as I have described are so few in surgical literature; they can, I believe, almost be counted on the fingers of one hand. That they should be practically unknown at the present day is not remarkable, because the taxis is employed to a relatively slight extent as compared with former times. We must also remember that our predecessors in whose hands such cases were more likely to be met with could not have the practice and training in examining herniae that we have, seeing that their opportunities were entirely confined to cases in which strangulation was present. I think, therefore, that there is good ground for a very reasonable suspicion that some of the most notable cases of infantile hernia that have acquired an established position in our records may not have been genuine cases of infantile hernia at all, but may have been produced, as in my case, by an accident of taxis.

REFERENCES.

¹ *Medico-Chirurgical Transactions*, 1886. ² *Lancet*, March 12th, 1904.

An Address

ON

THE USE OF FILIGREES OF SILVER WIRE IN THE CURE OF HERNIAE USUALLY CONSIDERED INOPERABLE.

READ BEFORE THE NORWOOD DIVISION OF THE BRITISH
MEDICAL ASSOCIATION.

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GENTLEMEN,—In thanking you cordially for the honour you have conferred upon me in asking me to address you, I must confess that when some time since your Secretary approached me with the suggestion that I should deal with the subject of Filigree Implantation, I felt some diffidence in appearing before you. I thought the subject, although to my mind one of considerable importance, might not present itself in a particularly interesting light to you; if, therefore, this should be so, I trust you will bear with me, for the sake of those who suffer from the condition which I propose to consider, while I endeavour to lay before you a method of curing, in the truest sense of the term, those cases of hernia which have hitherto appeared, to surgeons and physicians alike, to be beyond the range of legitimate surgery. The cases to which I refer may be classified as follows:

1. Those of repeated recurrence after operations generally known by the misnomer of "radical cure."
2. Those of such dimensions that the probability of firm union of the deeper tissues is open to grave doubt.
3. Those in which there is a chronic condition present tending to the constantly repeated increase of intra-abdominal tension; such, for example, as chronic bronchitis, asthma, constipation, urethral stricture, etc., especially where these are the concomitants of old age and feeble muscular development.
4. Those cases in which the hernia is the direct result of loss of some portion of the abdominal wall, in consequence of accident or the operative removal of tumours.
5. Those simply of hernia in patients beyond the age at which it is reasonable to hope for a cure by the ordinary methods.

Now, if you will consider for a moment the question of the recurrence of hernia, and the factors upon which it depends, you will, I think, agree with me that, putting aside all other contributory causes, the chief reasons of the reappearance of a hernia are the employment of unsuitable methods of operation, the occurrence of deep suppuration, and the undue curtailing of the period of convalescence in the recumbent position.

With regard to the two latter points I need say little; they are usually avoidable, and, provided the method of cure is suitable to the needs of the particular case, the accident of recurrence should be a very rare event. Few of us, however, have finished our hospital career without having seen recurrences after operation which led us to wonder who the optimist could have been who invented the immoral term "radical cure," and how many unfortunates have been condemned to wear trusses of all shapes and sizes, in an endeavour to control a protrusion which

marked the site of a "radical cure" of former years! I do not propose to tax your patience by a dissertation on the dull subject of the application of trusses to herniae, but I would maintain very emphatically, that an operation for the cure of hernia which requires the subsequent application of a truss to prevent its return, can in no sense lay claim to the term "radical cure." I am personally very much opposed to the use of trusses in all but perfectly inoperable cases; and by inoperable I mean those which, from their huge dimensions, preclude the possibility of returning the hernial contents to the abdomen, those in which some diathesis such as haemophilia is an absolute contraindication, and those in which the patient steadfastly refuses to undergo any cutting operation. It is most disappointing for a surgeon to have to undertake the attempt to cure a hernia whose coverings have been thinned out, matted together, and histologically altered by years of truss pressure. Such cases have long since passed from the stage in which the ordinary operative methods might be expected to result in a true cure.

