Curvatures of the spine and spinal diseases : cases sucessfully treated, and reported in the Boston medical & surgical journal / by Charles H. Spring.

Spring (C. H.)

CURVATURES OF THE SPINE

AND

SPINAL DISEASES.

CASES SUCCESSFULLY TREATED

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Of Boston, Mass.,

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CHARLES H. SPRING, M. D.,

GIVES SPECIAL ATTENTION TO THE TREATMENT OF

CURVATURES OF THE SPINE AND SPINAL DISEASES,

And may be consulted at his Office, No. 7 Harrison Avenue, Boston, Mass.

Office hours, from 9 A. M. to 2 P. M.

CASES OF ANGULAR AND LATERAL

CURVATURES OF THE SPINE.

CARIES of the vertebræ has always been regarded as a disease of a serious nature, and it is one for the cure of which many remedies, both medicinal and mechanical, have been proposed since its nature was first described by Mr. Pott, whose name has since been associated with it. Pott's disease being the name by which it is known, angular curvature has been its synonym, as descriptive of the deformity resulting from it. It is unnecessary to describe the pathology of the disease, as it is already well known, and less diversity of opinion exists concerning it than relative to the best method of treatment.

It has generally been regarded as unfavorable to attempt to lessen the curvature resulting from it, and any such attempt is supposed to retard, if not prevent, the recovery. Mr. Liston, Sir Charles Bell, and Dr. Valentine Mott, in alluding to Pott's disease of the spine, object to any attempt being made to reduce the existing curvature; giving as a reason that such a course tends to separate the bodies of the vertebræ, and prevents the process of ossification which is necessary to repair the loss of substance. They place main reliance upon setons, issues and constitutional treatment, together with the recumbent posture, and, in some cases, mechanical support.

It is usually maintained that a cure of this form of disease must, necessarily, result in a curvature of greater or less degree, according to the duration and extent of the disease; and my object is to show — by a report of cases which have been under my charge — that Pott's disease of the spine is susceptible of a cure without curvature, when taken in the earlier stages, and that even a considerable degree of curvature may be reduced in the more advanced stage; and also that the reduction of the existing curvature does not prevent the process of ossification, or retard the recovery.

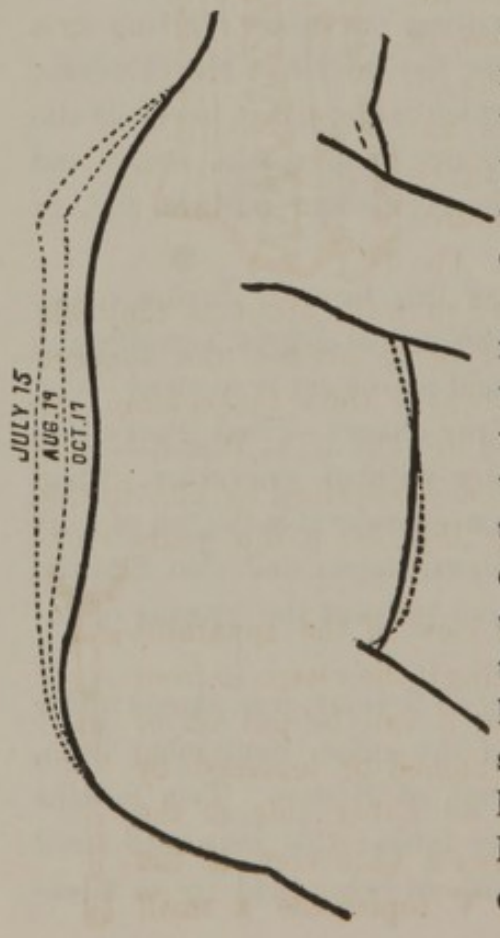
CASE I. — Clara B——, of this city, aged 9 years, was placed under my care for treatment of Pott's disease of the spine, September 20th, 1861, by courtesy of Dr. S. D. Townsend, of Boston. Two months previous, she began to lose the use of her limbs; this increased until she was unable to walk, or even stand, without being held by an atten-

