Thesis for M.D. degree of the
Edinburgh University by
George More Reid.

"On the Radical Cure of Hernia
with special reference to some of
the methods that have been
adopted for that purpose"

Edinburgh
April 2nd, 1883
The writings of those who declare against radical cure, their theories are seen to be based on the answer that they believe should be given to the second question. In short, they say that because operations for radical cure have not as yet proved a complete success, and in some instances have been not only dangerous but fatal, etc., as a suitable time, is usually sufficient to relieve the sufferer, therefore operation should not be undertaken. For example Bryant in one of the earlier editions of this textbook says, "I believe that when a hernia can be kept up by a press, and the patient is likely to remain in a civilized country, where press can be obtained, any operation for the radical cure is unwise."
of herons is an unjustifiable one; to risk the life of the patient on the theory of a cure with the probability that the patient will be rendered less liable to its recurrence, when a truss has to be worn subsequent to the operation, as a matter of safety is a practical delusion. An opinion so strongly expressed as this, and coming from a surgeon in the position of Dr. Bryant, ought to be received with all respect. But if we put aside for the present the question as to the safety and success of the operation. that has been performed for this purpose, and considered only the question of desirability, it can hardly be doubted that most surgeons (including Dr. Bryant) would answer in the affirmative.
The matter is put in a nutshell by asking, "Which is better to lead or not to lead a hero?"

If it is better not, then a radical care is a desideration.

Hence can hardly be considered otherwise than as bad. For authors call it only an inconvenience. This indeed an inconvenience, and a very persons one I may prove to be.

It incorporates its victim, from taking his proper share in the actual duties of life; it prevents him occupying many offices which he might otherwise do with advantage to himself, and to society. In many cases I cause the insurance premium to be raised, which shows that they consider it an extra risk.

At one time it was considered to be an immoral disease. Such
views are no longer held, but a
feeling of delicacy or shame
(proper or improper we doubt but not less
powerful for all that) prevails
among those who believe it to be an
incorrigible disease, applying for
the relief they ought to receive
from nurses. They are persuaded
about it, (and probably more so from
their believing it to be incurable)
that they make it a secret and
hide it, tell only the great con-
sequences of a strangulation
appear, and compel them to apply
for relief. "But worse than this"
more Peyton points out. "It frequently
gives rise to a morbid mental
condition. The patient becomes
a prey to every depressing influence
when brooding over such a state
is certain to reduce his concerns.
himself to be the victim of a defect which can only result in physical incapacity and misery. Hypoplasia and its innumerable forms of expression follow, and the life of the hernial man is, in many instances rendered an unhappy and too often a useless one. Besides this, there is the fact that not seldom, whether from want of care, or insufficiency of skill, a strangulation of the hernial may occur. This condition, if not relieved by thoracotomy, or some other operation, usually proves fatal, and even after thoracotomy a fatal result may occur. Such are some of the facts and inconveniences to which a hernial individual is subject.

Further, hernia is a disease of deformity of varying extent...
presumed. It affects a very large proportion of mankind, some writers calculated that from as light to a
sixteenth and 60 affected. Malagasy
Pernot considered that one in every thirteen
people of French makes was affected.

Some slight idea of the extent
may be got when it is stated that
Thompson of London
made at the rate of 53,000
shores every year, most of which
are for this country, and this is
independent of those made by other
marketers.

The writer, having his residence
in an upcountry town in Victoria
Australia, with a population of
about 10,000, on an average,
settled on 300 horses every
year.
Many recruits for army service are annually rejected because of physical defects. Statistics of examinations for military service, in the United States Army during the War of the Rebellion, show that of 306,508 rejections, 38,132 or more than one-eighth were because of hernia. Thus there is a great loss to the community of men who might otherwise be able to perform it well. Such considerations as these, make it extremely desirable that hernia should be cured. In some cases this is done by means of a truss, and if a truss were designed so as to fit in all instances, there would be no need to discuss the question of operative procedure, but in the vast majority of cases it is
only palliative. We are left then to consider the second question: ‘Can a radical cure be effected easily, safely, with promise of success?’

