

*(With Dr. Kidd's Compliments.)*

ON  
CHLOROFORM  
AND SOME OF ITS  
CLINICAL USES.

BY  
CHARLES KIDD, M.D.

PHYSICIAN TO THE METROPOLITAN DISPENSARY.

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## ON CHLOROFORM AND SOME OF ITS CLINICAL USES.

I propose here to put together a few of the effects of chloroform and its advantages as we see it chiefly in hospital practice; by comparing such groups of cases, we are enabled to decide for ourselves its value or its various contra-indications in the less defined cases met in the wider fields of practice.

### OLD-STANDING DISLOCATIONS OF HIP-JOINT REDUCED BY MANIPULATION UNDER CHLOROFORM.

Neglected old dislocations of the hip-joint or shoulder are amongst the very common but less inviting accidents that come under notice in hospital and outdoor practice. Who does not remember these cases in his eventful student days, the potential force to be exerted by ropes and pulleys so repulsive and mechanical; the pain to the crippled patient so great; the dragging of the hip-joint by the surgeon, as if he was working a fire-engine, his assistant's heel at the scrotum, the students in relays exerting a long pull, a very diagnostic but noisy pull, and pull all together, still the head of the bone not moved: who does not remember, then, the working with the shaft of the bone as a lever of some kind duly explained to the class; the horrible injury done to the torn capsule, the chafing and abrasion of the skin; the surgeon still in despair, very red in the face, with ignominy reduced to work the fire-engine, we mean the pulleys, still more vigorously in his shirt-sleeves; the head of the bone still unchanged, the wretched patient crippled and writhing, still on the rack in torture; extra hospital porters, surgeons, and assistants called in; more pulleys; emetic tartar and bleeding, and, in the end, the patient obliged to hobble away, politely told that his case, now of some five or six weeks' standing,

——— "pitiful to the eye,  
The mere despair of surgery."

Very peculiar as a pathological specimen, &c., is hopeless. In two of these cases, one on the *dorsum* of the ileum, of five weeks' standing, the other of four weeks' standing, which we assisted in at Guy's, the great toe inverted and placed on the instep of the opposite limb, the patients were placed on the usual Procrustes bed adapted to these old time-honoured, but now beginning to be disused, operations. The students had volunteered to try their strength in half-dozens at the ropes and pulleys: the surgeon, partly at our suggestion, however, advised first a trial of the quiet manipulation now to be described under chloroform, intimating quaintly that the fire-engine-like performance might be more honoured in its non-observance. The globular head of the femur in such a case as this on the *dorsum* is tilted up above the edge of the acetabulum, and a little behind it under the gluteus, the trochanter looks forward. The new chloroform manipulation consists in avoiding force, extension, and pulleys, and by a little knack, coaxing back the head of the bone into its place; the surgeon for this purpose, as well known, *bends* or flexes the femur forcibly back on the pelvis, abducting strongly as the flexion is nearly accomplished, and then by rotating the shaft of the bone itself in this manoeuvre, the head of the bone thus acted on at the end of a long lever of another kind, comes right in an instant, and returns to the acetabulum, if that cavity have not already become filled up. This plan, in a word, is the very opposite of the old violent *extension* plan. Chloroform, in fact, has worked a revolution in this department of surgery. In another case of dislocation into the *Foramen Ovale*, occurring in a slightly made poor young woman at Guy's, a round towel was adjusted in a clove hitch knot around the thigh, and in place of pulleys, chloroform was administered. Extension was first made by means of this towel by the house surgeon, his heel having been placed against the head of the femur in the region of the foramen ovale; a modification of the previous manipulation was then practised, extension made, and the limb rotated, when the head of the bone left the foramen ovale, returning with a jerk to the acetabulum.

Dislocation into the *Ischiatic Notch* is another and troublesome variety of this accident. In one case after chloroform had been given to full narcotism, steady extension was made, the limb directed outwards; within a minute the head of the bone slipped into its right place. In a second instance of the same kind, a healthy young woman, who was knocked down in the street, the wheels of a waggon passing over her thigh, the head of the femur being pushed into the ischiatic notch, in this case the manipulations were nearly the same as in the first instance, but that the knee and thigh were flexed, *adducted*, rotated outwards, and extended. (For dislocations of the shoulder and elbow or ankle, the principle is nearly the same.)

