Post (A, B) EXSECTION

OF THE

ARTICULAR EXTREMITIES OF THE PHALANGES OF THE FINGERS AND TOES

FOR THE

RELIEF OF DEFORMITY OF THOSE MEMBERS.

ALSO,

BLEPHAROPLASTIC OPERATIONS.

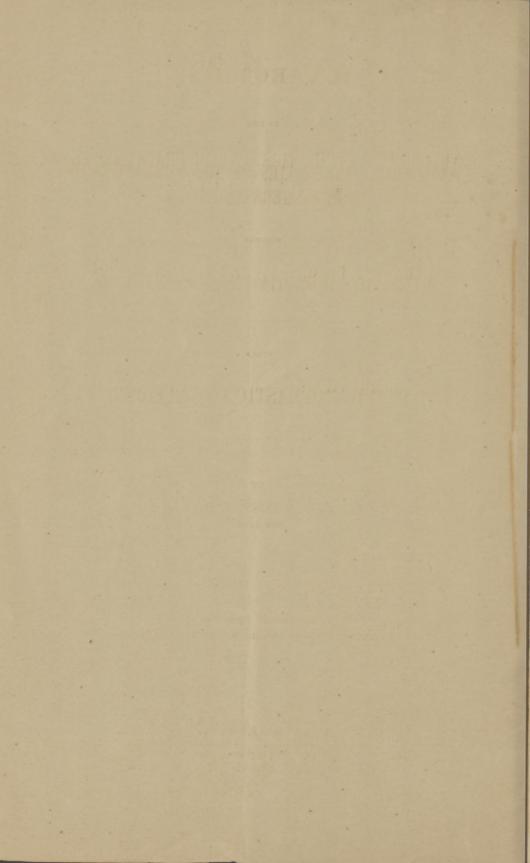
BY

ALFRED C. POST, M.D., LL.D.,

NEW YORK.

TRANSACTIONS OF THE AMERICAN MEDICAL ASSOCIATION. Phila

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MEPHAROPLASSED OPERATIONS.

ALERTO C ROST, M.D., LLD.,

NOT HOME STORMERS OF STREET

COLLINS, PRINCER, TO JAVEE BYREET.

ON EXSECTION OF THE ARTICULAR EXTREMITIES OF THE PHALANGES OF THE FINGERS AND TOES, FOR THE RELIEF OF DEFORMITY OF THOSE MEMBERS.

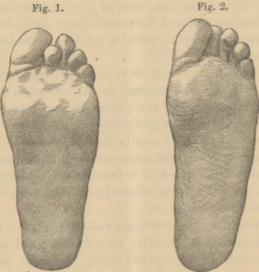
THE joints of the fingers and toes are liable, from various causes, to become anchylosed in a bent position, occasioning a considerable degree of deformity, and interfering with the wearing of gloves, or of well-fitting shoes or boots. In bony anchylosis, and in the aggravated forms of fibrous anchylosis, the deformity cannot be removed by the ordinary methods which are resorted to for this purpose, such as gradual extension, or forcible disruption.

To meet this difficulty, and to rectify the displacement of the offending member, I have resorted to the operation of excising the articular extremities of the phalanges, and replacing the affected finger or toe in a straight position. As far as I am aware, the operation is an original one in its application to the fingers and to the smaller toes. An analogous operation has, however, been successfully performed in a number of instances upon the great toe, at the articulation of the first phalanx with the corresponding metatarsal bone.

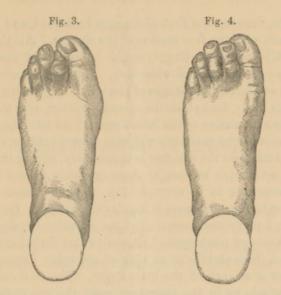
My experience, in the performance of the operation on the fingers, and on one of the smaller toes, has satisfied me as to its utility and safety in appropriate cases. Without further preliminary observations, I will give the details of two cases in which I have resorted to this operative procedure.