dant. This was at first regarded as paralysis, and treated as such; but subsequently attention was directed to the spine, when tenderness was discovered in the dorsal region, at the ninth and tenth dorsal vertebræ. When I first saw the patient, her general health appeared to be good, and the sensation in the limbs was perfect; but there was an almost entire loss of motion. On making percussion over the 9th dorsal vertebra, considerable pain was experienced, apparently in the abdominal muscles. Mechanical support was applied in such a manner as to support the weight of the upper extremities, and relieve the pressure upon the diseased vertebræ. This was re-adjusted from time to time as became necessary, and syrup. ferri iodidi, xx. gtts. ter die, was given, with manifest improvement. The use of the limbs has been entirely regained, and the patient walks with ease to my office, which is a mile distant from her home, and is able to walk up and down stairs without assistance.

In this case there has been no perceptible curvature, as the paralysis began so soon after the disease commenced in the vertebræ, that all curvature was prevented by the application of mechanical support.

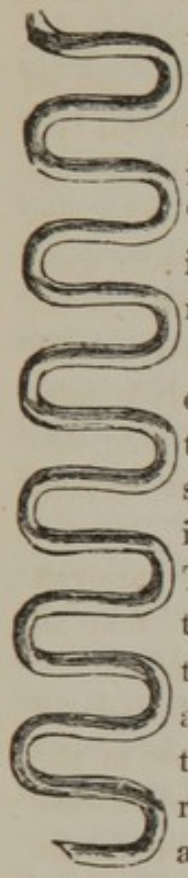
Case II. — A son of Mr. Lucius Dennison, of Norway, Me., aged 3 years, was placed under my care for treatment of Pott's disease of the spine, July 15th, 1861. The disease commenced six months previous, in the fifth dorsal vertebræ, and soon involved the sixth. When I first saw the patient there was a considerable degree of curvature — as may be seen by the outer dotted line in the engraving (Fig. I.) — and it was increasing rapidly; the head was thrown back upon the dorsal region, as is usually the case where much curvature exists. There was considerable dyspnœa, and the patient was easily fatigued by slight exertion; but little pain was experienced, though a slight jar would produce it; there was a general condition of ill health, and the patient had been failing somewhat rapidly. The head was large, the hair light, the abdomen enlarged, and there were other indications of a scrofulous condition of the system.

Fig. I.



The treatment in this case consisted principally of mechanical support, so applied as to relieve the weight resting upon the diseased vertebræ, and to gradually restore the spine to its original position and reduce the existing curvature. The outline of the back, as taken at three different times, is shown in Fig. I., together with the dates; the outline only is given, as that is all that is essential to show the progress of the reduction, The pressure upon the projecting vertebræ was gradually increased, and so arranged as to be constant, in order to retain whatever improvement had been made.

Fig II.



In these cases I have made use of an apparatus constructed after the manner of ordinary corsets, with springs of tempered brass wire, bent in the manner shown in Fig. II. The advantage of such a spring is that greater mobility is thus given than by any other means, and yet it affords all the support and pressure that may be needed. It is so arranged as not to interfere with the action of the chest in respiration, or press unduly upon the abdomen; two points extremely desirable to be attained in any apparatus for spinal curvature. The patients were allowed to walk about as they felt inclined, no restraint being needed, the support remedying the weakness of the spinal column. It is the apparatus used by Dr. J. A. Wood, — formerly of this city — and described by him in the *New York Journal of Medicine* a few years since.

Fig. III.

Fig. IV.

