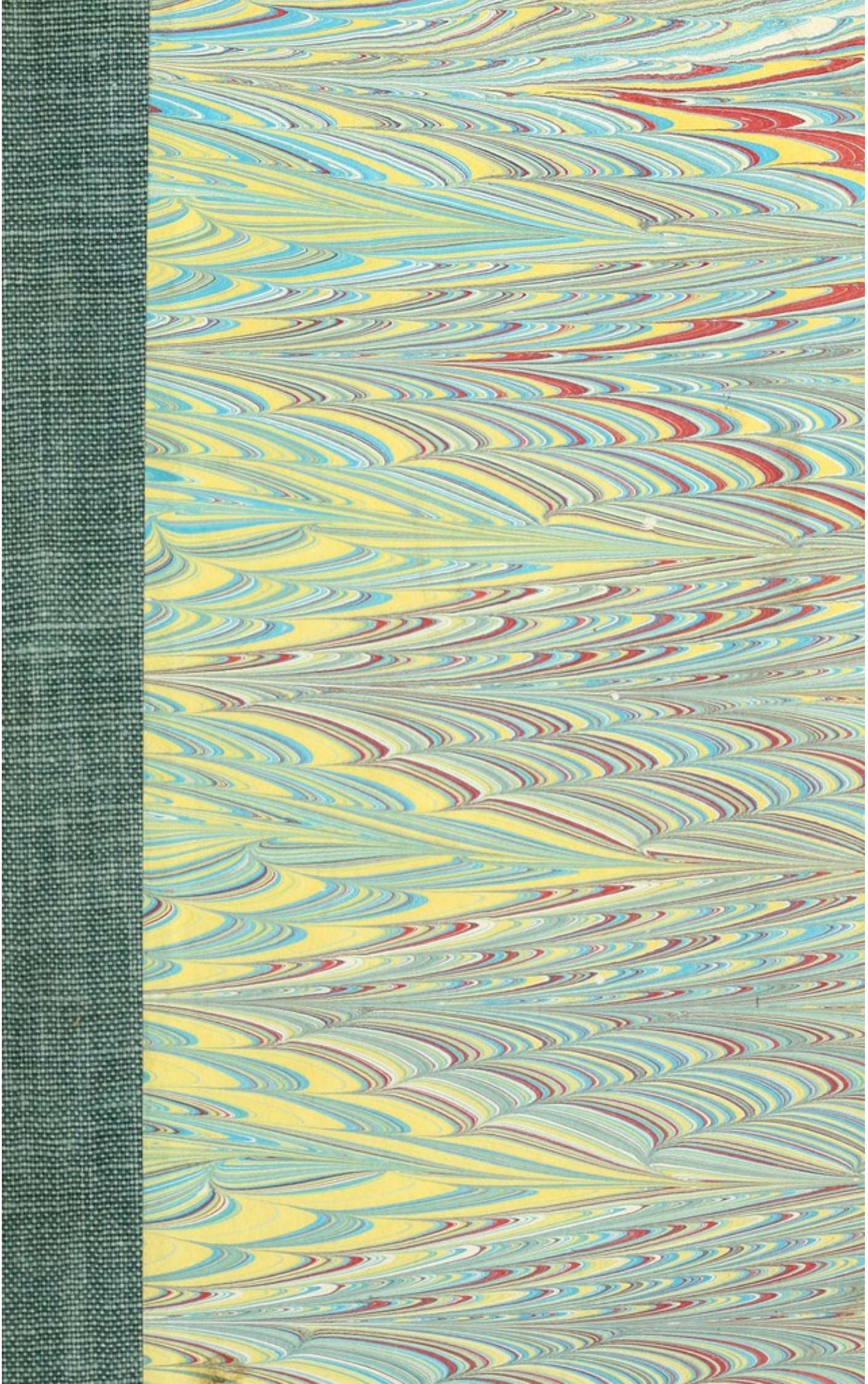
Skin grafting / by John Woodman.



