Taylor, in the second edition of his valuable *Manual of Medical Jurisprudence*, thus remarks on the fungi:

"Most of the narcotic irritant poisons, just considered, owe their deleterious effects to the presence of an alkaloidal principle similar to morphia, and susceptible of insulation by complex chemical processes. There is, however, considerable difficulty in extracting these alkaloids from the respective vegetables; and when extracted, the chemical differences among them, in respect to the action of tests, are so slight, as to be scarcely appreciable, even in the hands of a practised analyst."

The few conclusions, therefore, which it is in my power to offer with regard to this subject, are very insignificant; and are derived more from physiological observation than from chemical inquiries. However, they had better be stated.

I. The narcotic principle is given off freely during the combustion of the fungus; and, as it exists in the fumes produced, is highly volatile.

II. Combustion of the fungus in oxygen gas does not destroy the anæsthetic principle.

III. The anæsthetic principle is not quickly absorbed or destroyed, either by water, alcohol, or strong alkaline solutions.

I present these researches to the profession with great deference. I am aware that they are not so extensive as they ought to be, but they have cost me many weeks of incessant labour; and I put them forth as being calculated to lead to further inquiry into the narcotic effects of the fungi, by other and abler minds, rather than from an estimation of their own value. I have been desirous only to show that there is a principle in one of the fungi capable of producing narcotism in animals by inhalation. It remains to be seen, whether other plants of the same family possess similar powers; and whether a narcotic agent can be obtained from a fungus that shall admit of being employed in practice with no more trouble to the operator, and with less danger to the patient, than are entailed by the anæsthetic agents now in use. So important a subject is at least worthy of further investigation.*

Mortlake, May 1853.

CASE OF EXTREME LATERAL CURVATURE OF THE SPINE, OF MORE THAN FIFTEEN YEARS' DURATION.

By SAMUEL HARE, F.R.C.S. Eng.

CASE. SUMMARY. GREAT ACCOMPANYING DEFORMITY OF THE CHEST: THE HEART BEATING BETWEEN THE SECOND AND THIRD RIBS OF THE RIGHT SIDE: UNFAVOURABLE STATE OF THE GENERAL HEALTH: IMPROVEMENT UNDER TREATMENT: INCREASE OF THE BREATHING CAPACITY OF THE LUNGS.

Miss —, aged twenty-nine years, residing in the north of England, came under my care on April 15th, 1850.

History. She was born of very healthy parents, and her general health was stated to have been good during childhood, though she had suffered from some of the diseases incident to that period of life. When about twelve years of age, she suffered severely from an attack of scarlet fever, from which she was not expected to recover; and subsequently from inflammation in one ankle, from which period is dated the commencement of her future sufferings. The inflammation was accompanied with a great swelling of the part, and was so severe as to confine her more or less for six or seven months. She consequently became very weak and delicate, and suffered much from violent headaches, especially in the forehead.

It was when she was fourteen years of age that the curvature of the spine was first discovered, though it is probable that it had existed for some time previous. It was indeed supposed by herself and friends to have been caused by the improper or too constant use of the crutches, which she was obliged to use when she first began to walk, on gradually recovering from the affection of her ankle. The upper curve of the spine was noticed to be towards the right side, while a slighter one also existed towards the left, in the lumbar region. At that time, she was growing rapidly in height; and the progress of the deformity was equally rapid.

As the deformity advanced, her bodily weakness increased; she felt languid and tired, and complained of a dull, heavy pain in the spinal column, with a sensation of its being too weak to support the weight of the head and upper extremities. Instead of being extremely active, as she was wont to be, she became inanimate, and unable to go about without a tendency to faintness, and sometimes actually fainted: she had also a numbness both in the upper and lower extremities. She suffered likewise from nervous depression, painful sensibility and anxiety of mind, and a want of power to concentrate her attention upon anything, while her memory failed her very materially; her breathing became shorter and more difficult, attended with palpitation of the heart on using any exertion, or being subject to any excitement; her appetite sometimes failed her; at other times she feared to take food, from its causing severe pain afterwards, though, if she did not take it, she suffered from faintness and a sinking sensation.

