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THE
RADICAL CURE OF HERNIA:

EMBRACING

A DESCRIPTION OF THE DISEASE,
ITS VARIETIES, PECULIAR CONDITIONS, CAUSES, SYMPTOMS, DAN-
GERS, TREATMENT AND PERMANENT CURE.

TOGETHER WITH

A HISTORY OF TRUSSES.

AND

AN EXAMINATION INTO THE VARIOUS KINDS IN GENERAL USE;
WITH A DEDUCTION OF NEW PRINCIPLES, AND A DESCRIPTION OF A NEW
INSTRUMENT RECENTLY INVENTED FOR A
RADICAL CURE.

WITH ILLUSTRATIONS.

This summary is condensed from a manuscript of some extent by the author on the subject, designed for the general reader. It is presumed it will be sufficiently comprehensive to answer the many inquiries so frequently made by those afflicted in relation to their disease. It embraces the first attempt, ever offered, as an exposition of the philosophy of a Radical Cure; and has been principally traced from actual experience in the treatment of the disease.

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BY A. W. PATTERSON, M. D.

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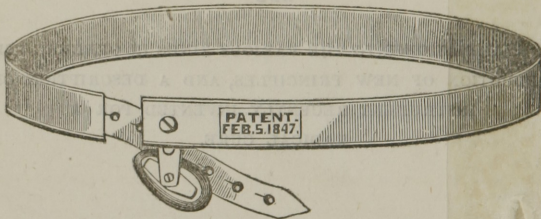
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INTRODUCTORY.

THE Radical Cure of Hernia, is only certainly and permanently effected by the influence of proper mechanical means. The philosophy of the process discloses to us, that it is a simple effort, which the system favors: and in attempting to institute it, we should only—as in restoring any other abnormal condition—aid nature. This we do by supporting and stimulating the part;—supporting it, that its healthy relations may be sustained: stimulating it, that it may not relax the more by virtue of the support, but be excited to a healthy condition;—which the gentle, uniform and elastic pressure of a wooden block, of the proper size and demensions, will only do.



By its *gentleness* of pressure, the part is not benumbed, debilitated and relaxed. By its *uniformity* of action, the hernia is securely retained. By its *size* and *shape*, the surrounding tendonous fibre is stimulated to contraction; and, early are established deposit, adhesion, re-union, thickening, and finally, consolidation of the tissues; which restores the part to a condition of permanency and power, not surpassed by any previous healthy and vigorous state.

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A. W. PATTERSON,
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RADICAL CURE OF HERNIA.

THE scant knowledge possessed by the multitude of the disease here treated of, has been the inducement to present these pages. Mere observation, except to the professional man acquainted with its anatomy, furnishing but little information, and there being no work extant on the subject, designed for the general reader, renders the demand for such a publication pressing indeed. It is a lamentable truth, that many linger under hernia, sometimes for years, without being at all acquainted with the character of their complaint; consequently, having no apprehensions concerning it, until, perhaps, an *irreducible* or *strangulated* state has intervened—when, more than likely, surgical aid comes too late. Again, there are others, who of course, without any information on the subject and consequently unable to judge for themselves, endeavor to obtain relief, but are unfortunately led astray by promises with instruments incapable of rendering it. To all such, then, these pages are offered, with a hope that they may be benefited.

To such of the *Medical Profession* as may meet with this summary, we would say, that in our endeavor to disseminate general information on so important a subject as that of hernia, and improve the usual mode of treatment, we do it in aid of the Profession, whose object is the relief of human suffering. It must be admitted there is no branch of general practice that has received so little attention; and almost necessarily so: an effort therefore to reclaim, it is hoped, will be duly appreciated. In respect to the treatment, mechanically, due regard has been paid that it should be in exact accordance with anatomical principles; and although the views may be new, the best authorities may be cited to sustain them.—See *Lawrence*, p. 91; *Sir Astley Cooper*, p. 378, etc.

A remedial agent, that would be entirely effective, and at the same time devoid of the serious objections, so common to all in general use, has long been wanted. Such a one we have endeavored to furnish. And we may add, the very liberal manner in which it has been received by the most eminent practitioners, is flattering testimony of the success of our efforts.

CHAPTER I.

HERNIA, OR RUPTURE IN GENERAL.

WHEN the walls of the abdomen have given away, or become so relaxed in some part as to permit the bowels or their appendages to escape outwardly, generally in the form of a lump or swelling under the skin, the person is said to have *Hernia* or *Rupture*.

When it is not the result of external injury happening on any part of the abdomen, as by a blow, it generally has regular seats of appearance; as, at obliterated passages, naturally weak; or at others which continue to communicate outwardly, but are intended to be occupied, as those through which the spermatic cords pass; and which but require to be widened by relaxation to occasion its occurrence.

Hernia, then, properly speaking, is not a *disease*, though we term it such, but a *physical defect*, resulting from injury, or weakness of the muscles embracing the abdomen, and may occur in the most robust and even healthy.

As the protrusion passes outward, it carries before it a thin, pearly membrane, called the *peritoneum*, which lines the abdomen in every part; and when it reaches its external position, this forms the hernial sac, or sheath, and gives the swelling its rotund appearance.

The tumor thus escaping, may vary from the size of the finger's end to that of the fist. But when permitted to remain down long, may increase to inordinate dimensions.

The person attacked finds his strength materially diminished, and his health somewhat disturbed. He shrinks from usual exertion, and pain and colica symptoms are often felt in the bowels. A dragging, sinking sensation, is especially experienced, on account of the bowel being forced from its natural situation and its functions somewhat interrupted.

These symptoms, however, present the disease in its mildest form, and when none worse intervene, are generally mitigated by replacing the bowels in the abdomen and retaining it there by the proper means. All of which should be readily done by gently pressing the protruded parts till they disappear, and applying an instrument usually called a *Truss*; which, by its elastic pressure, is intended to secure the retention.

Comparative relief should now be obtained; for when a rupture is perfectly replaced and securely retained with an instrument that sits easy, the affliction is lost sight of to a degree for a time. But unfortunately this is seldom likely to be the case. The patient instead of finding himself relieved is probably any thing else. His truss pains him, and his rupture is frequently escaping. The bowel is becoming pinched, the part irritated; and it, perhaps, requires caution to restrain the disease from assuming a dangerous form.

He is not aware that the instrument which he wears to so little purpose, as well as most found in general use, are gotten up by empirics and mere machinists, who know nothing of the anatomy of the disease, and of course less of the consequent principles upon which a truss should be constructed.

Nor does he know that the physician to whom he has probably looked for relief, has been unable to extend it, on account that he has had no better instrument to apply; from the fact that he has been deterred from any attempt to furnish a suitable one, because of the very illiberal feeling that has pervaded a portion of the Profession, in respect to a just and honorable recompense. It is well known that but few could afford, or at least were willing to spend their time and money to produce an improvement for which they should receive no proper remuneration. When a treatise on any department of the Profession was furnished, the propriety of a copy-right was not questioned: nor should have been any more the same protection to the useful inventor.

These, then, have been the causes which so unfortunately led to a professional neglect of the hernial patient, and thereby threw him into the hands of the incompetent for treatment. But we are happy to say, that the illiberal prejudice is fast disappearing; and surgery—for it applies to its entire range—already receiving many valuable acquisitions in this way. It bids fair to keep pace with the spirit of improvement that marks the age, and the ratio of human suffering be correspondingly diminished.

Hernia is capable not only of a perfect retention by a truss, and with ease to the wearer, but susceptible of permanent relief by a *radical cure*. This is known to the judicious medical practitioner: and the instrument which he carefully constructs in accordance with correct anatomical principles, it may be expected will perform it. And when such will have supplanted the deceptions of the day, there will no longer be cause of complaint.

A hernial protrusion may not always consist of bowel—it may be composed of an appendage which serves as a covering to the contents of the abdomen, known as the *caul* in animals, and the *omentum* in the human subject. And accordingly, as the case may be, the rupture receives the name of *intestinal* or *omental*. It sometimes, however, is composed of both. These two forms of the disease are generally distinguished by the feel. An intestinal hernia is usually soft and elastic to the touch; and, when forced back into the abdomen, disappears with a gurgling noise. An omental rupture on the contrary, is somewhat hard, and of a thick, doughy consistence, and makes no noise returning into the abdomen.

The disease is likewise subject to certain conditions, which require general terms of distinction. When a hernia can be returned into the abdomen, it is said to be *Reducible*: when it cannot be replaced, it is termed *Irreducible*: and when the muscles embracing the orifice of exit, in consequence of being irritated, so contract upon it as to arrest the circulation, and endanger mortification, it is said to be *Strangulated*.

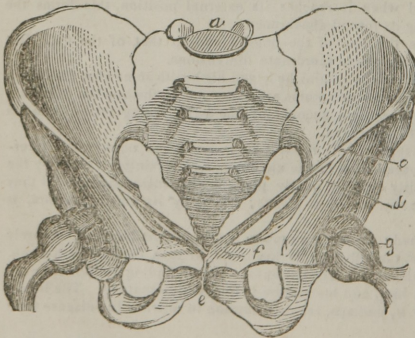
These are but preliminary remarks, and appertain to the disease in general. We will now take up, in regular detail, its various relations, forms and conditions, and plainly, but briefly, describe them; and, afterward, the treatment and the improved remedial means employed for that purpose.

CHAPTER II.

THE PELVIS, OR BONY STRUCTURE, AND ITS RELATIONS TO HERNIA.

BEFORE entering upon a description of the varieties of Hernia, we will present a view of the Pelvis, or Bony structure connected with the abdomen: and accompany it with such remarks as may bear upon the subject.

PELVIS, OR BONY STRUCTURE.



Explanation.

- a. Spine or back bone.
- b. Ilium or haunch bone.
- c. Poupart's ligament.
- d. Gimbernat's ligament.
- e. Junction of the pubic bones, by cartilaginous substance.
- f. Continuation of the pubic bone, as on the other side.

Here, then, is the foundation upon which are built tendons, ligaments, muscles and tissues, to complete the pelvic cavity — all wonderfully and beautifully woven together by nature, for the support and protection of the organs within. When they perform this intended function fully, the parts remain entire; when they do not, hernia is the result.

To understand properly, then, the nature of this failure, or abnormal condition of the parts, a correct knowledge of the skeleton structure upon which they stand, as well as of its relative bearings with the different situations of the disease, is indispensable.

A short distance on either side of the middle of the pubic bone, on its upper edge, a strong ligament (Poupart's) is given off in direction of the groin. Immediately under, and in the angle of its connection with the bone, a certain difficult kind of rupture (Femoral) makes its appearance. Its relative position here should be carefully marked.

Again, descending from above, in direction of the groins, the spermatic cords and round ligaments appear at the top of this bone and pass down externally to it. In course of these, other ruptures (Inguinal) make their appearance, and come in close contact with it. It will, therefore, be seen, it has close connection with the subject in point of locality.

But a more practical importance is attached to the subject; which consists in the application of the instrument for relief; which must be done in view of these facts, or no beneficial results can be expected; but, on the contrary, much that is highly injurious.

Patients are often heard to complain of their truss hurting; and well might they, it may be said, when the cause is inquired into. An instrument that rests upon the pubic bone, not only pinching, but literally contusing, the integuments and spermatic cord — producing all the results of a shriveled testis, &c. — or, at another point, compressing the great vessels of the thigh where they emerge from the abdomen, causing numbness and even palsy of the limb — might well make a patient complain.

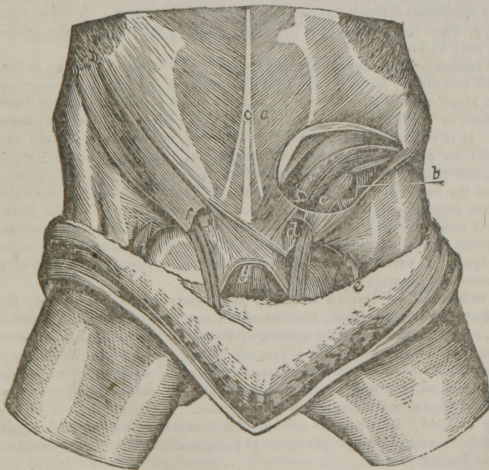
Now, the cause of all this suffering and injury to the patient, which, too, is so common, arises from an ignorance of the anatomy of the part, and of the close relations existing between the Bony structure and the different situations of the disease. For an instrument to sit easy and be effective, must be constructed in conformity with these, and in view of a proper knowledge of them. The importance of such attainment, then, will be seen to be as unquestionable as it is indispensable.

CHAPTER III.