SKIN GRAFTING

BY

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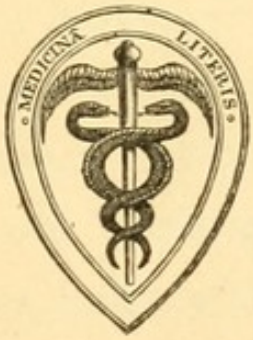

SECOND EDITION, REVISED AND ENLARGED

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PREFACE

TO

THE SECOND EDITION.

The success which the first edition of this little work met with, has induced me to publish another edition.

In doing so, I have carefully revised and re-written much, and added what I thought necessary to bring the subject down to the present date.

I am glad of this opportunity to thank those who have assisted me either with their advice or approval, and would especially pay my tribute to the memory of the late Mr. A. Poland, whose last published writing was his report on skin grafting in the *Quarterly Medical and Chirurgical Review* of July 1872, in which he mentions this work.

J. W.

2, Chichester Place,
Southernhay, Exeter,
February, 1873.

SKIN GRAFTING.

Skin grafting has been so largely performed in most, if not all, of the London and Provincial Hospitals, that it can no longer be treated as a new subject, but I doubt if it has yet reached that position in general practice to which I hope it may attain; for though like most things it has not perhaps quite fulfilled the sanguine expectations of its promoters, it has most certainly proved to be of the highest value in numerous cases, and those chiefly of a class that were almost incurable without it.

The experience of the last two years will, I trust, enable us to clear up some of the points of difficulty, and to judge the degree in which wounds, especially ulcers, healed in this manner resist return in comparison with others treated without engrafting.

Several cases of inveterate ulcers of the leg which were healed by grafting, have returned for treatment after periods ranging from six months to two years; in nearly if not quite all these cases the original spots at which grafts have been inserted have

remained as small islands of skin, from the size of a pea to a sixpence, and in most of these on merely giving rest and applying a simple zinc lotion they have healed rapidly, the healing process taking place simultaneously from the edges of the wound and the islands of skin, these latter growing much as when first engrafted, but beginning to do so at once. This proves that although the cicatrix resulting from engrafting is not equal to healthy skin, yet that a certain circle round each spot approaches so closely to true skin as to resist the ulceration which the surrounding connecting tissue succumbs to. It is therefore clearly very important to engraft as many spots as convenient, so as to have as many centres of skin growth, and as little connective tissue as possible.

My experience is that ulcers healed by this process (I do not mean where only one or two bits of skin have been put in as an experiment in a large ulcer, but where the grafts are within an inch of each other) remain well a considerably longer time than when cured in the ordinary manner. In burns also the contraction has been much less than usual, and I think a larger experience will confirm these views. With regard to the manner of the operation, although one or two instruments have been invented to assist in removing the small piece of skin, I do not know

that there is any material alteration; but unless the granulations are very healthy, I find it much more successful to adhere to my first plan of placing the piece of skin in a small incision in preference to merely laying it on the granulations. Mr. Fiddes' plan of scraping epithelial scales over the surface of the wound has been, I think, generally found unsuccessful, at least I have never been successful, although I have tried it many times, and I have never seen but one case in which it was thought to have in any way accelerated the cure, so that while we have so much more certain a process to fall back upon, I cannot recommend a trial of his.

Plastic Surgery has been long known and practised by the profession, but it has chiefly been used to remedy deformities of the face or contractions from burns; for although Hunter proved that the spur of a cock would grow on his comb, this appears to have been looked on as a mere curiosity, and it was not until 1847 that Dr. F. Hamilton, of New York, suggested a somewhat similar plan for the treatment of large wounds. This in 1854 he put in practice in the case of Henry Driscoll, who from an accident had lost a considerable portion of the integument of his leg. After fifteen months, it being evident that the ordinary processes of nature were insufficient to heal the wound, he dissected a piece of skin from the calf of the other

leg, without entirely severing its connexion. This piece was not, however, nearly large enough to cover the whole of the wound. In ninety days cicatrization was complete, and has remained so up to the present time. The skin grew from its circumference in every direction, and in the end was nearly double its original size (vide *New York Medical Gazette*, Aug. 20, 1870).