If I might be permitted to offer you advice on this point as a surgeon, it would be never to apply a truss in any case that is operable, for by so doing you will vitiate the chance of cure by operation in subsequent years. Do not presume that a case is inoperable simply because of the size of the hernial orifice; modern surgical methods have brought within reach many cases which from their size alone are certainly not within scope of the older operations. Lastly, do not make use of the term "radical cure"; it is misleading alike to patients and to their friends; but if you do use the term, let it be reserved for cases of hernia (excluding femoral hernia) in young and healthy subjects, and for those which may be submitted to the method which I am here to introduce to your notice—namely, that by the implantation of a prepared filigree of silver wire.

I do not wish to trouble you with statistics of the frequency of recurrence of hernia; the tendency to this unfortunate accident is sufficiently well known to all of you; but I wish to draw your attention to one or two points which may help to further explain the reasons of such an occurrence.

The question as to which layer of the abdominal wall is the chief delinquent in the formation of a hernia is still, I believe, *sub judice*. At one time it was supposed to be the peritoneum that held this unworthy position, but, as I have elsewhere pointed out, this theory is erroneous. The peritoneum has no influence in the production of a hernia where it is backed up by sound abdominal wall, nor of a recurrence where the sac has been efficiently removed. Some writers have laid stress on the importance of accurate union of the fibrous aponeuroses of the rectus muscles in median hernia, and have split, fashioned them into flaps, and overlapped them, apparently with little result. But few, however, have assigned to the musculature its full importance. Those of you who will cast back in your memory and endeavour to call to mind any case of hernia which you have seen submitted to operation, either inguinal, umbilical, or ventral, will, I think, realize that in no case have you ever seen muscular tissue (excluding, of course, the cremaster muscle) forming part of the coverings of a hernial sac. A hernia in its descent will always choose the most inelastic structures through which to force its path. These it will pick out and patiently stretch, almost as if it knew it would not have to do so a second time. Muscle fibres, being composed of very highly organized and elastic material, refuse obstinately to be permanently stretched. They may be pushed to one side and allow less important structures to give way to pressure, but they will not stretch and cover a hernial sac. Where are examples of this to be seen? Firstly, in the median line, where the recti muscles, being forced apart, permit a hernia to pass between them; secondly, in the hypertrophied bladder of stricture and prostatic enlargement, where the muscular fasciculi, although hypertrophied, allow the sacculated mucous membrane to pass between them; thirdly, in cases of ventral hernia following wounds, where only the cicatrix stretches, the muscle never forming part of the sac. The reasonable inference to be drawn from these facts is—that it is upon the musculature of all other structures that the duty of withstanding the extrusion of the abdominal contents devolves. If only the recti muscles could be kept in close contact with each

other and in good condition, or the internal oblique and transversalis muscles with Poupart's ligament, hernia, whether inguinal or median, would be a perfectly curable condition by the ordinary method of operation. Unfortunately this is not the case. In the young the conditions are often ideal, especially in congenital cases, in which, as you know, the prognosis is exceptionally good. But what of the old, the corpulent, the wasted, and the effeminate? Quite apart from their occupations (which may be those of glass-blowing, wind instrument playing, or navvying, to mention three of the worst employments predisposing to hernia), their muscles are altered in structure; there is a marked development of intermuscular fibrous tissue, causing feeble action of the muscles; there is evidence of fatty degeneration, causing friability at operation; there is wide separation of the recti muscles, preventing their apposition; or, in the case of inguinal hernia, there is recession of the arched margin of the internal oblique and transversalis muscles from Poupart's ligament. In these poor people no ordinary form of operation presents the least hope of permanent cure; some other means must be employed than that of using bad material to close a wide gap.

Now what are the methods which have been devised for the cure of herniae inoperable by the ordinary means? Some of them are ingenious if unsuccessful. Briefly, I may mention the following:

I. The overlapping of the already stretched tissues in the form of flaps cut in various directions, with a view to strengthening the abdominal wall at the site of hernia.

II. The covering of the gap by the transplantation of a musculo-fascial flap raised from the tissues in the vicinity.

III. The use of wire staples for the purpose of pegging down the conjoined tendon and Poupart's ligament to the pubic ramus.