The answer to this can only be arrived at after a consideration of the methods that have been adopted, for the cure of hernia. As the inguinal hernia is the most common form, and the one to which most attention has been paid by those who have aimed at a radical cure, it must be most convenient to consider it. Only bringing in the others as they may seem to bear on the subject. The greater number of operations up to 1858 were performed on very unscientific principles, and many of the...
Older methods were both absurd and barbarous. They were based on an approach to a correct knowledge of the cause, and pathology of hernia, and many of them were positively dangerous. Yet successful results have been put on record. *Hildanus tells of a case where the horizontal position in bed, with low diet, effected a cure in five months. Blood letting, purging, &c. were adopted in other cases in addition to the position. Compression and the use of antiseptics was a favourite with many, and could hard close but little mischief. Had not Posey written so powerfully as to cause gangrene, some opened
the sac, and having reduced the contents disclosed it along both the sides. Others anatomized the interior of the sac a very dangerous proceeding. Less dangerous but equally valueless, were the openings of the "Royal stitch" and "Prussian Blue". The former consisted in opening the sac and stitching the edges closed, as to obliterate the cavity. In the latter a golden wire, sometimes a leader, was passed behind the sac and cord and tied tightly enough to close the sac, but not too tightly to prevent the circulation going on in the cord. Other methods had for their object, the closure of the sac by causing adhesions inflammation of its interior. In some cases this was effected by passing a section and leaving
It is for a time. In others an iodine was injected into the interior of the sac.
M. Belgrand in Paris, Prof. Lanfranconi in New York, first introduced this method using a solution of Iodine of Silver or Iodinum. And in 1864 M. Robert presented to the French Academy an account of three cases in which the tech successfully performed the operation. Two of them were congenital hernia, and one of these suffered also from hydrocele, which was cured at the same time as the hernia. M. Robert did not allow the iodine to remain permanently in the pad, but kept drawing it by syringe shortly after injection. M. Bouvet of Lyons endeavored to close the sac by increasing with pins below the internal inguinal ring.
a procedure which could only convert a vesical hernia, into a labourec. None of these methods, can be considered as strictly scientific, they aimed at obliteration of the sac. A knowledge of the pathology as well as the cause of hernia, would have shown their inventors, that when they had succeed it was only by closing the sac, already formed, which did not present the formation of another. Having as they did open rings, and a canal down, which direct might force another plethoric protusion. Putting aside the danger of having, they could only succeed in cases where the canal happened to narrow enough to prevent the formation of a second one. Later operators said that it was not the sac, but the condition of the
canal that was at first. The idea was only an accident, one which had to be provided for, no doubt, but not the main feature of the hermia. They said that somehow or other the canal must be closed, but it was not at first clear how this could best be done. Earleen operators endeavoured to do it, by simply plugging the canal, plugs of various kinds have been used. In some cases of enteroscoiosis an endeavour has been made to insert the organisms into the rings, which it was hoped would then contract, so that the hermia would not reappear. It is stated that Cooper, Stephens, Kelcey, and Gazvand obtained cases by this method. It is however applicable only to a limited number

Warren
of cases, is uncertain and may be the production of serious inconveniences by dragging on the stomach or other viscera. The lesion has been recommended to be used as a play but such an operation is not one calculated to find favour. The thermal pad itself has been used for the same purpose. In 1829 an ingenious operation was tried Warren by Belmas upon dogs, and both

succeed. It consisted in the introduction of a small piece of gold electrodes planed into the upper part of the pad; the plastic matter pointed out by the irritation set up, from the presence of this body illustrates the material of which it is formed, and becomes incorporated with it. Organization is said to take place, and a resisting
Barrier to the progression of Ulcers is formed. The operation was performed first on a boy of 14; his life was in danger for ten days, but he ultimately recovered, and is said to have been radically cured. In at least one case, a plug of skin was formed and turned into the external canal with success. The patient was a lady extremely anxious to have a radical cure performed, and the operator was Jameson of Baltimore. Still later attempts have been made to plug the canal by an invagination of the skin, and tissues beneath it. In 1837 Gérdy proposed and performed an operation, in which a fold of skin was pushed up into the canal, carrying a portion of the glands of the external sac.
Before it, two patures were then passed this time to the other of the grow, tied over a compress and made to retain the inflation. 

A solution was prepared to have taken place within the canal. 

Sometimes in addition, an attempt was made to cause adhesion of the surfaces of the unsaturated ether by painting them with strong ammonia. 

Many often when the patures were removed the plug gave way and seldom remained any length of time in the canal. It not infrequently too, proved fatal, and has long since discontinued fallen into his memory. In 1838 Harveys's Bone proposed a modification of Steel's method, in so far as that the recom

mended the use of an instrument whereby the inflation of the skin
might be carried out more easily and effectively. This instrument consisted of three parts (or four if you include the screw) - a cylinder for the canal, a carved needle running through the cylinder, and a coach usually made of a concave shaped to lie over the skin of the grooves and compress. The skin and tissues were first invaginated into the canal, the cylinder was then pushed in, and the half carved needle passed through it. To transfer the upper portion of the invagination, the canal of the skin of the groove. It was then passed through a hole in the concave coach, the other end of which was fitted to the lower end of the cylinder, by means of a screw, and pressure was effected. This differed from Wedg's method in the phlegm being.
Resin in itself adhesions had formed, which it was hoped would permanently retain the irrigated skin in the canal. As a matter of fact, they did not. They proved too weak. The canal was dilated rather than constricted, and the flaps left open. Wartezin operated on 14 cases. Warren in Rome, not one of which was permanently cured. The irrigation in being was graduallydescended. These operations were founded on the erroneous principle of dilating a canal for the purpose of reducing it in calibre, and as a consequence they failed. Neither of these are not performed.