Dr. Hamilton thus proved that engrafted skin would adhere to healthy granulations; that the piece so engrafted would grow, and need not therefore cover the sore; but he failed to see that its original attachment might be wholly separated before being engrafted elsewhere. M. Reverdin, of Paris, was, without doubt, the first to discover and practically demonstrate the great fact, that small pieces of skin taken from a different part of the body could be placed on healthy granulations, and made to grow there; and to him, therefore, belongs the entire credit of introducing this new process in surgery. M. Reverdin's paper on Epidermic Grafting was read before the Surgical Society of Paris in December, 1869, published in the *Bulletin* of the Society for that year, and also in the *Gazette des Hospitaux* for January 11th and 22nd, 1870.

If, then, to Dr. Hamilton belongs the credit of being in some measure the pioneer, and to M. Reverdin that of being the originator or discoverer of this process, to Mr. George Pollock, of St. George's Hospital, as

undoubtedly belongs the entire credit of its introduction into England. Having heard of M. Reverdin's experiments in May, 1870, he immediately tried it, and it is owing to his success that the operation has claimed such an amount of interest and attention in both the scientific and surgical worlds. Mr. Pollock's first case was one of a child aged eight years, who had been for three and a half months in St. George's Hospital, with a very extensive burn of the right thigh, of more than two years' standing. The ulcerated surface extended from the buttock to the knee; it was broad above, narrow and pointed below. The success of this case attracted considerable attention, and caused the operation to be tried in most of the London and several of the country hospitals. During its progress, Mr. Pollock transplanted a small piece of a negro's skin, which attached itself, and around it grew an island of skin; but although the original spot retained its colour, the skin growing round it was the same as from engrafts of white skin, and after some time, without apparent cause, the piece of black skin sloughed away.

In noticing the general treatment of ulcers, two principal things have to be considered—viz., rapidity and permanency of cure. Skin grafting will be found to greatly assist the surgeon in meeting both these requirements.

Ulcers are of many kinds, and of course those which rest and other applications will rapidly heal, are not, unless very extensive, the cases in which much benefit will result, as to *rapidity*, by the adoption of engrafting; on the other hand, either in cases of extensive destruction of integument, or in old chronic and (so called) incurable ulcers, the most marked successes will be found; not that from this it is meant that every case can be cured, still I am sure so large a number can be, that no case should be put down as incurable until this method has been fairly tried and failed. Then, as to permanency, all who have had much to do with ulcerated legs will know how prone the cicatrix is to give way again and again when the person returns to his work. Now if, as I believe, the skin which grows around each graft resembles true skin very much more closely than the lowly organized plastic matter of an ordinary cicatrix, it must have more elasticity and more power to resist the strain put on it afterwards, besides being less likely to contract than an ordinary cicatrix.

Sufficient time has now elapsed to prove the correctness of these views, ulcers healed by this process possess greater elasticity, and do not contract as those healing in the ordinary manner, and having a higher organization do not ulcerate again nearly so readily, and if they do the spots engrafted do not usually

ulcerate, but generally remain as islands of skin in the midst of the ulcer, and on rest, healing takes place rapidly, each one of these spots becoming a healing centre.

In cases of severe burns this plan will be most useful in preventing as much as possible contraction of the cicatrix, and also to improve its character by making it resemble the skin as nearly as possible. I have not had an opportunity of trying it in a severe burn in the neck or face, but from the success attending it in burns of other parts of the body, I have little doubt of its success. The question next arises, is it necessary to take the whole skin?

It is generally acknowledged that the papillary layer of the cutis must be taken, although some surgeons think that it is only the living epithelial scales that are necessary, and Mr. D. Fiddes, of Aberdeen, said that a few epithelial scales scraped from the surface of the arm or the outer part of the thigh and applied to the granulations were sufficient.

Myself I have always taken the whole skin, and have found the healthier looking the granulations the smaller the portion of skin and the less care are required.

Mr. Fiddes' plan I mention, but although I have tried it frequently I have never been successful with it. One very noticeable fact is, that engrafting not

only sets up the healing process round the spots implanted, but actually so stimulates the healthy powers of the ulcer, that the edges which often have not shown any advance for months, will put on a healthier appearance, and grow out, as it were to meet the islands of skin forming in the centre. Time no doubt may improve and modify the applications of this process; but I am certain it will always be looked upon as one of those permanent advances which the science of Surgery makes from time to time.

