

SAYRE (L.A.)



A CLINICAL-SURGICAL LECTURE

DELIVERED IN

BELLEVUE HOSPITAL AMPHITHEATRE,

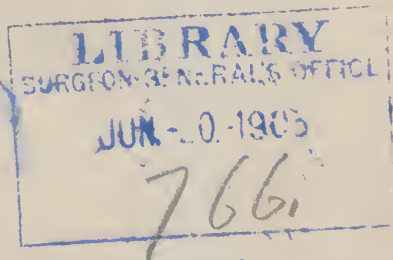
December 24th, 1879,

BY

LEWIS A. SAYRE, M.D.,

Professor of Orthopedic Surgery in Bellevue Medical College.

STENOGRAPHICALLY REPORTED FOR GAILLARD'S MEDICAL JOURNAL,
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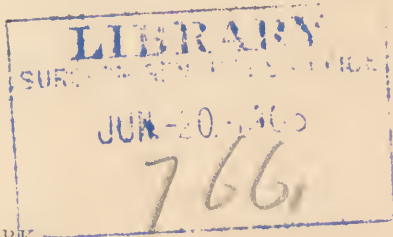
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DELIVERED IN BELLEVUE HOSPITAL AMPHI-
THEATRE, DECEMBER 24th, 1879.

BY

LEWIS A. SAYRE, M.D.,

*Professor of Orthopædic Surgery in Bellevue Hospital Medical
College, New York.*

LATERAL CURVATURE OF THE SPINE.

GENTLEMEN:—On account of the stormy weather we will not have as many patients to illustrate our subject as we had expected.

Lateral curvature is a deformity exceedingly common in all countries, and particularly so in this. It occurs most frequently in young girls about the age of puberty, and it is a result, commonly, of unequal contraction of the muscles of the two sides of the body. The spinal column is acted upon by the muscles of either side, and if these act in harmony with each other it retains its normal outline; but if certain muscles on one side of the trunk become paralyzed, or if on the other hand they become unduly developed by exercise, the harmony of action between the muscles of the two sides is destroyed, and this is a sufficient cause to produce rotation of the spine.

Another cause is inequality in the length of the lower limbs, due for instance to a fracture of the femur or tibia union having taken place with shortening of the leg; or to disease of the hipjoint from which recovery took place with shortening, causing, when the patient stands upright, ob-

liquity of the pelvis and a corresponding curve of the spine. If you put a book two inches in thickness under one foot, and stand with the other foot upon the floor, you will observe an obliquity of the pelvis, the right side—if the book be under the right foot—being more elevated than the left, with a curve to the left in the lumbar portion of the spine, and a compensating curve in the opposite direction in the dorsal region. This position of the spine is assumed in obedience to the laws of gravity, for if, while one limb is shorter than the other, you should try to keep the spine in a vertical position, resisting the instinctive tendency to the formation of a compensating curve, you would lose your balance and fall. Now, take your foot off of the book and put it upon the floor on a level with the other, and you have gotten rid of the lateral curvature ; and in the treatment of lateral curvature which is due merely to inequality in the length of the limbs, all that is necessary is to put the soles of the shoes on a level with each other, and this can be done by thickening the sole of the shoe worn upon the foot of the shortened limb.

Carelessness on the part of young girls in assuming awkward positions is an ordinary cause of lateral curvature ; the simple habit of standing on one limb more than on the other is sometimes a starting point for the development of lateral curvatur of the spine.

Usually the first sign of spinal curvature, called rotary or rotatory lateral curvature, that is noticed is the prominence of one shoulder blade and the apparent general deformity ; but often, long before this attracts attention a measurement of the distance from the umbilicus to either nipple would show one to be nearer the median line than the other, a result of the rotation which is taking place. As this rotation takes place the latissimus dorsi of one side is put upon the stretch and by contraction tends to bring the spine into a lateral curve. As the deformity goes on, the muscles which act in opposition to its progress become weaker and weaker and the muscles producing it, by constant exercise grow stronger and until in some cases the ribs descend even into the

ventrum of the ilium, and the angles become much more prominent.