IV. The implantation of some form of solid body to fill the gap, and act as a permanent bar to the extrusion of the abdominal contents.

I.

The first of these methods has, I believe, met with some success at the hands of certain American surgeons; it is not, however, equally applicable to all varieties of hernia, and has the disadvantage that confidence is being placed in structures which have already proved themselves untrustworthy. It much resembles the placing of two bad sentries to guard a post where one has already failed, in place of utilizing one good one.

II.

The second method finds its best exemplification in the endeavour to cure hernia at the femoral ring by the superposition of a flap taken from the pectineus muscle and fascia. It has not proved satisfactory in my own experience, nor, I believe, in that of other surgeons; but it must be admitted that femoral hernia has yet to be submitted to the test of filigree-implantation, and, I fear, without much prospect of success, the anatomical relations in this part being probably adverse to its use.

III.

Under the third heading there is little to say; the use of staples, which a rarefying osteitis must in time loosen, seems to me to lack the basis of sound surgery, and, although I have no personal experience of the method, the reports of other operators appear to bear out this supposition.

IV.

Coming to the question of the use of perforated metal plates, woven wire gridirons, and lastly the filigree which forms the subject of this paper, it may be said that the earlier forms of apparatus were unsatisfactory. Many of their introducers were compelled to remove them owing to the irritation and discomfort they produced by their excessive rigidity; some were removed on account of suppuration; and in explanation of the failure of these forms of apparatus, I would point out to you the factors which are essential to the acceptance by the living tissues of large masses of foreign substance in their midst.

First, asepsis is of paramount importance; cases there are in which suppuration has occurred without vitiating the result, but so far as I know, this can only be said of the special form of filigree to which this paper refers. Secondly, the most perfect pliability is necessary in order that the apparatus shall at all times and in all positions yield to the bodily movements. Thus, most of the rigid

gridirons, having stout frameworks supporting heavy wire trellis, were so uncomfortable that they had to be removed; this, of course, applies equally to the perforated metal plate. Thirdly, the most perfect freedom of vascular anastomosis through the apparatus must be possible, otherwise it will become to a large extent encysted, and, therefore, imperfectly fixed, and so form a source of irritation and suppuration.

The problem of how to induce the tissues to accept such a foreign body as was desired, and to enter into a permanent partnership with it was satisfactorily solved in 1903 by Dr. Willard Bartlett of St. Louis, who pointed out the fact that pliability of the apparatus was one of the chief essentials to success. At that time I was much interested in the cure of so-called inoperable hernia and recurrent hernia, and I immediately put his method, which he had devised and described, to the test of practical application. So satisfactory have I since found it that I propose to make no apology for thrusting upon your notice a subject which I have dealt with already on several occasions in the medical press during the past three years. The benefit conferred upon the sufferers from hernia by this method, at the hands of other surgeons as well as my own, will amply justify the apparently commonplace nature of the subject.

The construction of the filigree is a very simple matter, and until recently I made my own as I required them; I have now, however, arranged with Messrs. Down Brothers for their manufacture, as I have found it convenient to modify slightly the original pattern when used for inguinal hernia. For simple ventral hernia the method is as follows:

A board of soft wood, such as the back of a cigar box, is taken, and on it is laid a sheet of white paper. On this is marked out the size and shape of the filigree required. Supposing, for example, that this is to measure 6 in. by 3 in., a pin is stuck into the board at each of the four corners of the plan. The distance between the two pins of either side is then divided off into eighths of an inch by pencil marks or compass, and at each of these marks a pin is inserted. A reel of pure silver wire, No. 28 standard wire gauge, is now taken in the hand and a turn or two is made round the pin at the left hand bottom corner of the plan. The wire is then carried across the second pin from the bottom of the opposite side. Passing round but not encircling it, it is drawn tight and carried back to the left-hand row, where it passes round the third pin from the bottom. Thus it zigzags from side to side till it reaches the last pin of one of the rows, when it is carried across to that of the opposite side, and the journey back again is made in exactly the same manner till the pin on which the wire was originally wound is again reached. The two ends of wire are now neatly twisted together and cut off short.