Like a great many others, I first heard of this subject from the announcements in the newspapers of Mr. Pollock's transplantation of the piece of negro's skin; but my attention was more especially called to it at the Annual Meeting of the South Western Branch of the British Medical Association, held on July 20th, 1870, at Torquay, under the Presidency of Mr. W. Pollard, when Mr. W. Swain, Surgeon to the Royal Albert Hospital, Devonport, exhibited a drawing of Mr. Pollock's case, taken from nature by his father (this showed the entire wound, with the engrafted spots, and the islands of skin growing round each). He was also able from the same source to give us details of the process as adopted by Mr. Pollock.

Having as Medical Officer to the Exeter City

Workhouse (the hospital of which, a separate and detached building, containing between eighty and ninety beds, is under my sole charge), as well as in dispensary and private practice, a large number of cases of ulcers always under my care, I was much struck with the importance of the subject; for if this (which had then been only tried on a case of severe burn) was capable of extension to all, or nearly all cases of obstinate ulcers, a new era in surgery would commence, in which bad legs, instead of being the *bête noir* of hospital and workhouse surgeons, would become objects of interest and credit to the surgeon.

With the intention of trying this at once, on the 22nd of July, 1870, I tried transplantation on the worst case under my care in the workhouse wards. The patient, Mary Soloman, had a very large and obstinate ulcer, extending all round her leg, of many years' standing. She had been in the infirmary wards for nearly four years, and every kind of treatment, including repeated applications of strong nitric acid, had been tried without effect, although the latter had certainly brought the wound into a healthier condition. I took three small pieces of skin from the front of the patient's own arm, and making slits in the granulating surface, placed a piece in each slit, and then covered them with strips of ordinary adhesive plaster, and continued the lotion she had been using

before (carbolic acid and water) to the rest of the sore. On the fourth day, I removed the plaster carefully; but one piece of the grafts came away with it, the other two were just beginning to grow well, when, in the middle of August, the leg suddenly sustained a very severe attack of erysipelas, which caused a portion of the islands of skin to slough away, and also stopped all progress for a month; but by November 4th the whole of the upper part of the ulcer was healed. (The further progress of the case will be seen by reference to the cases (No. I.) at the end.) My first attempts were not quite so successful as my later ones; but I can safely say, that I have hardly ever tried engrafting without some improvement.

How does this growth of skin take place? is a question that will necessarily be asked. Does the original piece engrafted grow?

I certainly thought that it did not, and early cases appeared to lead to this conclusion, viz.—the piece of negro's skin, in Mr. Pollock's case, did not increase, and finally sloughed away, and the skin around the graft always looks paler and bluer than the original piece, getting paler as it gets further from its centre. This induced me to think that it acted in some way on the surrounding granulations, causing them to assume a similar form; and there can be no doubt

that this is the case generally in the body, an atom of bone is replaced by an atom of bone, an atom of muscle, &c., in the same way; and that the influence of the small piece of skin was to induce the surrounding granulations to assume the same form, acting, in fact, rather as a pattern for them. But subsequent cases, and especially Mr. Bryant's, in which several pieces of a negro's skin inserted into a wound in a white grew, have induced me to modify my opinion, and to think that the skin grew by cell development as well as promoting a healthy action of the surrounding granulations. One point noticeable is, that the influence of each engraft only extends to a certain distance, and that there is a point beyond which it has little or no effect. To have the greatest and most rapid effect, the graftings should not be more than an inch apart.

Does the cicatrix formed in this way resemble true skin in all points? This may be answered in the negative. The piece of skin removed is cut too close (to avoid any fat being taken with it) for the several glands or hair bulbs to remain untouched. The cicatrix is also much smoother and paler than true skin, and apparently does not possess hair bulbs or sweat glands; on the other hand, in appearance it much more resembles true skin than an ordinary cicatrix, and will be found to possess a great deal of

the elasticity of skin, and to be of a higher organization than the usual cicatrix.

These facts made me doubt that the skin engrafted really grew, and now prove that it is at best only a partial and imperfect growth that takes place.

