

**A brief essay on the nature and treatment of herniae or ruptures :
illustrated with engravings / by David Tod.**

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A B R I E F E S S A Y

ON THE

NATURE AND TREATMENT

OF

ERNIÆ OR RUPTURES,

ILLUSTRATED WITH ENGRAVINGS.

BY

DAVID TOD, M.R.C.S.ENG., ETC.,

of the Anatomy and Physiology of the Organ of Hearing, and Diseases of the Ear,
and a contributor of Scientific Papers to the Lancet,

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Nature of Hernia.—A Hernia is a swelling or tumour formed by the protrusion of some viscus out of the abdomen; and the places where these swellings most frequently appear, are the groin, the labia pudendi, the upper and forepart of the thigh and the navel.

The contents of a hernial swelling are, in general, a part of the intestines only, or the omentum only, or of both together. Portions of the stomach, liver, spleen, &c. have also been known to constitute hernial tumours.

From these two circumstances—situation and contents—we derive the different anatomical names by which hernia are distinguished. When a portion only of the intestines constitutes the hernial tumour, it is called enterocoele; when a portion only of the omentum, it is called epiploecoele; and when both intestine and omentum contribute to form the tumour, it is called entero-epiploecoele. When the protruding viscus passes through the abdominal rings so low as the groin, or the labium pudendi, it is called inguinal hernia; and when they descend into the scrotum, it is called scrotal hernia. A congenital hernia is different from those above named. It generally appears some months after birth, and has no hernial sac of peritoneum, but is supposed to be formed by a rupture of the abdominal wall, and when the tumour is formed at the navel, it is called an umbilical hernia.

The following Notices have already appeared upon the merits of the Author's Truss.

"We have seen this truss in use. It is an exceedingly simple, clever instrument, and may be worn with extreme ease and the best possible effect."—*Lancet*, July 4, 1846.

"Mr. Top's truss, we think, will supersede those now in ordinary use. It is extremely simple, requiring no straps or other auxiliaries to adjust it, and does not weigh more than three ounces; and we understand it is approved and recommended by the Faculty."—*Weekly Dispatch*, July 24, 1842.

"Mr. Top's Truss.—We have had the pleasure of inspecting this very ingenious, simple instrument, and we have likewise seen the number of the 'Lancet' in which the Editor of that leading medical journal awards it his unhesitating approval, and pronounces it an 'exceedingly simple, clever instrument.' In these circumstances we have not the slightest hesitation in adding our own humble testimony to that of the Editor of the 'Lancet,' and of other acknowledged high authorities; and perhaps we may be doing a positive benefit to some of our readers, in thus introducing the subject to their notice."—*Cambridge Advertiser*, June 1847.

Printed by Richard Taylor, Red Lion Court, Fleet Street.

PRACTICAL OBSERVATIONS ON HERNIA.

Nature of Hernia.—A Hernia is a swelling or tumour formed by the protrusion of part of some viscera out of the abdomen; and the places where these swellings most frequently appear, are the groin, the labia pudendi, the upper and forepart of the thigh and the navel.

The contents of a hernial swelling are, in general, a part of the intestines only, or the omentum only, or of both together. Portions of the stomach, liver, spleen, uterus, ovaries, bladder, &c., have also been known to constitute hernial tumours.

From these two circumstances—situation and contents—are derived the different anatomical names by which herniæ are distinguished. When a portion only of the intestines constitutes the hernial tumour, it is called enterocele; when a portion only of the omentum, it is called epiplocele; and when both intestine and omentum contribute to form the tumour, it is called entero-epiplocele. When the protruding viscera pass through the abdominal rings so low as the groin, or the labium pudendi, it is called inguinal hernia; and when they descend into the scrotum, it is called scrotal hernia. Crural or femoral hernia is the name given to that which takes place below Pupart's ligament; and when the tumour is formed at the navel, it is called an umbilical hernia. A congenital hernia is different from those above named. It generally appears some months after birth*, and has no hernial sac of peritoneum, but is lodged in the cavity of the tunica vaginalis in contact with the testicle.

When the constituent parts of a hernia may be put back into the abdomen, it is called a reducible one; and when they cannot be put back, owing to adhesions, &c., it is called an irreducible one.