#### STRANGULATED HERNIA CASES.

"No warm bath, no ice, no tobacco, no purgatives." Even so; such is the rule of treatment of strangulated hernia now in the chief hospitals. In cases of *femoral* hernia strangulated, Mr. Stanley recommends one fair, steady, gentle trial of the taxis, without any of the preceding adjuncts; then if that fails, the patient is to be placed fully under the influence of chloroform, and the taxis tried again, but then if it fails also, the surgeon is called on to operate. The duration of the strangulation and the severity of the symptoms (which, by the way, do not always proceed in parallel lines,) must determine whether an operation must be immediate or not. If the abdomen and hernial sac be tender, the taxis is to be used with great caution, and operation is probably unavoidable.

In *inguinal* hernia (mostly in men) the warm bath is useful, and the rule of treatment is to the following effect:—"One trial of the taxis, then warm bath; second trial of taxis in the bath; if that fails, then chloroform is to be administered. Another trial of taxis under chloroform, which usually succeeds, if not, as in the former instance, operation is probably indispensable. Whether the sac be opened or not does not signify very essentially, and must depend on the nature of the case." Chloroform I have found is always useful in these trials, but not so advisable when it comes to the cutting operation.

Of course nearly all operations are now under chloroform, but a patient where the taxis fails, especially if very much exhausted, is not a good subject for continuance of the chloroform, at least to the stage of deep narcotism: nor is the operation a very painful one; the chloroform during the trials of the taxis appears to act in a double capacity, especially in children; it relaxes muscular spasm of the walls of the inguinal canal, and also by rendering the child insensible to the painful handling of the hernia, it prevents the crying, and fright, and forcible pushing down of the abdominal contents during the efforts of the patient, which are very violent in the generality of such cases. I have often known patients sent to hospitals like Guy's to be operated on, but the hernia at once reduced by use of chloroform which had not been had resort to previously.

#### SCROFULOUS DISEASE OF SYNOVIAL MEMBRANES TREATED BY ACTUAL CAUTERY.

Mr. Barwell has informed me of certain stages of scrofulous diseases of the synovial membrane of joints, where he has found the cure is much facilitated by the exhibition of chloroform and use of the actual cautery; this is specially called for in the earlier stage, in which the synovial and subsynovial tissues are involved in what else may prove a very troublesome and intractable disease. This author objects very much to setons, or the indolent suppurating but classic granulating sore, which becomes an issue a week or ten days after its application; "a much better and much less painful plan," he says, "is the actual cautery. If the means be judiciously employed in properly chosen cases, its action is marvellous; the iron is a three-sided prism, the edges slightly blunted, and while the patient is being placed under the influence of chloroform in the third stage, the joint to be cauterised should be protected by strips of plaster, leaving narrow intervals between each where the lines of firing are to run; the skin must not be divided by the iron, and the heat must be sufficient to char it into a yellow brown horny substance."

I can fully corroborate these views, and the remarkable fact, that this proceeding gives no pain whatever. When the effect of the chloroform has dis-

appeared there is still no pain; nay, as stated before, I have known such a patient not very deeply narcotised, who still retained his sense of contact or of a blunt stick, as he said, streaking out lines on his shoulder,\* but no fancy it was a very smoking, ugly cauterising iron at a white heat. Several very instructive cases have been published where this method has proved invaluable, "not merely is the hot iron painless, but it absolutely relieves pain." In a somewhat typical instance, one of these all too familiar hospital cases where nothing in the world would do good without chloroform: "Jane S., aged six, a pale strumous girl, suffering from pain and swelling of the left knee for twenty months." Mr. Barwell says: "the knee was a good deal bent, the child cried and shrieked when it was touched, or when any attempt was made to move it. I drew four striæ of linear cauterisation, and got the limb into a straight position. On recovering from the chloroform, the child sat up, and began to play with toys and other children in the ward. At the end of about two months the child left the hospital apparently quite cured." Five other similar cases are given.

