ON THE BENEFIT OF CHLOROFORM IN SURGERY
BUT MORE PARTICULARLY AS APPLIED TO MIDWIFERY
The great object of Medical Men is to prolong life and relieve suffering, and for this end many things calculated to effect this great object. For the fulfilling of this latter more particularly, nothing perhaps were better suited than the introduction and application of Chloroform, which in virtue of its anaesthetic properties has since its introduction been the fruitful source of saving many a life and relieving many a sufferer, and possessing properties also other than those of Anesthesia, it is of the greatest use when judiciously given and properly administered. Chloroform like many other things which preceded it, in which were well calculated to promote the excellence of mankind generally, met with great objection and opposition, before its use became general.
and even now notwithstanding the great benefit which it is so many ways, and to so many persons, has accrued from its employment, still several there are who are now object to it on various grounds, all of which however have been ally refuted by those who have taken up the subject. One of the so called evil effects of Chloroform will be alluded to as we proceed.

Before the introduction of Chloroform, many things were used in order to mitigate and relieve suffering, and endure pain, all of which were more or less successful in their turn, and although some of them proved beneficial in one way, namely by rendering the patient insensible to a certain degree at least to pain, still the after effects which they produced and still more the danger which attended their immediate administration were so great that rather
From the risk, for in some instances it was a great one, the sufferer preferred rather to submit to the pain than undergo the risk. As an example, one might mention the application of fomentations in the form of cancrine to relax the muscular system preparatory to the reduction of a dislocation, in order that the resistance of the muscular system voluntary and involuntary might at the same time render the reduction easier and less painful; but the after effects of this agent were in many cases dreadfully "destructive," overpowering, and even fatal depression of the heart's action more than once resulted in consequence of this practice.

Pain we know continued for any length of time will cause such a shock to the nervous system that death may result in consequence, and it is not so much the locale
pain of short duration that is so often fatal, it is pain not necessarily extremely severe, but pain continued for a considerable period of time that is so often fatal when not relieved; of course the greater the severity of the pain & the longer the duration of it, the greater the probability of the patient's non recovery. Prior to the introduction of this valuable anaesthetic chloroform, many a patient who had to undergo a severe operation, died from the very shock received by his nervous system. This accident for example has more than once occurred in the operation for stone, the extreme pain resulting from the operation & the equally depressing effects are well known, hence it no operation is anaesthetised by chloroform were appropriate, for when this operation was performed without the aid of this agent alone alluded to, the difficulties of the operation were great, and the sufferings of the patient extreme.
the result of the latter of these was that
the patient drew himself up in such a
manner, that the Bladder was
carried entirely out of reach of the
Operative knife, so long as the patient
continued so to contract his muscles,
and thus the operation was not only
greatly prolonged; the risk of the
operation consequently being greater, but
the sufferings of the patient were greatly
increased. It often happened also that
by the movements of the patient voluntary
or involuntary more injury than
otherwise would have been done was
inflicted on important parts, with
the patient remaining passive.
These evil effects are now by the
simple use of Chloroform all obviated.
Thus then the administration of
Chloroform in the Operation of Rectotomy
has greatly removed the chance of death
by shock, the result of extreme pain.
But this is but one of the many
satisfactory results to be derived from
its employment; others might be
mentioned, for instance, Operations which owing to their great severity used to be hurriedly performed in order to give the patient as little pain as possible can now be performed leisurely and consequently with greater satisfaction; the extent of diseased parts can be examined more carefully and without pain; the arterial surfaces can be seen with greater facility and accuracy, and nerves can be divided with ease, thus obviating the tendency to haemorrhage from the whole. The chance of patient all the while remaining perfectly unconscious of pain; the occurrence of secondary hemorrhages to which formerly used to be great, is now no longer much diminished.