Causes of Hernia.—The causes of herniæ are two-fold, predisposing or exciting. The chief predisposing cause is constitutional weakness in those parts of the abdominal walls where ruptures occur. Anatomy has beyond all doubt ascertained that the fibres of the transversalis muscle which cross the outer part of the inner abdominal ring are in some persons not so strong as in others; and this constitutional muscular weakness is the main predisposing cause of inguinal hernia. Predisposition to herniæ may also be the consequence of long-continued illness, which invariably produces progressive wasting in all the tissues of the body, and of course gradual loss of power in all the weak parts of the abdominal walls to sustain the viscera.

The exciting cause of herniæ is the extreme pressure of the abdominal viscera against the weak parts of the abdominal walls, when persons make any violent exertion, such as wrestling, leaping, riding rough horses, lifting and carrying heavy weights, foot-racing, vomiting, coughing, sneezing, straining at stool, &c.

The abdomen, which is always full, is unceasingly under the influence of two opposite forces, which balance each other in the healthy subject; one is the pressure of the viscera against the walls of the abdomen, the other is the reaction of these walls upon the viscera. If these two forces were in perfect equilibrium in all individuals under all circumstances, no rupture would ever take place. But there are, as has already stated, certain parts of the abdominal walls not built so strong as others, and which under any violent exertion offer less resistance to the pressure made by the viscera. This is especially the case where the abdominal rings, the crescentic margin of the crural arch and the navel are situated, and where a disparity in the equilibrium between the two before-mentioned forces occurs; the resistance of the abdominal walls not being, in these parts, proportioned to the force of the pressure of the viscera, so that herniæ generally take place there. Scärpa, in his *Traité des Hernies*, says, "Numerous practical observations prove that the immediate cause of herniæ is want of equilibrium between the pressure of the abdominal viscera, and the resistance of one or several points of the abdominal parietes." Whenever that equilibrium is wanting, the action of all the abdominal muscles is naturally directed against the feeble parts of the walls; and persons predisposed to hernia thereby instinctively avoid the weak condition of those parts; for the least strenuous exertion they make

Mr. Hey, in his *Practical Observations in Surgery*, relates a case in which a hernia contracted was first formed in a youth of sixteen, whose right testis had a little while before the appearance of the disease descended from the groin into the scrotum. A similar case has lately come before me in a gentleman of thirty-four years.

by coughing or sneezing prompts them to place their hands to the weak parts, when they perceive that they are either actually ruptured or about to be so.

Symptoms of Hernia.—The symptoms of herniæ are—a swelling in the groin, or at the navel, which disappears when the person lies on the back, and reappears on rising up: coughing will cause it to press against the hand when placed on it. If the hernia is an enterocele, and the protruding portion of intestine small, the tumour is small in proportion, and it can generally be easily reduced; in its ascent into the abdomen it is often accompanied with a gurgling noise. If the hernia is an epiplocele, the tumour is rather flabby and has an unequal feel; on reducing it no gurgling noise is heard. If the hernia is an entero-epiplocele, the tumour is not flabby, but it has likewise an unequal feel; on returning it, the gut ascends first, with a gurgling noise, and the omentum follows, without producing that noise.

Treatment of Hernia.—From the preceding remarks, every person afflicted with hernia may easily infer that no permanent cure can be effected without the immediate cause of the disease being removed, that is to say, unless the weak parts of the abdominal walls become strong enough to resist the pressure of the viscera, and keep them within the abdomen. This can be accomplished only by the combination of nature and art: Nature, if assisted by Art, will gradually heal up the breach made in the abdominal walls. The treatment of herniæ, therefore, embraces three operations:—The first is to restore the whole of the protruding viscera with their elongated peritoneal sac into the abdomen; the second, to bring and permanently keep together the surfaces of the internal abdominal ring. This being satisfactorily accomplished, there remains to administer those medicines which experience has proved effective to arouse the inert restorative powers in the system, particularly at the seat of the disease.

This treatment, however, is only applicable to reducible herniæ.

As to irreducible herniæ, the treatment must depend on the condition of each individual case. There are two different stages of irreducible herniæ, the totally irreducible and the partly irreducible, the nature of which must be ascertained before any attempt at effectually relieving the patient is made. If the hernia is found to be totally irreducible from the contents of the tumour having become thickened and hardened, or connected by adhesions with each other or with their containing sac, an attempt at reduction ought never to be made. If however the contents of a hernial tumour are found to be but partly irreducible, in which case the irreducible part always consists of the omental portion, and the reducible of the intestinal portion, the latter should cautiously be returned to the abdomen, and there retained by a properly constructed truss, to which a suspensory bag may be fixed to support the irreducible omental portion, in order to lessen the inconvenience arising from the weight of the protrusion.