A single strand of wire about a foot long is cut off from the reel to form a midrib for the filigree. One end of this is twisted on to the centre of the last strand of the filigree just completed, and a pinch with a pair of dissecting forceps makes it firm. The wire is now carried round each point of crossing of the strands of the filigree, which of course lie along the centre of it, and as it is drawn tight each turn is given a pinch to fix it. On arriving at the last strand a turn is made in the same way, and the excess of wire is cut off. The filigree is now complete, and on removing all the pins will be found to be a perfectly symmetrical structure, allowing of pliability in every direction. The little twisted portion at the left-hand bottom corner of the plan, where the filigree was begun, may be turned in towards the midrib of the filigree by means of a pair of dissecting forceps, in order to avoid any chance of discomfort from the projection of the rough end.

Filigrees for the cure of inguinal hernia are made in exactly the same way, but the outline of the plan is different. In my earlier cases of inguinal hernia, I was met by the difficulty of fitting a filigree of the same width at either end into a space which is much smaller at the pubic than at the iliac end. I therefore modified the original pattern by making it trapezoid, usually $\frac{3}{4}$ in. wide at the pubic, and $1\frac{1}{2}$ in. at the iliac end. Again I found it difficult to defend the entire length of the inguinal region in the male, owing to the presence of the cord; the portion of the canal external to the internal abdominal ring being always undefended and often weak. I have, therefore, for

male cases, had the filigrees prepared in two portions, the inner of which shall defend the canal between the internal ring and the pubes, and the outer that portion of the inguinal region external to it.

Before dealing with the operative technique of filigree implantation, I should like to say a few words to you about the necessity of taking every possible precaution to secure the most perfect asepsis. I need hardly remind you that no form of operation in surgery requires such care in this respect as that in which foreign bodies have to be introduced into the living tissues, and especially into fascial structures. In comparatively recent times the attempt to introduce these foreign substances, whether for the closure of deficiencies in the cranial vault or of gaps in the abdominal wall, or for the fixation of fractured bones, yielded results so unsatisfactory, that many surgeons abandoned the attempt. At the present time, however, these methods have become routine practice, simply through the realization that success can only be commanded by surgical cleanliness of the most rigid order. Where we are dealing with large masses of filigree this is especially the case, for the interference with the tissues is so great, and the oozing of serum, fat, and blood is so marked, that infection of the wound is doubly dangerous. If, therefore, I urge upon you precautions which seem excessive, it is this fact, coupled with my own experience of the operation, which must be my excuse.

Briefly, the skin must be thoroughly prepared; there must be no eczema of the umbilicus or intertrigo of the groins, so common in stout women. There must be no discharge from the umbilicus, no acne, no psoriasis or other form of dermatitis present, and the patient should be in otherwise good health. The question of rubber gloves is at present a vexed one, but those surgeons who do not use them must forgive me if I advocate them in the strongest possible terms. Possibly one may run little risk in discarding them in certain other operations; but I am convinced that the surgeon who attempts to place a foreign body in the living tissues without their use should either be able to carry out his manipulations without putting his fingers in the wound and without touching the foreign body with his ungloved hand—a matter practically impossible with so delicate a structure as a filigree—or he should leave the case severely alone. Again, I would inveigh against those operators who, when opening an abdomen, a joint, or the cranial cavity, wear neither cap nor mouth-guard, but heedlessly rub heads with the dresser over the part, and, bearded and moustached, recklessly pant, puff, and splutter into the wound as they announce the result of their manipulations or grumble at the absence of instruments or the rottenness of ligatures. Filigree operations, like most others, should be carried out practically in silence if we wish to command success and assist rather than retard the progress of surgery.