Besides this, chloroform when used as a means to assist in the diagnosis and setting fractured limbs, and more particularly in the reduction of dislocations is productive of the greatest benefit in more ways than one...
In connection with this Inquiry, the following
taken from the text itself of the of our best surgeons:
"Motorama contributes greatly to accuracy of
diagnosis, obtaining two most important results.
The patient suffers no pain, hence free of constriction or restriction. The examination, and the
muscles being thoroughly relaxed, the surgeon
performs his manipulations with so much facility as on the dead body.
Beside, it is not unlikely that
subsequent inflammatory treatment will prove less than if the examination
had been made on a suffering and resistant patient."
for we know that the great obstacle to the setting of a fracture, but more particularly to the reduction of a dislocation is muscular rigidity and resistance, and however the patient might endeavour to remain as passive as possible and thus render the reduction comparatively easy, still the involuntary movements of the patient so hindered the process that much more difficulty was experienced, and much more pain endured than otherwise would have been, had the parts remained nonresistant to the properly applied force. Now both the obstacles above referred to, are at once easily obviated by the administration of Chloroform, which not only reduces the muscular system entirely, but also relieves the patient from much agony which always results to the reduction more especially of a long standing dislocation. *Chloroform it has been stated is the applicable render
Circumstances in which great pain must necessarily be endured is not applicable when the amount of suffering is not likely to be great, and in proof of this they argue that more deaths have happened from its administration in minor operations, than in operations of the graver kind, a tolerance of the anaesthetic is said to be exhibited in the one case, though not in the other. It is admitted by most, that tolerance is a law that pervades all nature more or less, and is sometimes distinctly perceptible in health and in disease, and one cannot help thinking that it is a great provision by which, when the necessity is greatest, the tolerance is greatest, support for example one labourer under a severe malady and that for the cure of this it was considered necessary to administer a large dose of a certain drug, the effect produced upon one suffering under the malady would be far
different from that which would be produced upon one enjoying good sound health, in the one it might probably cure it in the other it would as certainly kill. Now this similar argument is applied to the administration of Chloroform, namely that if circumstances are such as to warrant its use, no evil consequence will occur, but on the contrary if contraindicated by the operation being trivial comparatively, no tolerance of the Anaesthetic will in general be suffered. Perhaps this may be true to a certain extent, but the following must be considered as having something to do with the death which have resulted from its administration in minor operations, and which have been brought forward in proof of this argument, namely, that in minor operations assistance may not be considered necessary by the medical man, consequently the administration of the Chloroform is
I refer more particularly to a case that happened at Stirling & which at the time attracted considerable attention.
either conducted by himself or left to the patient, in the former case the medical man was both to operate and to look after the breathing of the patient. Now it is surely quite impossible that one man can both attend in any thing like a satisfactory manner, to the patient while under Chloroform, and perform an operation however even of a minor description, his attention is, or ought to be, so engrossed by his present employment that to the exclusion of all else be for the time is unconscious of anything but the proper performance of the operation. The consequence is that after the operation is over and his attention is directed to the condition of the patient he may find that he is already too far gone for the proper remedial means succeeding in restoring him. This accident has happened under circumstances in which the patient administered the Chloroform to himself; but
The mistake here was obviously not in the administration of the Chloroform for a minor operation, but in the attempt made by one to operate, whilst there was not at the same time one present capable of watching the patient and preventing any bad symptoms developing therein. So long as the patient remained anaesthetised, and there was one whose duty it was solely to administer the Chloroform and attend to the patient, the result might have been very different, as proved by operations of a similar kind having been successfully performed, proper attention having been paid to the exhibition of the Anaesthetic. I have already stated that prior to the introduction of Chloroform many things were invented and applied, and undoubtedly the one that ranked highest among these was Ether, which in many instances was crowned with success and rightly so, for its great superiority in every respect over
every thing else was marked; no doubt the apparatus of considerable age was requisite, a very large amount of it was necessary to render the patient insensible to pain, and the period of time requisite to do so long, yet notwithstanding it proved highly satisfactory in its day in as much as no danger attended or resulted from its exhibition. Some great objections have attended its use. Together with those already mentioned were added the distinctly perceptible and persistent odour by no means agreeable perceptible in the breath of those who inhaled it and also the very persistent smell which attached itself to the clothes of those who administered it. The introduction of Chloroform has for many and good reasons entirely superseded the use of Ether, for when the two agents are compared as to their respective excellence the advantages in favour of Chloroform are so overwhelming that had
it received such unjust criticism and opposition its general use would have proved useless, a considerable period before it did so. Some of its advantages may be stated shortly as follows.