The symptoms fluctuated from time to time, but, on the whole, got worse; the languor, lassitude, and weakness, continuing to increase: indeed, her symptoms were such as to cause considerable alarm and anxiety to her friends. Some time afterwards, and when the spinal deformity had made considerable progress, the heart was observed to beat to the right side of the sternum, which it continued to do up to the time of my seeing her. For two years prior to this time, her health became much worse, and for twelve months she had at times scarcely been able to walk at all, owing to her general weakness and the severe pain in her back, and her increasing deformity.

Condition on April 15th, 1850. She was rather tall, of good figure and conformation, with the exception of the spine and chest; of a sanguineo-nervous temperament, fair complexion, and brown hair; and of an habitually cheerful disposition. She complained of much lassitude and weakness, and of great fatigue on using the slightest exertion; and had fainted that morning on rising from her bed. She was thin, had very little colour in her cheeks, or even in her lips; and her skin was not so clear as natural. Her spirits were depressed; she was still subject to headaches, and slept very indifferently, having startings when in bed. She suffered much from the shortness in breathing, especially on using any exertion, or after taking food; and was much oppressed when in a close atmosphere.

The left side of the chest moved very little during respiration; the ribs on that side (in consequence of the deformity presently to be described) being so small, and so close to each other, as to render the intercostal spaces scarcely discoverable. She was free from cough and expectoration; palpitations were not constant, but were induced by any trifling exciting causes, and sometimes even without any assignable reason. In the morning, she was troubled with nausea, retchings, and sometimes with vomiting. Her appetite was at best capricious, and generally very bad, so that at times she had a loathing of food; her digestion was weak; and she often suffered from considerable epigastric pain, flushes of heat, and perspirations after her meals; while, at other times, she had a severe and distressing sinking sensation in the same region, and her feet were generally cold.

On examining the spine, I found an exceedingly extensive sigmoid curvature, which had caused so much general deformity of the trunk, that the level of the left shoulder (the acromion process) was no less than four and a half

* I return my deepest acknowledgments for many valuable suggestions, and much kind interest, to Drs. Willis, Cormack, Snow, and Crisp, to Mr. Thos. Taylor, and to Mr. Henry Hudson. I have also to thank my friends, Messrs. Leipner and Beresford, for the practical assistance they have rendered me in my experiments. And lastly, I am exceedingly grateful to the Fellows of the Medical Society for the kind manner in which they received this paper.

inches below that of the right one; while, on the left side, there was a space or hollow of two and three-quarter inches between the ribs and the arm. The convexity of the dorsal curve, which was the most striking, and included the whole of the dorsal vertebrae, was to the right side; while the curve in the cervical and lumbar regions projected to the left. The dorsal vertebrae, besides being curved to the right, were so twisted upon their own axes, that their spinous processes were directed to the left side; and a rather deep depression, corresponding to the groove between the spinous and the right transverse processes, marked, in the middle part of the dorsal region, the course of the vertebral column: in this manner, the right transverse processes projected more backward than the spinous ones. The ribs of the right side, especially above their angles, were so deformed as to project still further back than the transverse processes; and, by thus forming a prominent ridge, they tilted the scapula upwards and backwards to such an extent, that its internal border looked almost directly backwards: the projection of the eighth right rib about its angle was the greatest. While the ribs were thus prominent on the right side, those on the left were quite as much deformed, but in the opposite direction; for, at the lower part of the scapula, and below it, they were so depressed as to form quite a hollow, while the ribs themselves were felt to be in the most close contact with each other, to be exceedingly diminished in their diameter, and, instead of being flattened, they were rounded in shape, and in size were about equal to a swan-quill. In the upper part of the left interscapular region, the ribs were so deformed as to cause a somewhat circular prominence.

The anterior part of the chest presented proportionally as much deformity as the back; the ribs on the left side being prominent, and those on the right being flattened. Owing to the condition of the ribs (itself primarily dependent upon the deformity of the spine), the sternum was so far from occupying the mesial line, that its centre corresponded with the inner border of the left scapula; and, on standing exactly in front of the patient, the part of the chest seen to the left of the ensiform cartilage measured transversely only three and a half inches, while that seen to the right of it measured six and a half inches; and similar measurements, made at the level of the nipples, were, on the two sides of the midsternal line, four and a half and seven and a half inches respectively.