#### OBSTETRIC OPERATIONS.

In cases of TWINS, the first child has been born (as often occurs) without much trouble; ordinary head presentation, but the second child comes down with a shoulder, the pains continuing still so severe, continuous, and agonising, that it is discovered to be next to impossible to introduce the accoucheur's hand to turn the child; such a case is very unmanageable for the poor mother, if the surgeon has no chloroform.

Where one meets in oldish women a somewhat analogous state, with undilating indurated os like card board, especially if "the waters" have come away, or if with a hand presentation the maternal parts are dry, hot, and tender, in such cases emetic tartar or venesection acts very well, or some prefer liquor opii, others chloroform; it is advisable to be cautious in using all together, or going from emetic tartar to chloroform. Chloroform is very useful in cases of protracted labour, with rigidity, which occurs to apparently robust healthy women who marry late in life. The agony experienced in some of these labours is very great, and chloroform will prove to be a complete blessing to such mothers.

Chloroform, according to my experience, is also peculiarly well adapted to cases of "primiparous patients," the tone of the muscular and reflex system is more healthy in these instances; and it is here very obviously in first confinements, from rigidity of parts, that anæsthetics are more likely to be called for.

Even in other patients in deep narcotism, if a little cold water be sprinkled or splashed suddenly on the face and neck, or ergot† administered, or the patient be fanned or pinched slightly, the uterus is easily moved to action, but as a general rule (and ten years' experience has convinced me of the fact), we

\* Our so frequent references to the sense of "touch" and pain, as connected with this subject, are of course intended to impress physiologically on the reader's memory that they are different; that the posterior columns of the spinal cord are the principle channels for excitation of reflex movements; that these columns are connected with the cerebellum, but the gray substance of the centre of the cord, the sensory tract, acted on specifically by chloroform, passes into the crura cerebri. The transmission of impressions of pain take place through the *so called* sensitive or posterior *roots* of the spinal nerves, one part when they reach the chord going upwards to the brain, and another downwards, hence also the danger of pain as experienced by Dupuytren and others. Indeed, the so termed sense of "touch," popularly so called, is now known to be made up of not less than four primitive distinct sources of sensation, to which are assigned, or assignable, four different functions, viz.: sense of heat or cold, sense of muscular action, sense of pain, and sense of contact; hence the curious fact, already stated, of patients not feeling a red hot iron, as a red hot iron passed round the shoulder, but remembering a blunt instrument passing on in contact with the shoulder. Hence, also, the curious fact as to the "muscular sense" in some cases of paralysis, *e. g.*, a woman will nurse her child while she looks at it, but if she looks away from it, the child falls; the muscular sense is absent. The sense of heat and cold enjoyed by this portion of the nervous system is what assimilates it to the olfactory auditory and optic nerves. There are cases, in fact, occasionally met in practice in which the sense of temperature (heat and cold) is lost, but the ordinary tactile sense remains. This is only a modified form of what is stated in the text.

† Ergot of Rye is a very old remedy; it makes its first appearance as a disturber of uterine action in the works from which Shakespeare or rather his amanuensis, Ben Jonson, copied the story of Oberon's juice, as well as that remarkable ether distilled from wine, sulphur, salt, and lime, already described.

need not go beyond the second stage. In a number of cases requiring version, there is, as well known, a depression also of a nervous character, it is common in women of delicate strumous fibre, it is well to anticipate it by a little ammonia or brandy.

In **FORCEPS** operations, as in lithotomy, authorities differ, as to whether chloroform should be administered at all, or given after the instrument shall have been applied or before it has been applied. It has been objected that an unskilful operator in forceps cases may do mischief if the patient at first is quite insensible, but there is not much force in this, if the forceps be not very often used where it ought not to be, and by unskilful persons; a skilful manipulator will not require to be guided by the cries of the patient. Much difficulty arises if the patient be not completely anæsthetic; better to have none at all than partial anæsthesia. This is essential, as otherwise the patient will struggle very much.