In 1858 John Wood by a careful study of the appearances and condition of the sagittal canal in horses came to the conclusion that any
operation to be successful must not only close the rings, but must unite the interior of posterior walls of the canal as well. More especially at the upper part, where the Reetar's by its contractions, acting on the posterior wall, greatly helped the delibration of the canal after it had begun. Sir W. Lawrence had already indicated this, in the great work on hermia. But it is to John Wood, that the credit belongs of being the first, to devise and perform an operation whereby the canal might be closed in the way mentioned. He had little previous operators, to consider the presence of the sac, and got rid of the difficulty by invaginating it, along with a portion of peritoneal fascia into the canal, thus using it as a plug.
But at the same time bringing the walls as closely together as possible by means of nature. In consequent cases where the neck of the one and canal were very narrow, he was able to perform the operation without misadventure. The necessary instruments for the operation were a small knife like a lancet, a flat curved needle, a handle, and a piece of strong copper wire, silvered, or pliers were itself. In his earlier cases, Tupper ligature was used, but this seemed to produce much greater irritation than was necessary. He therefore adopted the metallic nature which was so strongly recommended about that time by the late Prof. Simpson. The operation with ligatures differs slightly from that by wire, but as it is not here performed
there is no need of going into details regarding it. The patient is prepared as he would be for any other operation, and put under the influence of an anesthetic, pubis and prepuce of affected side are then cleanly shaved, the shoulders are well raised, the bowels is induced, and kept out of the way, by an assistant. The incision is then made, in the skin of the perineum over the sound of the hernial sac, or a little more than an inch below the crease of the pubes, of the hernia be a bladdercele. This should be large enough to admit a finger and needle. The fascia is then displaced from the skin to the depth of an inch all round the incision. The finger is then passed through the incision behind the sac, and pushed up into the canal carrying
see and surrounding fascia before it, as far as possible. The edge of
the internal oblique is then hooked forward, making the edge of the
conjoined tendon prominent. The
needle is then passed through the
decision, along the inner side of the
finger, through the parotid fascia,
undoubtedly upon it, and probably
down through fascia, and made to
fix upon the conjoined tendon.
A firm grip of this must be obtained.
The point of the needle is then made
to pass out through the skin of the
groin, which is drawn upwards and
forward, before the puncture is made.
One end of the wire is then fixed
in the eye of the needle, which is
quickly drawn back through
conjoined tendon, conical, and portal
wound. It is then disengaged from
The wire was passed a second time into the canal, half way along the other or outer side of the finger up to a level with the internal opening, where it is made to pass through a poneurosis close to Conjoined. The skin of the grove is drawn downwards and outwards, to permit of the finger coming through the femoral joint made. The other end of the wire is then fixed to it, and pulled through the tissues, to the perineal incision, leaving a loop outside in the groin. The needle is again disengaged from the wire. The tissues in front of the cord, including the portion of the Hernia sac that is not invaginated, are then taken up between the fingers and thumbs, the needle passed beneath them and one of the ends of the wire, fixed in the eye.
of the needle, and drawn through.
Sometimes the fingers of the assistant
may be included more especially in
direct hernia. The one may be
perforated or not. The two ends of
the wire are then pulled down so
far as just to admit the fingers of
an assistant within the loop left
in the groin. This loop being firmly
held, the ends are twisted three or
four times below; the wire is then
pulled up by the loop, and thus
the invagination is increased and
made pleasant from slipping.
The loop is twisted three or four
times also, and worked with the ends
over a roller bandage or a pad of
linen. A broad open bandage
is applied over the part to keep the
pad in place and make compression.
The after treatment is conducted f
On general principles, for some days, the loops are untwisted about the eighth or tenth day but not removed for five or six days more, after which an astrigent may be used to hasten the healing of the fistulous tract left by them. As soon as the parts will bear it, Wood recommends the use of a light rope of proper shape. In congenital hernia, invagination is not practised. The necessary instruments are a couple of pins half curved with a head at right angles, about three or four inches from the point, the head being made so as to form a loop large enough to allow another pin to pass through. The hernia being reduced, the finger is passed within the canal up to the internal ring and parts determined. One of the pins is then
pass through skin and tissues in front of the canal, and slipped down alongside of finger so as to transfer conjunct vertical and internal pillar of water ring, then over junction of horizontal pin, and out through skin of peristernum. The second pin is passed in at this point, and the finger placed below it, placing the peristernum into the canal. The pin is thus carried through the water pillar, and up towards the puncture by which the first pin entered, and through loop in angle of the pin, so that both pins may be locked together. The pin is fastened by both pins. The points are secured and the bead pulled. 