In trying to reduce a hernial tumour, only moderate pressure must be used, and the patient should be kept constantly talking to prevent the retention of the breath; for in this state a reduction cannot be effected, as the simultaneous pressure of the diaphragm and of the abdominal muscles on the viscera opposes it.

If the case be an inguinal hernia situated in the canal between the internal and external rings, the protruding viscera will slip back into the abdomen, by the patient merely lying down on his back, or standing in an erect posture, a gentle pressure being made with the fingers upon the tumour. In the case of a scrotal hernia, the patient should lie down on his back, have the pelvis raised about four inches higher than his shoulders, to lessen the superincumbent weight of the viscera in the iliac regions of the abdomen; the legs extended, separated and quiescent to extend the iliacus internus and psoas magnus muscles† behind the internal ring and inguinal canal; then softly squeeze the lower portion of the tumour to force the fluid contents

* I purposely omit to include the nature, symptoms and treatment of strangulated hernia in this essay, which is more immediately intended for the guidance of ruptured persons, whom the disease has not reached that dangerous state. Most earnestly would I warn them against delay, particularly those recently ruptured, in applying for remedy and preventive means to duly qualified men, and not to seek relief, as is too frequently the case, at the hands of individuals unacquainted with the pathological anatomy of hernia, which may have consequences still worse than procrastination. In far the most cases that come under my cognizance, incarceration of hernia has been brought on by the ruptured person having worn an ill-constructed truss.

† When the thigh is flexed, the contraction of these muscles behind the inner ring and inguinal canal obstruct the return of the protruding viscera. The same remark is applicable to the pectinalis muscle in femoral hernia.

into the abdomen: after this, grasp the tumour, make a gentle but steady pressure upwards, and the protruding viscera will forthwith slip back into the abdomen. If this operation prove ineffectual, the sooner the assistance of a surgeon is procured, the better, as through delay the patient's life may be placed in jeopardy.

If the case be a femoral hernia, the patient should place herself in the position recommended for reducing a scrotal hernia, to extend the pectinalis muscle below the crural arch and behind the falciform process of the fascia lata, and to form a depression in the upper and inner part of the thigh close to the groin, having the sartorius and rectus femoris externally, the gracilis and adductor longus internally, with the pectinalis and adductor brevis behind; then softly squeeze the tumour to force the fluid contents into the abdomen: after this, press the tumour with the thumbs gently down towards the saphenic opening* in the fascia lata, whilst the tips of the fingers are cautiously urging the protruding viscera through that opening in the direction of the femoral ring, *i. e.* backwards and upwards until they disappear.

The mode of returning an umbilical hernia need not be described here on account of its simplicity.

With respect to the second operation of the treatment, namely the bringing and permanently keeping together the surfaces of the internal abdominal ring, I will repeat here what I have already published in the 'Lancet,' July 4, 1846, upon this subject:—"About twelve years ago my attention was directed to the various kinds of trusses then recommended and used in the treatment of inguinal hernia. After a minute examination, I perceived that all these instruments were formed without any reference to the anatomical structure of the parts affected—that the pad of every truss could only press upon the external abdominal ring; consequently could not prevent the viscera from passing through the internal ring and lodging in the canal between the two rings, to the imminent danger of the wearer†. I likewise perceived, that when strong pressure of the pad was required to prevent the viscera from escaping beyond the external ring, the circulation of the spermatic chord would be interrupted, and thereby cause great injury to the patient‡. To prevent such effects, I constructed a truss upon a principle totally different from all others; and I can now state that nearly one hundred§ persons, males and females, are wearing my invention, without having the least protrusion of the viscera, or the functions of my structure interrupted.

"It is difficult to give a correct description of the truss, which I now strongly recommend to the notice of the numerous professional readers of the 'Lancet.' The pad, which is about the size and shape of the point of a man's thumb, presses gently over and a little below the internal abdominal ring, to enable the fibres of the transversalis muscle which cross the outer part of the ring to sustain their tone, and the other structure of the ring and inguinal canal their integrity. From the pad the spring of the truss ascends obliquely towards the spine of the ilium, forms a curve above the crista ili, passes across the back, then descends and terminates in the opposite groin. The pressure of the truss is confined chiefly to the pad and curves of the hoop: but care is requisite in fitting the truss to the part where the pressure of the pad must be made, else the instrument will be of no use to the wearer.