Professor Simpson recommends chloroform in such cases. If there be an "Anæsthetist" in attendance in whom he has confidence, he would disregard in some measure this caution of Dr. Murphy. He would procure full anæsthesia, and the forceps being in readiness, carefully and more easily pass them, the pains are then allowed to return to assist the forceps traction. In a second case, if the accoucheur were without the assistance of an Anæsthetist, he would recommend full anæsthesia in the same manner, and the introduction of the forceps.

The administration of chloroform in cases of **ABORTION** at the fifth or sixth month, is recommended by good practitioners, as it renders the extraction of the entire ovum more easy for the patient, and more complete. In this class of accidents, as well as in retained placenta with contracted uterus, the relaxing effect of the anæsthetic is now generally admitted by practical men.

As regards patients with distorted pelvis, chloroform or ether is also of a certain value, as by its means we are better enabled to introduce the hand to measure the brim of the pelvis, and thus decide whether to use the crotchet or other instrument; it may obviously cause some slight delay in the progress of such case or cases of contracted pelvis, but with the observance of due care, this is not of any serious moment.

Even in cases of **PLACENTA PREVIA**, chloroform has been resorted to by Simpson and others with complete safety. All such accidents as this are of course seriously full of risk whatever is done for them; but general experience now in this year (1861), tells us that the best practice in placenta previa is, first, to administer ammonia or ergot, then chloroform a few minutes after as for "version," and bring down the child's feet as soon as possible.

If in chloroform we had nothing more than an antidote to the sometimes mischievous action of ergot of rye on the foetus, it would be a useful agent, but it has done greater things than these,—it removes pain, and at the same time facilitates the recovery of the patient; it has more than anything else helped to abolish craniotomy, and even by making pains more bearable, it may lessen the necessity for forceps. Of this action of ergot on the foetus, it has been stated that one in seven of very large numbers of "still-born" children are found to perish from the administration of ergot to the mothers. It is also a very painful subject to consider how many die from the unnecessary use of forceps, when a surgeon in the most fashionable district of London boasts that the forceps in his practice (a very large one) is applied once in about every forty cases, a very fair average, according to some. There is hope of a better state of things when chloroform becomes more general; already we hear of 300 cases in the practice of one surgeon in Scotland, a large number of which would have been forceps cases, all brought to a safer conclusion by versional delivery and chloroform. At Copenhagen, in one year (1850), we hear of fifty-three cases of version under full narcotism: from Dublin we hear the master of the finest lying-in hospital in Europe saying, he never omits the use of chloroform in version cases; and the experience of this large hospital for the last dozen years is decidedly in favour of chloroform. 400 such cases have done well in Dublin.

As to the safety of chloroform in obstetric practice, it may be said that in about 30,000 obstetric cases of various kinds up to the year 1860, there was

not a single fatal accident correctly ascribable to chloroform. (A case at Christiania happened seventeen hours after chloroform had been given; the patient died apparently from the shock of a severe instrumental delivery.) This safety I am inclined to attribute to the increased activity of the reflex system of the woman called into action by the labour; the reflex system, in a word, of the abdominal muscles and those of respiration, so indispensable for carrying on the circulation at the right side of the heart. Chloroform, as remarked so often, is very safe too in children, partly due perhaps also to this increased activity of the reflex system, so painfully evident occasionally in instances of convulsions in children, due to this augmented irritation. It is quite possible we may hereafter hear of deaths apparently from chloroform in labour, but even here we should remember that one author (Dr. Churchill) has furnished fifty cases of such sudden death, in not one of which was chloroform used at all. We should remember that a singular tendency to abdominal inflammation also supervenes in these cases where albuminuria is present, and the convulsions more than usually severe.