Round once which is done easily by turning the upper pin towards the neck.
The punctures being guarded by lint.
A small pad is put over the groin and kept in position by means of a rubber bandage.

The effects produced by these operations are said by Wood to be (1) the union of the conjoint tendon and inner pillar of superior rectus.

In direct cases, the edge of the rectus muscle. With pericapsular ligaments, and the outer pillar of the ring.

(2) The prevention of distraction of the superior and posterior portions of the orbit canal by making the rectus act on the anterior wall of the canal, as well as the posterior through the superior sinew.

(3) obliteration of the sac by the adhesive inflammation set up by means of the wire or pins. Which with the compression of the neck of
of the sac. Prevents the protrusion of the bowel into it.
141 strengthening of the consolidation that forms a barrier to terminal return by the invaginated portal fascia and the opposing raw surfaces of which unite. 15) Support of adhesions further up in canal, by union of fibers of terminal rings, especially in direct hernia.

We have now to ask ourselves, "Is the operation one that can be performed with safety to the patient?"
The theoretical objection of its being performed near to structures (cords of epigastric artery, spleen vein, etc.) that it would be dangerous to meddle with, does not seem a valid one. It might be said with equal truth, that earplug abolishing should not be performed, because
the internal carotid is in the vicinity and has been wounded by some surgeon. In the hands of a skilful operator these structures need not be involved in the operation. The results are however sufficiently striking to present any but skilful operators performing. We are now likely to arrive at an idea of the amount of danger by looking at the results that Wood himself has had. In the most recent account given by him, he had performed 310 times. In 167 of these, the results had been perfect as to success or non-success. Out of the 310, there had been only 3 deaths, and these occurred in the first hundred cases, three in the last 210. Death in the first case at least was due to an accident
that might have followed any other operation, and not to anything special in the operation itself, or its mode of performance—pneumonia occurring three weeks after. Apart from the danger to life, there is risk of atrophy of breast. Should the cord be interposed with, but insufficient cord should enable the operator to avoid this.

With regard to the success of the operation, Mr. Wood reports that of the 167 (out of 310) of which the results have been published, there have been 119 cases after a lapse of from 2 to 24 years. Recovered, but to a much less extent than formerly occurred in 448 cases. Looking at the matter theoretically however one cannot be surprised that there should be a recurrence
In many cases to the extent of a bulging on the gums. The operation seems to be imperfect in the respect that the internal ring is not sufficiently acted upon. (closed.) Doubtless attempts to effect this would be exceedingly dangerous, but it nevertheless is one of the drawbacks of the operation for only the external ring and the lower portion of the canal are completely closed, and there is no change that the operation can be said to effect in the formation of a barrier to the protrusion of procerus below the arch of the border of the internal oblique and conjoint tendon, and thus a chance is given to nature to effect a cure itself.

Even in the hands of Wood himself, it cannot well be said
to do more, and thus all that the most puerile operator can do is, that by this operation a better chance of cure is given than by the wearing of a truss or any other means. That had been previously adopted.

Next to Wood's operation may be placed Spartan's not chronologically but because of its manner of performance. Spartan considers that the drawbacks of Wood's operation are that "a hold is secured on the fibres of the ring at two points only while the undigested tissues are forcibly drawn up in such a way as in some measure to defeat the object the surgeon has in view of approximating the sides of the canal as much as possible."