In this, as in all other surgical operations, the selection of proper cases is an important element in their success. It is absolutely necessary that the ulcerated surface should be covered with more or less healthy granulations; and if it is not so, it must be made so before transplanting is attempted. In the very foul cases that come under my care, I remove all sloughs with poultices, with a little carbolic acid added, and then apply a carbolic acid lotion (one drachm to a pint of water); and this, with perfect rest, generally gets the wound into a healthy condition.

Wounds from accidents, such as burns, scalds, &c., will heal much more rapidly, and the engrafts grow much quicker than on old ulcers,—in fact, the younger and healthier constitutions do in this, as in all other cases, the best; but in old persons and old ulcers the success, though not always so rapid, is nearly as certain.

But it is now time to give the *modus operandi*.

The wound being in a proper and healthy condition, a small piece of skin should be taken from the

arm or some other part of either the same individual or another healthy person. I have found the inner side of the arm, about two inches above the elbow, the most convenient part to take the skin from. Supposing, therefore, this to be the part selected, I proceed thus. I flex the arm, then pinch up a small piece of integument with an ordinary pair of forceps, and cut out the piece with either a sharp scalpel, or better still, a sharp pair of curved scissors;* the piece taken out should be about this size O. This may now be divided either on the nail, or in any other way, into two, three, four, or even five parts; make an incision into the surface of the ulcer, or incisions as may be needed, wait until the bleeding has quite stopped; then put each piece into one of the incisions, taking care to lay the cut surface downwards, then cover it with a piece of Professor Lister's non-adhesive lac plaster (a small bit about an inch square is what I generally place over the spot), and then keep this *in situ* with a strap or straps of ordinary adhesive plaster, then put a little cotton wool and a bandage, so as to cause steady pressure. At first I put on only ordinary adhesive or isinglass plaster, and then found that, in spite of scraping off the adhesive over the spot, &c., I

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* Mr. Bryant has invented an instrument, with forceps and scissors combined, which seizes the piece of skin and cuts it out at one movement of the fingers. (*Vide* his article on Skin Grafting in his work on Surgery.)

continually managed, in taking off the plaster to pull out the engrafted skin. However, at the recommendation of my friend, Mr. Nelson Dobson, then House Surgeon to the General Infirmary, Bristol, I was induced to try Lister's carbolized non-adhesive lac plaster.

This plan I have still continued. The only alteration I make is to use finely picked oakum instead of the cotton wool. This absorbs and deodorises any putrid discharge. Other surgeons merely lay the piece of skin on the granulations, first wiped clean or scraped with a scalpel. This will succeed very well where the granulations are healthy, but in indolent ulcers I have always found it advisable to make the incision I mention and place the grafted skin in it, as it thus comes in contact with a more healthy surface than if laid on the top. Some prefer merely to place isinglass plaster over the spots, but I always use the lac plaster, as I find it makes an admirable dressing for the wound. I now leave the leg untouched for forty-eight hours, when I remove the outer bandage, and sometimes the lac plaster, then, however, putting a fresh piece of the plaster, and re-bandaging for another two days. Be careful, on removal of the plaster, not to wipe the wound, but to clean it by bathing with water. Mr. Bryant advises that the grafts be put near the edges of the wound, thinking they grow better there, but I

cannot say I have noticed this myself. Then carefully remove the outer adhesive plaster and the inner or lac plaster, and you will very likely see little or nothing, and your first exclamation will be, "This is a failure!" But it is not, for like other sowing, there must be time for the young plant or young skin to grow. Wait some days, or a week at the outside. About ten to twelve days in all,* and you will see a bluish white point or points arising at the spots where the skin was placed; watch these, and you will find they daily increase, until, if you have planted them sufficiently close, they will meet together, and also meet the edges, and your wound or ulcer is healed. Of course this takes time, and very likely your first case will not be so successful as this. Then you must try again; and there is no limit to the number of times or places you may engraft. In some cases I have not divided the piece of skin at all, but pared off the surface so as to form a freshly cut surface to receive it, and then have treated it as before. Some of these have grown, whilst others have not. In young and vigorous persons, as burns in children, I think almost any amount of subdivision of the piece of skin removed from the arm might be tried with success.

