so rapidly as 1,000 per second. Therefore we can have no doubt that the slow rhythm of nine per second under the influence of volitional stimulation, represents the rate at which the muscle is receiving so many separate impulses from the brain: the muscle is keeping time with the molecular vibrations going on in the cerebral hemispheres at the rate of nine beats per second. Careful tracings show that this rate cannot be increased by increasing the strength of the volitional stimulus; but some individuals—and those usually who are of quickest intelligence—display a somewhat quicker rate of rhythm, which may be as high as eleven per second. Moreover, it is found that by stimulating with strychnine any of the centres of reflex action, pretty nearly the same rate of rhythm is exhibited by the muscles thus thrown into contraction; so that all the nerve-cells in the body are thus shown to have in their vibrations pretty nearly the same period, and not to be able to vibrate with any other. For no matter how rapidly the electrical shocks are allowed to play upon the grey matter