Owing to the flattening and depression, already alluded to, of the ribs of the left side posteriorly, the antero-posterior diameter of that side of the chest was very much diminished; indeed, in a patient of the same size as Miss —, I do not remember to have met with a chest in which the diameter from the nipple to the scapula was so small as two and three-quarter inches, which was the measurement in this case. As may well be supposed, when chests are so much deformed, it is not unusual to find the normal relation between the parietes and the position of the heart somewhat altered; but in this case the position of the heart was most remarkable, for it pulsated most distinctly between the second and third ribs of the right side; while, to the left of the sternum, its pulsation could not be detected. Beyond this displacement, there were no signs of disease in this organ; and the lungs, although their action was interfered with so as to cause much shortness of breath, seemed to be otherwise healthy. The right hip, as is always more or less the case in this kind of deformity, was depressed or flattened, and the left one was preternaturally prominent.

During the course of the disease, every pains had been taken to relieve her; and various plans of treatment, which had been suggested, were adopted. Thus, at one time she had been recommended to employ the old plan of carrying a weight (as a vessel of water, etc.) upon her head. She wore braces, which crossed her back, and passed round her body. At one time, she had a back-board, which was daily held by passing her hands backwards, above the shoulders; and at another, a back-board such as is used in the army. Other plans were employed, all supposed to have the power

of improving the muscular power of the left side; but, notwithstanding these, the disease continued to progress.

Having, in the history of several other somewhat similar cases of this disease which I have published, as well as in my work on *Curvatures of the Spine*, detailed the plan of treatment I adopt, it is unnecessary to enter at length into it on this occasion: suffice it to say, that exercises of any kind fail altogether to produce good effects in cases so advanced as the preceding; while I also consider that the recumbent position, when used *alone*, is capable of effecting but little. The recumbent position was used in this case; but it was combined with gentle extension, and with moderate pressure upon the projecting parts, in such a way, that its tendency was to restore them to their natural position. Great attention was also paid to the improvement of the general health by the use of appropriate remedies.

This was the plan which was commenced with; and the same, modified a little from time to time, according to circumstances or symptoms, was perseveringly pursued during the whole time that the patient was under my care. She had a course of alteratives with warm and mild purgatives, until the action of the digestive organs was improved; and the same remedies were afterwards prescribed, according as they appeared to be indicated, with occasional tonics.

It would be tedious to detail the notes taken from time to time of the progress of this case, extending over a period of more than twelve months; suffice it to say, that before she had been under treatment many days, she experienced, in consequence of having the weight of the head and shoulders removed from the diseased spine, and from the greater freedom with which she could expand her chest, very considerable relief as regarded the pain in her back, while the palpitations were less frequent, and the breathing more easy and comfortable. By the end of three months, her appetite had also very much increased, and she had almost ceased to feel any inconvenience after taking her food; while, with reference to her spine, she had already become somewhat straighter; the shoulders were flatter, and the chest less contracted; and the heart pulsated two inches lower down, though still to the right of the sternum. Her health continued to improve, and with it her spirits and her strength; while in the course of two or three months more she had entirely lost the pain in her back, which had troubled her so much and so long; the improvement in her form continuing at the same time to progress.

My notes, after she had been five months under treatment, were:—"She is decidedly better than she has been before, being free from ache or pain of any kind; she has good nights; her appetite and digestion are good, and she is able to take her food without any fear of suffering afterwards. She has lost all her faintness and weariness, and is free from palpitation, the heart having more nearly resumed its natural position. The inspirations are considerably deeper, and the breathing capacity of her lungs is much increased, being now fifteen inches more than in April last, and her spirits are excellent; her general appearance is much more healthy, her figure is considerably improved, and she is gaining strength, being able to take a little exercise without fatigue. The angle formed by the projecting ribs on the right side of the chest is less acute, and the hollow on the left has so much diminished, that while the distance from a line drawn vertically from the humoral end of the clavicle to the most receding point of the hollow, was at first three inches, it is now only two and one-eighth inches, showing a diminution of nearly an inch; the cartilages of the left false ribs project less; and the intercostal spaces of the right side are less marked, in consequence of her having become stouter and straighter."