DIFFERENT KINDS OF HERNIA AND THEIR ANATOMY.

THE various kinds of hernia are designated according to the part of the abdomen in which they occur. There are four general varieties, viz: *Inguinal*, *Femoral*, *Umbilical*, and *Ventral*. Their relative situations, as well as the anatomy of the parts connected with them, will be better understood by reference to the following cut, which shows a dissection of the groin and parts adjacent.

A DISSECTION OF THE GROIN, SHOWING THE ANATOMY OF HERNIA.



- Explanation.* — a. The umbilicus or navel, the attachment of the umbilical cord at birth.
- b. The internal abdominal ring where the spermatic cord of the male, or the round ligament of the uterus in the female, quits the abdomen on its outward passage.
- c. The spermatic cord or round ligament in the inguinal canal, the passage connecting the two abdominal rings.
- d. The external abdominal ring, where the cord or ligament leaves the inguinal canal to pass over the arch of the pubis.
- e. The femoral aperture or ring, for the outward passage of the femoral vessels.
- f. The muscles covering the inguinal canal, and not dissected away as on the opposite side.
- g. The arch of the pubis partly seen.

The skin is here laid down from off the muscles, exposing the spermatic cords and ligaments of the uterus, where they emerge from the abdominal rings; also presenting a view of the different aper-

tures and localities and parts adjacent, from which the various hernia escape. We will describe them in the order observed above.

INGUINAL HERNIA AND ITS VARIETIES.—Inguinal ruptures are so named because they appear in what is called the inguinal region or groin. Their appearance is through the abdominal rings, which are natural openings through the walls for the passage of the spermatic cords of the male and the round ligaments of the uterus in the female. These rings are situated in each groin; the lower immediately above the pubic bone, and the other about an inch and a half above it, in the direction of the groin. The upper or internal ring, only communicates with the interior of the abdomen. It perforates directly outward about half the thickness of the walls, where it joins the inguinal canal. This passage descends and connects it with the lower or external ring, which perforates the remaining half thickness of the walls and appears immediately under the skin. Here, then, through this winding passage, is a natural opening from the interior of the abdomen outward. Through it the cords and ligaments as named pass; and in company with them *Common Inguinal* or *Oblique Hernia* makes its appearance. By examination of the cut the description will be readily understood. When oblique hernia is of long standing and permitted to remain down considerably, the internal ring becomes distended, and drawn down so as, perhaps, to correspond with the external ring. Its obliquity being thus destroyed, it receives the name of *Direct Inguinal Hernia*.

But there is another way in which the inguinal form leaves the abdomen, and of course the name takes upon it a corresponding variation. Instead of leaving the abdomen through the internal ring, as described, it sometimes bursts through the tissues immediately under and into the lower ring; when, on account of being more in the ventral region, it is called *Ventro-Inguinal Hernia*. When in any of the above instances it is permitted to continue its course downward, as all ruptures when not supported gradually descend, it finally makes its way into the scrotum of the male, when it is called *Scrotal Hernia*; or into the pudenda of the female when it is called *Pudendal Hernia*. There is another variation of Inguinal Hernia, which, on account of its appearing at birth or soon after, accompanying the testis in its descent from the abdomen and having no peritoneal covering, is called *Congenital Hernia*. We frequently meet with little sufferers laboring under this form of the disease, in consequence of neglect, and unfortunately too, for it is generally beyond the reach of remedy. Many accouchers, unacquainted with it—for it is sometimes difficult to detect—take but little notice of it, mistaking it for a slight swelling, which they imagine will soon disappear. But instead of disappearing, it soon becomes irreducible, by the formation of adhesions, and consequently beyond treatment. Mr. D. of Philadelphia, brought a sprightly boy of six or seven years of age to me, to know the cause of a swelling in the part, which he stated had existed since a few days after birth. Upon examination, I found it to be Congenital Hernia. It had reached the upper part of the scrotum, where it had become firmly adhered; and consequently irreturnable. He insisted upon an effort at treatment. I made trial for a week, but to no purpose.

FEMORAL HERNIA.—This variety is of considerably less frequent occurrence than the one just described; and happily too, for it is the most difficult and dangerous of all. It is a form of the disease that never becomes large, hence its severity; for, in proportion as a hernia is small it is dangerous—being more liable to incarceration. It is somewhat difficult to give an idea of its anatomy. A dissection is not so easily presented to the eye, when represented by a drawing. But, by reference to the preceding cut, an imperfect conception may be had.

In front of the pubic bone, and immediately under the attachment to it of a strong ligament, called Poupert's, or the crural arch, which bounds the lower and outer part of the abdomen, is an aperture through which the nerve and great blood-vessels pass from the abdomen to be distributed on the limb below. Through this passage, then, in company with these vessels, this variety of hernia appears and takes its name accordingly. If it enlarges and continues to descend, its course is toward the bend of the thigh, while it assumes an oval or elongated and sometimes hour-glass shape—lying generally in a horizontal position, and rising somewhat above and anterior to the ligament. Sometimes, instead of extending toward the bend of the thigh, it continues its course in company with the femoral vessels and descends more perpendicularly along the inner and anterior part of the limb. The tumor being deeply seated and much resisted in its descent, presents but little external appearance; and the neighboring absorbent glands and adipose matter tend further to conceal it; especially in the female or fleshy subject. It varies in size from the bulk of a hazelnut to that of a walnut, and but rarely attains a more considerable magnitude.

It has been found the most difficult of all Hernia to treat; but greatly owing to the very illly adapted instruments used. In fact experience proves, that there has been no properly constructed Femoral truss yet in general use. Mr. H., a respectable citizen of Philadelphia, called on me with a Femoral Hernia, which he declared, no truss he could procure would retain; and he but expressed the general experience of those so afflicted. I had the satisfaction of making a perfect retention in a few minutes, with one of our instruments; and about five months afterward, of learning he was perfectly well. He is one of many, with like results. I beg indulgence for the mention, but feel proud in being enabled. There is no form of the disease, as already intimated, that has produced so much suffering; and the heart gladdens at the recollection of the numerous instances in which relief has been afforded.

UMBILICAL HERNIA.—This is a protrusion at the umbilicus or navel—a part of the abdomen always somewhat tender and weak, and consequently subject to the disease. It being the attach-

ment of the umbilical cord at birth, it never becomes so firmly grown over as other parts of the abdomen. Indeed, were it situated lower, where the weight of the viscera would be more upon it, no person could escape hernia. It is a form of the disease that frequently occurs in children, on account of a defective condition of the part continuing; and especially when they are what nurses call *cross*. It is likewise an attendant upon pregnancy and parturition, from consequent distension of the abdomen and unusual taxation of the muscles. It will, therefore, be seen to prevail in children and child-bearing women.

VENTRAL HERNIA.—This form, as its name would indicate, strictly belongs to the abdomen. In fact when a hernia appears on any part of the abdomen, more or less distant from the varieties enumerated, it is properly entitled Ventral. Appearing so much as it were at random in any part, renders the adaptation of a truss somewhat difficult. In truth almost every case requires an instrument to be made expressly for it. It is happily but of rare occurrence.

CHAPTER IV.

PECULIAR CONDITIONS OF HERNIA.

THAT one-ninth of mankind should be afflicted with this species of suffering, may seem incredible; yet, it is but a medium estimate of Medical statistics, and prevails to a vastly greater extent than is generally supposed. It is common to the old and young, male and female; and no condition or mode of life is exempt from it. Certain varieties, however, are more common to one sex, and others to the other.

Inguinal Hernia is more common to males. And this seems to arise from the comparatively narrow pelvis, and more distended state of the abdominal rings. On account of the first, the weight of the abdomen is less sustained within the bony cavity; and consequently the muscles of the groin more taxed, and the abdominal rings more exposed; which, in addition to their comparatively wider state, and the mobility of the cord within them, must induce this variety of the disease in the male.

Again, Femoral and Umbilical Hernia are more common to females. By reversing the causes just enumerated, we account for the prevalence of the first. For the pelvic cavity of the female, being comparatively larger, sustaining the weight of the viscera almost entirely, under ordinary circumstances, within it—thus relieving the abdominal parieties, but exposing the femoral apertures more, predispose to the first-named variety. While the distention of the abdomen in pregnancy, and the over-taxation of the abdominal muscles in child-birth, increase the chances of the umbilical form.

Several herniæ not unfrequently occur in the same person. As for instance: Femoral on one side, and Inguinal, or Inguinal and Femoral, on the other; or the same variety on both sides. When they appear, however, under any circumstances, on opposite sides, the person is said to have *Double Hernia*.

The right side, more generally than the left, is the seat of the complaint. This may be occasioned from more sudden exertion being usually made by the limbs on this side. The right foot, for instance, is generally placed forward first; or used in preference to the other, when any single and sudden effort is made. The right arm is likewise more individually the servant of the will. In short the limbs and muscles on this side, in every particular, are more employed in hasty and violent efforts, which accounts for the greater prevalence of the disease upon it.

It is a condition of Hernia to be hereditary. It unfortunately entails itself, with all the certainties of a constitutional disease, upon an otherwise healthy offspring. Show me the parent that is ruptured, and I will suspect it in the child. For, if it has not already appeared, the unquestionable tendency to it, inherent in the system, will doubtless be developed at some period or other, though it may not be till even late in life.

CHAPTER V.

CAUSES OF HERNIA.

THERE was a time—and not many years since—when Hernia was of comparatively rare occurrence. The causes then which have produced its prevalence, are truly of modern date. But before we enter into an examination of them, we will take a cursory view of others at large. And these may accordingly be divided into two grand classes:

First.—Those which weaken the abdominal muscles, and relax the general tone of the system.

Secondly.—Those which increase the pressure of the viscera, thereby destroy the proportionate strength of the muscles to bear them.

With respect to the first class, anything that predisposes to debility, by relaxing muscular fibre, tends to predispose to the disease. It widens the apertures, through which the spermatic and femoral vessels pass; it unbinds the tendonous tissues, and elongates the attachments of the viscera, rendering them more pendulous and pressing.

A person naturally fleshy, being reduced by sickness, but recovering and again returning to active employment, before adequate strength is regained, may discover a sudden swelling in the groin, which proves to be a hernia. Warmth of climate, season and clothing, frequently produce the same effect. Wasting of muscle, as is usual after the meridian of life is past, may also occasion it. And it is on this account, and at this period, that the disease is most prevalent. Fluid diet among laboring classes, is also looked upon as a cause of the complaint—there not being the same amount of bracing nourishment afforded to the system. These, then, constitute the principle causes belonging to the first class; and are often to be met with, especially, when hurried on by predisposition to the disease. But the complaint so appearing, is invariably in its mildest character, and in striking contrast, when ushered in by other symptoms.

The second class present it in its most aggravated and dangerous forms. A person leaping from a height, or thrown from a horse, may be heard to complain of uneasiness and swelling in the groin, which is found to be a hernia. Violent action of the abdominal muscles, by pressing upon the viscera, not unfrequently produces rupture. It is in this way, that lifting of heavy weights, especially when the body is in a bent position, that the disease is brought on. Men working in our iron-foundries, from this cause, are very subject to it. Plasterers, likewise, as another class of men, from working over-head on ceilings. Also, merchants and merchants' clerks, who are much on their feet, and occasionally tilting heavy boxes. Violent coughing frequently produces it. Children having hooping-cough frequently take it, as well as when fretful. Costiveness is another source of the disease; and greatly aggravates it where it already exists. Increased size of the abdominal contents is another cause. A person suddenly growing fat, and the abdominal muscles not accommodating themselves sufficiently early to the distention, may permit its occurrence.

There is still another way, in which the viscera are made to press violently against the walls of the abdomen; and this brings us to a consideration of the modern causes. The one I allude to, is a great and fearful one. It is a most prolific cause. I mean compression around the waist. Its baleful *modus operandi* is readily seen. Take a distended sack, and try to girdle it, in the manner a young lady secures her stays, or a gentlemen the buckle on the back of his pantaloons, and can you do it, even to the extent they can their persons, without rending it in some part, or *rupturing* it, if you prefer the term? The answer is plain. It is thus by binding in the waist, that the cavity of the abdomen is diminished, and the viscera forced down against the walls that embrace them; which may not have sufficient strength to retain them, and they must escape. Here then are the evils of modern dress—a dangerous comment on the tapering waist. In former days, when our good grandsires wore their pantaloons below the bilge of the abdomen, supporting rather than depressing it; and their sensible dames appeared in the loose dress, HERNIA had not so many victims.