To avoid these drawbacks, he proposes...
that the walls should be brought together and the insanguinated tissues and one secured by means of a corticoid instrument, nickel plated, with a fine point, moveable handle. The preliminaries of the operation are similar to those of Woods. The incision is in the parotid and the insanguination of the fascial fascia. With the forefinger in the canal an examination is made of the parts around. The proper instrument is then thrust through the skin of the graft, and tendon of the external oblique, approaches the internal ring; it is then made to pierce the conjunct tendon as high up as possible. The internal ring is said to be practically closed when this is done. The screw is then turned through the insanguinated tissues, thus, through the outer pillar.
to the inner plexus of arterial plexus and through it, after which the point is brought out through the wound in the peritoneum. The point is protected by a ball of India rubber and a pad and bandage placed over all. The instrument is left in for a week, usually after which it is removed. A similar operation is performed in congenital hernia, the meshes being invaginated instead of the sac. In sound cases instead of leaving in the body, it has been tied with cat gut or tendon ligature and withdrawn along the tract made by its entrance, but passage through the canal. Each lead of the ligature is then tied to a glass rod, laid over the groin, but the results do not seem to have been so satisfactory as when the
screw alone was used. In the British Medical Journal of July 23, 1882, Mr. Pantor reports 57 Operations and gives details of 34. None of them have proved fatal, and in no case has the temperature risen as high as 102.5°F. 30 are considered as cured, 14 as relieved. None are made worse by it. Of the 36 referred as cured, 16 two were said a slight tendency to return, but in one this disappeared after the use of a press. As to age all the cases were under 30—1807 there were under 10, 9 ranged from 10 to 20, while 7 were over 30. 29 were males, 7 females. Of the females 70, 3 were females. 14 of the cases were congenital. It may be noted that Mr. Pantor prefers that no press should be worn after this.
operation, or if one is necessary, it should be a simple fastness without a spring. As to the question of safety, this operation must be regarded as one of the most satisfactory that has yet been performed for the radical cure of hernia. There has been no deaths, and slight of any fever. Of course it may be argued that it has been performed principally on healthy children. So it has. But this is no objection, for no one would think of performing such an operation on an unhealthy person. It is also an operation that is more easy of performance than Woods, and must be considered at least as successful. The same objection would however seem to apply to it as to Woods. What it is unethical
Ring and lower portion of the canal first and closed. The internal ring being to some extent left open.

The Witten saw Mr. Amundale perform this operation twice during last winter season. The first case was a man between 20 and 30 with a large perineal hernia which almost incapacitated him from working. He was discharged cured. The other case was a boy about 12 years old also with a perineal hernia who had had an operation for the radical cure unsuccessfullly performed in Glasgow about a year before. The charge released so that the hernia could be kept up by means of an external bandage. He has been for one of the best of these being recorded in the British Medical Journal for Dec. 25, 1880, by Dr. Whyke of Elgin. In a case
If double congenital inguinal hernia
in a boy of 10. he passed a specially
prepared carbolic-dustedature in a
bootslace fashion through walls
of canal and incised gap of
hernia, with marked success.
It is not perhaps at first sight
readily understood, but once it is
it will be found comparatively
easy of performance.
Listerian antiseptics have
been the means of reintroducing
some old operations, that have
been given up because of their
dangers. None of them are equal
to the one recommended by M. Lister,
which owes its success entirely
to antiseptic surgery. That is
ligation of the neck of the sac, and
excision of the sac, and stitching
together the margins of the abdominal
opening. Objections to other methods need not be gone into as they are not now performed. In this operation the neck and upper portion of the sac are exposed by a deep incision, the sac opened and the contents retained. If there are any adhesions of viscera to sac they are ligatured and divided. The neck of the sac is then thoroughly exposed and a ligature passed round it as close up as possible. The sac is cut away immediately below this and the margins of the opening and stump of the sac are sewed together. With a continuousuture.

By the abdominal opening, Mr. Unandale pleads to me on the external ring for tricks detailing one of his cases (of) he writes, "the neck of the sac was ligatured..."
the paw cut away and attached to the margins of the external ring in the usual way. Several successful cases have been recorded. But the same theoretical objection seems to apply to it, as to Woods' view, that the internal ring and the lower portion of the canal are closed against the hernial protrusion. That the operation is practically safe there is little room to doubt. That it can be performed with ease is seen whenever surgeons do it. That it is a success there is some doubt among surgeons. Mr. King, in the American Post,
Those in whom owing to its health it is not advisable to proceed to the major operation of Wood. It is not difficult to perform, but it does not afford to form an imagination material nor as copious an excitation of lymph as Wood's operation. He also considers that no patient should lack the benefit after the stitching operation.

On the other hand, Kenneth McLeod in the Indian Medical Gazette of June 1, 1897, considers it the most promising operation for radical cure. According to him, it comprises:

1. An assurance of obliteration of the scar;
2. accrescence at the internal ring;
3. flagging of the canal from within, and (4) approximation of the pedes of the canal after the manner of Wood.
"This latter is not brought out in Mr. Turner's paper as he
mentions only the external ring
and stump of the pen). It procures
all the advantages of Woods' operation
with greater precision and accuracy.

As much as everything is done under
the eye, it removes the two great
disadvantages of Woods' operation.

Of uncertainty regarding the treat-
ment and fate of the pen, and in-
vagination of structures from
without which have a constant
tendency to be pulled away, and
it provides a pledge for
the other, which assists in closing
and coiling the canal and most
materially aids in preserving pub-
reginal descent.

It is however a doubtful matter
whether the objection that has
Rein shown to lead to Wood's and Spear's operations does not also
appear here, but as to complete closure
of the internal ring. The operation
would appear to be more applicable
to cases of general hernia. Where
the canal being so short the
Graduation is more likely to play.

Warren: The last operation is one that comes
for Hernia from America and is connected
with the names of Keaton and Warren.