A smaller quantity of Chloroform is requisite to Anaesthesia in safety.

No Curative apparatus as was wont to be employed in its inhalation is necessary in order to administer it. The action of Chloroform is much more speedy than that of Ether. Those who could not from the high price of Ether can now owing to the much greater cheapness of Chloroform derive all those benefits from it which accrue from its use. Few Medical men ought to go without a Chloroform case with them, seeing that without any inconvenience and often with great advantage a sufficient quantity can at all times be easily carried.

The Senile properties of Chloroform are these. It is a clear heavy volatile liquid extremely soluble, boils at a temperature
of 14.1. Its taste is very sweet, it's
odour is peculiar but agreeable, it
is non-inflammable its sp. gr. is 1.480.
Its chemical composition is as follows:

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<th>Element</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Carbon</td>
<td>2</td>
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<td>Chlorine</td>
<td>3</td>
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<tr>
<td>Hydrogen</td>
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or

<table>
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<tbody>
<tr>
<td>Argyle</td>
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<td>Chlorine</td>
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or

10 argon 2. Hydrochloric acid 3.

To C Cl V.

Preparation
1. Pass a stream of chlorine gas through a
2. Distil Pyrogallic spirit and chloride of lime.
3. Act upon chloral by means of lime or
an aqueous solution of Na. Potassium.

Chloroform as applied to Surgery

Some of the benefits to be derived from
the use of chloroform in Surgery.
have been alluded to in connection with the operation of Lithotomy, but when we inquire a little further into the matter we find that by referring to statistics they inform us that the rate of mortality resulting from Surgical Operations is in a morsel very much influenced by the employment of Chloroform.

The mortality for example attendant upon amputation of the thigh, Leg, Arm, without Chloroform is considerably greater than with. For without Chloroform the deaths were as follows:

- Paris: 1 in every 3 died
- Glasgow: 1 in every 3 died
- British Hospitals: 1 in every 3 died

But the results of these operations were very different indeed when Chloroform was used, for the mortality in these cases was upon an average only 1 in every four. Of the mortality of the Left alone were also very different for when Chloroform was not employed the deaths were 1 in every 2. But when employed they were 1 in every 4.

It will be observed therefore that the
employment of Anaesthesia by Chloroform, lesser the rate of mortality to an enormous extent, and were it not for statistics, we would be utterly unable to arrive at any such conclusions, for Statistical investigator be it remarked is the only sure guarantee for anything like a true conclusion being drawn from such proceedings.