There are other modern causes, which might be mentioned, but we will dismiss the subject here. For the removal of the great genius of evil, just mentioned, will of course obliterate others connected with it, and dependent upon it. The summary is perhaps sufficiently extended to awake attention. We have endeavored to enumerate the causes briefly, for the information and precaution of all. It is hoped they may serve the purpose; and if not sufficiently timely for some, at least so to many. For it is no idle dream, that the disease may be guarded against, and even the diathesis removed, where it already exists, by resorting to such bodily training, as is best calculated to establish vigor of muscle and soundness of health. It is a physical infirmity, which may be effectually checked in this way, while yet in embryo; and, eventually, the area of its dominion be greatly diminished.

CHAPTER VI.

GENERAL SYMPTOMS OF HERNIA.

THE approach of hernia is sometimes slow, and even unsuspected for a time. The discovery of an indolent tumor in the region of the abdomen, may be the first notice the patient has of the existence of the disease. Ruptures which appear after middle age, from the gradual decline of muscular energy, or from hereditary predisposition, often approach after this manner. Therefore, when an apparently harmless tumor, though not larger than the finger's end, is detected in any of the ordinary seats of the disease, its character may be suspected. If it disappears on lying down; re-appears on coughing or assuming the erect posture; becomes, after a time, somewhat tender to the touch; is soft, without change of color in the skin; produces uneasiness when the abdomen is distended, or the bowels costive,—you may feel assured, even without the corroboration of half these symptoms, that it is hernia.

If there be no attention paid, the symptoms, after a time, assume a more serious character. The strength diminishes, the health becomes precarious, and the patient fretful and nervous. The tumor continues to increase in size; and the bowel progressing in its descent, produces a pendulous, dragging, sinking sensation in the viscera, caused by their loss of support underneath. Colic symptoms often intervene, especially when there is costiveness. When a person from accident, or violent exertion, becomes ruptured, the symptoms are more acute. Severe pain in the part, and redness of the skin, are often the result. And, under the circumstances, it requires the bowel to be early replaced, as there will be less or more danger of strangulation, on account of the inflammatory symptoms that may ensue.

An irreducible hernia is attended with many of the above symptoms, but cannot be returned into the abdomen. And is always either the result of neglect to procure an instrument for its retention, or of the imperfection of the one used.

The strangulated form is attended by symptoms as severe and dangerous as unequivocal; and likewise, generally, the result of neglect, or imperfection of the instrument worn. When a hernia is allowed to descend frequently, and especially while it is yet small, and supported by an imperfect truss, the orifice through which it escapes is liable to become irritated, while the muscles embracing it become rigid and swollen; when they consequently contract upon it, and arrest the passage of the contents and the circulation through the part. It is then strangulated; and the rapid succession of alarming symptoms announce its tendency to be speedily fatal, if they be not arrested. Severe pain, heat and inflammation immediately ensue; the patient becomes restless, the pulse hard and quick; a sense of abdominal compression is complained of; eructations and vomiting come on, and the contents of the stomach are freely ejected; and sometimes of the bowels as low down as the constricted portion. The patient is covered with a cold, clammy sweat. After a time, the severity of the pain mitigates and the tumor changes to a purple color, indicating the gangrene and mortification that are taking place. The symptoms thus progress in succession, producing death in a few hours, if relief be not obtained.

CHAPTER VII.

DANGERS OF HERNIA.

HERNIA, under any circumstance or form, is less or more dangerous. Even when capable of reduction with ease, and under the protection of a tolerably good truss, the patient is by no means secure. A few hours from inattention, or perhaps accident, may convert his seeming safety into an alarming condition. His disease may become irritated, his instrument may give away;—in short no security for his safety exists, and he may pay the forfeit with his life.

And when the disease has assumed an irreducible or strangulated state, the dangers are increased. It becomes either ultimately fatal, or suddenly perilous; if a severe, and at best, dangerous operation be not resorted to, which, generally, only can afford relief.

The pendulous state of an irreducible rupture is such, as to constantly contribute to its increase of size. It therefore becomes larger and larger, and after some years will probably engulf the whole contents of the abdomen,—extending in a tremendous sac, as low down as the knees. The unfortunate sufferer dragging out a most miserable existence, till death finally comes to his relief. During this time the rupture is moreover less or more subject to strangulation.

And when the strangulated state intervenes, it is in truth, generally speaking, suddenly perilous. It must necessarily and speedily terminate in mortification; and especially, when it contains intestine, must prove fatal. Instances of omental hernia, have been known to undergo the results of strangulation, and recover by the formation of an abscess. But such are extremely rare. In fact, the recovery in every way from this state of the disease, not excepting by a surgical operation, is so uncertain, that its name may be identified with death.

CHAPTER VIII.

TREATMENT FOR THE REDUCTION OF HERNIA.

THE moment a hernia is perceived, the first thing to be done is to reduce it; which the patient should immediately endeavor to do, by gently pressing it with a few fingers, if it be small, or with one or both hands, if it be large. The pressure should be of such varied character, as would naturally suggest itself in an effort of the kind; and always be directed toward the orifice from which the hernia has escaped. If it be from the internal ring, and has descended somewhat in the inguinal canal, the pressure should accordingly be upward, outward and backward. If it be a Direct, or Vento-Inguinal rupture, it must be directly backward or nearly so—making allowance for the falling tendency, which of course always carries it somewhat below the place of exit. And, if it be Femoral, the pressure must be rather downward, backward and outward. The effort as yet may be made in the standing posture. But should there be any difficulty experienced, every advantage of position likely to favor its reduction, should be taken. The patient should not only lie down on his back, but elevate his shoulders and hips, draw up his knees, and thus materially assist both by relaxation of the abdominal muscles, and the natural tendency of the rupture to return by its own gravity. After this manner, he will more than likely succeed, himself; and if he has to do it frequently, will perhaps acquire an expertness, that may be only surpassed by his medical attendant. But, should he not be successful after some considerable effort in this way, we would not advise too much perseverance; as the bowel might become injured, or the part so irritated, that strangulation might be induced.

A rupture may be irreducible for a time, when there is neither any adhesion yet taken place, nor

strangulation likely to occur. It may be owing to one of two other causes, namely: the rapid dilatation or growth of the parts after they have escaped, preventing their repassing, readily, again into the abdomen; or, contraction of the neck of the sac; and in consequence it may be impossible to effect a reduction, by mere manual effort. When such seems to be the case, I would advise a collateral means, which alone, after some time, may accomplish it. Let the person remain in the recumbent position, and resort to cold applications to the tumor; such as linen folded and wet with vinegar. If this may not have the desired effect, ice broken and put in a bladder, to avoid the inconvenience of it melting, must be had recourse to, and persevered in until the hernia is likely, or actually has returned of itself. I have found this a most effectual means, and have succeeded with it, when I am confident nothing else would have answered.

Mrs. —, of Philadelphia, sent me a measure for a truss for herself. After some days, her husband called and informed me, she could not reduce her hernia, and wished me to see her and make the effort myself. I did so, and attempted it with all the little skill I possessed; and persevered in it, as long as was thought prudent, but all to no purpose. It was evident there was no adhesion, and tendency to strangulation there was none. Ice was ordered at once; for I knew, it would require the most powerful of like means. This was continued, until the fifth day, when the hernia disappeared of itself into the abdomen.

This mode of treatment, however, requires one precaution. If the ice be long and freely applied, there is some danger of frost-bite. The consequences of which will be sloughing, soreness and inconvenience, afterward.

When the rupture has been returned, a truss must be applied to secure its retention. But, should there have been any considerable difficulty in effecting the reduction; and means employed, which may have rendered the part sore, the truss should not be applied at once, but sufficient time be permitted to elapse, for the soreness to disappear. The patient, however, in the mean time, must remain in the recumbent posture; for should he attempt to stand on his feet, the rupture will be almost certain to re-appear; when the same difficulties may be again to encounter, before it can be reduced.

CHAPTER IX.

TREATMENT OF IRREDUCIBLE HERNIA.

WHEN a hernia once becomes firmly adhered to the walls of the sac, but little hope remains for relief. Yet, relief is sometimes obtained; and therefore, no case should be abandoned in utter hopelessness.

It happens that Irreducible ruptures, especially when large, are often of the omental kind, or at least, in part. Now, if there be any intestine returned, pressure may be so applied afterward, as often to effectually reduce the obstruction. If the hernia be sufficiently small, a concave pad attached to the ordinary spring, can be selected for the purpose. But if the tumor be of too great dimensions, a *bag truss* can be employed for the same end. Persevering after this manner, aided sometimes by collateral means, which can only be prescribed at the time to suit the circumstances of the case, success is sometimes attained. But if all these means fail, there is another alternative, though one that greatly endangers life,—that of an operation to replace the bowel. Yet, but few surgeons care to undertake it. The chances for recovery are indeed so few, it is very prudently seldom recommended.

If this last resort then be abandoned, the only thing that can be done, is to give the sac all possible support; which may be done tolerably conveniently, by a bandage properly constructed for it. By using this precaution, much of the necessary inconvenience and danger is obviated. By being thus sustained, it is likewise prevented from increasing so much in size, which is a very important consideration. In the meantime, injury by carelessness, or accident, must be especially guarded against. It greatly increases the peril. An accident, of this kind, came under our notice, some months ago, which we will narrate.

Mr. C. of Philadelphia, labored under a double, scrotal, irreducible hernia, very large; and which there was no possibility of reducing. It happened that a fire occurred one night in his immediate neighborhood, and alarmed with its progress, he forgot his usual precaution, and gave liberal assistance to the firemen. Unfortunately in a moment of haste to escape from a portion of falling walls, he was trodden over, and caught by some timbers. His hernia suffered materially; the tumor being somewhat lacerated. He was carried to the Pennsylvania Hospital, where he was operated upon,—for it was the only alternative, and afforded some chance for his life. The bowel was found not to be injured, and was replaced with success. He did well and recovered fast.

A few weeks afterward, and while yet in the Hospital, I applied one of our trusses. It gave perfect support, and about five months afterward he was found to be radically cured. As the case turned out, the accident of course, was for the better; but the chances were immensely against it. An irreducible rupture, though it may escape like accidents, is nevertheless subject to strangulation, when the danger is increased.

CHAPTER X.

TREATMENT OF STRANGULATED HERNIA.

WHEN a hernia has assumed a strangulated form, which will be known by the symptoms enumerated on a preceding page, the treatment must be energetic and decisive; and so much so, we would not advise that it should be directed by any other than a regular practitioner. It is a form of the disease that is extremely dangerous, and generally terminates in a few hours. So no time should be lost—no precious moments be spent in tampering with an uncertain treatment, but the proper medical aid at once be secured. Yet, as the practitioner may reside at some distance, and some time necessarily elapse before his arrival, something palliative at least should be done in the meantime. And nothing can be better than the cold applications, as employed for the reduction of the disease. This will have a tendency to relax the rigidity of the stricture, lower the temperature of the already heated part, diminish the flow of blood to it, and likely create a movement in the bowels; all of which will tend to arrest the progress of the symptoms and favor a reduction. When the physician arrives, he will employ additional means; such as blood-letting, the warm bath, purgatives, opiate injections, &c., which of course will be selected and varied to suit the circumstances of the case.

If, after due effort has been made in this way, and no success attained, an operation with the knife, as the only alternative, must be resorted to. This will relieve the stricture; and the orifice thus widened, will permit the bowel to be pushed back into the abdomen. And if it has been undertaken sufficiently early, and by a skillful operator, relief will likely be obtained. But we are obliged to record the fact, that probably one-half the patients thus treated do not recover, but mostly on account, that the operation has been delayed too long, the bowel having become mortified, when of course death must ensue.

At Pittsburgh, Pa., a case of strangulated hernia lately occurred, which might be mentioned in this place. The symptoms had progressed far, and the only hope lay in an immediate operation. It was accordingly performed; but the bowel was discovered to be mortified, and the necessarily fatal result at once made known. Had the operation been undertaken in time, life might have been saved.

We might enliven this sad picture of the disease, by the recital of many recoveries, where the same means was employed; but our object is to illustrate the importance, and even necessity, of early attention to it, when it assumes this form.

CHAPTER XI.

RETENTION BY TRUSSES.