Case I. Miss B. L., a young lady about fifteen years of age, had suffered much annoyance from early childhood in consequence of a malposition of the index toe of her left foot, which rendered it impossible to wear a well-fitting shoe, and which occasioned pain in walking or dancing, even when she wore a shoe

much larger than her foot. The second phalanx was bent nearly at a right angle with the first, and could not be extended. The apex of the toe rested on the ground, while the anchylosed joint projected above the level of the adjacent toes. I made vigorous efforts to overcome the rigidity, and to rectify the deformity by passive motion, and by persistent pressure. But I failed to accomplish any beneficial result by these means. I therefore resorted to the operation of exsection, which I performed on the 28th of May, 1874. I made an incision in the median line of the dorsal surface of the toe, about an inch in length, dividing the skin, the extensor tendon, and the periosteum. Having carefully detached the periosteum from the bone, I divided the first phalanx with a bone forceps, about a quarter of an inch behind the articulation, and removed the detached portion of bone. The toe was then easily brought into a straight position and kept in place by a plantar splint, with adhesive plaster and bandage.



The wound of the integuments was closed with fine sutures. No suppuration followed the operation. The wound healed by the first intention. Within a fortnight the patient was able to wear a well-fitting shoe and to walk without pain or inconvenience, and the toe has since that time occupied its appropriate position, and the deformity has been completely and permanently overcome. Figs. 1 and 3 represent the deformity, and Figs. 2 and 4 the cure.



CASE II. On the 26th December, 1876, I was requested by Dr. J. S. Monell to meet him in consultation in the case of Miss Flora W., about 14 years of age, both of whose hands had been severely burned four days before by the upsetting of a kerosene lamp into her lap. When I saw the patient, I found that the cuticle was detached from both hands, from the wrists to the ends of the fingers and thumbs, and the entire surface of the injured parts was bathed in pus. It was evident that the injury extended more deeply than the outer surface of the skin, and that there was great reason to fear the occurrence of serious deformity of the hands and fingers. The hands and forearms were carefully supported in a supine position, and as soon as the dead cuticle could be entirely removed, felt splints stiffened with shellac were applied to the dorsal surface of the forearms, hands, and fingers. the fingers being separated from each other, and each one being secured by narrow strips of adhesive plaster to the corresponding portion of the splint. The dressings were continued through the months of January, February, March, and April, the healing of the raw surfaces being promoted by skin grafting repeated from time to time. At the end of four months the healing process was completed, the fingers having been kept separate from each other, and those of the right hand being free from deformity, and enjoying a very satisfactory degree of motion. The left hand was not in so good a condition; the dorsal surface presenting rigid

cicatrices, drawing the first phalanges backward, and interfering very much with the free motion of the fingers. All the joints of the middle and ring fingers could be passively moved in the directions of flexion and extension. But at the articulation of the first and second phalanges of the index finger with each other, there was bony anchylosis in a bent position, and at the corresponding articulation of the little finger, there was false anchylosis in a similar bent position, and with almost entire immobility. The patient spent the summer in the country, having been directed to keep up passive motion, at short intervals, even if the process should continue to be very painful. I have reason to believe that these instructions were faithfully carried out. On the 26th of October, I performed resection of the articular extremities of the first and second phalanges of the index and little fingers, removing about three-eighths of an inch of the index finger, and about a quarter of an inch of the little finger. The mode of operating was precisely as in the operation upon the toe in the first case which I have reported. I was able at once to bring the phalanges into a straight position, and to secure them by strips of adhesive plaster to an appropriate splint. The wounds healed promptly, and the fingers have since maintained a straight position. There is some motion at the seat of the exsection in the index finger, but in the little finger there is none. But the appearance of the hand is greatly improved by the operation, and the young lady and her family are very much pleased with the result.

In most cases of exsection of the articulations in the treatment of anchylosis, the primary object is to bring the affected member into a good position, and thus to relieve the patient from deformity. In many of these cases an additional advantage may be gained by securing a useful degree of motion in the false joint. But if such motion cannot be secured without the impairment of strength, or without the production of deformity, it is better to secure the good position and the strength of the limb by the sacrifice of its mobility. It is always an easy matter in making a false joint to obtain a flail-like mobility by the removal of an excessive amount of bony substance; but this is an evil to be carefully guarded against.

In conclusion, it appears to me that the operation which I have proposed is applicable to the relief of many cases of deformity of the fingers and toes, which have hitherto been regarded as beyond the reach of any remedial measures known by surgeons.

BLEPHAROPLASTIC OPERATIONS.

Case I. In Sept. 1876, I was consulted by Mrs. W., a lady about 50 years of age, who had suffered for a number of months from an epithelioma, which involved the left lower eyelid, extending from the outer canthus about two-fifths of the length of the lid.