On the value of Chloroform as an Anaesthetic in Natural Labour

The amount of pain experienced in the Second stage of labour, is generally speaking, more severe than that attending any operation to which the human body can be subjected to, for the passage of the head of the child at this stage along the passages especially of those who for the first time happen to be in labour causes such exquisite agony, that in some cases it is past all description or even on our part even conception, andlead
those who argue that pain in labour is in itself solitary, and a thing to be desired rather than otherwise, only to endure something even approaching it. Doubtless they would very soon come to the conclusion that the employment of Anaesthetics by Chloroform in Midwifery is one of the greatest blessings mankind ever experienced. But notwithstanding the great advantages of Chloroform in Midwifery it has been stated regarding it, that it is dangerous in many ways, that it hinders the uterine contractions, thus delaying the labour, and consequently rendering it always more tedious, that it is dangerous to the mother, and that it is no less so to the child, that it produces serious complications, such asConvulsions of the brain, that it leaves the body weak and the mental faculties deranged, that the fact of its relieving the attendant pain in this process is no object for that because
the pain is salutary and a thing to be encouraged rather than nullified, and that it may prove fatal. As regards those statements the ample experience of the more celebrated Anaesthetists who have employed Chloroform proves that they are all in the highest degree erroneous for none of those evil effects which were attributable to Chloroform have been observed by those whose attention has been directed to this subject, and whose power of observation was well calculated to recognize such evil results had they occurred. As regards the last named argument adduced against the employment of Chloroform, it may have proved fatal in some cases and in some hands, but was this not the case with those salubrious amenities life Chloroform was ever suggested, surely? Suppose the same argument was applied to Medicine, have none of those remedies which were used once and are still now used to restore calm and allay the extreme
argued caused by intense suffering proved fatal; undoubtedly they have, and because in some instances they have proved fatal, is what a reason sufficient for their being discarded, indeed, and not only so, but expanded from the case, those who hold this opinion in regard to Chloroform ought to hold it so applicable to all else; lest surely this argument is erroneous. That Chloroform has proved fatal is no sufficient grounds for at once abandoning its use, for many other valuable agents have also proved fatal, and yet after all in the large majority of cases have been productive of the results the most unexpected and convincing and satisfactory. As to the other objections to its use it may be stated, that Chloroform is no manner hinder. Utterness contraction, that it is not dangerous even to mother or child, that it does not produce serious complications such as convulsions or delirium; that
it in no manner influences the mental condition of the patient and that instead of lessening the body weakened and very much our fevered it tends to lessen the patient altc
greater strength, not only in strength but also in spirit, that the fact that chloroform does relieve the suffering only is not only a thing to be desired, but by all means and as to the argument that pain is salutary a thing to be desired it is accounted for only on the ground that the person who endured such an argument was fit not for an asylum rather than for intelligent society.

We now come to the more immediate benefit of chloroform in labour. It greatly facilitates the labor, relaxes the internal passages greatly, does not delay the separation of the placenta, in no manner prevents its complete and regular contraction of the uterus after delivery, modifies to short necessary following labour, greatly assists
the recovery by rendering the sufferer insensible to pain, the effects of which without the employment of Chloroform must have been so depressing, the use of Anæsthesia by Chloroform in Midwifery was better recognized by the following recapitulation. It consists in the relaxation of the maternal passages. It renders the patient insensible to the extreme agony of the second stage. It renders the examination of the presentation more satisfactory as well as painless to the patient and also greatly facilitate the diagnosis of post-natal presentation. It facilitates the extraction of the Placenta when necessary. It renders the introduction of the forceps easier and renders the patient insensible to the pain necessarily resulting from their employment. The amount of uterine prostration and physical debility as a result of parturition is greatly lessened, consequently the secondary dangers
are also greatly modified, for the greater the [illegible] traction, the greater consequently the reaction. Recovery is more speedy, more thorough, more satisfactory, and the chance of relapse after the employment much less.

The benefit of chloroform in Morbid Labour in delivery requiring operative measures as for instance Forceps, Laming Zygomatics. When the existing state of things are such that the above mentioned operations are requisite it is apparent that the sufferings of the mother must be considerably increased in consequence, and the call for relief is therefore greater. Perhaps the advantages of chloroform under these circumstances cannot be better illustrated, than by reference to one or two cases published in Dr. Simpson's Obstetric Lover. The first case happened to be a patient to whom it was first administered on account of having been previously delivered by Caesarean after a long labour.
Her second confinement took place a fortnight before the full time. The Chloroform was commenced to be inhaled as soon as the Os uteri began to be well dilated and the pain very severe.

In twenty-five minutes the child was born. The crying of the child did not arouse her mother nor did she awake till after the placenta was removed. She was then perfectly unaware that her child was born.