WHEN a rupture of whatever character has been reduced, and the soreness, if any has been created in effecting it, has disappeared, a truss must be applied; and so selected and worn as to make a perfect retention, and with the greatest possible ease to the wearer. Several kinds of hernia, however, are very difficult to retain; for instance Femoral, Direct and Vento-Inguinal, which require trusses of no ordinary merit to manage. Femoral, especially, on account of escaping under Poupart's ligament and descending so immediately in front of the pubic bone, is difficult to reach at its point of exit. And furthermore, as the pressure is obliged to be directed upward, rather than backward, in order to effect any good purpose, an instrument only of a peculiar adaptation will serve. We are free to say, that heretofore there has been produced no instrument at all suited to this species of the disease; and the experience of those so afflicted goes to corroborate our statement. The very manner in which all are made to act, at once points out their incapacity, to any one knowing any thing about the anatomy of the part. They rest upon the strong ligament—the Crural arch—named above; and it is intended they shall press it down from its usually stretched position, sufficiently to make it bear upon the aperture from which the hernia escapes. But, the folly of such intention, as well as its inconsistency with sound principles, is soon made obvious. This ligament, stretched between the pubic and haunch bones, like the cord of an archer's bow, is of course capable of such depression; but mark the result. Severe pain, contusion of the skin, and compression of the femoral vessels, as they emerge from underneath, are at once complained of. And this is not all, the object of the instrument is not reached—the hernia is not retained. With every movement, the position of the part is changed; the ligament, perhaps, in spite of the pressure upon it, regains its naturally stretched position; and with every such change, the hernia likely escapes. And this is the shabby manner in which femoral hernia is usually retained. But still, a more fatal result sometimes attends. Absorption of the ligament is liable to be produced, which of course destroys it.

The retention of Direct and Vento-Inguinal hernia, is likewise no easy matter with the ordinary truss. The emergency of the rupture so directly over the arch of the pubis, renders it impossible, with the usually constructed instrument, to place the pressure in the proper place. They all more or less overlap the pubic bone, and of course can press no lower than this bone. And the result is, the rupture is not retained. It is only prevented from passing down in front of it. Of this too, the patient is not always aware. He may imagine his hernia retained; for under the

circumstances, little or no swelling may appear, as it may be confined principally to the orifice of descent.

A perfect retention, therefore, must be the first aim; for without it the inconveniences and dangers that accrue, are too numerous and too obvious to again require repetition. And moreover if a *radical cure* be held in expectation, it is indispensable; for without it, none need be expected. But we may add that the ordinary truss, nor in fact any *soft pad*, generally speaking, can never effect this. It requires the fulfillment of certain indications, which but few trusses will reach. The reasons of all which discrepancy and general failure, remains to be inquired into. And if the hernial reader has carefully accompanied us thus far through these pages, he knows something of the character of his disease, and is prepared to enter upon an investigation of its proper treatment. And as this is mainly mechanical, compatible with principles based upon the anatomy, which we have endeavored to disclose, it at once brings us to a history and examination of the various instruments employed for the purpose, to which we will now regularly proceed.

CHAPTER XII.

HISTORY OF TRUSSES.

A TRUSS is a bandage or instrument designed for the retention of hernia. It is intended by its application to make external pressure upon the orifice, through which the viscera have protruded, and thereby prevent their re-appearance. In olden time, a simple bandage was used for this purpose; and similar contrivances are still to be met with at the present day. But since the introduction of the elastic steel-spring, it has been almost exclusively used. The advantages which it possesses are unequivocal. By its elasticity it adapts itself to the varying character of the abdomen; when it increases in fullness, it extends with it; and when it diminishes, it contracts with it. Therefore, though the immediate successor to the simple bandage, it was a noble improvement, and has successfully defied a substitute, and doubtless long will. Upon its introduction, appeared the stuffed pad. It was now thought that the instrument could boast a high state of improvement; and it is true, its attainments had been considerable. Nor would it seem they were yet forgotten. They are still to be met with, under the name of the "Common Truss," and its hundred variations, dangling in every Apothecary's window. Many changes in the material of the pad then succeeded; as ivory, bone, glass, &c., but were found objectionable, on account of smoothness of surface. But a new property was soon to be discovered and added, in which a far greater perfection was to consist.

Not many years ago, a farmer at his plow, who labored under the disease, being troubled with his rupture escaping, on account of the imperfection of the old truss he wore, and unwilling to leave his work at the time to procure a better one, placed a chip of wood, hewn somewhat in shape, by his pocket-knife, under the pad; which answering the purpose so well, was permitted to remain for some time, with the only inconvenience of the part becoming a little sore. Upon the removal of it, after some weeks, he was surprised to find the rupture not escape; nor, seemingly, likely to do so. He hesitated about replacing the truss, for he felt supported and secure in the part. He accordingly left it off some days, and still all was right; and finally abandoned it, nor had he any more use for it. He related the circumstance with joy to his acquaintances, and the fact soon became generally known. *He was radically cured.* Curiosity was awakened. The particulars were elicited in full and investigated. Why should not others be cured? inquired the Profession. Trusses were accordingly constructed with wooden blocks, and patents taken for the same. It was thought that HERNIA would now be erased from the catalogue of human ills. For it was expected, that if the pad was but of wood, a radical cure must necessarily follow. But like many another important discovery yet in its infancy, its promising usefulness, instead of being further developed and matured, was soon to be debased and sunken into disrepute. The simple, gently-pressing substitute of the old farmer, adapting itself to the part with every step he took, could not be clung to closely in principle and improved in construction; but *things* befitting an age of barbarism be produced, and called "Improved Instruments for the Radical Cure of Hernia." Being a block, like a drayman's fist, firmly and immovably riveted upon the end of a spring, powerful enough to press the stomach into the throat, and, moreover, girded underneath with a strap, alone as much annoyance as the disease itself. The consequence of all which are well known, and sadly and severely too, by the unfortunate individual, who has been jaded and goaded with them; and all too, with the fond hope of being radically cured; which it was his misfortune never to realize. Yet, common sense might have taught him, if it did not the crazy vendors, that such expectation was inconsistent, idle and vain.

But this brings us, in the history of the instrument, to the present day; except in the various views taken of the curative effects of the wooden block, which will be taken up under the head of Radical Cure. And it now but remains to make a general examination of trusses, that the reader may know wherein they are particularly defective, and on what principles a new instrument should be constructed. And in entering upon this, we will commence, as we formerly did, when our attention was first drawn to the subject.

CHAPTER XIII.

AN EXAMINATION INTO THE VARIOUS KINDS OF TRUSSES IN GENERAL USE.

DURING several years general practice as a physician, cases of hernia not unfrequently occurred to us, as they do to all so engaged; and on account of the difficulties labored under by the Profession for want of a good instrument, our attention was directed to the subject; and we accordingly determined to take it up and investigate it. In the first place, the various kinds of trusses in general use, were to be examined; and a line of distinction drawn between their merits and defects, that we might know in what part of the construction an improvement might be attempted. To this, we, therefore, proceeded. And soon a motley many had we around us. Our little professional domicile became a truss store to appearance. Here were some with back-pads, and there some with front-pads only. Some with this kind of construction, and some with that kind;—as multifarious and diversified as the contents of a Pandora's box; and perhaps many a patient has declared, possessed of as many plagues. Surely the idea of adding another to the list, held out no flattering promise, especially while we yet had no conception of what it might be. Although the want of an improved one became, to appearance, doubly urgent. *En masse*, the whole collection before us seemed to divide off into two grand classes; namely, **SOFT PADS** and **HARD PADS**. Under these two heads, we accordingly took them up, and briefly found them, as follows:

SOFT PADS.

DEFECTS. I. *They will not make a perfect retention.*—The first thing indispensable in every truss. The pad being large, is generally more or less intended to rest on the pubic bone, and by virtue of pressure there, prevent the descent of the hernia. Therefore, though the bowel may not descend any lower, it is nevertheless, scarcely in any instance, at the same time perfectly retained in the abdomen. If it does not indeed remain in part in the inguinal canal, it is almost certain, in less or greater amount, to be found in the internal abdominal ring, or orifice of escape, if it should be lower; as in the Direct or Ventro form. Which, generally being the case, there can of course be no perfect retention. And when the hernia is of the Femoral variety, the adaptation of the instrument is still worse, and necessarily the retention still more imperfect.

II. *The Spermatic cord is more or less injured.*—The continued pressure it receives, being constantly pressed against the pubic bone, must inflict this in greater or less amount. For it matters not, though the pad is soft, it will have this effect.

III. *The Soft Pad, as such, is defective.*—Being soft, it soon loses its shape, speedily wears out, absorbs the fluids of the body, and beside becoming offensive, produces a heated, sweltering, weakening effect, which, in addition to the severe pressure, must inflict a doubly injured, crippled state of the part.

IV. *They seldom, if ever, effect a Radical Cure.*—The process under which the part must go, to arrive at a radical cure, is only instituted by a pad of the hardest material. The only instances wherein a cure of this kind may be effected under the use of soft pads, may be said to be in the very young subject. But in such instances it cannot even be said to be by virtue of the Soft Pad. It is known, that a simple bandage would effect the same, if properly applied and worn. The part strengthening by the rapid growth of the infant, becomes secure, and the hernia permanently retained, and thus radically cured. These, then, are the defects of Soft Pads in general. And the question may have already arisen—have they any merits at all? We answer, they have *but one*.

MERIT.—*They have ease, compared with the opposite class.*—But they have not by any means entire ease. The injuries and severities before mentioned, are any thing but ease; yet it is comparatively such, when contrasted with the effects of the others. Soft Pads, therefore, as a class, are found to possess **FOUR PROMINENT DEFECTS**, and but **ONE IMPERFECT MERIT**.

HARD PADS.

DEFECTS. I. *They likewise will not make a perfect retention.*—Their entire construction is such, as will not accomplish it; though the material of the pad is better calculated for that purpose.

II. *They will hurt, in every sense of the word, often causing contusion and injury, not only of the groin and spermatic, but femoral vessels; producing numbness, and even palsy of the lower extremities.*—This is all occasioned by the hard unyielding pad, acted upon by a powerful spring. These constitute the sum of defects.

MERITS. I. *They, in many instances, will cure radically.*—This, as will be seen, is effected variously, but by defined processes, though only capable of being instituted by a Hard Pad.

II. *They will retain their shape, remain cool and clean, and not become offensive.*—Because the material is hard and durable.

III. *Their retentive power exceeds that of Soft Pads.*—Their surface being unyielding, of course does not permit the rupture to channel its way through it, as it tends to pass out underneath, and thereby are more retentive in their properties. This view is supported by a decision to that effect, of the Philadelphia Medical Society, published in the American Journal, for December, 1835.

Three good properties then belong to this second class; but, perhaps, more than counter-balanced by the weighty objections urged against them.

Here, then, is perhaps a correct view of the instruments in general use. And it certainly should not excite surprise, that so little success attends the treatment of the disease; or, why so few physicians care at all to treat it. The sum of essential merits in the one class, amounting but to *imperfect ease*; and in the other to a *probable cure* only,—either more than canceled by the weighty objections accompanying them,—certainly leaves the state of treatment in a very low condition; and with but little as a basis upon which to build an improvement. Were the two properties, imperfect as they are, found in the same class, there would be less difficulty in effecting something. But, not being the case, it would indeed seem that something new, in almost every particular, must be produced. Some new construction which would embrace them both; and, moreover, present them more effective, must be fallen upon, or no improvement would be reached. In a word, we must have more ease than afforded by the soft pad. We must have a better retention than made by either; and, at least, a tolerably certain cure. Now, it became evident, that the required ease, and perhaps secure retention, might be gained by a new construction, but the tolerably certain cure depended upon certain principles in the *modus operandi*, which were yet to be ascertained, before their indications could be filled. The theory of a radical cure, it was thought, was understood; but, why it was effected in one instance, and not in another, could not be explained,—it was yet to be inquired into. It was plain, however, it depended upon the action or influence of the mechanical means employed, but had not been investigated so fully and successfully as to be understood. And to this, we now directed attention. To discover it, was no small desideratum. If the chances of a radical cure were not at least increased, the instrument received but little acquisition by the introduction of the wood pad. If they were rendered but tolerably certain, a great deal was gained. Accordingly, we entered into various experiments; and springs of different strengths were finally applied. Some of greater, some of medium, and some below medium strength, and their comparative effects noted. It was found that those above medium, scarcely ever effected a cure; those of medium, were more successful; while those below medium, more frequently effected radical cures. Here then was the important information at once arrived at. It was plain that **THE PRESSURE USUALLY EMPLOYED WAS TOO GREAT**; and that it was the secret of so much mischief. And mark the prospect. Could it be generally reduced, the ratio of cures would be correspondingly increased. And could it be *sufficiently* reduced, the full extent of beneficial results would at once be realized. And when thus brought particularly under notice, it was not difficult to see that severe pressure could have no good effects; but instead, destroy the very thing desired; by benumbing the part, and thereby retarding that strengthening, healing process, which is the process of a radical cure; and which the very gentle action of a hard surface is alone sufficient to excite. Lawrence (good authority), in his Work on Ruptures, says, at page 91: "The patient should on no account, wear a more powerful spring than is sufficient to keep the rupture up; since the long continued pressure of the pad must have the effect of weakening the abdominal ring and surrounding parts." Therefore, **GENTLE PRESSURE** was now emphatically wanted; and this chimed in well with the ease sought. A construction that would afford the one, would naturally furnish the other. An instrument that would press gently, would also press with ease. Next for its construction.