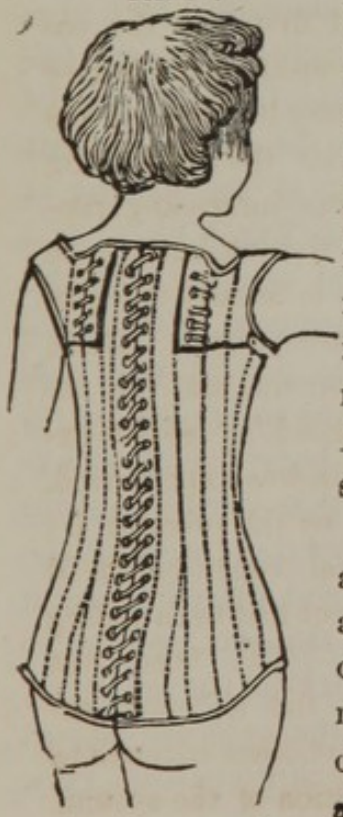


Fig. V

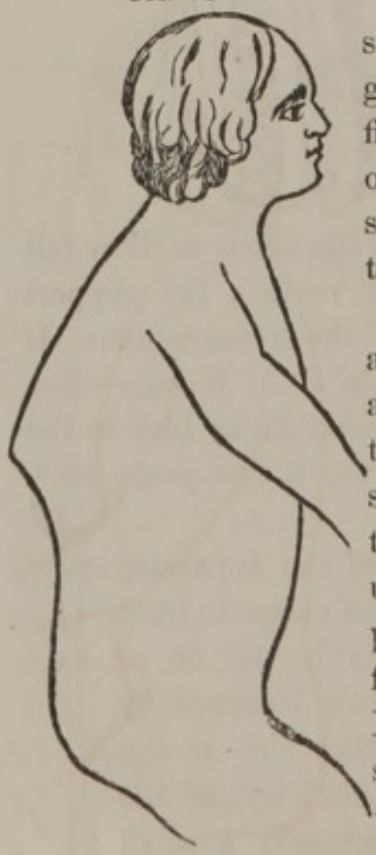
Fig. III is a front view of the apparatus as applied; in removing it the clasps in front are unfastened so that it can be put on or off easily. It is tightened or loosened by means of the lacing on either side of the clasps. Fig. IV shows a back view of the apparatus, and Fig. V represents a small

light crutch, which is applied in some cases of lateral curvature, or in cases of angular curvature involving the upper dorsal vertebræ. It is attached to the side of the apparatus and causes but little inconvenience.

In most of the cases of Pott's disease of the spine that I have met with, the paralysis consists of a loss of motion, while there is but little or no loss of sensation, except in extreme cases. The reason for this, assigned by Sir Charles Bell, seems to be the most rational; it is, that the inflammation, except in severe cases, is mostly confined to the bodies of the vertebræ, and would be most likely to affect the anterior branches of the spinal nerves, which are the nerves of motion. Mr. Liston thinks it is caused by the curvature being with the convexity posteriorly, which produces pressure upon the anterior branches of the spinal nerves; but in Case I. there was no curvature, and yet there was almost entire loss of motion, with unimpaired sensation.

Case III.— This patient — a daughter of Mr. Rufus S——, of this city — became affected with caries of the spine at two years of age; the disease involving the ninth and tenth dorsal vertebræ, resulting in a somewhat extensive curvature. She became very much emaciated, and unable to stand, unless assisted by an attendant, and supported the weight of the body by resting her hands upon her knees. The spine was bent quite sharply at the point of disease, instead of forming a longer curve, as is more frequently the case in the advanced stages.

Fig. VI.



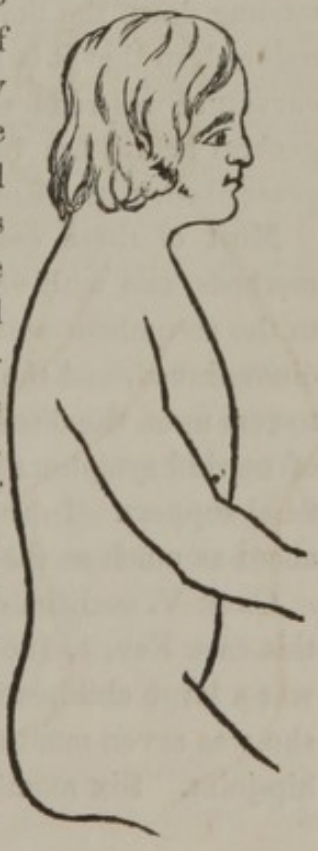
She came under treatment a year and a half since, at which time the disease had been progressing for two years. There was great difficulty of respiration, and the frequent attacks of pain in the bowels were the source of great suffering. The appearance of the patient at this time is shown in the cut (Fig. VI.)