Some may fancy that the taking the skin from the

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* The growth of the piece of skin is generally visible earlier than this.

arm or other part of the body must be a painful process. Having taken it out of my own arm on two or three occasions, I can safely say that it is almost a painless operation, and none of my patients have ever objected to a repetition of the operation, although they have been very frightened at the idea at first. Care must be taken that the skin be removed free of any fat. Practically I have found that if the arm is flexed, and a piece of the loose skin pinched up and held with an ordinary pair of forceps, and then cut off with the scissors, this is deep enough, and avoids the fat (the part may bleed slightly, but a small piece of plaster soon stops that). One fact with regard to what has been said before as to the healthy stimulus given to the edges of the wound by transplantation is worthy of notice. In one case (No. II.) I have not as yet got a single spot to definitely grow; yet, before I tried transplantation the edges of the wound were hard and rounded, with no inclination to heal, the granulations flabby and unhealthy; since the attempt on November 4th, at engrafting, the edges of the ulcer and the granulations have assumed a healthy appearance, and the wound has closed in considerably.* I cannot, of course, say whether this is owing

* The decrease in the amount of discharge from the ulcers *immediately* after engrafting has been so evident, that the attendants in the workhouse hospital wards have repeatedly called my attention to it. (*Vide* Case VIII.)

in any measure to the attempts at transplantation, but I mention the case owing to its singularity.

Another thing is, that in the most successful cases, on removing the plaster, there has been no appearance of growth; and the first symptom, some days after, has been a small pit or hole in the granulations: from this centre a spot of bluish white skin has grown. On the other hand, in some of the cases where the piece of skin has been plainly visible, the result has been that it has sloughed away afterwards. I may add that I have found it necessary to the success of the operation to keep the patient in bed, at least for a few days. Of course it may be possible to get the skin to grow without this rest, but it is most important that the engraft should be kept steadily in its place, and that the leg should be kept in the position in which the circulation should be most rapid, and bed is the only place in which both these points can be properly attended to.

The chief advantages of this process appear, therefore, to be the greater rapidity with which ulcers and wounds can be healed; the comparative ease with which so many old and intractable ulcers have been cured; and lastly, though not least, the fact that the cicatrix thus formed more nearly approaches true skin than the lowly organized plastic material forming an ordinary cicatrix, and is therefore much more likely

to bear the strain put on it when the patient returns to his usual occupation.

Experience having proved the value of this operation, I would press it on the attention of those of my fellow practitioners who have not tried it, reminding them that this is almost a painless operation, and one that if it does no good can do no harm. To those who have tried it I know I may appeal with confidence for their verdict in its favour.

The following cases are only typical of a much larger number, which it would be tedious to detail. I would only remark that I have recorded the only (two) unsuccessful cases I have had, and that some of the patients treated have been very loth to have their legs healed, fearing some other malady would be brought on if the wounds ceased to discharge.

Case I.—Soloman, Mary, aged 47, was admitted to the hospital wards of the workhouse on October 26th, 1866. Had had an ulcer of leg for four years previous to admission. This patient first came under my care in February, 1869; she then had a very extensive indolent ulcer extending right round the leg. I tried every manner of treatment, including applying strong nitric acid with the effect of getting the wound to look healthier, but no efforts could get it to close in at all.

This patient was the first I attempted grafting on, and was also, I believe, the first done in Exeter. On July 22nd, 1870, I took three small pieces of skin from her own arm and engrafted them in the manner previously described, only placing ordinary adhesive over instead of Lister's lac plaster. On the fourth day I removed the plaster, and with it one of the grafts; the other two were growing well, but in August the leg was attacked with erysipelas, which proved very severe, and caused a portion of the islands of skin to slough, and stopped all progress for a month; however, by November 1st the upper part had nearly healed, and on November 4th I engrafted two pieces of skin taken from my own arm. These I treated with the lac plaster. These doing well, on November 30th I grafted two more pieces from my own arm. In this case I may remark that the cold weather appeared to act adversely to the growth of the new skin.

Dec. 26.—This wound is three quarters healed, and I have no doubt that fresh engrafting in the spring will complete the cure of this case.

1873, *Feb.*—This case has never entirely healed, although at times it has been nearly so.

Case II.—Pope, Maria, aged 66, admitted in the hospital wards of the workhouse, August 20th, 1869.