CHAPTER XIV.

NEW PRINCIPLES OF CONSTRUCTION WANTED.

THE new principle of **GENTLE PRESSURE**, as it regards a radical cure, we accordingly claim as the result of our own labors. Its importance will be duly appreciated. While it affords the prospect of a speedy and permanent cure, it also procures the long wished-for ease to the wearer. As a principle, it is unalterably such; and future instruments must necessarily be constructed in conformity with it. With these views we proceeded to devise some mechanical construction that would fully develop it. And it might be supposed, this would be readily accomplished, by simply reducing the strength of spring. It is true that the strength of spring must be reduced; but, of itself, it would not be sufficient. The hernia would not be retained; for the pressure usually employed, was requisite to that end; and, under the general construction, would not permit of being reduced. The cases mentioned in the preceding chapter, as selected for trial, were those only in which gentle pressure would subserve; but in which the varied pressure, as named, was applied; though the powerful was unnecessary for the purposes of retention, but important to comparative results. For only from the thus varied treatment of like cases, could their, respectively corresponding results be estimated. So the simple reduction of the strength of spring, was not sufficient of itself, for the generality of cases. Some new construction must be added to render it effective. And when it was recollected, that with the tips of but two fingers, almost any rupture might be retained, even against the action of a violent cough, it seemed plausible that some arrangement might be fallen upon to act with equal ease and certainty; while it was direct evidence that powerful pressure was uncalled-for. Could such action, therefore, be imitated, we would have what we sought. To imitate it, then, was important. A small block and an upward pressure would do it; and would differ materially from that made by the usual trusses; which was backward and on a large amount of surface, coming in contact with the pubic bone and solid parts of the groin. Moreover, it was essential it should have a yielding and self-adjusting movement, that it might avoid the usual severity, as well as general liability to let the

rupture escape. For the pad being riveted tight on the spring, as is common, must necessarily vary its point of pressure with every movement, and consequently afford no security. For instance, when the leg is thrown forward, pressure is made by the lower part of the pad; and when it is thrown backward, it is made by the upper part; at the same time endangering an escape of the hernia, to a degree, in every instance. It is true, that some of the pads before us, for instance, Hull's patent, and the old Eberle truss (imitated by Marsh and others), had a kind of movement to meet the exigency referred to; but so imperfect as to render it doubtful, whether any advantage at all was derived. The former having a rocking motion, and the latter a yielding one on the under side only; and consequently when it would yield, it would be but to let the hernia escape. It was therefore unquestionable that the yielding movement must be entire,—that it must be at the center; and any mechanical arrangement that would confer it, with a perfectly self-adjusting one, would carry out the combination desired. A spiral coil of wire was employed for a time; but it lacked steadiness, and would not readily regain its center; and was accordingly abandoned. The semi-elliptic spring, supported by a center-pin, was finally struck upon; and found to act to admiration, as will be seen in the next chapter.

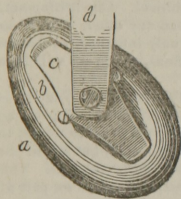
CHAPTER XV.

A NEW TRUSS.

HAVING succeeded in combining the perfectly self-adjusting principle with the entire yielding one, it was found, when given a block of small dimensions, to act with all the certainty of the tips of the fingers, and well nigh with the same ease.

The shape of the block was modified to a regular rotund-elongate, or egg-shape; and, with a plate imbedded upon it, delicately poised on two semi-elliptic springs, crossed at right angles—but finally, on but one, for it was found to answer better—connected by a center-pin, passing through the lever, spring and plate, and secured underneath by a screw-bur; having space to descend and give action to the spring.

BLOCK ATTACHMENT.



Explanation.

- a. The block in imitation of the egg-shape; and of Holly, or White Maple wood.
- b. Brass plate, imbedded upon the block, and secured to it by a screw on each side.
- c. The semi-elliptic spring, with points resting on the plate.
- d. The lever or neck, connecting the block with the main spring.
- e. The center-pin, passing through the lever, semi-elliptic spring and plate, and secured underneath by a screw-bur; with space in the block to descend, so as to allow the spring to act.

It will now be seen that the block is poised, as it were, on an elastic pivot; that when acted upon in any part, will readily yield; and, so soon as relieved, as readily regain its erect position. It is therefore given a perfectly self-adjusting property, combined with an entire yielding one, by which it is enabled to adapt itself to any movement, or attitude under which the part may go; and consequently retain the rupture with comparatively little pressure, and almost entire ease to the wearer. Hence at once is gained a series of advantages—A MORE UNIFORM PRESSURE, A MORE SECURE RETENTION, COMPARATIVE EASE and A SPEEDY CURE.—For a speedy cure will necessarily follow the first two. The lever is made of malleable iron, which will permit it to be bent, so as to raise the block, or throw it farther under, if necessary, at any time.

The truss when complete, appears as in the following cut. The main spring in all instances crosses before. The advantages derived from this arrangement are very considerable. The bow of course is larger and the elasticity greater; and passing beyond the bilge of the abdomen, secures an upward and inward pressure against it, instead of an outward one, as is the tendency of the old-fashioned spring.

Explanation.

- a. The main-spring with appropriate covering, passing around the body.
- b. The button-screw, passing through the main-spring into the lever; and on which is buttoned the end of the cover.
- c. The block, as described above.

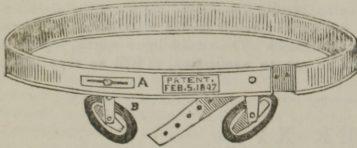
THE SINGLE TRUSS.



This construction is suited to all the varieties of Inguinal hernia. When applied, it will be seen that the block points in the direction of the groin; and on account of its small size, will not come in

contact with the pubic bone, nor solid parts of the groin. Being let down at right angles from the main-spring, it dips below the bilge of the abdomen, and is consequently secure in its position, and requires no perineal-strap to keep it in place. The block is intended to sit immediately over the hernial orifice, and by the gentle pressure it makes, only enter it sufficiently to stimulate the part to the necessary action. And the great secret of success has been considerably owing to this close proximity of the block. All the pressure that is employed is properly exerted; and for the purposes of actual retention and a radical cure, but little is wanted; and hence the efficiency of the little, employed by our Instrument.

THE DOUBLE TRUSS.



Explanation.

- a. The longitudinal opening for the button-screw of the second block.
 b. The second block, like the other in every respect.

The Double Truss differs from the Single, only in the construction of the main-spring; and in this only by the addition of a slide, and another block. At a proper distance from the end of the spring is a longitudinal opening, or slide of suitable dimensions, through which is placed the button-screw, to secure the second block; and by which it may be placed nearer or farther from the other, as may be required. It, therefore, has the advantage of a variable distance between the blocks, so often in demand, on applying an instrument of the kind; also, of lightness, having only the weight of the single spring.

Each general variety of hernia properly requires a truss to be expressly adapted in its construction to it. And a lack of this, is one great cause of much of the lameness of the many trusses in use; the one form of which is intended for all the varieties of the disease, except Umbilical. Our Instrument, as described above, is perhaps better calculated for universal application, than any other. But if so employed, must often fall short of its duty. The above arrangement is only intended, as before mentioned, for the Inguinal form. For the other varieties we have variations, which we will here describe.

When the FEMORAL variety is met with, though its occurrence, like the Umbilical and Ventral, is comparatively rare, the adaptation we make is simple and effective. Instead of the block pointing obliquely to the line of the main-spring, it is made to point directly toward it; or, in other words, to stand at right angles with it. The size of the block is also diminished nearly a half, but left of the egg-shape; and when applied, the lever is set under to an angle of about thirty degrees. This secures a most perfect adaptation to the anatomy of the part; and such a complete action on part of the Instrument, that the worst cases are managed with all ease.

Femoral hernia has been generally found so difficult to retain, that it has been frequently declared unmanageable. But the declaration should not excite surprise, when we examine the things called trusses, that have been used for the purpose. Among the very large assortment waded through in the examination, in a former chapter, there was but a solitary one, intended expressly for this species of the disease. And, strange as may appear, not until the year 1835 had there been a single instrument in the general market, constructed expressly for it. How, then, is it possible, that this variety of the complaint, differing so widely in its situation and anatomy, should have been any thing else than unmanageable. And much more so, must it needs be in the hands of the empiric or mere instrument-maker; who, of course, could not distinguish one variety from another.

For UMBILICAL Hernia, the form of block is as usual, being a regular circle, varying from two to six inches in diameter. On the inside center is a semi-spheroidal projection, like the face of the thumb, differing, however, in dimensions to suit the size of the hernia and the age of the patient. This projection is placed in the umbilical indenture, after the hernia has been returned, and partially in as much more orifice as the protrusion may have caused; and thus prevents its re-appearance.

In attaching the block to the main-spring, no lever is employed. In the end of the spring a longitudinal opening of two inches in length is made, through which is placed the button-screw, and made to enter the center-pin; into which it is thus screwed, and the attachment rendered complete.

In this form of block, the advantages of the self-adjusting movement, given by the semi-elliptic spring, is especially realized. With each breath, it adapts itself to the movement. Its action is indeed inimitable.

The VENTRAL TRUSS being so seldom wanted, and always varied to suit each case, renders it impossible to give any definite description;—other than that the surface of the pad should seldom be much convex. It sometimes, however, requires a central eminence. But as we have already said, it requires a special shape for each case. It is therefore useless to attempt being minute.

We have not presented cuts, showing the variations of the Instrument, for these latter forms of the disease. Other than Inguinal hernia is so comparatively seldom met with, renders it unimportant.

CHAPTER XVI.

THE RADICAL CURE OF HERNIA.

THE word *Cure*, applied to hernia, simply signifies its retention by a truss or bandage. But, its *Radical Cure*, implies its actual cure; by which the person is restored to soundness in every respect in the part; and no longer required to wear a truss, or any like instrument. Formerly, when contrivances for the retention of hernia were yet in so imperfect a state, as to act with no degree of certainty, and the comparative relief of a tolerable retention seldom attained, the disease was said to be *cured*, if its descent was but prevented; for it was not expected that the instrument could be dispensed with afterward; and much less that an actual or Radical Cure could be thus wise effected. It is thus, therefore, originated this application of the term. And when in the progress of its treatment, actual cures were performed, the word *Radical*, in contra-distinction, was prefixed to it.

Various modes of treatment were formerly, from time to time, resorted to, before the introduction of wooden blocks, for the purposes of a Radical Cure; as, the golden stitch, excision of the sac, use of the cantery, astringent applications, &c. And resort to this latter, and to operations by the knife, are not still abandoned. We not unfrequently, at the present day, hear of some new plaster for the actual cure of hernia, or novel mode of operation, for the same purpose; though the impracticability of either is alike obvious, and has long since been satisfactorily proven.

Upon the introduction of the wooden block, the Radical Cure of Hernia, was looked upon as tolerably certain; as has been disclosed elsewhere. But how far it has succeeded is well known, both to the Profession and the public.

It was first urged that the cure was the result of irritation, or adhesive inflammation, as it was termed, and all possible effort employed to create this condition. In addition to the use of powerful springs, the block was rendered rugose, or rough with a file, that it might be the more effective. But it seldom, if ever, fell short of the desired purpose. The contused groin was beheld with delight; and the patient encouraged with high promises to bear up under it. But the unfortunate victim did not always find that "*to grin and bear*," as the vulgar word is, relieved him. Often after months of suffering, he was doomed to learn that his cherished hopes were not to be realized; and that his disease was in no way relieved, but perhaps rendered worse.

It was thus discovered after a time, that this mode for a Radical Cure would not do. It was then surmised that the secret lay in a perfect retention; and that the advantages of the wooden block must consist in its retentive properties exceeding those of the soft pad. Attention was accordingly directed to it. And though the surface of the block was rendered smooth, and comparatively flat, to avoid the formerly cherished irritation, the severity was not by any means done away. The strength of spring was if possible increased, for the most perfect retention was now the aim—it was the talisman of a complete cure; and must be had at no matter what expense of contusion and suffering to the patient. But with all, it was found that something was wrong—the per centum of actual cures did not increase.