The method of treatment adopted was the application of mechanical support, with tonics and as generous a diet as the patient was able to take. The apparatus was so applied as to support the weight of the body and upper extremities from the hips, with moderate pressure upon the curvature. Under this treatment the patient began to improve, and gained strength for several months, when she was removed to New Brunswick, after which I did not see her for six months. Meanwhile the external support was not continued, and the little patient grew

worse rapidly. In January last she was brought back to this city; upon examination at that time, a tumor was found at the side of the spine and below the point of the disease, which was slightly fluctuating, indicative of a lumbar abscess; a second abscess was forming on the upper part of the thigh, just below Poupart's ligament. Iodide of potassium was prescribed, and different preparations of iodine applied externally, with but little apparent effect. There was entire loss of motion in the lower extremities, with inability to control the fæcal or urinary discharges. The abscesses formed slowly, and early in March that in the femoral region exhibited distinct fluctuation, and was opened by a free incision, discharging eight ounces of pus, abounding in flakes of lymph and shreds of broken down tissue. The lumbar abscess was opened a few days afterwards, discharging about four ounces of pus. These continued to discharge for six weeks, when they closed by the use of pressure constantly applied; since which time there has been no tendency to the further formation of abscesses. During the discharge of pus the patient became very much reduced; but after it ceased she gained rapidly, fully recovering from the paralysis of the lower extremities, and is now as healthy and strong, apparently, as other children of her age.

After fluctuation was distinctly felt below Poupart's ligament, the tumor was lessened in size by placing the patient upon her back, and an impulse given to it when she made an effort to cough, as is usually the case in the formation of psoas abscess. The lumbar abscess was materially diminished after opening the first one, but as there still remained an accumulation of pus, which showed evident signs of opening upon the surface, it was deemed advisable to lance it. During the time that the abscesses were forming, the mechanical support was continued, and as much pressure applied upon the curvature as the condition of the patient would admit; this was more easily accomplished as the abscess was below the prominence of the curvature, and was not disturbed by the pressure applied at the latter point. The result of the applied pressure was that the curvature has been greatly reduced, and the back now presents the appearance shown in Fig. VII. During the treatment of this case, the patient has been allowed to move about as much as she felt inclined, except

Fig. VII.



during the time the abscesses were forming and until the discharge had ceased, as the use of the limbs was not regained until that time.

Case IV.— Miss A., of this city, came under my care for treatment of caries of the spine, in June, 1861. The curvature was both angular and lateral, having for its centre the last dorsal vertebræ; the projection was comparatively slight, being less than an inch, though the disturbance to the general health resulting from it was great. She had had almost constant pain in that vicinity for the two years preceding, which was greatly increased by the least fatigue or over-exertion, and which had materially affected her health. There was a partial loss of power in the lower extremities, and, at times, a feeling of numbness in the limbs, which was a source of much annoyance. Mechanical support was applied at once, with manifest relief. During the summer, the patient suffered very much from diarrhœa, which produced great prostration and consequent increase of pain in the back. Early in September she had recovered from the effects of the diarrhœa, and the pain in the back was very much relieved. Much permanent benefit was experienced from the application of leeches at the point of the disease, as it relieved the excessive tenderness and the peculiar throbbing pain that is so frequently felt during the acute inflammatory stage of the disease. The sensitiveness of the whole back was excessive, and was productive of much suffering, with occasional neuralgic pains, which were felt in the back, and at times extending down the limbs. During the winter the curvature was mostly reduced, so that it is hardly perceptible at the present time. As the curvature was reduced, the tendency to paralysis disappeared and the general health bas been restored. Citrate of iron and quinia were prescribed, with manifest improvement.