She stated her sensations to be those of waking from a very comfortable sleep. It was for a time a matter of so small difficulty to persuade her that the labor was over and the living child presented to her in her own.

A very illustrative case also as to the assistance afforded by Chloroform in Forceps Cases may be mentioned from the same author.

Patient with deformed Spine and contracted pelvic outlet. At her first confinement two different medical gentlemen had failed in effecting delivery by Forceps. Before being seen
she was a considerable time in labour; the head was low in the pelvis, in the right occipito posterior position of the presenting part was the forehead, one orbit could easily be felt behind the symphysis pubis. It had remained in this position many hours. The fetal heart was still distinct but small.

The patient was then placed in a deep state of anaesthesia, and the forceps being applied the head was turned a quarter of a circle and subsequently extracted. When awakened from her sleep she expressed surprise to find that she had been delivered. She was, however, separated, the uterus contracted firmly, the uterus made an excellent recovery. In concluding these remarks on the inhalation of Chloroform in Midwifery Labor, allow me to mention an advantage in Cranioscopy Case VII. Comparison between

The conjugate diameter was 11 inches, the head of the child could not enter the brim, and perforation was requisite.
The patient made some resistance and struggled a good deal at first, chiefly probably from some uneasiness, however, she soon began to breathe quietly and gradually fell into a kind of dreamy sleep. The head was perforated and the Ceratol and the Osmicstotherm were alternately used for the space of three quarters of an hour before the head could be got through the bone. She was at length delivered; the placenta separated in about 10 minutes afterwards was comfortably handled and changed. Remaining all the while perfectly unconscious and did not awake for a quarter of an hour after the operation. She died so she quite quietly and was greatly surprised to find that all her miseries were over. There was no hemorrhage and the recovery was in every respect satisfactory.

Chloroform beneficial when applied in the treatment of Perforal Contraction.
few things are more painful to witness than Delusional Convulsions, the delicate frame and still more delicate feature, the strong frame, though its feature, alike, are distorted and deformed, and the occasionally bloody tongue is lolling about in an uncontrolled and uncanny manner. It is of the highest consequence that something should be speedily done for relief. This we can happily now afford by means of Chloroform. For the Metastatic Morbid in this complaint is recognized to be Carbonate of Ammonia, which is the result of the transformation of the urea in the blood.

If in the manner in which Chloroform so successfully prevents the Convulsive attacks, appears to be by rendering the urine Saccharine, and by doing so presents the change of the urea into its Carbonate of Ammonia. This property of Chloroform is wonderfully remarkable, all the more, when it is known that all other Antispasmodics without one exception, are in the highest degree injurious and fatal when employed.
Actions and uses of Chloroform are these.

Anaesthetic, Gaseous, Salutary. Antispasmodic. It is a diffusible stimulant and is very effective in arresting vomiting, nausea and diarrhoea.

Locally, it is of much value in Carcinoma of the Uterus uteri, in Carcinoma of the female, and in Carcinoma of the male; and in Carcinoma of the nipple it is also used with relief in uninjured or else of it forms a soothing liniment. It affords great relief also in cases of Hysterical by insipting its vapour several times a day into the vagina.

In Ditthole Rectum too it is very curative and in the form of vapour it always very much the pain of Strumous Locotion of the Ovary, and relieves the intense photophobia attendant upon this affection. It has been successfully employed in this role by being dropped into the decayed tooth by this in this way it allays the intense irritability of
the expected remedy. In severe cases of that affection so dangerous to children I mean diphtheric Stoidia it is very successfully employed in virtue of its antipneumonic properties. When used in small doses it considerably relieves the cough attendant upon it, also pneumonia, bronchitis.

Duncan McEwan Jr.
14. Law of Tolerance

C. Inthatcher

B. Afghanistan, Middle East, Tibet, Cambodia, Vietnam