The secret was then declared to lie solely in the *shape* of the block. And many were the shapes that consequently appeared. It was likewise deemed indispensable sometimes to wear one shape awhile and then another. But still all would not do. The average success was no better.

Next, and finally, the whole difficulty was pronounced to lie in the general construction. The ordinary elastic spring—never before nor since doubted by good authority—was therefore found fault with; and a *bottomless basket-looking contrivance*, called an abdominal supporter, brought in aid; and hernial blocks attached to it. It was thought that by this compound operation of general support, a radical cure would be facilitated. But tie up the arm and will not the muscle shrink? Give general support to the abdomen and will not its muscles relax?—the very cause of hernia. However useful may be the supporter applied for its own purposes, which, we doubt not, experience proved it to be a very bad hernial apparatus—the poorest that had been struck upon—and we hear no more of its application.

And thus reads the history of the wood pad. Is it then to be wondered at, that it should sink into disrepute, and its transcendent properties have been doubted? We are no less surprised than sickened to see in the perusal, how little plain common sense was evinced; to say nothing of the downright stupidity of some whose attainments should have guided them more clearly. For should not ordinary observation have taught the most illiterate theorizer, that a contused and inflamed condition was uncalled-for, for the purposes of a Radical Cure. Or that a complete retention, regardless of powerful pressure, could never facilitate the same object. Or that the shape of the block, singly and alone, any more than individually the general construction, could never produce the desired results. But, we do think that all might have readily inferred, that the severe pressure alone, was sufficient, not only to prevent the process of an actual cure, but to induce a worse condition of the disease. For, why it must necessarily do this, will be acknowledged upon being mentioned.

It is known, it is a law of the tissues, or living parts, to experience numbness under severe and continued pressure; and with the same certainty, will absorption or wasting of the parts underneath take place. Therefore, the necessary results of this very principle must defeat the object in view; and, moreover, aggravate the disease and render it worse. On the other hand, mark the results of a gentle pressure—a pressure that produces no numbness. Notice the palms of the hands and the soles of the feet, subject to this kind of pressure. Or examine the muscles of the laborer, so constantly strung by

action of the tendons,—and you see the results of a gentle pressure. Is it difficult then to see the opposing effects of the two kinds in the treatment of hernia? Or is it difficult to see, why the farmer was radically cured by the imperfect pressure of his old truss; while the hundreds subjected to a powerful pressure were not bettered? The idea is so simple, it requires no farther illustration. And why any relief, in any instance at all was had, under the circumstances, may be referred to one of two causes, or to both. There must by chance have been a lighter spring, than usual, employed; or there was sufficient muscular energy to resist the effects. The advantages of both, however, may have been enjoyed.

THE RADICAL CURE OF HERNIA, which we will now consider more especially, consists in the occlusion or closure of the hernial orifice; which in consequence prevents the re-appearance of the disease. The occlusion is caused by the obliteration of the sac at its neck—except in rare instances—which generally takes place while it remains exterior to the orifice of descent. For being the elongated peritoneum and serving as the lining membrane to the tumor, it seldom returns with the protrusion into the abdomen; but remains without, is extirpated by the obliteration, and afterward disappears by absorption. So any process, physiological or pathological, that effects a permanent closure of the aperture, so as thereby to effectually retain the bowel, without further mechanical support, is a means of Radical Cure. And variously summed up, they are as follows:

I. IT MAY BE EFFECTED BY THE ELASTIC CONTRACTION OF THE SAC, AND MUSCULAR FIBRES EMBRACING THE ORIFICE.—It is a law of the economy, that when any part is subjected to distension by mechanical force, it yields less or more by virtue of its elasticity, but may become embarrassed in its functions. Yet, if the distention be continued, the part becomes adapted to its new position; and its functions regain their tone. But, so soon as the distending force is removed, the effects are reversed—there is an effort to regain the normal condition, by elastic contraction, and the part thus restores itself.

Now when a hernia leaves the abdomen, carrying before it the peritoneum, which lined the abdomen, evenly and without surplus in the part, it does it in conformity with the law just mentioned. It becomes the distending force, and the peritoneum and orifice, the parts effected. They become gradually elongated and widened, as is witnessed in the progress of a hernia. But, return the protrusion and keep it securely so, and you see nature working out her own cure. Contraction immediately commences in the sac, and the tendonous fibre embracing the orifice, and is continued until ultimately, if the sac does not entirely retreat within the abdomen, a new continuous surface resulting from adhesions and deposit is formed; and, any external surplus removed by absorption. This is generally the case, but not always. It has happened that the sac would so contract, as to become very small, and also, the orifice sufficiently to secure a retention, without the aid of an instrument, and remain so. But the reason is readily given. Some distending force remained. The remaining cavity was always found to be filled with water, in consequence of still communicating with the interior of the abdomen; but, the aperture not sufficiently large to permit the descent of the bowel. Although the chances of permanency be small, when a cure is effected under any circumstances, under this head, yet it is entitled to the term Radical.

It is by this process or law of the economy, that infants are restored, by use of a simple bandage. And it explains why, in very rare instances, soft pads have been known to cure adults radically. But, it is generally the process of time; for occurring so rarely, it cannot occur—what would be called—immediately.

II. IT MAY BE EFFECTED BY SIMPLE ADHESIONS.—This delicate bond of union, is like that formed by bleeding surfaces when brought together, and known to surgeons under the name of “union by the first intention.” It is an early result of such surfaces in contact, and differs but little in hernia. The peritoneal surface under irritation readily unites; the two surfaces of the empty sac, therefore, brought together, under the pressure of a truss by which they are irritated, soon unite in the manner referred to. And if the union was always of a stable and substantial character, it would be a successful process of cure. But this is not the case; and hence the frequent recurrence of the disease, after it was supposed that an effectual cure was made. It is true it sometimes proves Radical. Cases of permanent cure being known to occur in this way, especially when the patient was young. The process is therefore entitled to the name.

III. IT MAY BE EFFECTED BY INTERSTITIAL DEPOSIT.—The action of a truss pad, sometimes produces a deposit from the blood in the interstices of the tissues underneath, which hardens them and renders them less extensible, and, accordingly, a more efficient barrier against the egress of the hernia.

The result may be effective in proportion as other parts are involved. Should there be any agglutination with deposit in the neck of the sac, with muscular contraction of the orifice, there may be some chances of permanency in the obliteration. But upon the whole, it is but little more stable, than the result of the preceding process; and cannot promise much more permanency.

IV. IT MAY BE EFFECTED BY GENERAL CONSOLIDATION.—The cellular tissue, which occupies the neck of the sac, the neck itself, and the surrounding tendonous fibres, *faciæ*, &c., may be condensed and consolidated into one general mass, and thus effect an obliteration. This is sometimes the result of a long continued pressure made by a truss block of rather flat surface; and for sometime after the removal of the instrument, renders the part perfectly secure. But like the occlusion produced by adhesion and cellular deposit, there must frequently be doubt about its permanency. It is a law of the tissues to remove all such conditions by absorption, when the causes that produced them are removed. Therefore the majority of such cases cannot prove permanent.

V. IT MAY BE EFFECTED BY SUPPURATION.—When the pressure employed, for the purposes of retention, is so severe as to produce actual inflammation, it always terminates in simple condensation, interstitial deposit, or *suppuration*. When the last occurs, there is a solution of continuity or death of particles, which are thrown down and removed by the discharge of pus or matter. Their place is speedily refilled by the formation of a new membrane, of a much more firmly fibrous character than produced by adhesions; and possessed with a tendency to contraction, from which the constant change under which solids go, is never able to set it free. It therefore becomes a most effectual barrier to the descent of a hernia. It lacks but one thing to become a generally successful means of permanent cure. That is, it could not with safety be established in the neck of the sac, which would be indispensable to a perfect cure. There would be great danger in the peritoneum, so susceptible to slight irritations, taking upon it a generally inflamed condition, which would be likely to prove fatal.

A barrier to the entire descent of a hernia is often produced in this way; occurring sometimes in course of the inguinal canal, at the external ring, or in front of the pubic bone, caused by the severity of the instrument; and sometimes by lack of attention to it.

An instance of this kind came under my notice a short time since. A young man called on me for a truss. On removing the one he had on, which he stated had given him exceeding pain, the part was found already suppurating over the inguinal canal. I advised him to use no truss till it would heal, but to return home, keep as much as possible in the reclined posture, and apply poultices. He did so, and after some days returned with delight to tell me, that his rupture, which was a scrotal one, was "half cured," to use his own phraseology. The suppuration had interposed a barrier, which prevented its descent lower than where the block had rested.

VI. IT MAY BE EFFECTED BY A RE-UNION OF BROKEN FIBRES.—Most hernia, occurring after adult age, are more than likely attended by less or more rupture of muscular or facial fibre. It is not possessed of the elasticity common to it in earlier growth, and moreover is generally subject to more severe distention at adult age, from exertion. The Ventral or Vento-Inguinal forms must necessarily be accompanied by some rent of fibre.

When such a condition occurs, the re-union by fibrous deposit, under sufficiently early and judicious treatment, is simple and effective and even permanent. But how long after the occurrence of the disease, it may be capable of being established, has not been ascertained. The instances which have come under our notice, were of recent origin.

Mr. G., a young man belonging to a fire company of Philadelphia, while running with an engine, was accidentally tripped up and run-over. He rose with a sense of pain in the groin, and after some hours upon examination found a small swelling with redness of the part, in the abdomen near the groin. He wished me to examine it. I found it to be a ventral hernia. I prescribed the recumbent position, with the necessary applications, and after some days applied a truss. He recovered speedily. In two months I removed the instrument, and pronounced him well. His early cure was the result of the above process.

VII. IT MAY BE EFFECTED BY THICKENING AND HYPER-NUTRITION.—Not many years ago, when the Profession of Philadelphia were agog with a new truss that had appeared, a committee, appointed to investigate the subject, very correctly reported, that its action did not promote *thickening* of the part; but on the contrary, always absorption under the block. And though they recommended the truss in unqualified terms, they could name no other means by which it would effect a radical cure, than by its retentive properties. And it was thought retention must accomplish every thing. For there seems to have been but little notice taken of the benumbed and debilitated condition produced, and consequent suffering from the severe pressure. Our experience, afterward, from employing the same instrument, fully corroborated their statement, so far as it was negatively concerned; and completely disproved it affirmatively. For, in the first place, its retentive properties did not exceed those of many other trusses; and the horrible pressure it made, generally defeated all possibility of a cure by virtue of it, and every other process by which the like was effected, except by suppuration, when the chances of life were necessarily compromised.

It seems, that the instrument-makers, who were employed as workmen on this truss, have since become competitors in the market, and got up one of their own; which they claim will certainly cure; because, being the same truss, they have discovered that *the block was worn wrong side up!*

Now when the pressure is so regulated and reduced, as not to benumb and cripple the part, and cause absorption, a thickening from hyper-nutrition (or abundant nutriment and basis of structure) may ensue, and a Radical Cure be thus effected. But it requires a perfect retention to be made in the meantime, which is seldom effected by the ordinary instruments.

VIII. IT MAY BE EFFECTED WITH CERTAINTY AND PERMANENCY BY STIMULATING THE HERNIAL ORIFICE TO CONTRACT.—To secure this, only requires the proper instrument, and that judiciously worn. It requires a truss with a block, small, convex and elongate; that by such dimensions it may not only come in close contact with the hernial opening, but enter it somewhat, and thereby produce the requisite stimulation. It likewise requires the pressure to be self-adjusting and gentle, that by the former, it may be uniform and the retention secure; and by the latter, expansion of the orifice and numbness of the part be avoided.

Experience has proven this to be the only entirely successful method of permanent cure. Hernia of the longest standing may be effectually obliterated by it. It is in fact, a sweeping process of eradication, and, more or less, embodies many others. For instance, where it is established, there is

conjunctly, a determination of blood to the part, interstitial deposit, adhesions, re-union, thickening and finally consolidation; which alone would render the chances of a cure tolerably certain and permanent; yet, they are but the results, as well as auxiliaries of stimulated contraction, and when combined with it, render the probabilities of a Radical cure no longer equivocal.

CHAPTER XVII.

METHOD OF CURĒ BY THE NEW TRUSS.

THIS Instrument, the result of experience as disclosed in the preceding pages, has been constructed expressly to carry out the valuable principle of a gentle, limited and well-regulated pressure. When applied, it is found to act with all desirable ease, safety and success; instituting the phenomena of its action in beautiful train, and speedily leading on to a Radical Cure.