Chloroform has been used with good and suggestive results in puerperal MANIA, even after large doses of opium had failed in quieting the patient, or producing sleep. Simpson, for instance, relates a case very like one I had also, where a lady was attacked five times with puerperal mania after as many successive confinements, and in whom a hereditary or constitutional condition or taint was suspected, as several of the other members of the family at different times had been under treatment for forms of mental disorder. In none of these five confinements had she used chloroform, but on the occasion of her sixth delivery it was administered, and she recovered without once manifesting any tendency to insanity; the poor lady herself said that the extreme intensity of her sufferings in the first labours drove her out of her mind, and "she attributed," as Simpson remarks, "perhaps quite correctly, her escape on this occasion from the horrors of a lunatic asylum to the use of chloroform during her labour." Waters, of Liverpool, Churchill of Dublin, and others, give us similar cases of mania, whilst of puerperal convulsions, Channing has used ether in ten cases; Shkelton, of Dublin, chloroform in nine cases; and Braun chloroform in sixteen cases with most remarkable success.

It would be unwise at the same time to disguise from ourselves the fact, that in puerperal mania, as in *delirium tremens*, chloroform (indeed, almost every variety of treatment,) will prove useless or disappoint us for a time, till natural sleep be procured for our patient: my chief object in referring so often to sleep and its theory, emotion, alcoholism, &c., has been that the anæsthetist may not give a mechanical opinion that chloroform is always the one thing needed. This class of mania patients are very pitiable objects, they will even refuse food. Chloroform, no doubt, destroys consciousness, but its action on the cerebral lobes is very fugitive, much less deep than the action of alcohol, much less deep than that of morphia, or the anti-soporific effect of green tea. The chloroform action is directed more to the sensory ganglia and cord, while probably the external convolutions, the organs of thought, so deeply engaged in mania, are not so influenced (p. 185). That chloroform acts in some manner not yet well described, almost alone, on these portions of the nervous ganglia is evinced in the sugar which appears in the urine after the administration of chloroform. In surgical cases about the head and neck, where the vagus nerve is functionally implicated, this sugar also appears in the urine. I described such a case in University College Hospital a few years since. Sugar in the urine is very common after division of the pneumogastrics in the lower animals; it depends, according to Pavy, upon the activity of the respiratory function being so diminished as to offer an impediment to the natural flow of blood through the system. It would be an interesting fact to see if this sugar is common after accidents from chloroform, it would be thus desirable to test the urine found in the vesica of such a patient. If we had no dreams during sleep, in other words, if we had not the brain partially active, we could not have that gradual and beautiful return to consciousness that every one feels on rising in the morning; so also under chloroform, if we had not some gradual quiet compensating action going forward, which, for a better term, I have elsewhere called "hybernation," under the deep sleep of anæsthesia, its action

on the special ganglia of life is so serious, and so specific, it would be very dangerous. This part of the external convolutions, &c., so over excited, too, in mania, does not come under the influence of chloroform, and in convulsions, it has been made clear by Brown-Séquard that it is rather some point of the membranes of the brain, and not the brain itself, from which the irritation radiates, so that we run no risk in the latter coming under the effects of the anæsthetic.

#### CHLOROFORM IN DENTISTRY.

In cases of dentists' operations chloroform is much used, and with great safety; it affords very marked relief, though, as a rule, it is not desirable to push the anæsthetic action as far as complete insensibility; deep narcotism is, indeed, to be avoided, as the patient should be partially conscious, at least as regards the special senses, so as to hear the spoken directions of the operator when he directs the mouth to be opened, the mouth to be washed with water, &c.; such patients will often cry out most terribly too, especially nervous females, they have the apprehension of pain vividly before them; yet, when asked afterwards, they say they felt nothing, they express the utmost amazement that five or six or ten hideous stumps, old enemies, are all out; but such is the fact.

As regards the position of the patient, although, perhaps, not very desirable, yet I have administered chloroform so often to persons sitting upright or partly upright in a dentist's chair, that I believe there is not much risk attending it. Snow had six hundred such cases; if faintness occurs, however, the patient should at once be let down on the floor, or placed in a horizontal position, or carried into the open air. M. Velpeau relates an accident (somewhat of the nature of a dentist's case) that is, suggestive to dentists; he was called to remove an enlarged tonsil, he chose ether as the anæsthetic, the patient became deeply insensible, blood collected in the mouth and throat, the directions to wash the mouth with water were unheeded, the reflex function of the nerves of the part was extinguished, and the patient was suffocated. In such a case as this the operator must trust almost entirely to the will of the patient, as it is now found that probably some deaths have been hastened by catching the tongue in a forceps to draw it out, or hooking the finger into the pharynx; if the respiratory muscles have stopped, the effect of such is of little use.

