view, I incline to the doctrine that this salt is a valuable therapeutic auxiliary to other measures when we have to contend with certain forms of bronchial distress. I am sure of its capability to do good service in the proper asthenic bronchitis of old people. I claim for it no higher virtue, because I know our proneness to call any drug a *specific* which we know particularly well how to work with.

I would beg special attention to the absolute mortality of the smallest quantity of opium, and to the still more destructive effects of morphia.

If a patient be teased by residual catarrhal sputa, a short mercurial course will clear it away; and after that (or even at the same time) an iron tonic will help to restore the general health.

Great care must be taken at all seasons of the year that the skin is properly protected.

To recapitulate: I would specify the following points as deserving notice in the clinical history and management of Acute Capillary Bronchitis:—

1. The extraordinary pulse and breath-ratio, and the intense dyspnoea.
2. The pathological origin and character of the sputum.
3. The quasi-cyanosis of the skin, together with the so-called "collapse."
4. The occasional indistinctness of the diagnosis from acute tubercle.
5. The necessity of a supporting and alcoholic treatment.

ON DIVISION OF THE STRICTURE IN STRANGULATED HERNIA.

By THOMAS DARBY, F.R.C.S.I., Bray, Ireland.

THE mode of dividing the stricture when performing the operation for the reduction of strangulated hernia has been much dwelt upon, and we are cautioned not to divide it too freely; but I am not aware that it has ever been suggested to not divide it at all. Having succeeded in reducing the hernia without dividing the stricture in six cases after the sac had been opened, I beg leave to submit a short account of three of those cases so treated by me.

CASE I.—Stephen Manly, aged 80, was admitted to the Rathdown Union Hospital, on August 22nd, 1862, suffering from a strangulated hernia in the right groin. I operated; when the sac was opened a considerable quantity (probably not less than from ten to fifteen ounces) of brownish serum gushed out, and a knuckle of small intestine was exposed to view in the bottom of the sac; I introduced a director into the stricture, and as I passed it round the neck of the hernia, the bowel returned into the abdomen without further manipulation. It is here necessary to state that, for forty-eight hours after admission to hospital, Manly refused to submit to the operation, and that during this interval he had been placed under the influence of chloroform, had the tobacco enema administered, and the taxis carefully applied without avail. He recovered.

CASE II.—Jane Barrett, aged 70, the subject of old reducible femoral hernia on both sides, was admitted to Hospital June 10th, 1863, with the hernia in the right groin strangulated. Taxis having failed, I laid open the sac, and exposed a portion of omentum and a considerable coil of small intestine in a state of strangulation. I carried the director completely round the neck within the stricture (a practice recommended by the late Dr. Hutton of Dublin), and by careful manipulation, succeeded in returning the entire mass to the abdominal cavity. This woman recovered.

CASE III.—Anne M'Loughlin, aged 30, was admitted to hospital on October 4th, 1865, with a strangulated hernia in the right groin. I opened the sac, and reduced a coil of small intestine without dividing the stricture, although it was so tight that considerable difficulty was experienced before I could pass the director round the constricted part. This woman also recovered.

It is not merely on account of these cases having recovered after operation that I have selected them for this paper, but rather because each case differed from the other in some feature of practical interest; for example, in Manly's case, it is not easy to understand why symptoms of strangulation presented, or why the elaborate attempts at reduction should have failed in a case where the bowel, after the sac was opened, may be said to have returned of its own accord; in Barrett's case, the contents of the sac were large, solid, and complex, yet no great difficulty was experienced in returning them; and, in M'Loughlin's case, where the constriction was very severe, it was found possible to return the bowel without dividing the stricture.