The block, small, elongate and convex, accurately adapted in its shape to the anatomy of the part, neither comes in contact with the pubic bone, nor muscles of the thigh. The gentle and readily-accommodating pressure, obviating numbness and its debilitating effects, secures comparative ease and a perfect retention—the first great step toward an actual cure. And the close proximity of the block to the hernial opening, entering it to a degree, stimulates the surrounding fibre, causing it to contract, and the block to recede, which the gentle force of the spring permits. While the blood quickened by the action, determines to the part, and freely circulates through it, distending and strengthening the structure, by particles of deposit, which in time are converted into firmer, fibrous material. Adhesions, re-union, thickening and consolidation, follow. And the part is thus, from an enfeebled, and relaxed state, speedily built up to one of consistence, permanency and power; perhaps considerably surpassing the most sound and vigorous condition it could have boasted before the occurrence of the disease.

It is thus the Instrument performs, and is attended with a certainty of success, unparalleled in the history of treatment.

CHAPTER XVIII.

INAPPLICABILITY OF THE NEW PRINCIPLE TO ANY OTHER INSTRUMENT.

THE NEW PRINCIPLE of a gentle and well-regulated pressure, is inapplicable to any other instrument; as well as *unattainable* by their construction. It is part and parcel of ours; or the immediate result of its action; and accompanies it, as a portion of it. It was seen in Chapter xii, that when the attempt was made to apply it to any other, which only could be done by reducing the strength of the main-spring, it would not do; for then, generally speaking, the rupture was not retained. Their construction required all the pressure given them. But this was not all; even if the principle could be joined to them, they would still remain to a great extent defective, on account of the *material* of the pads of many, and the *shape* of all. If they were soft pads, they would not do at all, and if of any *smooth*, hard material, they would be nearly as defective. They would always, either slip from the place, or adhere too firmly to it, owing to the state of moisture on the surface of the skin. By the former, the hernia would be allowed to escape; and, by the latter, the air precluded from the surface;—either of which would destroy the progress of a cure. But the shape of the pad would render them ineffective in all instances. They are generally large, and but little convex; consequently they can never make effective pressure on the hernial orifice, nor stimulate it to contraction; which can only be done by a small convex surface gently and partially entering it. And were such a shape given them, it would still be worse, they would be injurious. Their powerful pressure would distend the orifice, and effectually keep it so, completely destroying the effects desired. The INAPPLICABILITY, therefore, of the principle to any other construction than our own, will be obvious.

CHAPTER XIX.

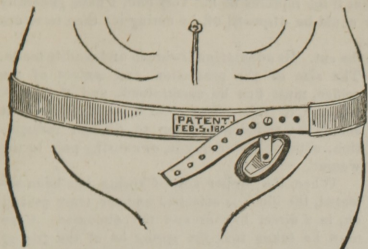
DIRECTIONS FOR THE CORRECT APPLICATION OF THE NEW TRUSS.

THE correct application of the Instrument, is an item of no small importance. A perfect adaptation is necessary, not only to ease, but indispensable to a proper performance. An instrument that does not fit correctly, will not sit easy; nor will it act with the certainty and success expected. We will, therefore, give some definite directions, which may guide in its application, as well as subsequent use.

The first thing to be done, is to ascertain the kind of hernia. And if it be Inguinal—of which more than nine-tenths of all ruptures are—the Instrument for that variety will be brought forward. It is then, generally, best to take the measure around the pelvis; and make a selection of size accordingly. This will at least assist in the selection, but not always be a certain guide. The size can only be accurately ascertained by the application of the Instrument. The hernia should now be

carefully reduced, which is done best in the recumbent position; and the truss applied, as seen in the following cut:

THE SINGLE TRUSS APPLIED.



It must be placed on from the opposite side, immediately below the haunch-bone, and carried across before. The accuracy of the fit and adaptation will now be determined. The spring should sit easy but close all around, except over the spine, which it should not touch. The block should be found immediately over the hernial opening; which will be sufficiently low to reach the pubic bone, but not to rest upon it; and so far across upon the groin, as not to reach its solid parts. And to always secure this adaptation, only requires the proper length of spring to be selected; which there need be no difficulty in doing, as our Instrument is unusually replete in sizes.

The block should next be examined; and it lever, being maleable iron, may be bent, and the position thus altered. But it will not happen one time in three-score, that the inclination need be altered. The block, being poised at the center, adapts itself mostly to any exigency that might arise. If any alteration, however, is made, care must be taken in replacing the lever, that it be left at right angles with the main-spring; and that the button-screw, forming the connection between them, be left secure and immovable. This will cause the block to always point in the proper direction, and act more effectively. The adjustment made, the strap is brought round and buttoned moderately tight on the stud in the end of the spring. Attention should be given, that the block is always kept fairly above the pubic bone; that it may not pinch upon it; as well as, be too low to secure the retention.

The application of the DOUBLE TRUSS is similar, in the outset, to that of the single; there being but one spring. In the first place, it must therefore be adapted in every respect like it. This done, the action and bearing of the other block remains to be examined.

The second block will, in almost every instance, want adaptation in two ways. First, it will want to be placed at a proper distance from the other. In most persons of like size, apparently, there is a difference in the width of pelvis. This renders the distance between the blocks variable; and calls for alteration in almost every case. The button-screw, therefore, securing the block, must be slackened and the block shifted to the proper place.

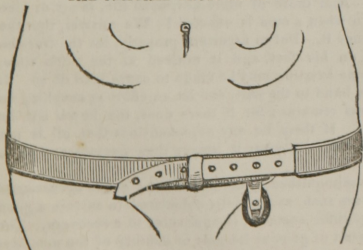
Secondly, we must next examine the comparative amount of pressure. If it does not correspond with that of the other block, the lever must be bent to regulate it. If it be thrown farther under, the pressure will be increased; and if it be raised, it will be diminished. The adaptation will thus be completed.

It sometimes happens that a Double Truss may be employed with good results, where but a single rupture has yet appeared. It is often found that the opposite side is weak and predisposed to the disease. For the causes which have produced it on the one side, may have operated to induce it on the other. It may be ascertained by placing the hand in the groin, and requesting the patient to cough. If there be weakness of the part, the bowel will be felt distinctly to strike, as though it would protrude. In such instances, goodly service may be obtained by the application of a Double Truss. It will sustain and strengthen the part, and substantially restore it, by the time the other side is relieved.

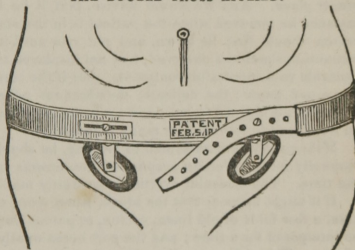
The FEMORAL TRUSS is applied in general respects like the Inguinal. The spring of course must fit, and be of the proper length. It is, however, worn somewhat lower on the pelvis, as the hernia is situated lower; for we generally make no increase of length in the lever. When the hernia has been returned, the truss is applied; and generally requires no farther adaptation, if it has been selected of the proper size.

When cases of Double Femoral hernia occur, the blocks of course are simply attached to the spring, in the same manner as for Double Inguinal. And when instances present of Femoral hernia on one side, and Inguinal on the other, the blocks for each variety, respectively, will want to be used. It sometimes has happened that Inguinal and Femoral both have appeared on the same side.

THE FEMORAL TRUSS APPLIED.



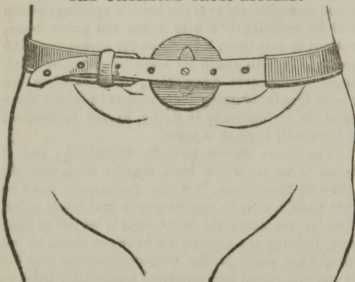
THE DOUBLE TRUSS APPLIED.



And it presents a difficulty that is not easily surmounted. I have employed, at the same time, a block for each. But it is exceedingly difficult to have them act well under the same spring. And to employ two springs would still be worse. I have also sometimes constructed a double block; which, occasionally, would answer a tolerable purpose. But if the ruptures be not very bad, I have generally found it best, to neglect the one, until the other could be disposed of, by curing it; then to return and treat the other; and thus finally manage them.

The UMBILICAL TRUSS is applied as seen in the cut. Its adaptation is simple and readily made.

THE UMBILICAL TRUSS APPLIED.



The size of the protrusion and extent of the orifice, must first be ascertained, and the block selected to suit. The central eminence on it should be sufficiently large to fill the indentation, without distending it, or causing pain to the wearer.

When the proper size of spring has been selected, the block is attached and the truss placed on, in a direct line around the abdomen. Care must be taken that the spring be of the proper length; for, being short, it may draw against the side of the indentation, or being long, it may push against it; in either instance, rendering it uncomfortable to wear, and ineffective in its use. To remedy this to a degree, there is a slide in the end of the spring, over the block, which will permit it to be varied to suit the requisition. It will be

found to sit easy, and be worn with a comparative degree of comfort.

The application of the Instrument for the *Ventral* form, is of course in most respects, like that of the others. It is always applied in a horizontal line around, and beyond the bilge of the abdomen, when the disease is found to either side; and worn with the same ordinary directions.

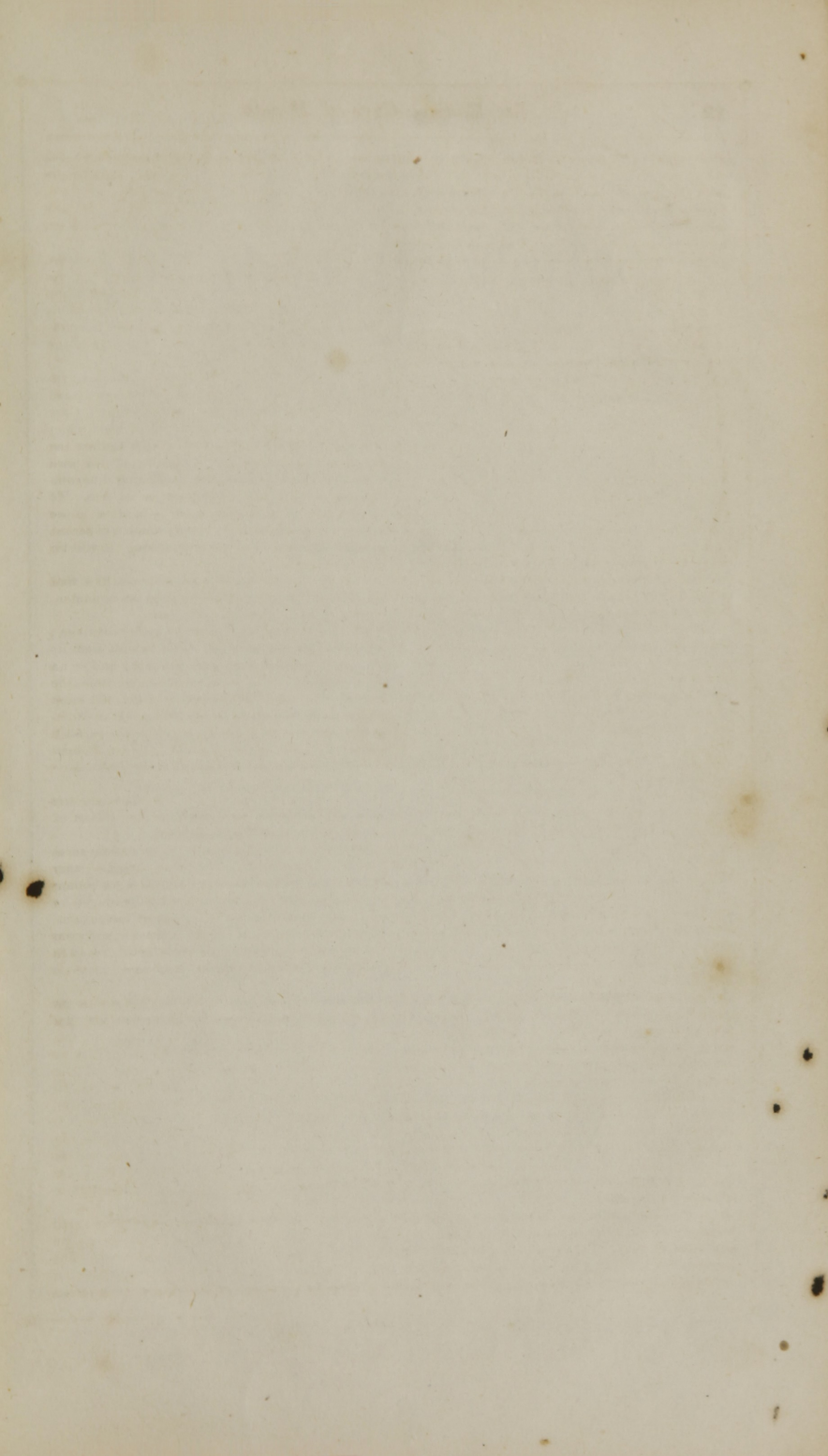
IN GENERAL, whatsoever be the kind of truss applied, it may be worn over or under the linen; but under is better; it will act with more certainty and efficacy, and not be so liable to shift from its proper place. And we would advise, that it be kept applied as constantly as possible; and in no instance be removed when the patient is in the standing posture. If it is taken off at any time, the person should first lie down, and not rise until it is replaced. And if removed at night, the same precaution should be observed, and not displaced till abed, and re-adjusted before rising. It is indispensable to a successful treatment. For if the hernia be allowed to protrude at any time, the passage is opened anew; the delicate, membranous adhesions, which are already formed, will be broken. And thus all that has been done toward a permanent cure—perhaps, the successful result of weeks—be destroyed in less than as many moments.