On the 22d of Sept. I excised the morbid growth, including it between two vertical incisions, one on the inner side of the tumor, and the other just without the external canthus, and joining these incisions by a horizontal one below the tumor, thus leaving a chasm of the form of a parallelogram, in the situation which had been occupied by the morbid growth. (See Plate I., Fig. 2.) I extended the horizontal incision outward upon the temple, and made another horizontal incision parallel with it a little above the level of the upper margin of the lower lid, including between the two a flap, a little wider and a little longer than the chasm which it was designed to bridge over. (See Plate I., Fig. 3.) I dissected up this flap from the subjacent parts, and drew it inwards, and secured it by fine sutures to the remaining portion of the lower lid.

Finding that there was a considerable degree of tension, I made a vertical incision through the skin and subjacent tissue more than an inch in length, half an inch behind the external canthus. The gaping of this wound relieved the tension of the flap, and allowed union by the first intention to take place throughout its whole extent. The open wound on the temple was filled with lint moistened with collodion. (See Plate I., Fig. 4.)

In the course of a few weeks it healed by granulation and cicatrization, and, as it contracted, it drew the adherent flap, and with it the remaining portion of the eyelid outward and backward, so that nearly the whole of the lid was supplied with a

tarsal margin, and presented an appearance almost entirely normal, as represented by Plate II., copied from a photograph which was taken a few months after the operation. The cicatrix on the temple is concealed by the hair of the patient.

CASE II. Ectropion of both upper lids, resulting from a severe burn; Cicatricial bands on the nose and left cheek; Contraction, thickening, induration, and adhesion of the left angle of the mouth; Notch of the upper lip on the right side of the median line, with indurated cicatrix, and adhesion to the jaw; Series of plastic operations for the restoration of the eyelids, and other features, and the reproduction of the eyebrows.

Miss E. L., of Norfolk, Va., ætat 22, came under my care in Dec. 1876, having been previously, for a short time, under the care of Dr. Gurdon Buck, whose health had become so infirm that he was obliged to discontinue his attendance. In the spring of 1875, she had had a fainting fit, falling forward with her face resting on a coal fire burning in a grate, and remaining for some seconds in contact with the fire. The burns remained a long time unhealed, and when cicatrization at last was complete. the face of the patient, which had been a remarkably handsome one, was greatly disfigured. The integument of the forehead. including the lower part of the hairy scalp, was converted into a mass of tense, shining, red cicatricial tissue. The left evebrow had entirely disappeared, and nearly the whole of the right eyebrow was wanting. The left upper lid was in a state of extreme eversion, the tarsal margin being closely adherent to the cicatricial tissue of the forehead, and separated nearly an inch and a half from the free margin of the lower lid. The conjunctival surface of the lid was exposed throughout its whole extent, being thickened, indurated, and increased in vascularity. The right upper lid was everted to a less degree, its tarsal margin being adherent to the cicatricial tissue of the forehead, and separated from the margin of the lower lid a little more than half an inch. A cicatricial ridge, an inch and a quarter long, extended along the median line of the nose, downwards from the lower part of the forehead; and another similar ridge three-quarters of an inch in length, extended from the bridge of the nose obliquely downwards to the left cheek. The left angle of the mouth was thickened, indurated, drawn towards the median line, and firmly adherent to the upper jaw. From the left angle of the mouth a firm

and prominent cicatricial band extended outwards to the cheek. The upper lip, about midway between the median line and the right angle of the mouth, was firmly adherent to the upper jaw, was notched at its margin, and presented a dense mass of cicatricial tissue, extending up to the nose. The lower eyelids and the right cheek were nearly in a normal condition. (Plate III.)

During the month of November, Dr. Buck had excised the cicatricial ridge extending outwards from the left angle of the mouth, and had made a free application of caustic potassa to the indurated margin of the incisions, and by careful attention during the healing process, cutting down the exuberant granulations by repeated applications of nitrate of silver, and maintaining firm pressure by strips of adhesive plaster, had succeeded in closing the wound with a smooth cicatrix. The other deformities remained in statu quo, when the patient was transferred to my care.

My first operation was performed on the 22d December, 1876. (Plate IV.) The patient was brought under the full anæsthetic influence of ether, and I commenced the operation by making an incision on the forehead about an inch above the distorted margin of the left upper lid, extending inwards nearly to the median line, and outwards to the temple. The incision was slightly curved, with its concavity looking downwards, and was about three inches in length. I then dissected from the periosteum the flap including the remains of the lid, to such an extent that I was able to draw the upper lid down to meet the lower. With three sutures I then joined the lids together, leaving a gaping wound on the forehead an inch and a half broad, and more than three inches long. I cut a pattern of oil silk of the size and shape of the wound, and turning the pattern into a vertical position, I applied it to the integument of the temple, from which the hair had previously been removed by means of a razor. I cut a flap a little larger than the pattern, and having secured the bleeding vessels, including the temporal artery, I turned the flap into a horizontal position, and attached it to the margin of the wound by numerous fine sutures. Finding that there was too much tension at the upper part of the flap, I made a parallel incision about an inch above the flap, through the cicatrical integument of the forehead. The tension was relieved and the edges of the incision gaped to the extent of an inch. The open wounds were then lightly covered with lint saturated with collodion.