That instances will occur where old adhesions, gangrene, or some other circumstance may render the division of the tendons necessary, there can be no doubt; and in such cases it will be also necessary to open the sac. If, therefore, we take into account that the sac *must* be opened in the worst cases; that peritonitis is not the cause of death in the majority

of those cases which terminate fatally after operation; that the fear of peritonitis does not deter surgeons from opening the abdominal cavity in the treatment of other diseases; and, on the other hand, if it be borne in mind that all danger of wounding an artery is avoided; that the tendons are left uninjured by the surgeon; that the operation is much simplified; and that in cases of recovery the patient is in all respects as well and as little liable to inconvenience from the rupture as he was before strangulation took place, the advantages of reducing hernia without dividing the stricture—the practicability of which is sufficiently proved by the foregoing cases—will be made manifest.

THE CURABILITY OF LATERAL CURVATURE OF THE SPINE.*

By WILLIAM ADAMS, F.R.C.S.,
Surgeon to the Orthopædic Hospital.

THE curability of lateral curvature of the spine is, at the present time, one of those unsettled questions which urgently demand the attention of the profession; and I now venture to submit some conclusions at which, from observation and experience, I have arrived, in reference to the curability of this affection.

In order to bring this subject forward in a definite manner, I propose the two following questions; viz., 1. In what cases is lateral curvature of the spine curable? and 2. What are the directly curative means?

As a starting point, I would particularly insist upon the fact, that no confirmed or persistent curvature of the spine, however slight, can exist merely as a functional affection; but that in every instance a spinal curvature is necessarily associated with, and dependent upon, certain structural changes, proportionate to the degree of curvature and its duration. It is of the utmost importance to recognise this fact, because lateral curvature is generally described as being, at least in the early stage, a functional affection depending upon muscular debility, or the undue action of certain muscles which have been called into play by some occupation, or some acquired habit. There can be no doubt that, in such cases as these, there is often some appearance of curvature, such as may be produced by any person in certain attitudes; but a careful examination will show that no persistent deviation of the spine exists. There can be as little doubt, however, that such cases have often been treated as cases of lateral curvature, and of course with great success under various methods of treatment.

A broad and distinct line must be drawn between any such functional conditions—or, as they may be called, functional or physiological curvatures—and the confirmed or persistent curvature of the spine, which, however slight, is necessarily associated with structural changes. A ready and certain means of diagnosis is of the utmost practical importance, in reference both to the treatment and the prognosis of the case.

The ordinary method of examination for forming a diagnosis is by passing the finger down the spinal column, and tracing the apices of the spinous processes; but this is fallacious, as the spinous processes may deviate laterally in a case of simple debility, without actual curvature; and on the other hand may remain in a straight line, whilst the bodies of the vertebræ have deviated to a considerable extent, so as to form a large internal curvature, associated with considerable alteration in the relations of the ribs in the dorsal region, and of the transverse processes of the vertebræ in the lumbar region.

In all cases of the so-called lateral curvature of the spine, the primary and essential deviation takes place in the bodies of the vertebræ, which are found to move laterally in the direction of horizontal rotation, so as to give a spiral twist to the portion of the spinal column involved. The result of this is to cause a projection backwards of the angles of the ribs in the dorsal region, or bulging on the side of the convexity of the curve, and a corresponding depression or receding of the ribs on the concavity of the curve. In the lumbar region we have also a projection backwards of the transverse processes of the vertebræ which render prominent the lumbar muscles on the same side; and on the opposite side the transverse processes are depressed, so as to leave a hollow in the lumbar region, and allow a prominence of the crest of the ilium, and an apparent enlargement of the hip.

Upon these conditions I rely as a positive test of the existence of those deviations and structural changes which essentially exist in all cases of persistent or confirmed lateral curvature, however slight. In slight cases, these deviations will be made more apparent by placing the patient in a stooping position, and in practice I always adopt this mode of examination.

* Read before the Harveian Society of London.

As the curability of lateral curvature must depend upon the nature and extent of the structural changes, and as the only solid basis of any method of treatment must be an accurate knowledge of the morbid conditions, too much importance cannot be attached to the pathology of this affection; and we must inquire, What structures are necessarily involved, and what is the nature of the structural changes? These inquiries, moreover, must have especial reference to the early stage of the affection; as, in cases of long duration, structural changes affecting the bones, cartilages, ligaments, and muscles connected not only with the spinal column, but with the ribs, have been frequently demonstrated by dissection.