Keaton: It has not as yet received sufficient
or Raptura. Keaton in this country. There would
seem to be two reasons for this neglect,
1st its somewhat unfortunate history,
and 2nd its not being properly under-
stood. It consists essentially
in the hypodermic injection of an
constituted upon the rings, and walls
of the canal, through which the
Hornci has come that is to say those portions of fibrous tissue lying directly in contact with the exterior of the neck of the hernial sac. For the operation a hypodermic syringe and needle are required. The needle is not that ordinarily used. It must be stouter and less liable to break or break. It should not open at the point, but by two or more apertures in the side, a little way from the point, so as to throw the injected material at right angles upon the tissues. Dr. Warren recommends a specially twisted needle, because it is made to pierce more easily than the ordinary flat or round shaped needle. The point should not be too sharp. The critical need
is a preparation of oak bark usually mixed with the liquid extract and may, after a suitable quantity of morphin sulphate added to it. The amount to be injected varies from 10–30 minutes, and depends upon the calibre of the canal. For this operation, it is said to be applicable to pleural (thoracic as well as perineal) and upon the condition of the parts. The bladder is first returned to the abdomen, as far as possible, the part along with it, in an effort being made to empty the canal, as much as possible. If it cannot be returned as in the majority of cases it cannot, then is must be left in the canal. The stone is then inunctioned into the canal in front of the finger. The operation


cord and pad, are packed aside, as to leave only thin flakes between the outer pillar of external ring and the finger. The needle is introduced at this point so as to later the canal at once, grasping the pillar, but not cutting it. The finger is then removed and the needle passed gently on towards the internal ring. Care must be taken not to touch cord and not to later pad, nor penetrate the fascia transversalis. When it has been pushed up to the fascia, the injection begins and is continued as the instrument is withdrawn. If necessary the point may be moved about to as to sweep over the tissues. The injection stops as the needle is withdrawn from the external ring.
...so as not to act on the tissues in front of the canal. A pad and Arabic bandage is then applied and the patient kept in bed for 10 days or a fortnight. A case is made to be obtained in this way sufficient to allow of a truss being placed in it from three months to a year after the operation. Sometimes it is larger hence the operation must be repeated. As to how this is effected there is some difference of opinion. Some time after the operation there is a slight constitutional disturbance, the temperature rising to 100° or 101° F, but this passes off in a few days. Inflammation ought not to occur, but there is a slight tenderness on pressure over the canal. An effusion of
Graph is thrown out, which becomes organized, forms adhesions under limits as in Woods operation. The anterior and posterior walls of the canal thus patching off the hernia. Heaton himself would seem to indicate that the plastic material thrown out acts as a barrier, and that the irritation of the fibres around the walls induces them to contract, so that along with the plastic matter the hernia is prevented of returning, and that in this way time is given to allow nature to effect a cure. This contraction he asserts, actually takes place to a certain extent, directly after the operation, and continues to make progress for weeks, and even months afterwards. The neck of the sac is sufficiently compressed
by the material thrown out to prevent bowel passing & so it had locally. It may be done as in other operations a new cord. The operation has neither been performed without any fatal result, so that no opportunity for an immediate examination of the parts involved has been otherwise. Mr. Leavon obtained an examination of one of his cases, five years after the operation which had been a complete success. The account he gives of it is somewhat meagre.

I called in Mr. Winslow Lewis to witness the autopsie upon examination of the groin the appear cases were so natural, that it would not have been suspected that he had ever been subject to hernia. The fibrous parts were
as firm, tough and resisting on the side where the lumen had existed as on the side which had never been ruptured. But it is worthy of observation that although the healed side did not retain any superior thickness over the normal side, yet the pillars had lost all the thinned sharp edged appearance, which is always presented to a greater or less extent in all heretics, that have existed for a length of time.

The interstitial deposit of glandular material was able to persist because there was need and use for it in the economy.

He tells us nothing of the case so that it is to be presumed that this was a case where he was able to reduce the par as
Well as the hernia. Yet more attention has been paid to a correct knowledge of the modus operandi with less to attain.

There is only one instance of its performance on record in an English journal (Lancet Vol. 1881, p. 596).

The patient was a sailor, aged 21, admitted to St. George's Hospital under the care of Mr. Bryant on 15th August 1830, with a right inguinal reducible hernia, which had first appeared about eighteen months before. When first seen it was about the size of a hen's egg. After walking it became larger. As the mass was anxious to have something done, Mr. Bryant permitted Dr. Warren, who was in London at the time, to operate. The report states that Dr. Warren reduced the hernia.
and inaugurated the concept. The tissues and nervous far into the canal, but this not so he himself believed. 
Reduce the size along with the herm.