If the person is accustomed to bathing, he should have a change of trusses, that he might use one purposely for it. For, on account of the reasons mentioned, he should not attempt to be without at the time. The muscular exertion necessarily made, would greatly endanger a descent.

If it might happen, that the block, when worn next the skin, should chafe and produce some soreness, a few folds of old linen, cotton, or patent lint—which last may be obtained of any druggist—may be interposed for a time; and the part occasionally dusted with a little powdered starch, or carbonate of zinc. This will generally soon relieve it. It is not intended that such action shall be produced by the truss. Where it occurs it is mostly the result of a bad adaptation, or negligence of the patient. For a while after a truss has been applied, there is nothing better than the use of a sponge and cold water, morning and evening. This will dissipate any sense of weariness, as well as tendency to extreme irritation. A slight redness of the surface is not objectionable, but anything more is uncalled-for.

The length of time usually required for the accomplishment of a Radical Cure, may vary with the age and general health of the patient. Upon these it almost entirely depends. But when they are favorable to it, a child or youth, generally speaking, is permanently restored in two or three months. A person under middle age, in four or five months. And those of more advanced life, in six or nine months. It may be inquired, How will it be known when a cure is effected? We answer, that the general feeling of restoration in the part will announce it. But to ascertain properly, let the truss be removed cautiously, while the person is standing on his feet, and it noticed at the same time, whether the protrusion is likely to follow; if not, some exertion may be made to cause it to do so. If no appearance of descent is still indicated, apply the hand to the part, and let an effort at coughing be made. This will at least test whether any weakness remains; for if there does, the bowel will be distinctly felt with each effort, inclining to descend. If there be any apprehensions that all is not right, replace the truss for a while longer. For it is better to wear it longer than necessary, than to abandon it too soon.

It does not require, that the usual occupation be relinquished in the meantime; or the accustomed mode or habits of life be changed—presuming they are such, as are fully calculated to sustain a good condition of health. A fair amount of labor, or healthful exercise, is conducive to a recovery. The disease, usually, being but little other than the result of general languor or debility of the muscular system, is of course relieved by any means calculated to establish vigor and general tone of the system.



THE
RADICAL CURE OF HERNIA.

WITH
ILLUSTRATIONS:

EMBRACING THE FOLLOWING

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BY A. W. PATTERSON, M. D.

☞ ONE COPY OF THIS ACCOMPANIES EACH INSTRUMENT. ☞

CINCINNATI:

1849.

EDITORIAL NOTICES.

"For the speedy relief and permanent cure of ruptures, there is doubtless no instrument recently presented to the public, worthier a more impartial consideration than this Truss. It, doubtless, well nigh possesses all the merits in point of improvement, that an instrument of the kind can."—*Daily Times*, June 25.

"It is considered a perfect article of its kind, and our surgeons, we are informed, entertain a high opinion of it."—*Daily Sun*, June 25.

"It is said to be quite a superior instrument. The usual severity is done away, and the rupture effectually retained with but slight pressure."—*Daily News*.

"It is, as far as we are capable of judging, a perfect article of its kind. It has been pronounced by physicians who have examined it, the *ne plus ultra* of articles of this kind."—*Pittsburgh Chronicle*.

"Its great merit is, that it accommodates itself to all the motions of the body, and is never liable to get out of place."—*Pittsburgh Gazette*.

"We are told that physicians who have examined it, pronounced it a superior article. It is so constructed, that the block which bears upon the part moves on springs into any position adapted to the feature of the body. It is in this respect that the old trusses are defective."—*Pittsburgh Post*.

"An admirable improvement on the ordinary truss. We understand the medical men of our city consider this a great improvement."—*Pittsburgh Dispatch*.

"An improvement in trusses, which is likely to supercede all others in use. Pads of a hard material only will effect a cure; but the great severity, from their unyielding position, heretofore has been a source of loud complaint. This difficulty seems to be completely obviated by the invention of which we speak."—*Pittsburgh American*.

"Although not at all acquainted with the disease, we apprehend, from what we understand, that this truss is immensely superior to any in use."—*Pittsburgh Commercial Journal*.

"It seems to possess the requisites of a perfect truss. It causes no pain or fatigue to the wearer, and so readily adapts itself to every movement of the body, it cannot be thrown out of place except by an actual removal with the hands. This truss has been worn some time by a friend, who says that it is the best truss, in every respect, that he has ever used. We understand that it has been examined by several of our most skillful physicians, who speak of it in the highest terms."—*Pittsburgh Telegraph*.

"This truss appears to us to be the very best modification of that instrument. It combines certain advantages found in no other."—*Ledge and Standard*, Sept. 4.

"WATT & PATTERSON'S NEW TRUSS.—This new instrument, advertised in another column, is for the radical cure of Hernia. It is constructed upon an entirely new principle, and apparently possesses high merits. Its object is to do away with the severity of the wood-pad. First, by reducing the amount of pressure usually employed; and secondly, in rendering it effective, by giving the block the power of adapting itself to any movement. Hence, it is said to be easy to wear, and by virtue of its gentle pressure, to early effect a radical cure. We would recommend those using an instrument of the kind, to call on Dr. Patterson and examine it. His office is on Walnut Street, above Third."—*Cincinnati Daily Globe*.

"THE BLOCK SPRING TRUSS.—By reference to advertisement, it will be seen Dr. Patterson has opened an office for the sale of Watt & Patterson's new Truss. The Doctor has numerous testimonials from eminent physicians of the eastern cities, where this truss has been tried, of its fitness for the uses for which it is intended. The afflicted needing such an instrument may find it greatly to their advantage to call on Dr. Patterson and examine it."—*Cincinnati Daily Gazette*.

"WATT & PATTERSON'S BLOCK SPRING TRUSS.—It will be seen by reference to an advertisement in to-day's paper, that the celebrated Block Spring Truss, recommended by eminent physicians in the east, where it has been used and tested to their entire satisfaction, is now for sale in this city. This Truss is for the cure of Hernia or Rupture, of which, it is calculated by high medical authority, *one-ninth* of mankind is afflicted. We can say nothing from experience ourself, not being a doctor, but we think those afflicted will find it to their advantage to call on Dr. Patterson. His instrument will recommend itself."—*Cincinnati Daily Commercial*.

"WATT & PATTERSON'S BLOCK SPRING TRUSS.—This invention for the cure of Hernia, enjoys the reputation of a most admirable contrivance for this dangerous and painful disease. Its great qualities have been tested in hundreds of cases, with a success which could only attend the most decided merit. Many of the Profession speak in warm terms of it, and have given certificates of the cures which it has effected in their practice. No greater recommendation than this is needed."—*Germantown Telegraph*.

RECOMMENDATORY.

THE multiplicity of evidence, appearing from the most eminent sources, attesting the high merits of this Instrument, is the best guarantee of its excellency to those unacquainted with it. Among the many under whose favorable notice it has been brought, we would mention the following:

- SAMUEL GEORGE MORTON, M. D.,
Late Prof. of Anatomy in the Pennsylvania Medical College.
- SAMUEL McCLELLAN, M. D.,
Late Professor in the Pennsylvania Medical College.
- JAMES McCLINTOCK, M. D.,
Professor of Surgery in the Philadelphia Coll. of Medicine.
- HENRY GIBBONS, M. D.,
Professor of Institutes in the Philadelphia Coll. of Medicine.
- CHRISTOPHER C. COX, M. D.,
Professor in the Philadelphia College of Medicine.
- HENRY S. PATTERSON, M. D.,
Professor of Anatomy in the Pennsylvania Medical College.
- J. K. MITCHELL, M. D.,
Professor of Practical Medicine in the Jefferson Med. College.

Recommendation

By Professor Gibbons, of the Philadelphia College of Medicine.

"This Truss appears to us to be the very best modification of that instrument. It combines certain advantages found in no other."

Recommendation

By J. H. O'Bryan, M. D., late Surgeon in the Pittsburgh Hospital.

"Watt & Patterson's New Truss has proved unusually successful. With it we have effected eighty per cent. of radical cures."

Certificates.

Numerous certificates have reached us from all quarters. We insert a few to fill out the present page.

EXTRAORDINARY CURE.

RUPTURE OF FIFTY-THREE YEARS' STANDING CURED!

CHESTER COUNTY, Pennsylvania, May 26, 1849.

"Dear Sir: The Truss I obtained of you a few weeks ago has entirely cured me, although I am old and my case had been considered hopeless. I am now seventy-two years of age, and was ruptured when I was nineteen, by a fall from a horse, and have since tried, I believe, every Truss in use, but could get no relief until I procured one of Watt & Patterson's from you; its effects have been extraordinary, and I am no longer obliged to wear it, or any other. I feel grateful to you, and you are at liberty to make this public if you see proper. Yours, &c.,

JAMES LEDLEY, Sr."

CURE OF A DIFFICULT HERNIA IN THREE MONTHS.

"Dr. Patterson: Dear Sir—It is about four months since I called on you with a very difficult rupture. I told you I had tried every truss in vain—so I had—and never obtained any relief. But I was willing to make one more trial, and am now delighted to inform you of the result. The one you applied not only gave me immediate relief, for I wore it with all ease, but has ENTIRELY CURED ME. It is a month since I laid it off, and all remains right. You are at liberty to make this public, if you wish to do so. Very respectfully,

"Louisville, Ky., July 14, 1849.

JAMES DAY."

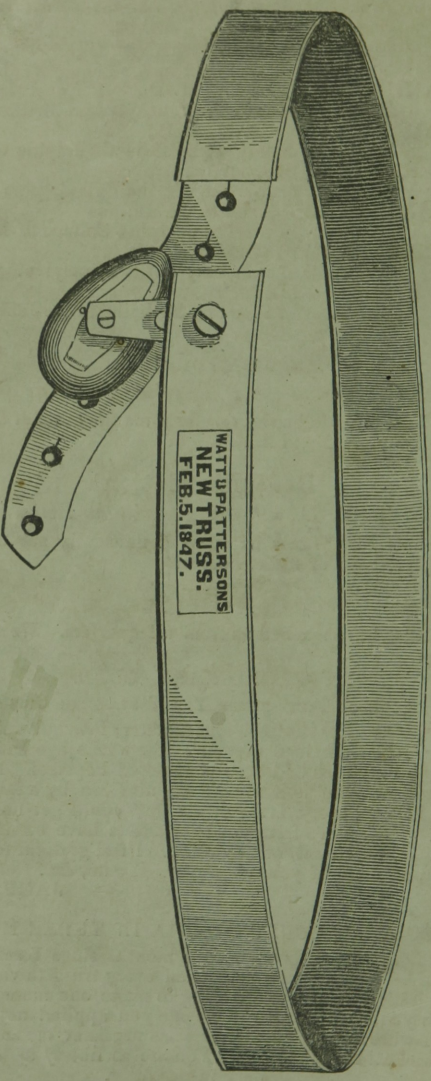
A VERY OLD HERNIA CURED.

"THIS CERTIFIES, that I was ruptured about forty years ago by lifting heavy timbers, and continued so, without relief, until about six months ago, when I obtained one of Watt & Patterson's New Patent Trusses, which I believe has completely cured me.

"Greenup Co., Kentucky, July 18, 1849.

SAMUEL MARTIN."

**WATT & PATTERSON'S NEW TRUSS,
FOR THE RADICAL CURE OF HERNIA.**



Sold by Dr. A. W. PATTERSON, Walnut street, above Third, Cincinnati, Ohio—where all orders for the West and South are to be addressed.

Persons forwarding their measure (the number of inches around the pelvis, immediately below the haunch-bone), will be furnished the Instrument, with assurances it will fit.

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