Those who still believe that lateral curvature is, at least in the early stage, essentially a physiological condition, depending upon some disturbed balance of muscular power, such as the excessive use of the muscles of one arm, increased development of certain muscles from various occupations, or, according to the theory of M. Guérin, upon active muscular contraction, will not readily admit that structural changes affecting the intervertebral cartilages and the articulating processes exist, except at a late period of the affection. On the other hand, I consider it to be a well established fact, that no lateral curvature of the spine, however slight, can exist as a fixed or persistent condition, without rotation of the bodies of the vertebræ having taken place; this indeed is, in my mind, the essential condition of lateral curvature, and it is equally certain that in this horizontal rotation of the bodies of the vertebræ, the intervertebral cartilages and the oblique articulating processes suffer from undue mechanical pressure. The *intervertebral cartilages*, in the centre of the curve, gradually become wedge-shaped from unequal and long continued compression; and the *articular surfaces of the oblique articulating processes* become altered in their direction. This latter change is most conspicuous in the lumbar region, where the articulating surfaces are nearly vertical, and face directly inward and outward, being evidently so arranged with the design of limiting, to an extreme degree, any lateral motion in this region. There can be no doubt that this change occurs in all cases, in proportion to the extent of the curvature.

The *bodies of the vertebræ* also suffer from unequal and long continued compression, and become wedge-shaped in the centre of the curve. I have seen this condition in cases of slight lateral curvature which have existed for some years; its occurrence is evidently dependent more upon the duration than upon the extent of curve.

The *ligaments* of the spine have been in most books erroneously described as elongated on one side, and contracted on the other, in cases of lateral curvature, as we know they are in cases of deformity occurring in the moveable articulations, such as the knee, etc.; but there are no ligaments along the sides of bodies of the vertebræ which would at all correspond to any such description, and the ligamentous bands connecting the bodies of the vertebræ and crossing the intervertebral cartilages, are simply adapted in their length to the altered thickness of the intervertebral cartilages with which they are connected.

In the *muscles* connected with the spinal column, no structural changes have been detected in the early stages of lateral curvature, nor probably should we expect to be able to trace any, even though the deformity were supposed to depend upon the undue action of any particular set of muscles, unless in some cases of curvature occurring in the course either of some paralytic or spasmodic affection, which would entirely remove the case from the ordinary form of lateral curvature which we are considering. In all severe cases of lateral curvature of long standing, however, the spinal, intercostal, and abdominal muscles have been found in different degrees of atrophy and fatty degeneration from disuse.

Of the various structural changes which I have enumerated, there can, I think, be no doubt that those which occur first in the order of time are, unequal compression of the intervertebral cartilages, and alteration in the direction of the articular surfaces of the oblique articulating processes. These changes, I believe, occur simultaneously; and, at the time of their occurrence, the curvature may be said to become persistent, or confirmed; in fact, when they occur, the case becomes at once distinguished by a broad line from cases of *weak spine*, or, as they may be called for description, functional curvatures apparent only in different attitudes, and generally dependent upon muscular debility.

To be able to determine precisely, during the progress of a case of lateral curvature, the exact period at which structural changes commence, and also to be able to determine precisely the extent of these structural changes, are two points to which I have devoted much attention. Both these points, I believe, I have satisfactorily determined; and, as the extent of the structural changes can be accurately ascertained by the extent of the rotation, we have thus acquired a knowledge of facts which materially aid us in forming an opinion as to the curability of the affection.

Assuming, then, the existence of certain structural changes produced by undue mechanical pressure, the question must be asked—To what

extent, and under what circumstances as to age, duration, etc., do these structural changes admit of being repaired by the efforts of nature, when the producing cause, viz., mechanical pressure, is removed?