"As the bones of each person have something peculiar, I make it a rule, when applied to for a truss, first to ascertain the nature and condition of the hernia, and to take with the utmost correctness, the size and shape of the pelvis. After this I fit the truss to the patient, and test its capabilities under various circumstances before I have it finished.

"None of the actions of the abdominal muscles should be interrupted by the use of the truss; very little pressure of the pad is required to retain the viscera within the abdomen; the effect produced by a slight pressure of a finger over the internal abdominal ring will convince any ruptured person of this. Nor ought a properly fitted

This opening is situated about an inch and a half below the groin. See plate 2. No. 4. I have recently attended two cases of this kind, one exhibiting symptoms of inflammation, the other of strangulation. I succeeded in relieving each patient by dilating the external ring with the point of the little finger, and thus removing the spasmodic stricture at the internal ring, when the tumour disappeared.

Of several hundred persons that have come under my notice, and had worn trusses constructed to press upon the external abdominal ring, nine only were free from disease of the spermatic chord or testicle.

The number amounts now to above two thousand, and in many cases the ruptured parts

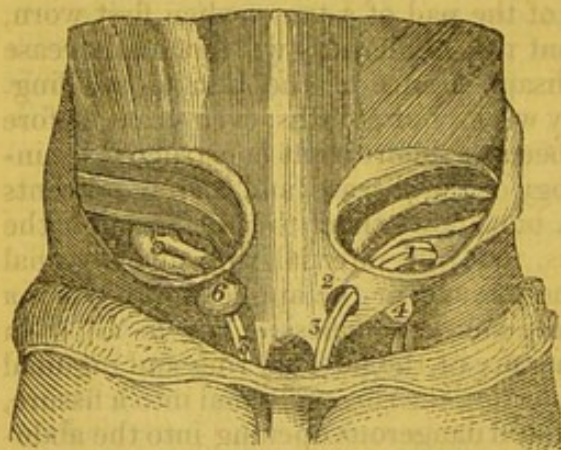
truss to shift out of its position, nor give any annoyance to the wearer worn over or under the shirt."

I have stated in the preceding extract, that in wearing a truss, none of the actions of the abdominal muscles ought to be interrupted, and that the pad should press but gently over the aperture through which the viscera protrude. The pressure of the pad should just equal the resistance required to keep the viscera within the abdomen; any amount of pressure beyond that is not only unnecessary, but injurious; for in the treatment of herniæ we ought to be guided by the same principles which serve us in the treatment of other local injuries. A hernia is a local disease, consisting of a separation of two surfaces which were united by cellular substance, and of a protrusion of viscera between them. A *properly* constructed truss is an instrument adapted to keep those two separated surfaces together, to prevent the least protrusion of the viscera; and to fit the peculiar shape of the pelvis without interfering with the functions of any important structure. A truss not possessing these properties will invariably increase the sufferings of the patient, and place life in jeopardy.

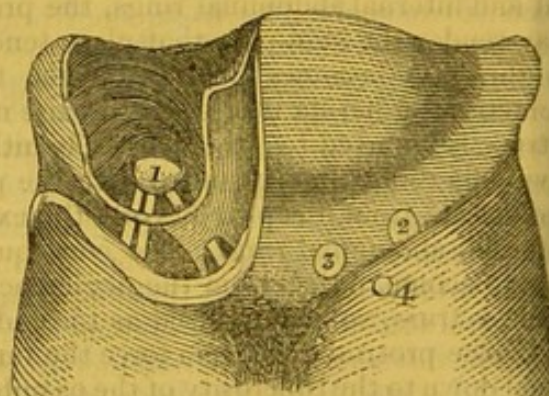
With respect to the third part of the treatment of herniæ, namely the administering medicines capable of soliciting nature to heal up the breach made in the walls of the abdomen, these must always have reference to the causes and condition of the disease, and be very gentle in their effect; for everything of an irritating nature must prove detrimental to the reproductive powers of life.

The following diagrams will facilitate the better understanding of the nature and surgical treatment of inguinal and femoral herniæ.

No. 1.



No. 2.