A great variety of mechanical contrivances for the cure of the deformity have been tried, as you may judge from the number and variety of the instruments which I here show you. More inventive genius has been displayed by surgeons in trying to construct apparatus for the relief of this deformity than of any other deformity of the human body. I have here only a sample of the different kinds of instruments which have been invented for this purpose, of which I have a cart load or two at home. They are all constructed on the general principle of exerting lateral pressure against the projecting processes with the object of forcing the spine into a vertical position. This pressure upon the projecting points has been so great at times as to gall and make sore a spot equal in size to that of the compressing plate. Here is an instrument that I took from a young girl in Amsterdam. You can see the marks of the blood still upon the side of the plate which exerted pressure against one of the projecting processes. She had worn it for years without being straightened by it; and, indeed, it is impossible to straighten the spine of these patients by such lateral pressure so long as there is a band, such as you see on these instruments, passing over the shoulders and keeping them pressed down. If the lateral pressure be sufficient even to fracture the ribs, you cannot extend the spine while these straps press down on the clavicle, preventing elongation of the spine. Dr. Judson demonstrated by this articulated vertebræ I now show you that by extension of the spine the rotation was more or less completely overcome (according to the length of time it had existed,) and the lateral curvature almost entirely disappeared. Dr. Mitchell of Philadelphia, many years ago tried extension in the treatment of lateral curvature of the spine, but to Dr. Benjamin Lee, of Philadelphia, is due the credit of suggesting self-suspension in the treatment of this deformity, and if he had applied to the body in this improved position, an accurately fitting mould to retain it, he would

have accomplished the object desired. In the majority of moderate cases, where the bones have not become permanently changed in form and structure, self-suspension and proper gymnastic exercises alone will suffice to overcome the deformity ; but if the deformity have reached a stage in which the ligaments are changed in form, and the angles of the ribs have changed, this simple method of treatment is not sufficient to effect a cure.

Here you see a case previous to suspension ; mark how great the deformity. After suspension, what a change ! How great the improvement in the position of the patient ! There is no amount of screw or lever power,—there is no mechanical treatment whatever that can make so great a change in this figure as self-suspension has done.

Now, as soon as self-suspension is discontinued they will, of course, relapse into their former shape, and something is necessary to retain them in the improved position which self-suspension gives them. For this purpose I have found nothing that will bear comparison in usefulness with the plaster-paris Jacket applied over a closely skin-fitting shirt. I have explained to you at former lectures how to apply the Jacket, and I will not take time to repeat it here. In young ladies a pad should be put over the breast, under the skin-fitting shirt, and removed after the application of the plaster jacket. The object of this is to allow development of the mammæ. The dinner pad, as you know, should not be omitted in either girls or boys. If there be any sores on bony prominences, as on the crest of the ilium, caused by the pressure or chafing of the instrument which the patient had been wearing, a pad of cotton should be put over them, outside the shirt, before applying the plaster jacket. Self-suspension should then be continued twice daily, the patient, after applying the head gear, pulling himself up by a rope which passes over a pulley, until *he feels comfortable*, and never go beyond that point, no matter whether he be lifted sufficiently for the toes alone to touch the floor, or not. Under no circumstances permit him to be pulled up while his arms are by his side, for it might strain the liga-

ments of the neck and cause serious injury. But by extending the arms full length, and applying one hand over the other he can pull himself up until he feels comfortable, and stop as soon as he begins to experience the slightest *feeling of discomfort*.

A surgeon of this city, in a recent lecture says that he approves of the plaster jacket treatment, but that he thinks the hanging of the patient in applying the jacket, a very serious objection; but if you observe what I have said and strictly follow the rules I have given I think you will find no such objection to exist. Mr. Miller, of London, devised a way to apply the jacket with the patient in a horizontal position, but the spine is not sufficiently straightened by the horizontal position alone; it must be farther straightened by extension applied to the arms and legs. In order to prevent the plaster from setting too quickly when applied with the patient in a horizontal position, a gum has to be put with it, which makes it impervious to air, a very objectionable fact; but the plaster applied during suspension of the patient does not require to have any ingredient added to make it "set," and is perfectly porous and pervious to air after becoming set.

Some surgeons have tried to overcome the deformity of lateral curvature by keeping the patient in a horizontal position for some time, and it may be said that this method of treatment has been carried to its perfection; yet I have seen patients kept in that position for thirteen years, and yet the deformity was not relieved; and in many cases according to the statements of the patients and their friends—the deformity has steadily increased notwithstanding the horizontal posture had been preserved.

