and bodily lassitude, they are becoming abnormal or pathological, and require judicious treatment.

The local causes leading to spermatorrhœa are most frequently hyperæsthesia and chronic inflammation of the prostatic urethra, induced by masturbation, gonorrhœa, sexual excesses, and the like. But it is chiefly in the direction of treatment that I would direct attention. It is very wise in these cases to lay down strict hygienic and moral rules for the patient. Thus, avoidance of all alcohol; light, simple, nutritious diet. Direct him to empty his bladder the last thing at night, and as early in the morning as possible. Riding on horseback or over very rough roads is not advisable. The mind and body should be given sufficient exercise, to keep the thoughts away from the subject. Habitual constipation is often met with, and requires close attention. Medicinally, bromide of potash is indicated. But chiefly, remove any reflex source of irritation.

If there is an elongated prepuce, with or without phimosis, circumcision is to be performed; in one troublesome case, I found this act most speedily. If the rectum contains any irritation, it should be at once remedied—as external and internal piles, or fissure of the anus. The over-sensitive or chronically inflamed urethra, as in the cases of prostatorrhœa, is best met be the passage of the sound, and the injection of nitrate of silver.

ON THE NECESSITY FOR A MODIFICATION OF CERTAIN PHYSIOLOGICAL DOCTRINES REGARDING THE INTERRELATIONS OF NERVE AND MUSCLE.

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OBJECTIONS TO THIS THEORY.

1. It has been objected to this theory that "a muscle can contract when irritation is directly applied without the intervention of nerves." Now, I am not in the least disposed, or obliged, to dispute this assertion, for reasons which will appear later on. My thesis has much to gain, and nothing to lose, by the fullest admission of the independent irritability of muscular tissue. But it is exceedingly difficult, if not at present impossible, to say when a still irritable muscle has been deprived of "the intervention of its nerves." Certainly such is not the case in the experiments edited by Dr. M. Foster, in the Hand-book here tofore referred to, where the experimenter, in order to produce the ideo-muscular contraction, is to choose "a muscle which has been much exhausted by treatment or by long removal from the body," and to "wait till neither muscles nor nerve give any ordinary contraction with an electric stimulus." It cannot be held to be proven that in such a nerve-muscle there is not still remaining a force in the weakened nerve sufficient to control the equally weakened muscle.

CURARE AND THE MOTOR NERVE ENDINGS.

2. It has also been objected that, while the motor nerve endings are paralyzed by curare, the muscle does not contract, as it ought to do if this theory were correct. To this I have to reply, that if the muscles are not found contracted it is partly due to the insufficiency of the poisoning of the motor nerves, and partly to the fact that curare diminishes the contractile energy of the muscle (*a*). Nicotine and conine act precisely like curare (*b*), and in the final action of these three poisons, motor nerve paralysis and spasm, or convulsions of the muscles, occupy a prominent place. (Ringer). The special results vary, of course, in different animals. Nicotia sometimes acts like an anæsthetic (*c*); and the same is doubtless true of the others. Now, anæsthetics induce muscular relaxation by deoxydizing the blood; and nicotine is known to disorganize the red corpuscles which are the oxygen carriers. It is doubtless in this way that, under the slow action of these poisons, muscular relaxation is brought about. If death be rapidly produced by curare, convulsions occur (*d*). Here the motor nerves are paralyzed before time has been afforded for the poison to lower the irritability of the muscle, which passes into tonic or clonic spasms according to its freedom, thus behaving as it "ought" to do. Is not this a sufficient answer to the objection?

But more remains to be said. The experiments with curare are not so conclusive as to be beyond the reach of criticism. They were intended to

* Read before the Physiological Section of the Ninth International Medical Congress, held in Washington, September, 1887.

(*a*) Rosenthal, Muscles, etc., p. 254.
(*b*) Ib., p. 253.
(*c*) Stille and Maisch, p. 372.
(*d*) Stille and Maisch.