Has a very large ulcer extending all round the leg except a small bridge of skin at the back; says it has been of many years standing; has been in the Devon and Exeter Hospital, &c., but the wound has never healed beyond a certain point. After trying various plans of treatment, on Nov. 4th, 1870, I cut a small piece of skin from the inner side of my own arm, just above the elbow, and then divided it on the back of my nail with a scalpel into five pieces, three of which I engrafted into the woman's leg (the other two pieces were engrafted into the leg of Case I.). On November 30th I again transplanted a piece of skin from my arm, and here I would remark upon the peculiarity of this case. Neither of the engrafts could be definitely said to have grown, but the granulations, which were flabby and raised, assumed a much healthier appearance; and the edges of the wound, which had previously looked rounded and hard, and had not increased for months, suddenly looked more healthy, and the edges began to grow towards the centre. The cold weather appears to have to a certain extent stopped progress in this case, but I intend to try it again in the spring. I may here remark that this is the only case in which I have not had more or less growth of some of the pieces of skin engrafted.

On *Dec.* 26.—I tried Mr. D. Fiddes' plan of engrafting epithelial scales only, which entirely failed.

1873, *Feb.*—This case remains in much the same state, and I cannot get any grafts to grow. These my first are still my only unsuccessful cases.

Case III.—Poole, John, aged 66, admitted into workhouse hospital wards. Has had a large ulcer on front of leg for three years. On November 9th, 1870, I took a piece of skin from inner side of his own arm ; divided it into three pieces and engrafted them in ulcer about one inch apart, dressing with lac plaster, &c.

Nov. 25.—Two pieces are growing well.

Nov. 30.—Both spots growing well.

Dec. 7.—One has joined the edge.

Dec. 23.—Wound healed.

Case IV.—Burnett, John, aged 55, admitted to workhouse hospital wards with an ulcer of thirteen years standing over tibia. This did not yield to any kind of treatment, although I tried all I could think of.

1870, *Nov.* 9.—I engrafted the leg in three places, the skin being taken from the patient's own arm, and divided on nail into three pieces, dressing as usual.

Nov. 25.—Two small spots of skin-growth can be seen.

Nov. 30.—These are growing nicely.

Dec. 5.—Spots longer.

Dec. 7.—Spots as large as a sixpence.

Dec. 19.—Wound nearly healed; both spots have joined edges of wound.

Dec. 26.—Cured.

This case was re-admitted eighteen months after with a return of the ulceration, but with two islands of skin the size of a sixpence left, showing where the engrafts had been placed; this case speedily healed itself on rest being given, whereas on the former occasion no treatment prior to engrafting had done it any good.

Case V.—Mitchell, Wm. Thomas, a carpenter, aged 29 (a private patient). On Nov. 5, 1870, he got a severe burn of right leg from the explosion of a hand rocket. This was treated with oil and lime water and poultices, until all the sloughs were removed; and on Nov. 11, I took a small piece of skin from inner side of his arm, and dividing it into four pieces, engrafted these, and dressed as usual.

Nov. 19.—Two spots visibly growing.

Nov. 23.—The two others can now be seen.

These spots grew rapidly, and the wound, which was of some size, was entirely healed by Nov. 30.

This case shows the advantages of this process in healing a wound much more rapidly than the ordinary

methods, and the cicatrix resembled in appearance true skin.

Case VI.—Coombes, George, aged 36, admitted to workhouse hospital wards. Has had a bad leg for four years. On admission, he was suffering from rheumatism, and had a very extensive, foul, and unhealthy-looking ulcer of leg.

1870, *Nov.* 18.—Transplanted two pieces of skin from his own arm, and covered with lac plaster. On 22nd removed the plaster, and dressed with carbolic acid lotion.

Dec. 2.—Two spots growing nicely; are about the size of a fourpenny and sixpenny piece respectively. The spots here grew rapidly until they got to the size of a shilling, when they appeared to flag.

Dec. 7.—They have reached the edge.

Dec. 12.—Transplanted two more pieces of skin.

Dec. 16.—Removed plaster; the pieces were just visible, and grew very quickly.

Dec. 24.—Discharged cured.

In this case the granulations were, prior to the first engrafting, raised and flabby looking; the spots showed themselves first in two pits or depressions, from which the islands of skin grew.