The first point to bear in mind is, that these are no structural changes of disease; no inflammatory, ulcerative, or destructive processes; but that such structural changes as exist are the result simply of undue mechanical pressure, producing some alteration in form by atrophy and absorption. And the second point is that, in the normal condition of the spinal column, nearly one-fourth, or certainly between a fourth and a fifth, of the total length of the moveable portion of the column above the sacrum, is composed of elastic intervertebral cartilage. Professors Quain and Sharpey state the proportion as about a fourth; but the measurements of other authorities make it rather less. We also know that it is principally from the compression of this intervertebral substance that we all vary in height when measured at night and in the morning. This variation I have frequently found to range between half and three quarters of an inch. It is clear then that, when evenly compressed, as during the erect position in the day time, the intervertebral cartilage recovers by its elasticity, during the night, when the mechanical cause of compression is removed, that which it has lost in the day time.

In lateral curvature, therefore, when the intervertebral cartilage has not been too long compressed, and become altered in structure by atrophy and absorption, we may expect that it will recover; but its complete recovery must have reference both to the age of the patient and to the duration of the curvature. In youth, during active growth, the greatest amount of recovery may be confidently expected; but some improvement may be looked for even when growth is impeded, as in some thick-set, muscular girls. After the completion of growth, less perfect recovery can be looked for, as all spinal deviations tend to become permanent and incurable, in consequence of a series of adapted structural changes in the structures involved.

With regard to the articular surfaces of the oblique articulating processes, we cannot expect to find in them the same capability of spontaneous recovery, when they have suffered from mechanical pressure so as to become altered in their direction, as their surfaces are covered only by a thin layer of fibro-cartilage. Nevertheless, during active growth, when ossification is incomplete, we may fairly expect that these processes will recover their normal form and direction, if the mechanical cause of compression be removed for a sufficient length of time; and this is to my mind an unanswerable argument in favour of recumbency, as an essential part of the treatment in every case of lateral curvature, in which either improvement or cure can be anticipated.

We have, then, good reason for believing that the structural changes in lateral curvature, when of moderate extent and not of long duration, are capable of being repaired by the efforts of nature during the period of growth, if the mechanical cause of unequal pressure be removed. It remains for us then to inquire:—By what means may this reparative process be assisted by the treatment adopted?

That which most completely fulfils the indication of removing the mechanical cause of unequal pressure upon the intervertebral cartilages, and the oblique articulating processes, is recumbency. The *modus operandi* of this has been already explained. In all cases of lateral curvature, therefore, occurring in young people, when there is hope either of cure or of much improvement, I employ recumbency by means of a reclining chair with a desk adapted, so that this position may be assumed during the hours of education. I consider that six hours during the day—taken at separate times—is sufficient time to be passed in this partially recumbent position.

Next to removing the total weight by recumbency, we have in the improved mechanical appliances, or spinal instruments, the means of diminishing the irregular distribution of weight upon the spinal column when curved. In other words, we have the means of employing a directive force of balance, which would lessen the irregular distribution of weight in a curved spine. But, beyond this, we are also enabled to exert a direct mechanical force upon the part of the spine curved; and if this force be properly exerted, and regulated by the surgeon, there can be no doubt that a diminution of the curve will result. According to my observation, recumbency and mechanical support are the only two curative means at the disposal of the surgeon.

Gymnastic exercises cannot in my opinion be considered as curative in fixed or persistent curvature, with structural changes, however slight; but there can be no doubt that they may be regarded as curative in cases of weak spine, or in functional curvatures; and also as preventive, in the sense of preventing a weak spine from becoming a case of confirmed curvature. When there is no evidence of structural changes, I rely upon gymnastic exercises, combined with partial recumbency.

If, when a girl is examined in the stooping position, we find that, in the dorsal region, the scapulae and the angles of the ribs on each side are symmetrically placed with respect to the spinous processes; and if in the

lumbar region the two sides be symmetrical; then I decide against mechanical support, and in favour of gymnastic exercises and partial recumbency. If, on the other hand, in the stooping position, there be a decided bulging of the ribs, or of the lumbar muscles on one side, with depression on the other; then I decide in favour of mechanical support combined with partial recumbency.