When a person comes to you to have a plaster jacket applied for the first time in a case of lateral curvature you should have him suspend himself day by day for a while, before you apply the jacket, so that the spine may become as straight as it may by this means, and save you the work of applying a new jacket every two or three days at first, because of the continued improvement in the shape of the

spine. The jacket having been applied the patient then continues practicing daily self-suspension until he "pulls himself out of his jacket," so to speak, and it has been my custom, heretofore, then to put on a new one; but within the past month I have adopted what I consider a more preferable way than to remove the entire jacket and apply a new one. When the deformity becomes so far diminished that I can put my hand between the body and the jacket at the projecting or bulging point over the deformity, I simply cut this much out, leaving the remainder of the jacket in position, and, during suspension, apply new material in the space thus cut out, and which fits snugly to the projecting deformity. The old jacket should be dampened around the part which has been cut out, before applying the new plaster bandage, so that they will adhere to each other. On applying the new bandage, it should be passed around the body once in order to give good leverage, after which you merely carry it across the chasm, and two or three inches to either side, when it is folded back upon itself, over-lapping the lower portion, thus continuing until the chasm is filled. This, as I said before, I consider a great improvement on the old method, for it is more easily done, and saves time and expense, and seems to be much more efficient.

Now, I wish to impress upon your minds this fact, that the object of the plaster jacket is not to strengthen the muscles; it is simply to retain the spinal column in the improved position which it assumes during self-suspension, and after applying it the muscles are to be strengthened by continued daily self-suspension, as I have already explained. But the statement has been made by some, and recently by Mr. Bernard Roth, of Brighton, England, in the *British Medical Journal* for December 6th, 1879, that in lateral curvature the muscles become weakened under Dr. Sayre's method of treatment. Mr. Roth says:—"Sufficient attention has not been directed to the effects produced on the nutrition of the spinal muscles by the application of Sayre's plaster jacket in slight and moderate cases of lateral curvature of the

spine. As far as I know, Mr. Golding Bird is the first surgeon who has pointed out (see British Medical Journal, Oct. 11th, 1879), that 'the dorsal muscles invariably waste from want of use under the jacket.' I can not understand how this important fact can have been overlooked so long. It is well-known that a limb kept immoveably fixed in a splint for six *weeks* or longer will show, at the end of that period, a decided amount of wasting of its muscles from want of use. How much greater must be the wasting in the erector spinal and other dorsal muscles when a Sayre's jacket has been worn for six *months* or longer! Mr. Golding Bird goes on to say that, in lateral curvature 'the muscles are called upon the moment the jacket comes off; so that, if they are wasted the patient will be often utterly unable to keep himself erect on the removal of the jacket until his muscles are *again* in working order.' I maintain that the dorsal muscles were not 'in working order' before the plaster jacket was put on. Muscular weakness is a potent, if not the chief cause in the production of lateral curvature. Now, would it not be more in accordance with common sense to strengthen these weak muscles in cases of slight or moderate lateral curvature, than to apply Sayre's bandage, under which they invariably waste,' as Mr. Golding Bird admits? In severe cases of lateral curvature, and in Pott's disease (caries) of the spine, the plaster jacket is the only possible and the best treatment, because whether the muscles continue to waste or not is of little or no importance here. "Dr. Sayre advises daily extension of the patient, and Mr. Golding Bird appears to consider this an efficient means for exercising the spinal muscles. I do not think this can be at all proved. * * *

"To sum up, I can only re-echo a remark made by Dr. Sayre during his recent visit to Brighton, 'that his plaster jacket was the only treatment for spinal caries and *bad* lateral curvature, but that for slight lateral curvature he quite agreed to a treatment for strengthening the spinal muscles without the use of his plaster bandage.'" I not only made this remark at Brighton; but have also

taught the same in all my lectures and writings on this subject.

Now, the only real objection to my plan of treatment of lateral curvature, which Mr. Roth would make in this criticism, amounts to this, that the muscles waste from want of use under the jacket, notwithstanding self-suspension is made daily. I will not ask you to accept my statement alone in proof that they do not waste, but will read to you a letter from Dr. Skene, of Brooklyn, in which he gives the history of a case of lateral curvature that he sent to me for treatment. It is as follows :

BROOKLYN, DEC. 3d, 1879.

