

the scaleni muscles do upon the cervical portion, thus necessitating a strong counterbalancing action from the muscles on the posterior aspect.

The explanation of lateral curvature is not so easy. Slight lateral deviations are frequently found in otherwise well formed people, and according to our author it is not agreed whether this should be called physiological scoliosis or not. We would at once anticipate his conclusion by inferring that this gives no trouble so long as the muscles are strong and active, and that, therefore, measures to prevent or restore their strength and activity should be employed. Amongst classical statues in the Louvre and British Museum Dr. Landerer has not been able to find any examples of the physiological scoliosis. The spinal column being freely balanced perpendicularly upon the pelvis, and thus held by the muscles on each side of it, as a freely balanced mast would be by ropes, it follows that when deviation occurred to one side or to the other it must be on account of muscular relaxation, as the mast would deviate if one of the ropes were slack. Increased weight in the perpendicular direction alone does not cause lateral deviation. The effect of gravity upon superincumbent or suspended weight will not produce scoliosis so long as the muscular structure is normal.

In Swabia, where the home of our author is, he tells us that women and girls carry heavy loads upon their heads up high mountains, but in spite of this, scoliosis amongst the laboring classes is seldom met with. On the contrary, very prettily formed figures are almost exclusively found due in great part to this exercise. The maidens of Capri also carry heavy weights upon their heads and are remarkable for their faultless development. The muscles are thus made powerful to oppose strong lateral resistance.

In incipient scoliosis the spinal column is exceedingly flexible and this great mobility should be regarded as the first sign of lateral curvature, especially when accompanied with flat back.

Autopsy of scoliotics reveals atrophy and fatty degeneration of the muscles of the back, especially of the concave side. We would have supposed that it would be greater upon the convex side where the relaxation would be.

We are all more or less critical in observing any slight obliquity of the shoulders and lateral deviation of the spinal column, but somewhat different

towards the antero-posterior direction of the median curve. Only in the most recent ladies' fashions does our author find that a well developed median curve is necessary and that a deep concavity in the lumbar region—lordosis—is pretty. The latter is formed artificially by the bustle or *tournure*.

In health the antagonistic muscles keep the vertebrae at proper distance from each other. If there be muscular weakness they will sink down upon one another, and in sitting or standing if the muscles act obliquely the spinal column will deviate from its natural position and the vertebrae will be pressed together causing disturbances of their circulation and nutrition until they finally become deformed. In brief, for the *preservation of the spinal column in a natural position healthy muscles are necessary. Habitual Scoliosis arises from superincumbent weight, the original cause of which is weakness of the muscles and therefore the treatment has to be directed to them.*

The results of treatment proved to our author that his views were correct. Massage goes further than gymnastics, and what these accomplish slowly massage does in direct manner by the hands of the surgeon. With cases of scoliosis in the first stage which permanently increased in a few months, the children felt stronger and steadier in the back and held themselves more erectly even after a few *seances*. Though the immediate effect of massage was quite evident, yet part of the improvement disappeared within a short time, but the gain gradually became lasting. The method employed by Dr. Landerer is the following: The child is laid upon the abdomen, the trunk bare to the lower half of the crests of the ilia, the arms stretched forwards. The extensors on both sides of the back are percussed with the balls of the little fingers from their origin on the pelvis upwards to the neck; at first gently, and then more vigorously. The concave side is percussed more strongly than the convex. The muscles on the side of the trunk so far as they are connected with the spinal column come in for a share of the same. Then the extensors of the trunk are stroked with the fingers held in a perpendicular manner.

We do not see why percussion should be used more energetically on the concave side, unless it be carried to an extreme degree so as to tire out the contracted muscles, and thus cause them to relax. Percussion has much the same effects as faradization