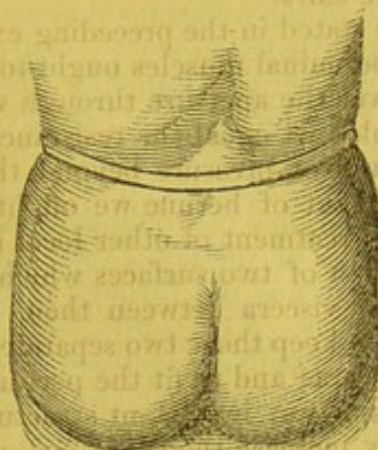
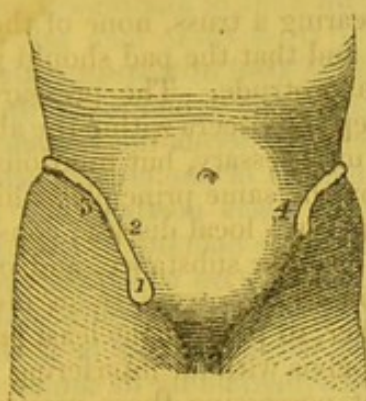
represents on the left side the anatomical structures of the abdominal rings and a femoral hernia protruding under Poupart's ligament; and on the right side an oblique inguinal hernia converting the inguinal canal into a fissure and escaping through the external abdominal ring.

1. Internal. 2. External—abdominal rings.
3. Spermatic chord.
4. The femoral hernia.
5. The viscera in the inguinal canal and protruding through
6. The external abdominal ring.

represents on the right side an oblique inguinal hernia passing through the internal abdominal ring, and on the left side the situation of the abdominal rings, and the saphenic opening in the fascia lata femoris.

1. The hernia.
2. Internal. 3. External—abdominal rings.
4. Saphenic opening.

By the plates No. 1 & 2, it will be seen that the internal abdominal ring is situated close to the groin, about one inch and a half from the external ring. It is easily discovered by lying on the back, placing the tips of the fingers in the groin and then coughing, when something will suddenly push against, and recede from one of the fingers—this will denote the situation of the internal ring. There is another way of discovering the locality of the internal ring, that is by the patient standing erect, placing the fingers of the hand on the side of the rupture over the external ring to prevent the tumour passing through it, then pressing gently but steadily with the fingers of the other hand upon the swelling, following it with the point of a finger until it vanishes, when the finger will be over the internal ring.



shows how the truss is worn in an inguinal hernia on the right side.

shows the situation of the truss behind.

1. The pad of the truss covering the internal abdominal ring.
2. The neck of the truss ascending and forming a curve above,
3. The anterior superior iliac spine.
4. The distal end of the truss which prevents the instrument from shifting out of its proper position.

A few monitory remarks on some incidental phenomena in the treatment of hernia.—If a hernia has existed upwards of a week in the canal between the external and internal abdominal rings, the pressure of the pad of a truss, when first worn, may render the skin over that place tender; but this tenderness will gradually cease as the skin becomes healthy on the total disappearance of the hernial swelling. Sometimes a hernia is allowed to exist not only weeks but months, even years, before a truss is resorted to; this truss has hitherto been an instrument constructed by individuals totally unacquainted with the pathology of the disease, and merely prevents the viscera from escaping beyond the external, but allows them to pass through the internal, abdominal ring. The consequence is, that the internal ring and inguinal canal become, either from the negligence of the patient, or the application of such a useless truss, so disorganized as to render a cure almost hopeless. For in all such cases the protruding viscera force the inner structure of the internal ring and inguinal canal down to the tuberosity of the os pubis, converting the ring and canal into a fissure, enlarging the external ring and forming a direct and dangerous opening into the abdomen, as represented in plate 1, No. 5. The consequences are painful to contemplate; for in any sudden exertion the pressure of the diaphragm and the abdominal muscles may force the protruding viscera beyond the external ring down into the scrotum or labium pudendi, and in their passage over the crest of the pubis become pinched by the truss; active inflammation soon sets in, contraction of the pinched gut ensues, and sometimes strangulation which may render an operation indispensable*. Where these sad consequences do not occur, others of a very distressing nature often take place from the use of a truss made to press over the external, instead of the internal abdominal ring. These are, partial paralysis of the cremaster muscle with elongation of the spermatic chord, varicocele, disease of the testicle and consequent impotency. The effects of these various injuries may be no less distressing on the constitution, for in all local diseases the constitution suffers in exact proportion to the magnitude of the injury or the disease, and to the importance of the part or parts affected in the general economy. When any of the abdominal viscera are displaced by rupture, the dragging of the displaced viscera disturbs the digestive functions: the assimilating system then becomes disordered, and the whole body has an unhealthy appearance. The dragging sensation is in many cases so severe, that it prevents the patient from participating in any social enjoyment, and his life is thereby rendered miserable.

