

capacity of the chest tends to improve the curvature." It is manifest that these frames fulfil these requirements.

The third and last division of the subject to which I will ask your attention this evening is the use of curved traction in

LOCOMOTOR ATAXIA.

I have no need to refer to the present interest manifested by the profession in the success of the suspension treatment, first practiced and published by Motchoukowski, in Odessa, in 1883, and afterward brought into prominence by Charcot in Paris, in January of the present year. In this country, Morton, Dana, and others have recently established valuable contributions to this subject, and a review of the cases so far collected from various sources which have been treated by this method shows a preponderance of favorable results. The treatment as outlined by these writers is simple and easily followed. It consists in suspending the patient for a period ranging from two to ten minutes once a day, or once every second or third day.

The precise effect of suspension upon the spinal cord and nerves in this disease is not as yet determined.

Dana* considers that "it gives a slight stretching to the nerves and an impulse to a better circulation in the cord." He also considers it "a method of treatment inferior to others in our possession."

Waitzfelder† considers "it hardly reasonable to suppose that the cord itself was stretched, for it floats so freely in the spinal canal that the counter extension of the weight of the body is not sufficient to produce that result without the greatest pain." He considers "it more likely that the traction exerted on the spinal nerves in some way brings about a change in the circulation and nutrition of the cord, and the amelioration of the symptoms is due to a lessening of the vascular supply of the cord and its membranes.

Morton‡ in his report on this subject asks the following pertinent questions: "What are the effects of suspension upon the healthy spinal cord? What the cause of the effect upon the diseased

cord? Is it due to a diminution of the irritability of the cord by stretching it, and temporary; or by reason of frequent and forced reduction of abnormal irritability likely to become permanent? Whether the cord can or cannot be actually elongated? What results may be obtained in other diseases, and whether a restoration of function may not influence the condition of a lesion?"

In conclusion, he considers "the subject is but just entering upon its experimental and clinical stage, but if we accept the facts thus far reported, and if they prove to be repeated in a large number of cases, we shall be obliged to admit that the sum total of improvement and cure, be it temporary or permanent, is far in excess of that attainable by any previous means, and as such must be regarded as the most signal advance yet made in the treatment of this hitherto intractable disease."

Motchoukowski§ is inclined to believe the improvement noticed in his cases to be due to the greater activity of the circulation induced during suspension.

He noted increased arterial tension and increased rapidity of the pulse and respiration during the suspension of living persons, and in experiments upon a cadaver he found a lengthening of the spine between the second cervical and fourth lumbar vertebrae of $2\frac{1}{4}$ cm.

The writer of an able editorial upon the subject, published in the *Journal of the American Medical Association*,|| September 7th 1889, states that "although the status of any therapeutic measure in a disease of so protracted and irregular course can only be determined after much more prolonged observation than has been had in most of the cases thus far treated, the reported results have been temporarily at least, so generally favorable, and the difficulty and risk of the treatment, under proper precautions, are so slight that it would seem worthy of a general trial."

He further states that "the rationale of the treatment is not very evident. Experiments have shown that in the cadaver, at least, the vertebral canal is sufficiently elongated to exert slight traction upon the spinal cord by the nerve roots: but why this should be beneficial is not quite clear. Althaus suggests that it may be due to the break-

* *The Medical Record*, April 13, 1889, page 420.

† *The Medical Record*, June 8, 1889, page 630.

‡ *The Medical Record*, April 13, 1889, page 406.

§ *Vratsch*, No. 17 to 21, 1883.

|| Page 343.