

of the cerebral hemispheres, as distinguished from the nerve-trunks proceeding from them to the muscles, the muscles always show the same rhythm of about nine beats per second: the nerve-cells, unlike the nerve-fibres, refuse to keep time with the electric shocks, and will only respond to them by vibrating at their own intrinsic rate of nine beats per second.

Thus much, then, for the rate of molecular vibration which goes on in nerve-centres. But the rate of such vibration which goes on in sensory and motor nerves may be very much more rapid. For while a nerve-centre is only able to *originate* a vibration at the rate of about nine beats per second, a motor-nerve, as we have already seen, is able to *transmit* a vibration of at least 1,000 beats per second; and a sensory nerve which at the surface of its expansion is able to respond differently to differences of musical pitch, of temperature, and even of colour, is probably able to vibrate very much more rapidly even than this. We are not, indeed, entitled to conclude that the nerves of special sense vibrate in actual unison, or synchronize, with these external sources of stimulation; but we are, I think, bound to conclude that they must vibrate in some numerical proportion to them (else we should not perceive objective differences in sound, temperature, or colour); and even this implies that they are probably able to vibrate at some enormous rate.

With further reference to these molecular move-