The filigree itself should be placed for five or ten minutes in sufficient ether to cover it, as only in this way can the grease conveyed to it unavoidably by the workman's hands be removed. From this it should be lifted by sterilized forceps, and placed in actively-boiling soda solution till required, when it is lifted straight from the sterilizer into the wound. The amount of stripping up of tissue required to form a satisfactory bed for the filigree has already been alluded to as producing a large amount of oozing of blood and fat, many of the victims of umbilical hernia being corpulent and full-blooded women; every precaution against this complication must therefore be taken. It is my custom to give calcium chloride in half-drachm doses for the two days previous to operation, for prevention of the former; only careful handling of the superficial fascia and extraperitoneal fat will overcome the latter.

In my own opinion few ligatures are sufficiently trustworthy to be placed in the tissues in the vicinity of a filigree. Silk I have long since discarded; catgut prepared by ordinary methods is no better; possibly that prepared by Moskowitz's iodine method, if carefully handled and personally supervised, is moderately safe, but I prefer to employ when possible only that prepared by van Horn and Sawtell, and since I first used it I have had no trouble in these cases.

Lastly, there is the question of drainage. The temptation to drain in the case of very stout patients with large deep wounds is great, but to those who contemplate per-

forming the operation I would say, avoid it, especially in cases of inguinal hernia. There is a certain danger in closing the wound by sutures of any sort, that infective material may be carried into it from the skin, and for this reason, unless there is much tension, I always use Michel's clips closely set. They ensure a very close apposition of the lips of the wound and do not pierce the skin; they must, however, be removed at the end of the seventh day,* as they are inclined to produce a minute slough from pressure if left too long *in situ*.

The technique of the operation varies according to the situation of the hernia. In the case of ventral or umbilical hernia, the incision is carried in an ellipse round the base of the tumour, and the sac and any loculi isolated as speedily as possible. The abdomen is then opened in the middle line some distance above the mass, and two fingers are introduced to ascertain if any bowel or omentum is adherent to the wall of the abdomen. The peritoneum is incised throughout the whole length of the wound on one side or other of the mass, and the hernial ring being everted, the sac is turned inside out and evacuated. Any excess of omentum is removed, and the whole cutaneo-peritoneal sac being completely excised, the peritoneum is closed by a continuous catgut suture. The fibrous sheath of the rectus muscle is now opened in the whole length of the wound on either side, and the hand being introduced between the muscles and the posterior layer of their sheaths, the former are gently separated from the latter as far as the point of entrance of the vessels and nerves into these muscles. At times difficulty may be encountered from the presence of the lineae transversae, these bands being attached to the sheath in front and behind; these attachments must be carefully snipped through with scissors. Similar treatment is now accorded to the anterior surface of the muscles, so that they can now be drawn towards each other. The next step is to approximate the edges of the posterior layers of the sheaths as far as possible, by sutures of stout catgut.

Any oozing having been checked by hot saline lotion, the bed is ready for the filigree, which is lifted from the sterilizer into the wound, the lips of the latter being widely retracted for its reception. The above is a modification of Bartlett's original method of placing the filigree upon the peritoneum. It is often very difficult indeed, especially in old-standing cases, to strip the latter from the posterior layer of the sheath; it often results in much oozing, and in the tearing of holes, with consequent loss of time in suturing. I therefore now place the filigree between the muscle and its posterior sheath; it is equally efficient, much more easily performed, and forms a more resistant bed for the filigree. Nothing now remains but to draw the muscles as far as possible together over the filigree, stitch the fat together if in a very thick layer, and close the wound with the clips I have mentioned.

In the case of inguinal hernia the wound must be larger than usual, and the aponeurosis of the external oblique muscle must be split almost to the anterior superior spine. The cord is freed and the sac dissected out in the usual manner, but instead of being transfixed and ligatured (which produces an inconvenient and knotty mass), it is excised and the edges are neatly sutured together. The inner or pubic section of the filigree is now laid upon the peritoneum deep to the conjoined tendon, and having the pubes to its inner and the internal abdominal ring to its outer end. The conjoined tendon is then sutured to Poupart's ligament by Bassini's method over it. The internal oblique and transversalis muscles must, as a rule, be incised from the internal ring outwards, and separated from the peritoneum sufficiently to allow of a large enough bed being prepared for the outer filigree, which is laid upon the peritoneum in the outer two-thirds of its length, and upon the cord in the inner third. The inner end of the outer thus comes to lie over the outer end of the inner filigree for about an inch, the cord being interposed between them. In this way it is possible to defend the whole length of the inguinal canal. The incision in the muscles is now accurately closed; the aponeurosis is united in the ordinary way and the skin incision is closed by Michel's clips.