I have now endeavoured to define the limits within which lateral curvature of the spine may be considered as curable, and also to point out the means which, in my opinion, may be safely relied upon as directly curative. The general result is, that in the ordinary forms of lateral curvature there is a stage in which it is possible to effect a complete and permanent cure; but this stage of curability is of limited duration, lasting probably not more than one or two years. It belongs to the early stage of the affection when the structural changes are slight and recent, and when we have youth and growth in our favour. If this opportunity of curing a spinal curvature be lost, the patient must take the chance either of spontaneous arrest of the curve, which occurs in some cases in which the curves are about equal in length; or of increase of the curvature with deformity and loss of health. The only possible benefit under these circumstances will be to arrest the progress of the curvature and remove the cause of pain, which may generally be accomplished by mechanical support.

Other means than those referred to have been recommended by different authorities, such as cutting the spinal muscles, first introduced by M. Guérin, and which is now being revived in this metropolis by some surgeons. But claims of this, together with other methods of treatment, I have, in my work on *Lateral Curvature of the Spine*, analysed, and rejected as curative means; and the limits of this paper would not admit my entering upon the subject on the present occasion.

CLINICAL MEMORANDA.

[Under this head, we shall publish from time to time, as materials accumulate, short records of remarkable cases in practice which are sufficiently rare, interesting, or instructive, to deserve record, but do not call for lengthened statement or comment. Brevity and point should be the valuable characteristics of cases forwarded for this column.]

ACUPRESSURE.

By J. P. SWANTON, M.D., Bantry.

WHILE acupressure is *sub judice*, it may be interesting to Sir James Y. Simpson, and those able men who are workers with him in trying to ameliorate human suffering, to know that, through the medium of our valuable JOURNAL, the subject is attracting favourable attention.

An opportunity was lately afforded of testing those principles, which appear so easy of application and so reliable. A middle-aged woman desired the removal of a malignant tumour of the breast. In many respects, the case was unfavourable for operation; the disease had existed for several years; the tumour was for some time ulcerated in two or three places, and the axillary glands were decidedly implicated. However, at her urgent request, and in the hope of giving a longer period of comfort, it was decided to remove the offensive mass. Chloroform was given, and acted admirably. Two vessels demanded attention. Needles were used, according to the fifth method (twist); and though the first attempt was not effectual in completely arresting the flow, they were immediately removed, and a larger portion of the vessel secured. A smaller vessel required torsion. Our old acquaintance, the ligature, was at hand, but was not called into requisition. After leaving the wound, a very considerable one, open for some hours, and applying cold water, the edges were brought together by silver wire, and wet lint applied, covered with a light bandage. In forty hours, the wound was dressed. One needle came off with the lint; the other required no force. The union was most satisfactory along the line of the wound, with the exception of the track of the needle, where a few drops of pus appeared. The sutures were removed at the same time, and adhesive plaster applied to keep the parts *in situ*. Unfortunately, in the next twenty-four hours, erysipelas of a severe character attacked the skin over the axilla, and soon affected the wound; the healing process was arrested, and the wound gaped. Now, at the end of a fortnight, it is healing favourably; the erysipelas has subsided; and I trust the patient will soon be able to return to her home.

Should another opportunity be afforded, I certainly shall try acupressure again, as I believe it to be worthy of a fair trial; and, in this case, the steps of the operation, except the introduction of the sutures, were almost painless, thanks, under Providence, to Sir James Simpson.

ON THE CONTINUANCE OF THE MAMMARY SECRETION WHEN THE URINE IS SUPPRESSED IN CHOLERAIC COLLAPSE.

By WILLIAM SEDGWICK, M.R.C.S. & L.S.A.