The amelioration of all her symptoms continued to progress, so that, at the end of twelve months, and even before that time, she was able to walk about with ease and comfort; and when she left my care, after having been under treatment eighteen months, she was entirely free from any kind of pain, and from the lassitude which had formerly been so distressing to her; while her strength had propor-

tionally increased. Her complexion was much clearer; she had more colour; her appetite was good; she could take her food with a relish, and did not suffer from the dyspeptic symptoms. At times, she had a little faintness; but for many months she had not had the difficulty of breathing and palpitations from which she formerly suffered so much. There was still, of course, as must be expected in such a very serious case, some curvature of the spine, with consequent deformity of the ribs; but the figure was nevertheless erect, and the spine and ribs had each assumed a much more natural appearance; the hollow in the left side, and the projection on the right, having diminished very materially; and, as a necessary result of these changes, not only were the shoulders much flatter, but they had assumed very nearly the same level, so as to make in this respect also, especially when seen anteriorly, a most marked alteration and improvement in the figure.

In February 1852, a most favourable opportunity offering, I strongly advised her to take a sea-voyage; and she consequently crossed the Atlantic, and is now staying at one of the Colonial Islands. The reports which she has sent to myself and her friends are highly satisfactory, as she describes herself as being able to take considerable exercise both on foot and horseback; and there is reason to suppose she will remain some time in her present locality, from a letter I have lately received informing me of her marriage.

REMARKS. Although almost every case of spinal disease presents some points peculiar to itself, there are, on the other hand, certain features common to many of the examples of this affection, by which they become, naturally as well as conveniently, divided into certain classes or groups. Excluding from consideration examples of angular projection, dependent upon caries and absolute destruction of the vertebræ, there are three forms of curvature which are generally readily distinguishable, which are each usually accompanied by some peculiar symptoms, and which are dependent for the most part on distinct causes. These divisions constitute the classes of lateral curvature, excurvation, and incurvation; and of the first of these, the case under consideration presented a very marked example, whether we consider the extent of the deformity itself, or the severity of the general and local symptoms to which it gave rise. The progress of cases of lateral curvature after the disease has once manifested itself is by no means uniform; for the rapidity, or the reverse, with which the deformity advances, is dependent upon the time of life when it first appears, the state of the general health at the time and subsequently, the continuance of the causes which first induced it, the remedial measures employed, etc.: but, notwithstanding these circumstances, as the tendency of the deformity, unless efficient means be adopted, is to increase, the amount of the deformity is, to some extent, proportioned to the time it has existed. In this instance, both the duration of the disease and the degree of deformity were very great; the former having extended over a period of more than fifteen years, and the latter being such as not only very materially to shorten the trunk, but also to interfere much with the functions of the lungs and other important organs, and to cause considerable distress from dyspnoea and palpitations.

Each particular form of spinal distortion is accompanied with a condition of deformity of the ribs peculiar to itself, and different therefore from the deformity which they present in the other varieties of spinal disease. As incurvation affects almost exclusively the lumbar vertebræ, this is the kind of spinal disease in which the ribs are least affected; in excurvation, the ribs and their cartilages often lose their natural curve, become straighter near their anterior extremities, and join the sternum more or less at an acute angle, while the sternum itself may either project too much forwards or may be unnaturally forced inwards. In severe cases of angular projection and of lateral curvature, the ribs are always much more extensively and seriously implicated, though in very different ways. In the former, the ribs of each side, after curving forwards at about their angles, project downwards and somewhat towards the median line in

almost a straight direction, so that their extremities frequently fall quite within the iliac fossæ, and sometimes even rest upon the bodies of the pubic bones. The chest, therefore, in such cases presents a very flattened appearance laterally, and the anterior parts of the ribs are not only so close as to render the intercostal spaces very narrow, but the ribs are often actually in contact; nor do the changes stop here, for the ribs themselves undergo an interstitial alteration, by which they not only become much smaller, but they lose their flattened character and assume a more cylindrical shape. With the extremities of those ribs the cartilages form a very acute angle on proceeding to join the sternum, the lower end of which is usually very prominent. The condition of the ribs is widely different from and more complicated than this in lateral curvature; for while, in angular projection, the ribs of the two sides are tolerably symmetrical, they assume very opposite appearances on the two sides of the chest in lateral curvature. In this disease, the condition of the ribs is indeed dependent upon that of the spine; but their deformity adds very much to the general appearance of distortion. The foregoing case follows the very general—the almost universal—rule of the principal or dorsal curvature having its convexity directed towards the right; when this is the case, the right ribs become much bent backwards, at a point from two to three inches from their head, so as to form a hump, which tilts backwards the right scapula, while the left ribs become flattened posteriorly, and the scapula of that side is depressed; in a word, all the changes ensue which occurred in so marked a degree in this case, and which, therefore, have been detailed in the account given of it. It may, however, here be added, that while in angular projections the anterior part of all the ribs become attenuated, in lateral curvature this only takes place on the concave or left side of the thorax, in which also the intercostal spaces are much narrowed, while on the right side they are very considerably increased in size.