This case was readmitted in October or November, 1872, with renewed ulceration, but three pieces of en-

grafted skin were left intact, whilst all round the connecting tissue had ulcerated away, fresh engrafting speedily cured it, the healing taking place from the islands of skin as well as the new grafts and the edges.

Case VII.—Steele, Henry, aged 11. This boy has been many years in the workhouse school, and has suffered from scrofula. He had had a scrofulous ulcer on the back of his hand for six years. He had been in the Devon and Exeter Hospital, and all the usual means had been tried. On December 5th, 1870, I transplanted two pieces of skin taken from his own arm.

Dec. 12.—Removed plaster.

Dec. 23.—The wound is healing in from the edges; one spot is growing, and the other is just beginning to be visible.

Dec. 28.—Getting on well, two-thirds of wound healed.

1873, *Feb.*—This wound was quite healed early in 1871, and has remained perfectly sound ever since. This is one of the most successful cases I have had, as it cured what had before been considered incurable. Mr. Fiddes' plan was tried here and failed.

Case VIII.—Turner, Anne, aged 46, admitted to workhouse wards with a very extensive and foul ulcer

of eighteen months standing. After getting the ulcer in a more healthy state, though it was still discharging very profusely unhealthy pus, on Dec. 5th I engrafted three pieces of skin taken from her own arm.

Dec. 12.—Removed plaster.

Dec. 14.—Three spots doing well; the amount of discharge became much less immediately after transplantation, or I could not have kept on the lac plaster so long. In this, as in all my latter cases, I have applied cotton wool, and then a bandage, firmly over the engrafts, so as to cause steady pressure; and I believe this has contributed considerably to their success.

Dec. 21.—Growing very well; centre spot size of sixpence.

Dec. 23.—This spot has joined the edge.

Dec. 27.—The wound is nearly well.

This case, considering the size and unhealthiness of the sore, was the quickest and most successful.

This case was seen twelve months afterwards, and found quite well.

Case IX.—Jones, John, aged 71, admitted to workhouse wards Dec. 5th, 1870, with two ulcers of very long standing.

Dec. 12.—Transplanted two pieces of skin from his own arm, one in centre of each ulcer.

Dec. 16.—Removed plaster, &c.

Dec. 24.—Both doing well; smaller ulcer just healed. Not only has healing taken place round the spots, but the edges also become more healthy after the engrafting.

Dec. 28.—The island in the centre of larger ulcer is rapidly increasing, and the wound will be quite healed in a few days.

Jan., 1872.—Discharged cured.

Case X.—H. Fulford, aged 34. This patient was a very drunken, dissipated fellow, and had suffered from syphilis; was admitted in November, 1871, with a very extensive ulcer of leg, both tibia and fibula being laid quite bare to the extent of *two inches each.* I merely gave him a few days rest, and then engrafted six pieces of skin; when these began to grow I engrafted six more. The ulcer extended right round the leg. The wound began to heal at once, and granulations were thrown out from the bones, and in two or three months the leg was perfectly healed, and he was discharged cured. In July, 1872, he was re-admitted with a wound nearly as large as before, and in a gangrenous condition, but even here one or two islands of skin were visible. The gangrene extended, so that I was obliged to amputate below the knee, which, however, failed to stop the spread of mortifi-

cation to the thigh, of which he died ten days after the amputation.

Case XI.—Emma Damerell, aged 30, admitted March, 1872, with a large gangrenous ulcer of leg. There was apparently some secondary syphilitic disease, and the wound after rest still maintained an unhealthy look. I treated her with pot. iodidi, &c. She objected strongly to engrafting, and when she permitted its being done, although I tried it three or four times, none of the grafts grew, and she took her discharge. In November, 1872, she was again admitted, with the leg in a frightful state. I immediately put her under a course of the perchloride of mercury for a month before I attempted engrafting, and when in December, 1872, I did so, to my delight I found the pieces of skin grow well, and she was so much a convert that, if it did not heal as fast as she wished, she begged me "to engraft another piece or two."

This case proves the desirability of giving patients with a syphilitic taint a course of medicine before trying engrafting.

1873, *Feb.*—This case is now quite well.

THE END.

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