My Dear Dr. Sayre :—Our mutual friend and patient Miss ———, enjoyed good health until 1875, when she was 21 years of age. At that time she was placed under the care of a dentist who undertook to straighten her teeth that were irregularly placed. This treatment was continued for two years, and during that time she suffered almost constant pain. Her strength gradually failed, and during the last half of 1877 she had slight pains in her back. These pains increased gradually until February, 1878, when she was then obliged to rest most of the time on her back. About the end of February, 1879, she consulted me about her health and I found a well marked double-lateral curvature of her spine. Before being aware of her spinal trouble, I tried to improve her general health by treatment, but without the slightest benefit. The rest of her history is well known to you, and I now only add that from the day that you dressed her in the plaster jacket (April 16th, 1879) she was completely relieved from all pain and resumed her usual habits of happy activity. She gained flesh and strength with astonishing rapidity. The jacket was worn from April 16th to December 1st, 1879, and during that time she has been perfectly comfortable and well. She has spent much of her time in my family and among my friends, many of them doctors, and no one has ever observed that she either had spinal disease or wore a plaster jacket, and some have doubted the fact when I have told them.

“When I say that she has been comfortable, I do not mean simply that she was free from pain, but that the jacket caused her no more trouble than her corsets would have done. She changed the vest *worn even under the jacket* with facility whenever she desired to do so, a very important item in the summer weather.

“I have just examined her to-day, December 3d, 1879, and find that she is *perfectly cured* and dashes around without her jacket with all the elasticity and grace of her girlhood. The treatment has astonished me, and the result is perfection. I would congratulate you, but that is unnecessary, the young lady is a monument, more valuable than a marble one, to the honor of your art. Permit me, my dear Doctor, to offer my sincere thanks for the kindness bestowed upon my friend and patient, and believe me to be gratefully yours,

ALEXANDER J. C. SKENE.”

That, gentlemen, is a medical man's testimony in regard to the non-wasting of the muscles under the jacket, and this is a matter of daily experience with me. Many cases become perfectly cured inside of a year, and are not compelled to use any jacket at all afterwards.

I now show you a case which has been under treatment for sometime, and will read to you the history as it was taken by Dr. Roberts.

DOUBLE ROTARY LATERAL CURVATURE OF THE SPINE.

Chas. A. Rice, 246 West 43d Street, New York. Patient was 20 years and 4 months of age when he came under the treatment of Dr. Sayre, which was on the 23d of January, 1879. Parents of patient, two brothers and a sister, are healthy, and so far as known, have no abnormal curvature of the spine.

Patient was a healthy child up to two years of age, when he had an attack of diphtheria. Sometime after his recovery parents detected lateral curvature of his spine. At this time he also had paralysis of his left lower extremity. No treatment was directed to the spine at first, but electricity was applied to his leg for a short time. Subsequently his leg was rubbed and manipulated by a nurse. At seven

years of age he fell out of the open door of the second story of a barn, to the ground, striking somewhat upon his side. The result was, he was laid up for two months. After this his lameness was more apparent, and he was obliged to use a cane to aid him in walking. His lameness, and the lateral distortion of the spine, gradually grew worse.

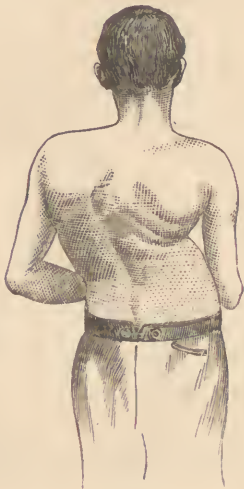
Between the ages of 10 and 12, electricity was applied to his leg with some regularity. At twelve years of age he went to an Orthopedic Institution in this city. A splint was first applied to his left leg, extending from the hip all the way down, so as to keep the limb stiff when walking, but so arranged that it could be bent when sitting down. This was worn for two years. About the same time a brace was applied for the relief of the spinal deformity, but patient could not wear it, as it did not support the projecting portion of the spine and pressed too much upon his sides.

Patient left off all treatment before he was quite thirteen years of age, but continued to wear the leg splint applied by him until he was fourteen. He then entered another hospital in this city on June 23, 1873, at the age of fourteen years.

Long leg splint was removed and a short ankle splint applied in its stead. A cork sole and heel an inch and a half thick which had been worn on the shoe of the left foot, was also removed. A spinal brace of the pattern in general use at this hospital was now applied, and worn night and day, except when removed for sores to heal up. Patient remained in the hospital a year, but continued to wear the spinal brace after he came out, although he soon abandoned the ankle splint and has since never worn one. He went to the country and remained three years. When he returned to the city he went to the hospital and had another brace applied which was made after the same pattern as the one previously worn. From this time until patient consulted Dr. Sayre, he continued to attend the hospital as an out patient.