Most of these cases had been treated, previously, after different methods, and with variable results. As long as the patient is confined to the recumbent position much improvement is made, but when this is discontinued, and the weight of the upper portion of the body allowed to rest upon the diseased vertebræ — as in walking — the whole train of morbid symptoms returns, unless this pressure is obviated by artificial support. In these cases, the patients have been allowed to walk about as much as they felt inclined without restraint.

Case V. — Ella, daughter of B. McQuillan, of this city. I first saw this case Feb. 1, 1863. She was then 2 1-2 years of age; at birth she was a large child, weighing twelve pounds, and continued healthy till she was seven months old, when she was attacked with disease of the hip-joint. Six months later, disease of the spine manifested itself, in-

volving the second and third dorsal vertebræ. When I first saw her she had never walked; she was very much emaciated, in fact, a mere skeleton, and weighing but ten pounds. The skin was dry and harsh to the touch, the curvature quite prominent, and there was great difficulty of breathing; the countenance was pinched and anxious, and she slept but little at night. There was some swelling over the left hip-joint, with considerable tenderness. The appetite was poor, and there was a tendency to diarrhœa. In every respect it was the most unpromising case I have met with. It seemed as if there was hardly a sufficient degree of vitality to respond to any course of treatment; she had lost all power over the limbs, and had but little control over the discharges from the bowels and bladder. The treatment consisted of the application of external support in such a manner as to relieve the pressure upon the diseased vertebræ and support the spine. Ferri et quiniæ citras. was prescribed, with a sitz bath in which sulphuret of potassium was dissolved.

During the first few weeks the gain was very small, and cod-liver oil was substituted for the iron and quinine with manifest benefit. I find in my note-book that by April 5th she had gained one pound in weight, and slept very well at night; the countenance had assumed a better appearance, and the skin appeared more healthy. May 27th she weighed fifteen pounds.

She continued to improve during the following summer and winter, the difficulty of breathing was entirely relieved, and her general health became as good as that of other children of her age. The curvature has been lessened and she is able to walk, having recovered the use of her limbs perfectly, with the exception of the difficulty in the left hip-joint — which, though improving, prevents her from bearing her full weight upon it.

During the month of April last she had a severe attack of erysipelas, extending over the face and neck, but she recovered from it perfectly, with no recurrence of the previous symptoms. It has been considered that the recumbent position was favorable in the treatment of diseases of the spine, as that was the principal point gained by the use of the "inclined plane," but this child was kept in the recumbent position most of the time on account of the disease of the hip-joint, and yet it was under these circumstances that caries of the vertebræ was developed.

The recumbent position affords rest to the diseased vertebræ, but unless the patient is restricted to one position it does not afford that perfect security that can be obtained by mechanical appliances properly adjusted.

Case VI. — Arthur, son of S. O'Leary, of Chelsea. The history, obtained of his parents, is as follows: — At four years of age, he had a fall, striking upon his back, soon after which he began to complain of pain in the back, and after playing a short time he became tired and wanted to lie down. The pain in the back increased, and in a few months a projection of the spine was discovered, which continued to increase rapidly until the time I first saw him, which was in September, 1861, at which time there was a large curvature involving the eighth, ninth and tenth dorsal vertebræ. The child was very much emaciated, and the scrofulous diathesis strongly marked, with light hair, a pale and almost bloodless complexion, and the skin dry and unhealthy, as is usually found where chronic disease exists in a strumous subject. The head was large and the abdomen protuberant. He was able to walk but little, and that only by resting his hands upon his knees; he suffered much from pains in the bowels, and the difficulty of breathing was, at times, very great, and it was increased upon slight exertion.