An interesting point, in reference to the above case, is the cause giving rise to it. This was believed by her friends, as well as herself, to be the use of a crutch for a considerable length of time; and, as the disease appeared during the time the crutch was in use, it is not improbable that this may have had something to do with it. At the same time it must be remembered that for such a cause to be effective in producing permanent deformity, the general health must have been in a very delicate state; for it is very uncommon to find permanent affection of the spine amongst the many who, from different causes, are obliged to have recourse to the aid of crutches; it is possible, however, that the first tendency to deformity may have been given in the way supposed, and, if so, the ordinary female dress, with its tight-lacing, would be a very powerful agent in increasing a disease which, in delicate persons, it is quite sufficient of itself to give rise to. On the mode in which this is effected, I have elsewhere very fully entered.

The disease, however, progressed for years, and scarcely could the deformity be called the worse part of the case; for, though in one point of view the primary affection, the secondary symptoms to which it gave rise were such as almost to embitter the patient's life, though they are only such as are frequently met with (often fortunately in a less degree) in similar instances of curvature.

That the functions of the heart should have been interfered with will be little wondered at when its position relatively to the parietes of the chest, on my first examining her, is taken into consideration; nor are palpitations, with frequent tendency to fainting, more than might be expected. Again, the surprise is as little that the patient should have been habitually subject to dyspnoea, when it is remembered that the antero-posterior diameter of one side of the chest from near the sternum to, and including the scapula, did not exceed two inches and three quarters; while the pressure to which the stomach and other organs were subjected, and the other circumstances of the case, were just such as would be likely to produce dyspepsia and its various concomitants.

But the patient had not been allowed thus to get worse without efforts being made to arrest the disease. Yet they had failed. And why? Because the remedies employed were not (and I believe such remedies cannot be made so) equal to cope with the requirements of such a case. General and local means must go hand in hand; the former to improve the general health, and the latter to rectify the deformity; but in a severe case, the last-mentioned indication can neither be effected by balancing a weight on the head, nor by gymnastics or other exercises, nor by endeavouring to throw certain muscles into action. In cases of angular projection, such plans are absolutely contra-indicated, and can only tend to aggravate the disease; while in cases of lateral curvature they fail, as in this instance, because, though the bones are not affected by caries, a certain alteration has taken place in their form, and it is necessary that, after the spine has been by gentle pressure according to the anatomical and pathological condition of the parts, and by slight extension, improved in form, it should be kept in that improved condition until, by the reparative powers of nature, such improvement has become consolidated. The reason why cases of very long standing cannot be improved to the same extent as more recent ones is, that in many of them ossific matter has been thrown out along the concavity of the spinal curve as the mode adopted by nature for the support of the weakened spine, and to prevent such further progress of the disease as might be incompatible with life. If the deposition of ossific matter take place to a great extent when the spinal column is in a deformed position, it necessarily tends to perpetuate the deformity; but the object to be aimed at is, in the manner I have alluded to, to restore the spine as much as possible to its natural shape, and to keep it there until, when the health improves and the reparative powers of nature ensue, the consolidation may take place while the spine is in a more natural position. Such, at least, are the views I entertain; and I feel that they are justified both by the success which in this case has attended treatment based on such principles, and by the result of very extensive experience which I have had in cases of a similar character.

9, Langham Place, London, May 11th, 1853.

BIBLIOGRAPHICAL NOTICES.

CONTINUOUS MOLECULAR CHANGES, MORE PARTICULARLY IN THEIR RELATION TO EPIDEMIC DISEASES; being the Oration delivered before the Medical Society of London. By JOHN SNOW, M.D., Vice-President of the Society. pp. 38. London: 1853.