The needle was then passed to the inner side and the injection. This
knew, or tissue to inner side of

external ring and along canal. A

pad and bandage were then put

Anesthesia was used and the
patent said he felt very little pain.
During the night and following day
he felt more pain and the temperature
rose to 99.4. On the 23rd the report
pays. "Morning temp 98.6. Passed a

good night. There was considerable
inflammation extending from the

internal ring on the right side,
downwards and over the whole

peritoneum. Lead lotion reduced
this and the inflammation had
Subsided by the 23rd. On the 24th, a thickening of the cord on the outer side was noticed, but the bladder was not affected. This thickening subsided next day. On the 27th, eight days after operation, the abdomen was much distended. There had been no motion for three days and patient was unable to pass water. Necessity by soap & water became and catheter. A bloody discharge thus made its appearance but there was no pain on micturition. The discharge ceased by the 31st. On Sep 12th, the patient was allowed to go about the ward with part of left bandage on. A thickening over external ring could be felt. He was dismissed on the 15th with orders to wear a press for six months at least, and to report himself from time to time.
He returned in six weeks.
The thickening could still be felt,
the movements still over the abdomen
abdomen being that a tendency to
produce, but the patient stated
that the hernia had not been down
since he left the hospital; he had
however constantly worn a brass.
He did not again return, so that
Mr. Bragg was unable to watch the
progress and result of the case.
So far as it goes Mr. Bragg cons
idered it satisfactory, but he
hesitated to pronounce an opinion
as to the value of the operation
not having material or results to
enable him to do so. He points out
as a weakness in the operation
the danger of injuring the sac
or even the peritoneal cavity itself.
This report is to a certain extent
unsatisfactory. It does not correspond with Needham's description of the operation. One is led to understand that there was a permanent invagination of the inner canal. Keston urges against George Wantz's and Woods' operations because of this invagination, stating that "the tendency of nature is to get rid of these viscera (invaginated) which are like foreign bodies in the canal, and the patient usually recovers". Moreover, as soon as the needle has passed to the external ring, he recommends that the invaginated finger should be withdrawn. In the second plan, we are left to infer that the swelling of the abdomen on the 5th day, and the urinential discharge were the result of the operation.
that an ast表彰4 whether inquiries were made as to the presence or absence of a gunshot. It is only from the context that we see the swelling of the abdomen must have been due to the fact that the condition of the kidneys was not been to join three days. Thirdly Newton would probably have said the irritation here had been too great, as we find that inflammation occurred close to the right side of the peritoneum. It must be to a certain extent regarded as a triumph to have obtained an opinion from Mr. Briggs who formerly weighed against radical operation for tenets. To the effect that so far as it treated the case was a success partly.

Were it not for its somewhat important historical, it would have been
More extensively used before this, and we would have been better able to come to an opinion as to its value. It was important chiefly in that Attenor, for some reason best known to himself, would not make his professional knowledge acquainted with it, at the time he was requested to do so, particularly in their opinion making it a secret remedy for a number of years. It would be impractical to Attenor on the controversy that took place it is sufficient to say, that a little mutual confidence would have helped matters greatly, and put the operation in a position where it could have been more easily tried, and its value tested. This probably because of this important history that proper attention has
not been paid to it. Even John Wood himself does not seem to understand it for we find them in the London Med Record for 1879 page 390. Calling it "a Record of Vegetable destruction" rather than of injecting the hermial sac with the characteristic variation of the end of vegetable destructions of code bark and locus it states classifies it in his "Dequest" with operations for the injection of the neck of the sac. Surely they cannot have read with anything like a degree of care what Heaton has written that this operation must not be confounded with that of injection of the sac. Subcutaneous injection of the hermial sac is neither a simple nor advisable operation although successful in many cases.
THE RADICAL CURE OF HERNIA BY HEATON'S OPERATION.—Dr William S. Bull reports the results of twenty-one cases on whom he has operated since 1879. He explains that he has had forty patients in all, but nineteen of these had not been seen since leaving hospital, and extended search failed to find them. The operation has proved in his hands, as in those of Heaton, a very safe one, there being no deaths and little constitutional disturbance. In only one case was there enough local inflammation to warrant the application of a cooling lotion for a few days. No swelling has been perceptible externally, but a plug of induration has generally been felt over the site of the canal, which has disappeared within two weeks. A very slight epididymitis occurred in six cases, but subsided in two or three days. One patient had retention of urine for five days, and in another the rupture (omentum) came down the day after the operation, and was irreducible for a month. Of the twenty-one cases, five were cured, seven improved, four temporarily improved, and five were failures. Of the seven improved, two might be considered as cured were it not that the patients continued to wear a support. Three others Dr Bull hoped to cure by a repetition of the operation. The patients were all males but one. The ages varied from four to seventy-three, the majority being from twenty to forty. From his experience Dr Bull feels justified in recommending the operation, and is sure that in another series of twenty cases he could greatly improve on this record. In the discussion which followed the reading of the paper in the N. Y. Surgical Society, several other surgeons gave their experience. Dr Weir reported the results of forty-one cases, which he divided into two series of twenty-eight and thirteen. Of the first series eight were successful, and the others improved. He did not place much reliance upon the teachings of this series, as it required some time to properly carry out the technique of the operation. He had not at first found it an easy matter to throw the fluid deep into the canal. The second series of cases were operated on with an improved instrument, and he felt that they were more reliable. Of the thirteen six were cured. In two the condition was improved, so that a truss could be worn, which was impossible before the operation. The rest were failures. Dr James L. Little reported four cases with two successes. Dr Briddon reported three cases, all failures. Dr L. S. Pilcher mentioned that one of his acquaintances had been operated on for inguinal hernia by Heaton between fifteen and twenty years ago. The result was complete relief, which had been permanent.—N. Y. Medical Record, Nov. 11, 1882,