In moving him it was necessary to exercise the greatest care, as a slight jar or an incautious movement increased the pain in the abdomen. The treatment of this case was similar to that of the preceding cases. Cod-liver oil and iodide of potassium was prescribed, and mechanical support applied in such a manner as to relieve the diseased spine of the weight of the body and cause it to rest more entirely upon the hips; at the same time it tended to restore the spine to its normal position. This course of treatment was followed by marked relief and improvement in the size of the curvature. At first there was a strong tendency to the formation of a lumbar abscess, but this subsided as soon as the curvature — which was the cause of it — was relieved. The patient was allowed to go out of doors and engage in the usual sports of children with but little restraint as the apparatus interfered but slightly with the natural movements of the body.

He now stands perfectly erect, the curvature having been reduced to a considerable extent, being not more than half as great as it was when I first saw him, in August, 1861.

One of the most prominent difficulties in caries of the spine is the tendency to the formation of abscesses. The pus formed around the point of disease burrows beneath the sheaths of the muscles and comes to the surface in some place remote from its origin, usually in the femoral or inguinal region. In one case, that has recently come under my care there is an abscess discharging upon the line of the sartorius muscle, midway between its origin and insertion, the pus originating from carious dorsal vertebræ, and burrowing beneath the sheath of the iliacus internus, it passes into the sheath of the sartorius and discharges at the

place before mentioned on the left side; on the right side, there is a second abscess opening just below Poupart's ligament. These continued to discharge freely until the back was properly supported, when the discharge began to diminish.

These abscesses are, in the majority of cases of spinal caries, the cause of a fatal termination; as the system, reduced by the previous disease, is but illy able to endure the exhausting discharge from these sinuses. I have found that by applying proper support to the spine these can be prevented where they have not already formed, and the same course will check them when they are already discharging. Among nearly one hundred and fifty different cases of spinal disease there have been but *two* in which abscesses have formed after support has been applied, and in these two the support was not continued in the manner directed.

Out of seven cases that have come under my notice, where abscesses were already discharging, there was but little difficulty in arresting the discharge of pus, except in one case, where it commenced several years previous, and the disease had progressed to such an extent that but little hope was entertained that benefit would result from any course of treatment. In one case the discharge was lessened two thirds within one week from the time the support was first applied to the back, and that, too, with no local treatment directed to the abscess itself.

Case VII. — Carrie, daughter of Mr. C. B. A., of Worcester, five years of age. This case was first placed under my care in February, 1862, through the courtesy of Dr. Joseph Sargent, of Worcester. In this case there was both angular and lateral curvature, which had been of more than two years duration. The angular curvature had commenced first, involving the 9th, 10th and 11th dorsal vertebræ; this increased for several months, when the body began to incline rapidly to the right side, producing an extensive lateral curvature, so that the child was obliged to rest the right hand upon the knee in order to support herself; this position — necessary in standing — had rotated the spine upon its axis, so that it was twisted more than one eighth of a circle upon itself, and it was impossible for her to assume the erect position unless supported. The general health had suffered considerably; the patient was easily fatigued by slight exertion, and there was much difficulty experienced from compression of the lungs, so that the difficulty of breathing was one of the most urgent symptoms that demanded relief.

Some months previous to my first seeing the patient, she had suffered

from a severe attack of congestion of the lungs, threatening suffocation, which was relieved by the application of a blister over the diseased vertebræ.

The case seemed unpromising from the complicated nature of the deformity, involving both the angular form of curvature — which projected nearly three inches posteriorly — and the lateral curvature, which, though occurring subsequently to the former, produced the greater deformity; and also the rotation or twisting of the spine, which is a common accompaniment of lateral curvature. It was with extreme difficulty that an apparatus, adapted to meet these indications, was fitted to the patient; but these difficulties were overcome, and by fitting an apparatus, similar to that used in the preceding cases, both the angular and lateral curvatures were arrested and relieved. The difficulty of breathing was relieved, and the child was not so easily fatigued as formerly. The lateral curvature yielded slowly at first, but afterwards more rapidly, so that at the present time the child has recovered from it entirely, and stands perfectly erect without being supported; the rotation, or twisting of the spine, is almost entirely remedied. Part of the angular curvature still remains, though it has diminished to a considerable extent, and will probably continue to do so, so that eventually there will be but little trace of the original deformity.