ONE of the most valuable customs followed by that venerable and highly useful body, the Medical Society of London, is the annual election of a Fellow of the Society to deliver an oration on some subject connected with medical science.

Of all the orations that have been delivered before the Society—and we have read most of them with interest and instruction—we know not of one which upholds better the scientific character of the Society, than that to which we now direct attention.

As the subjects treated on by Dr. SNOW are all open to free discussion, and belong especially to a class of subjects in considering which many minds may fairly differ, it may be that, in reviewing his special opinions, we shall find reasons for questioning many of his arguments. Before descending to particulars, however, we must delineate in a few sentences the general character of the oration.

A distinguishing feature of this production is the abundance of the information it conveys. It is not a book made up of milk-and-water originality, with conceited omissions of other men's thoughts and labours; neither is it a mere patchwork display, containing a fact from Adams, a sentiment from Hecker, and notes from everybody, with nothing at all from the author except the stitches, and

those too small to be visible to the naked eye. No; it is just what a book should be; it is written out of the fullness of the writer's knowledge—is original sometimes—interesting in every part—honest always.

The oration embraces numerous questions, and indicates on the part of its author a large amount of general knowledge, which is, however, introduced on all occasions in such a modest, brief, and incidental manner, that the writer himself seems scarcely to be aware of its introduction. The attraction of matter, the combination of the elements that compose the atmosphere, the processes of combustion and putrefaction, the temporary suspension of what is called vital action, procreation, the origin and prevalence of communicable diseases, the origin of endemic diseases, the important subject of cleanliness, the effects of communicable diseases on the social condition of the human race, the value of quarantine, and the labours of Jenner, are the subjects on which the readers of this comprehensive pamphlet will find themselves feasted.

In the preface, Dr. SNOW enters on the knotty point, the meaning of the terms physical, chemical, and vital; and observes, that "it is especially desirable to have a general term to include what is understood by the words physical, chemical, and vital, in order to avoid the disputes respecting these two latter words, and the needless antagonism in which these words are sometimes placed towards each other". We quite agree with Dr. SNOW on this matter; but we wish that bold man joy of his task, who shall dare to fuse the two terms into one. Dr. SNOW himself seems inclined to offer a compromise. "All changes of composition," says he, "whether occurring in a test-tube or in the living brain, are properly included amongst chemical changes; and all that takes place in living structures has a right to be called vital, whether it differs from what occurs elsewhere, or not." But why this compromise? We confess ourselves unable to tell. If every change of composition in the body is chemical, then the word chemical is quite sufficient of itself to indicate the nature of the change; and the term vital is dead, and had better be buried where no one can find it: but if the changes in the composition of the body are something more than chemical, *i. e.*, vital, then let the word chemical be abandoned altogether in relation to bodily metamorphoses, and let us endeavour to discover what this peculiar, this vital action, is.

The oration opens with the consideration of the two kinds of attraction, "the attraction which the atoms of matter exert on each other at all distances, and the attraction which exists only at all insensible distances". These definitions of the attractive force are up to the present day orthodox; they cannot remain unquestioned much longer. "Attraction at insensible distances"!—what can this mean? What is an insensible distance? In truth, there is no such a thing, there can be no such a thing, as an insensible distance. That between the atoms of bodies, or betwixt combinations of atoms, there may be spaces or distances which we cannot discern with the unaided eye, or even as yet with the microscope, we admit; but this is no proof that the distance alluded to is, in the abstract, insensible; the distance is only inappreciable to the visual organ, and to the imperfect optical instrument; it is perfectly understood by the mind; and the day may come when more than this will be arrived at. Moreover, if the attraction of very small bodies, or of the atoms of bodies, is to be called attraction at insensible distances, because of the minuteness of those atoms, then should we say, in like manner, that the power of attraction resident in bodies of stupendous magnitude, but so far removed from us in space as to be invisible even to the aided vision, is insensible attraction also, inasmuch as such attraction can only be inferred from other circumstances—cannot be seen. To be short, if the word distance conveys to the mind the idea of space, the space may be great or small, but space it is; and, as the mind can be brought by education to appreciate distances of any kind, the term "insensible distance" becomes a source of great obscurity and great error.

With an eye to the unity of the laws of nature, Dr.