strong evidence that paralysis, and not over-action is the condition of the nerve centres in tetanus. He instances "certain poisons, like gelseminum and buxus sempervirens, which produce at the same time both weakness of natural co-ordinated reflex action, cord paralysis and tetanus." He says "it is impossible that the tetanus should depend on stimulation of the cord, for we have seen that the tetanus was preceded by considerable depression of the cord and continues until the depression ends in extinction of all cord function ;" or, as he says again, the tetanus "occurred in a dying cord" (d).

In strychnia poisoning, death occurs from asphyxia (e), with its contracted and empty arteries and engorged veins :- the precise condition of the vascular system produced by destruction of the spinal cord, as in pithing, as already shown in a previous page. Do not the foregoing facts show that strychnia does not kill as a stimulant, or excitant, of the spinal cord ? Moreover, medical literature clearly shows the value of alcoholic stimulants in strychnia poisoning, but I cannot delay to quote it. On the other hand, chloral hydrate, which has some reputation in these cases, is "not by any means antagonistic" to the action of strychnia. It acts by simply lessening the contractile energy of the muscles, like other anæsthetics, by de-oxidizing the blood, and thus retarding the chemical process in the muscle, whereby its contractile force is generated. In this way the convulsions are arrested, and time gained for the elimination of the poison. But dangerously large doses-seven or eight grammes-(about two drachms)—are required for this purpose (t). "Strychnia affects paralyzed, sooner than unparalyzed muscles," writes Dr. Ringer: but this is not exact. Strychnia does not affect the muscles at all, as Dr. R. himself shows; and the muscles are not paralyzed in the cases to which he ref-rs. What he means is that strychnia induces twitches and spasms in muscles whose nerves are enfeebled, sooner than in muscles whose nerves are acting normally. Why is this? If strychnia were a stimulant, would it not sooner excite vigorously acting nerves than enfeebled ones? But since

its effect is to cause "depression of the motor nerves," nerves already suffering in this way have their activity more easily extinguished, and their muscles set free, than is the case with healthy nerves. The same thing is equally true of the other paralyzer, electricity. Twitches, tremors, spasms and tetanus are all but varying stages of nerve paralysis and of muscular freedom.

ELECTRICITY A PARALYZING AGENT.

Prof. Tyndall tells us that a mere trace of iron in the coils of a galvanometer, of even such splendid instruments as those used by Prof. Du Bois Reymond in his researches on animal electricity, caused a fallacious deflection of the needle, to the extent of thirty degrees and more (a). It is therefore not to be wondered that erroneous conclusions were sometimes arrived at in experiments so beset with fallacies, even when conducted apparently with the greatest care. So mysterious a force, which exhibits itself alike in the lightning's flash, in a tiny spark and the quiver of the eminently sensitive protoplasm of a muscle, might well excite wonder and enthusiasm. As investigation proceeds, however, the exaggerated ideas as to the important part played by electrical currents in the phenomena of nerve and muscle, and even of life itself, which prevailed some years ago have been rapidly on the decline among students of electrophysiology; but will doubtless linger long in the popular and even in the professional mind. But electricity is not nerve force, nor can it cause the generation of nerve force, which is impossible in a mere nerve trunk separated from its nervous This must be obvious. If it produce centre. effects equivalent to a loss of vital action such as occurs in the death or destruction of portions of the nervous system, it must be classed as a sedative and not as a stimulant. In the experiments about to be mentioned the currents employed are those used for ordinary physiological and therapeutic purposes.

The effect of such a current applied to the inferior laryngeal nerves is to induce spasm of the muscles of the glottis. "The rima is completely closed" (b). That is to say, it does precisely what we have seen above is done by section and paralysis of these nerves. Applied to the lower ends

⁽a) London Lancet, Feb. 17, 1887, p. 288; Braith. (b) Fothergill, Antag. Ther. Agents, p. 55.
(c) Lyman's Anæsthetics, Wood's Library, pp. 264,

^{267, 275.}

⁽d) Heat as a Mode of Motion, p. 34.

⁽e) Dr. B. Sanderson, Handbook, p. 308.