I instance this case on account of the complication and extent of the deformity, which has been much greater than in almost any other case that I have met with. This rotation, or twisting of the spine, was first described by Dr. Dods, of Bath, England, in 1824, previous to which time, it had not been noticed, or at least no one had described it. It results, unquestionably, from the attempt, on the part of the patient, to restore the equilibrium which has been lost by the inclination of the body to one side, and, to a certain extent, it compensates for the lateral curvature. In many cases, where lateral curvature exists, this rotation of the spine upon its axis conceals, to a great extent, the existing deformity, and the obscure muscular pains are attributed to almost any cause but the true one. Lateral curvature is more frequently met with as uncomplicated with caries, or "Pott's disease" of the spine, and in such cases it is more easily arrested and reduced; as a simple lateral curvature is more amenable to treatment than where it supervenes upon angular curvature, or caries of the vertebræ.

Case VIII. — Clara, daughter of Mr. W. M. C., of Thomaston, Me. I first saw this case in October, 1861. The child was then five years of age; there was a prominent angular curvature, involving the 3d,

4th and 5th cervical vertebræ, of two years' duration. There was great deformity of the chest, with the ribs flattened laterally and the sternum projecting quite prominently, producing such a form as is usually found in connection with extensive curvature in the upper portion of the spinal column. As the curvature had increased, the head had settled downward and forward, and rested upon the chest and between the shoulders; there was great incurvation, or hollowing in, of the dorsal and lumbar vertebræ. She was emaciated and prostrate, with all the nervous symptoms usually attendant upon such cases. There was much difficulty of breathing, and the almost constant neuralgic pains in the chest had, through the suffering they caused, materially affected the general health. The countenance had assumed a pinched and anxious expression, such as is usually observed in the advanced stage of chronic disease in children. Any method of treatment seemed attended with difficulty, on account of the extreme nervous irritability which characterized the case. The curvature had been produced by the weight of the head resting upon the diseased cervical vertebræ, and the first indication of treatment was to relieve this pressure upon the point of disease. The deformity of the lower portion of the spinal column required that it should be supported at the same time, both to relieve the existing curvature and to remedy the deformity of the chest, which, to a great extent, caused the difficulty of respiration and threatened still more serious disease of the lungs. An apparatus, similar to that already described, was applied to support the spine and to relieve the chest from the increasing pressure upon the lungs; from this apparatus two steel springs were extended upwards so as to afford support to a collar which encircled the neck, clasping in front, and upon which the head rested, supported mainly by its resting upon the lower jaw and the occiput, or back of the head. This collar afforded efficient support to the head, whilst it interfered but little with its rotary motion or the use of the lower jaw. The extreme nervous irritability of the child was a prominent difficulty to be overcome, but this soon yielded, and firm and comfortable support to the diseased vertebræ was afforded by this method, and the previous symptoms at once began to improve. The pains in the chest were entirely relieved, and she began to improve in her general health; the nervous irritability subsided, and she became as cheerful and pleasant as before the disease commenced.

She had been able to walk but very little before applying the support, but afterwards she soon began to walk with ease, and engaged in the usual sports of childhood with as much zeal and vigor as is usually displayed by children of her age. During the first six months she gained two inches in height, and since then she has grown rapidly and

her general health has been perfect. She is free from pain, and the chest is assuming a more rounded and natural appearance. In these cases, where the curvature involves the cervical vertebræ, the symptoms are more severe and the treatment more difficult; although the reduction of the existing curvature is not as marked, still the results of treatment have been as favorable as in other cases where the location of the disease has been lower down.

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