From the Eden Med. Journal

Of February 1883.
If rightly performed, the difficulty of performing it without both con
sequences ought to continue.

The rest of laboring the

area may be as brisk there as

a break point in the operation, but

it is questionable if the rest be not

required. Care ought however to be exercised by the operator not
to penetrate, if possible. We

have not got as yet the complete

statistics of Boston or Warren
to enable us to judge of the success

of the operation in their hands.

But Warren considers that his
cases must number about 80 percent

of his cases. The operation has

many recommendations. However
to induce surgeons to give it a

trial. These are its simplicity,

the fact that no anesthetic is
Required, there being absolutely no cutting, which in itself is a recommendation to the patient, its applicability to umbilical hernia as well as inguinal, and its safety, there being no fatal cases. It would also seem to be free from the objection to other operations for the whole canal as far as the internal ring can be acted on, by the operator, and that it may be closed entirely instead of only the lower portion. It is also claimed for it, that the effusion of lymph and subsequent adhesion is smaller, and more lasting, than that got by other operations. Last but not least, if a second operation is necessary to a patient after rupture, it would
greater readiness than to the more formidable ones of Wood and Sponson, or the cutting one of the Aneurinian.

It has occurred to the writer that an operation directly attacking the internal ring ought to be aimed at, leaving the canal and due to contract when they cease to be dilated. The following the Yanks might answer, they have been suggested before but not to his knowledge.

Make a vertical incision down to the transversus muscle about two inches long, two inches lateral to the internal ring. It is more than one inch above the rectus legament. Then with the handle of the knife separate the transversus muscle...
from the internal oblique to about one and a half inches internal to the internal ring. The lax shape of the parts will then enable you to bring them towards, so that the incision is immediately over the internal ring. Then expose cord and fascia with its covering of transversalis fascia, and having satisfied yourself that the bowel is reduced, allow the muscles to return to their normal position.

Then, by means of a curved needle bent at right angles to the shaft and fitted on a handle, pitch the sash with its covering to the inner surface of the internal oblique opposite to the internal ring or to the inner border of the transversalis above.

This would cause inflammatory
Extrusion, which would most likely obliterate the sac at its base and fill up the internal ring without interfering with the cord. In direct hernia, the neck of the sac would be attached to the superior of the conjointed tendon if they were pierced on to the edge of the rectus making the incision at some distance from the opening. It may be urged that there is increased risk of peritonitis by following this method, but performed under antisepptic precautions it does not appear to the writer that there is likely to be increased risk especially when contrasted with the formidable abdominal operations used to successfully performed.
Also it may be said there is a risk of the remaining of the fat becoming gangrenous. Mr. Green in operating for strangulated hernia ligatures the fat (also drawing up the canal) and he has not found for. The abdominal wall is not weakened as the incision is removed from the position of the internal ring.

It will then be seen that there is not good reason to recommend the more extensive performance of operation for the Radical Cure. Especially as of late years the results are becoming more and more successful and doubtless, careful observation of cases with criticisms and comparison of various operations,
May lead to the discovery of a safe and successful method of treating hernia and one of the most troublesome ailments of humanity.

As consequence of my entering the University under the old regulations, from having commenced study in 1836 and being required to submit a thesis before my final examination. I could not possibly procure any original record during the four years. These have, therefore, collected the subject of hernia being one I have always felt deeply interested in. Herniostomy was the first operation I witnessed.
how 30 years ago, and since then
Have had an opportunity of ex-
traming some thousands of cases
of hernia. Also in two volumes
This was perhaps instrumental in
saving life when. I diagnosed
strangulated hernia (which led
to operation) in cases where the
patients thought they were only
suffering from colic.
Instead of possible to make
herna a special subject of
further study

Edinburgh
April 2nd 1853.