AMONG the many difficulties attending the investigation of choleraic collapse, there is, perhaps, none more perplexing than the fact of the mammary secretion being uninterrupted when the urine is suppressed; and it has been only during the later epidemics of the disease that there has been any attempt to give a scientific explanation of what has been very commonly regarded as a pathological paradox. With reference to this subject, it may be remarked, that two theories have been lately advanced by distinguished writers on cholera, one of which is based on a finely adjusted hyperæmia of the sympathetic and spinal nervous systems, and the other on the chemical composition of the secretions; but both of these theories appear to have failed to gain the approval of the medical profession either at home or abroad. The fundamental error in both of them is traceable to a supposed necessity for physiologically classifying the urinary and the mammary secretions together; in consequence of which, it seems to have been very generally, though for the most part tacitly, assumed that, in other diseases of a less abnormal character than cholera, an arrest of the urinary secretion during collapse would involve a corresponding arrest of the secretion of milk. So complete, indeed, has been the failure hitherto to account for the continuance of the mammary secretion during cholera collapse, that M. Desnos (*Nouv. Dict. de Méd. et de Chir. Prat.*, tom. vii, art. "Choléra Asiatique", p. 418: 1867), in one of the latest and most elaborate articles on cholera which has been published in France, although he has cited both of the writers above referred to, yet passes over their theories about the continuance of the mammary secretion without notice, and merely ventures to remark that "it is curious to see that, in a pretty good number of severe cases of cholera, in the midst of this frightful disorder of all the functions, the lacteal secretion is not dried up; and that the menstrual flux is not arrested in its course." In this short paragraph, M. Desnos appears, however, to have approached nearer than he was aware to a solution of the difficulty; for the occurrence of the mammary secretion during cholera collapse, when, for example, the urinary secretion is totally suppressed, is undoubtedly due to the former being associated with the reproductive function, whilst the latter is associated with nutrition. Consequently, the influence of cholera on lactation must be studied in connexion with the influence of cholera on menstruation, on pregnancy, and on the life of the foetus itself, before it would be allowable to theorise on the continuance of one secretion, and on the arrest of another. When thus studied, it will be perceived that the occurrence during cholera of the mammary secretion is in no respect exceptional; for, as regards the reproductive functions generally, there is satisfactory evidence to prove that menstruation may, like the mammary secretion, occur during the algid stage of the disease, without being either delayed, diminished, or checked; that the liability to abortion is, for the most part, limited to the early periods of pregnancy, and that the blood lost on such occasions is not unfrequently florid; and that, towards the full term of pregnancy, not only does the liability to abortion usually disappear, but that the life of the foetus may be fully maintained during a prolonged algid stage of cholera, and even after the life of the mother has apparently ceased.

The influence of cholera on the mammary secretion itself is to be regarded as not simply negative in permitting, as it were, a little milk to be secreted when the circulation fails and the urine is suppressed, but it has, moreover, the effect of so far positively increasing this secretion, that the mammary glands sometimes become painfully distended during the algid stage of the disease, and gorged with milk before death. This appears to have attracted notice very early in the history of cholera; for Mr. T. M. Greenhow (*Cholera as it has recently appeared in the Towns of Newcastle and Gateshead*, 1832, pp. 44-46) recorded, in 1832, the case of a woman, aged 42 years, who was nursing a child of eighteen months old when attacked by the disease, from which she died on the second day. "The secretion of milk," he informs us, "continued during her illness, [and the] breasts became gorged before death." The pulse in this patient failed early in the attack, and the urine was throughout totally suppressed. In commenting on the mammary secretion during collapse, Mr. Greenhow remarks, that "the same fact has been noticed in other cases"; and he cites the evidence of Mr. Frost and Mr. John Fife, who had met with similar instances. Mr. Henry Bird (*Lancet*, Oct. 27th, 1832, p. 147) has recorded that a cholera patient under his care, "in a state of perfect collapse, and who was suckling an infant, had not the secretion of milk in the least degree im-