* Sir Astley Cooper, in his *Treatise on Inguinal and Femoral Hernia*, says, "An ill-constructed truss affords a false security more dangerous even than a total omission of this kind of support, since it encourages the patient to take violent exercise without apprehension of the probable consequences."

These remarks upon useless, and consequently dangerous trusses for males, naturally lead me to say a few words on the condition of ruptured females, who from delicacy conceal the sufferings they are put to through the want of anatomical and pathological knowledge in truss-makers or vendors. The truss these men sell to relieve the femoral hernia common to the female, is the same kind of instrument they have hitherto used for inguinal hernia common to the male. The structures of the affected parts are totally different in the two sexes. In a femoral hernia the viscera protrude under Poupart's ligament, between the crescentic margin of the crural arch and the femoral vein, descend obliquely outwards between the fascia pectinea and the falciiform process of the fascia lata, pass through the saphenic opening in the upper part of the thigh, and not through the external abdominal ring on which the pressure of an ill-constructed truss invariably bears; consequently a femoral hernia is allowed to appear and gradually increase in size whenever the patient is not in a recumbent posture. By wearing such a truss, if persisted in notwithstanding its faults, the pressure of the pad upon the neck of the hernial sac may soon produce inflammation in the tumour; adhesions then take place and the hernia becomes irreducible, to the lasting annoyance and imminent danger of the sufferer.

I conclude these monitory remarks with the all-important advice to persons who have in all appearance been completely cured of hernia by the treatment indicated in this Essay, ever to bear in recollection that the cause of the disease was constitutional weakness in the structure of the ruptured parts; and that it will therefore be prudent that they should continue to wear their truss, in order to prevent a recurrence of the disease at the same weak spot, which can never be made stronger than it was before the hernia took place: and "a hernia once cured and allowed to reappear is more liable to incarceration than a recent hernia*."

The newly-invented truss referred to at page 5 of this Essay, will be transmitted to any part of the country, by the applicant forwarding to the Author the following particulars:—The exact measure around the body above the hip-bones, the magnitude, duration, and side of the rupture, the age and height of the person. If the assistance of a surgeon can be procured for the measurement, a readier success in fitting the truss to the case will be ensured by the following additional particulars,—the exact distance from the anterior superior iliac spine to the internal abdominal ring, and to the spinous process of the third lumbar vertebra.

Should the spring of the transmitted truss, notwithstanding these precautionary measures, prove stronger than necessary to retain the viscera within the abdomen, pass a piece of tape round the neck of the instrument close to the pad, and raise gently, while strongly coughing, from the belly, till the swelling appears. Repeat the experiment several times, and if the result is always the same, you may draw approximatively your conclusions, from the degree of force used in raising the pad, what decrease of pressure the instrument does require, and give your information accordingly. The use of a gravimetre or spring balance in making the aforesaid experiment would enable the person to indicate more accurately the required diminution of the pressure.

If, on the contrary, the spring of the truss should not prove powerful enough always to retain the viscera within the abdomen, or otherwise not exactly fit the body, it will suffice to state, as regards the deficiency of power in the spring, under what circumstances the viscera happened to protrude, whether during the ordinary avocations of the wearer, or on his making any extra exertion or violent effort, and whether it occurred more than once. In the case of the truss not exactly fitting the body, slips of paper, indicating the required alterations, should be tied to the faulty parts, and thus it should be returned *carriage free*. It will then be altered and forwarded, or another sent in lieu of it, which will better meet the wants of the case.

Severe cases can only be relieved by a personal application to the Author in London, who may be consulted every day from 9 till 12 A.M., and from 6 till 9 P.M. He has no agents to sell his Trusses, every one is made to order, and adapted to the nature and condition of the hernia.

Price of the truss £2 2s. for a single one, and £3 3s. for a double, to be paid by post-office order, at the office, Tottenham Court Road, London, when the order is given, and the truss will be forwarded in two or three days.

* Sir Astley Cooper on Hernia.