The vascular membrane lining the pulp cavity of a tooth that is painful, is usually intensely sensitive and vascular, though the tooth itself is insensible; here it is desirable to touch the former with a little kreosote before extraction, or to allow the patient to wash the mouth first with iced water, or with chloroform and water.

\* It is to be feared that some dentists frighten the patient from having chloroform; they have at their fingers' ends all that has appeared in the journals of the danger of diseased heart, &c.; at the very worst, however, this is not worse than railway accidents. But what should we think of the intellect of a man, dentist or not, who would advise his friends never to enter a railway carriage. A patient should never be frightened, as fear may bring on exactly what is to be avoided.

Young patients require less chloroform, or rather they remain longer under it than old patients; they will go off into sleep, too, when released from the agony of an old pain; a fixed stare in such a patient with protrusion of the balls of the eye, with sudden surprise and stoppage of the breath are always the first signs of danger during the administration,—signs of irritable larynx cough, &c., require additional caution also. Under the head "Cardiac Syncope" (p. 130) in dwelling on Dr. Snow's theory in 1858, I expressed my doubt whether the mischief in fatal accidents is not already completed before it comes to that, and in the previous page, the respiratory muscles and the respiratory tract were

\* EMOTIONAL SHOCK.—The Persians have a fable of a king and his minister differing about the effect of fear on criminals, as to whether mental or corporal suffering is worse; one contending for one, the other for the other. The minister hereupon took a lamb, broke its legs, shut it up in a cage, and put food before it; he took another, shut it up in perfect health in a cage near a chained tiger, the latter so tied that he could spring at the lamb's cage but not touch it. Next day the king went to see the result of the experiment (*experimentum crucis*), the lamb with the broken legs was in great spirits and had eaten all the food placed before him; the other was dead from fright! This applies very strongly to chloroform administration.



explained to be the parts first engaged in this form of syncope or stoppage of the circulation. All the facts and reasonings of the subsequent three years up to the appearance of the able essay of MM. Lallemand, Perin, and Duroy have helped to corroborate this theory. Dr. Snow admits, too, that nineteen out of his forty-five cases, were not from "cardiac syncope," but over narcotism of the brain, probably respiratory apnea as not then understood. Bad ether, and probably chloroform contain free nitrogen, which might thus act upon the respiration.

The "law of tolerance" of chloroform, as observed in general surgery, ought not to be lost sight of in dentistry operations. Chloroform, like bark, ammonia, valerian, opium, ether, wine, &c., is particularly indicated where the pulse is weak or slow, and there is exhaustion, or shock of the *nervous* system present rather than of the *vascular* system. The two states are very different though often confused together; in the latter we have vascular exhaustion, suppuration, or diarrhoea, or hæmorrhage, or hectic; here these medicines are not as useful as in the former state of shock of the nervous system, or in debility, the consequence of long-continued pain, loss of nerve force, or convulsive excitement from excess of reflex irritability or mental emotion, &c. Where we have, however, vascular exhaustion, the result of hæmorrhage, steel, beef-tea, jelly, cod liver oil, milk, essence of meat, &c., agents that form fresh blood are called for, and whatever stops the drain on the system, such as astringents, wine should be given in such cases, too, but not trusted to alone. It is in the large hospitals like Guy's or St. Bartholomews, one often sees this illustrated,—two men as nearly as possible alike, get crushed in machinery, a thigh is smashed, perhaps in each, they are brought to hospital apparently dead, but in a state of collapse from "shock," one man with wine is roused up and recovers, the other cannot be brought to a state fit for amputation, the latter is *exhausted from bleeding*, and wine is useless or nearly so. Ammonia, chloric ether (a very common and very erroneous medicine in such cases,) even brandy in large quantities fails to act on this man's system. The bleeding may have been only six or eight ounces, which have soaked through his clothes, but still the surgeon anxiously waits for re-action, and too often waits in vain. This man is very similar to those cases of bad uterine hæmorrhage where transfusion of blood is required; he will probably come round more satisfactorily by means of strong beef tea, brandy, coffee, ordinary tea, or whatever of that nature he appears to take best, rather than by any of the drugs already mentioned, or any more perfect form of ammoniacal or alcoholised stimulant. Surgeons are still a little at sea on the doctrine or law of secondary *versus* primary operations; one school teaches one doctrine, another teaches another, with such warmth, too, as men stumble through in arguments on special hospitals,—wine in typhus or pneumonia, and such like polemics. The plan of "primary amputations" is the correct rule, but the disturbing element seems to be, what shall we do in the most serious injuries, as those about the hip-joint, or those complicated with hæmorrhage, where brandy, and ammonia, and chloroform are unadvisable in vascular, rather than nervous exhaustion.