January 23d, 1879. Patient seen for the first time, and presents a greatly exaggerated double rotary lateral curvature of the spine, as shown in the accompanying photograph. (Fig 1.) There are several sores due to pressure

of brace ; one upon left scapular, one over top of each shoulder, and one or two minor ones.



(Fig. 1.)



(Fig. 2.)

Self-suspension diminishes deformity considerably as seen in photograph No. 2. But as soon as it is discontinued he says he feels pain in his back and left side, with great discomfort, and a sense of weakness. He was recommended to practice self-suspension twice daily until the sores were healed up, and then to have the plaster jacket applied.

In the latter part of February, 1879, the first plaster jacket was applied while the patient was self-suspended before the class at Bellevue Hospital. This increased his height two and one-half inches ; but as it did not fit him comfortably, it was removed in a few days and a new one applied which gave him perfect ease.

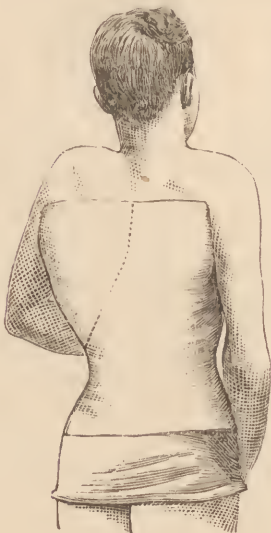
April 11th, 1879. Patient returned, very much improved in general health, and the daily self-suspension had so im-

proved his form that the jacket gave him no support, and a new one was required to retain his improved position. He says he feels better than when he came under treatment, and the sense of pressure or weight on his left shoulder has entirely disappeared. The crutch of the brace which came up under the right axilla had always been a source of great discomfort to him ; but now as there was no under pressure in this locality he felt greatly relieved. New jacket applied.

September 24th, 1879. Patient returned greatly improved. After a bath a new jacket was applied by Dr. L. H. Sayre.

December 20th. New jacket applied by Dr. C. H. H. Sayre, general health greatly improved, says he can now walk and work nearly all day. As the projection is still very great over angle of ribs on left side, I propose to remove a portion of the jacket over this part and then when he is self-suspended apply a fresh roller bandage of plaster paris over the vacuum thus using the old jacket as a fulcrum to aid in removing the deformity instead of applying a new jacket.

You see his present position with the projecting hump



(Fig. 3.)



(Fig. 5.)

over the angles of the ribs on the left side. (See Fig. 3.)

We now cut out this projecting bulge, as seen in dotted line beginning at the upper border of the jacket a little to the right of the median line, and continue downward and outward, a distance of ten inches, then curve upward and forward, and cut back to the top of the jacket again, taking a triangle piece out about ten inches in length and ten inches across its base, which is above. (See Fig. 5.) We now let the patient suspend himself, when we wet the plaster jacket a few inches on either side of the opening that has been made in it, take freshly prepared plaster bandage roller, and carry it completely around the body once at the lower end of the opening,

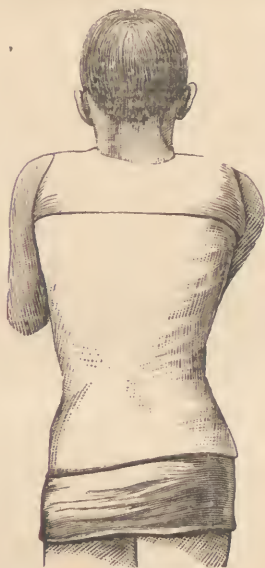


Fig. 4.)

after which we carry it but two or three inches beyond the opening, when it is reversed and carried the same distance on the opposite side. This we continue to do until the opening is completely covered. On removing the bandage to carry it to the opposite side it is held in position by an assistant, who at the same time rubs it with his hand to smooth it, and make it set. Now observe how marked the change in the shape of the patient. (See Fig. 4.)* The patient states that this application gives him a degree of comfort greater than ever before.†

* December 29, 1879, Mr. Rice again presented himself at the Lecture room, and stated that the improvement in his last jacket had given him more comfort than he had had for many years.

† These figures are all cut from photographs by Mr. Mason, Photographer to Bellevue Hospital. The cuts are made by Mr. R. S. Bross, 14 and 16 Ann Street, New York.