The manner of dealing with such a hernia as is found at times at the site of an old appendicectomy is much the same as that for median hernia. The inner loops of the

* Since the above was written I have shortened this period, and now remove the clips on the fifth day.

filigree will in this case lie between the rectus muscle and the posterior layer of its sheath, which must be opened this time from the outer margin, while the outer loops will lie upon the peritoneum (after excision of the sac and suturing of the edges) and deep to the transversalis fascia. A case of implantation which I have recently had under my care was of this nature, and as it is admirably illustrative of the method, I will give you the details, which I have not hitherto published.

The patient, an unmarried lady, was sent to me by Dr. Croucher of Eastbourne with the following history: Three years ago she underwent appendicectomy at the hands of a well-known London operator. The wound healed by primary union, but shortly afterwards the scar began to stretch, and soon a prominent hernia resulted. She then underwent an operation for this but without success, for the hernia in a few months was as bad as ever. She again went to her surgeon, but he gave it as his opinion that no further operation could be done owing to the friability of her muscles.

When I first saw her she was quite an invalid, unable to take any exercise on account of the dragging pain in her abdomen. She was sallow, thin, and easily tired. The scar of the previous operations was stretched and thin like tissue paper, through which the movements of the bowel were markedly obvious. On exertion the scar bulged in rather an alarming manner, and on deep palpation three fingers could be introduced between the separated muscles; nausea was produced by this examination, and coils of bowel could be felt adherent to the scar. The muscles felt to me in excellent condition, and I therefore advised the use of a filigree.

In October, 1906, therefore, Dr. Hewitt giving the anaesthetic, I excised the scar completely, the incision measuring 9 in., and found the ileum firmly adherent to the inner edge of the wound, at a point 12 in. from the ileo-caecal valve. There were some old caecal adhesions, and these were divided, the tags being removed. The peritoneum was closed by a continuous suture, and I then opened the sheath of the rectus muscle in the whole length of the wound. The fibrous edges of the oblique muscles were freshened till sound muscle fibres presented, and were carefully detached from the peritoneum. All oozing being arrested, I laid in a filigree of silver wire, $6\frac{1}{2}$ in. in length and 3 in. in breadth across the centre, having eight loops to the inch on either side. The rectus was then drawn from its sheath over the filigree as far as possible to meet the outedges of the oblique muscles and fixed by interrupted sutures of stout catgut, and the anterior layer of the rectus sheath being united to the external oblique aponeurosis, the skin incision was closed by the use of Michel's clips, no drainage being employed.

The present condition of the patient is in every way satisfactory; there is no pain or discomfort from the presence of the filigree; on coughing or straining there is no bulging; the area of the filigree on palpation, is hard and resistant and feels almost leathery, but permits freely of every abdominal movement.

Since this, my tenth case, was done, I have had occasion to implant a filigree in a case of epigastric hernia; and in two cases of lateral ventral hernia of gigantic size I have employed filigrees of 8 in. and 9 in. by 4 in. respectively. These will be published shortly with the case already related, so I need not weary you with them. I feel justified by the results of these 13 cases in endorsing the favourable reports of the operation given by Willard Bartlett of the 7 cases operated upon by him.

It may be asked what are the special advantages of these filigrees, and wherein do they afford a better prospect of cure than does the ordinary operation?

In the first place they are time-savers. The amount of time consumed in the accurate closure of a large ventral hernia in the ordinary manner is a serious matter in a stout patient, and if the method of weaving in silver wire is attempted at the time of operation (a method followed by at least one well-known surgeon at the present time), the operation becomes a very protracted one. Secondly, they enable us to remake the abdominal wall, even when it is impossible to make the muscles meet completely, the condition which has been present in every one of my cases. Thirdly, the amount of forcible manipulation required, the repeated pricking of vessels, and especially the tension to which the muscles must be subjected where suture is relied upon, are all points which render the occurrence of primary union less probable than when a ready-made filigree is used. Fourthly, the essential factor which compels a cure is the refusal of the wire to stretch.