It is fortunate, as stated previously, that very complete anaesthesia may exist; but still the special senses of seeing, hearing, &c., remain curiously perfect. Patients, too, as if in pain, especially sensitive ladies, will cry most vehemently as teeth are extracted, but they will say afterwards that they felt no pain whatever, and when the effect of the chloroform has passed off they remember nothing of pain.\*

Muscular rigidity of the masseter and other muscles of the lower jaw is very common in dentists' cases. A piece of wood or a screw is usually inserted between the teeth, and answers every purpose very well. If the patient is desired also to open the jaw, if the narcotism be not too deep, he will be found to assist, at least, in doing so, and there is seldom any difficulty on this head.

\* A dentist at Montreal was tried and found guilty of committing a rape on a narcotized patient, but it turned out to be a chloroform hallucination. A witness on the trial testified that it so happened his wife was also under the strongest impression, and complained that she had been violated by a dentist, but he himself (her husband) was present all the time she was unconscious. Both women, it was subsequently found, as also the patient in the well-known case of Dr. Beale, of Philadelphia, were menstruating at the time that they were rendered anæsthetic.

A dentist, if possible, should never permit chloroform to be administered to a lady without some third person being present; and he should never operate under chloroform at all if the lady should happen to be pregnant at the time. Cases of the latter description are not wanting where the excitement of the chloroform in the early stage, and the shock of the tooth extraction, have brought on premature confinement, or abortion,—a very awkward and disagreeable accident, to say the least of it, but one that might also prove to be very dangerous, from want of preparation for such an occurrence, and consequent hæmorrhage.\*

It is highly probable operations on the mouth, such as removal of teeth in the very remarkable cases of "furred tongue" from bad molar teeth, otorrhea, &c., from the same cause as described by Mr. Hilton, will soon be more studied, and I think we can see the day approaching when the indirect use of chloroform will prove invaluable in the transplanting of periosteum to fill up the gap in cleft-palate, or possibly to form artificial alveolar processes of real osseous structure.†

\* The variety of cases for which dentists extract teeth under chloroform is very great. Dental caries "in its thousand-and-one" forms, inflammation of the pulp, necrosed fangs, irritable dentine and fractured teeth, diseased stumps, with the painful proceeding of punching or elevating, removal of the second molar to make way for the wisdom-tooth, as sometimes done, or the removal of the misplaced or painful wisdom-tooth itself, &c. Severe fits of epilepsy have often followed the extraction of a tooth without chloroform. We should never forget, with all our boasted wisdom, that it is to dentistry we are indebted for the science of anæsthetics.

† There are several well recognized modes now in which chloroform shows its value indirectly. Thus surgeons, "with apostolic blows and knocks," set up particular operations, orthodox, for Stone, but for the last three or four years it is admitted stones are not as large as they were ten years ago. The stone is now sooner detected. The operation is not the hideous thing it was in the days of Montaigne, or Boileau, or Cheselden; this is due to chloroform. The patient formerly put off the operation till too late, till it was done, as it was called, to save life. The prostate was cut and lacerated, inflammation of the pelvic fascia and purulent infection, not understood, set in; but now the stone is small, the patient submits to operation soon, and recovers. Boileau's "Satires" were written under the bitter agony of a large stone. He died, refusing to be operated on, and so also of Montaigne.