The one great difficulty which has faced surgeons at all times has been the persistent and uncontrollable tendency of fibrous tissue to stretch when stretching was not desired, or to contract against repeated dilatation. In the case of hernia, therefore, a cure could always be guaranteed

if the tendency to stretch could be overcome. This has fortunately become possible by the use of the filigree. The manner of its construction, unlike that of the perforated plate, permits of the growth through its meshes, of the young fibroblasts and angioblasts which go to the formation of the new layer of fibrous tissue; and thus is produced, in a short time, such an impenetrable and inelastic mass of fibrous tissue and silver wire that nothing can pass it. As in all varieties of hernia it is only the intermuscular portion of the abdominal wall that gives way to pressure, it is clear that if this portion is inseparably incorporated with the filigree no further stretching is possible.

I have been asked what would be the effect of fracture of the filigree, whether there is any possibility of total absorption, and what would be the effect of the filigree in the event of a subsequent pregnancy.

Fracture I believe to be improbable; it is possible that the midrib might give way, as it lies in an axis transverse to that of abdominal flexion, provided that such flexion were sufficiently acute and sufficiently frequent; but even then the accident would not affect the power of the filigree, as this strand is solely for the purpose of retaining the loops temporarily in position; indeed, one form of filigree used by Bartlett is made without any midrib at all.

Absorption of the wire is, I believe, practically impossible, for, provided that it is composed of unalloyed silver, no further action takes place than that of blackening of the surface of the metal by oxidation.

With regard to the question of pregnancy, I am as yet unable to speak with authority, no case having yet been recorded in a patient who has undergone the operation of implantation. The enlargement of the pregnant abdomen, however, is one in which the lateral muscles are capable of enormous extension, and indeed are those chiefly concerned in the stretching necessary to accommodate the growing uterus. Were this not so, we should see median ventral hernia following childbirth far more frequently than we do. I therefore believe that not only will the filigree in no way interfere with the normal course of pregnancy, but that in pregnancy after implantation, it will be found a trustworthy guardian of the hernial site, in spite of the enormous strain put upon it.*

I have further been asked what size of filigree can safely be buried in the tissues? I believe there is no limit to the size, other than that imposed by the costal margins and the pelvis, and this is, I think, borne out by the gradually increasing size of the filigrees which I have been able to employ in recent years.

The last question I would deal with is that of suppuration. What is to be done in the event of such a mishap? It is obvious that the entire removal of a large filigree might prove a very difficult matter, and might open up a large tract of as yet uninfected tissue. Now, Gentlemen, I cannot say that my cases show an unbroken record of asepsis. In spite of every precaution, two of the number suppurated—one an inguinal hernia, very slightly indeed, and the other an umbilico-ventral, very profusely. The latter, my second case, done two years ago, in which the filigree measured 8 in. by 4 in., was that of a very stout woman in whom drainage was employed for very persistent oozing. I may say that both these cases eventually healed perfectly, and are to-day in perfect health, their filigrees being as efficient as if nothing had happened. Although one can never view suppuration as an unmixed blessing, I cannot help feeling that the experience gained in these two cases has gone a very long way towards confirming my faith in the method which I have had the honour of presenting, I fear in a somewhat imperfect manner, to your notice.

* One month after this paper was read, I had occasion to employ a filigree in a patient who was in the fifth month of pregnancy. She has recently been confined, and the case, which appears to entirely bear out the above remarks, will be published in due course.

WE mentioned some time ago that Count Vetter von der Lille, formerly President of the Lower House of the Austrian Parliament, was studying medicine. He took his doctor's degree at the University of Vienna on November 6th. Count Vetter von der Lille is over 50 years of age. We congratulate him on his having been found *dignus intrare in nostro docto corpore*, and we are glad to welcome so distinguished a recruit to our ranks.