25th. Removed the sutures connecting the upper with the

lower lid, and a portion of the sutures retaining the flap in its place.

26th. Removed most of the remaining sutures. Union by the first intention has taken place throughout nearly the whole circumference of the flap. I supported the flap in its place by shreds of lint saturated with collodion.

January 5, 1877. Removed dressings from open wounds on forehead and temple. Found the wounds in a healthy state of granulation. The flap remains perfectly in place. The hair is growing on its surface. The sensibility of the flap, when touched, is referred to its new situation at the outer extremity of the flap. When the flap is touched at its inner extremity, the sensibility is referred to the temple. The lid is everted to a moderate degree, much less that that of the right side. The swollen conjunctiva has occasionally been touched with nitrate of silver.

10th. I made an incision nearly an inch in length through the cicatricial tissue at the left angle of the mouth, and increased the extent of the vermilion border of the upper and lower lips by attaching the mucous membrane to the skin with fine sutures.

16th. I removed the sutures and applied shreds of lint moistened with collodion. The new vermilion border appears perfect but abnormally thick, and the angle of the mouth is too broad. The hair of the flap above the upper eyelid is growing, and I have begun to pluck the superfluous hairs, leaving in place a sufficient number to form an eyebrow, which already presents a promising appearance.

February 5. The line of union of the transplanted flap with the surrounding parts is so perfect that it requires a careful examination to detect its exact location. The newly formed eyebrow continues to improve. To day I performed a series of operations for the further improvement of the patient's appearance. It was found difficult to bring her under the full influence of ether, but, after a long struggle she was brought into a satisfactory state of anæsthesia. I then excised the cicatricial ridges on the nose, uniting the vertical incisions by fine sutures, and leaving the oblique wound to granulate. I then made a horizontal incision on the forehead above the right upper lid, as I had on a former occasion done on the left side, and dissected the flap from the pericranium, until the margin of the upper lid could be brought in contact with the lower. I then introduced a horn spatula between the lid and the eyeball, and with a sharp

scalpel split the lid by an incision which left the skin with the bulbs of the cilia in front, and the tarsal fibro-cartilage behind, after which I attached the integument of the upper lid to the tarsal margin of the lower lid by fine sutures. The edges of the wound on the forehead gaped so as to leave a chasm about an inch and a quarter wide and three inches long. By the aid of a pattern of oil silk, I cut an ample flap from the temple as I had previously done on the left side, and brought it into position, and secured it with fine sutures. As there was no tension, it was not necessary to make a parallel incision on the forehead as I had done on the left side. The open wounds were dressed with lint saturated with collodion.

Having finished the operations on the eyelid and nose, I then proceeded to operate on the right side of the upper lip. I divided the adhesions binding the lip to the jaw, and then excised the cicatricial mass from the notch at the margin to the anterior naris, leaving the lip in the same condition as in the operation for harelip. I brought the edges of the wound together by means of one pin suture, and five interrupted sutures, three through the skin, and two through the vermilion border. As the right angle of the mouth was thus brought too near the median line, I made a horizontal incision outward into the cheek to the extent of half an inch, and increased the extent of the vermilion border of the upper and lower lips, by attaching the mucous membrane to the skin by means of fine sutures.

The operation was a tedious one, the patient having been kept two hours under the influence of ether.

8th. I removed the alternate sutures around the transplanted flap. The patient has not felt well since the operation. She has no appetite, and has considerable febrile excitement. The wounds look well. I prescribed spts. mindereri, a tablespoonful once in two hours.

9th. I removed the pin suture from the lip, and a portion of the sutures around the flap.

11th. I removed all the remaining sutures, except those connecting the upper and lower lids. I supported the lips and the transplanted flap with strips of lint moistened with collodion.

14th. I removed the sutures connecting the upper and the lower lids.

21st. The general condition of the patient is very slowly improving. The transplanted flap is secure in its new position, but

there are two points along its lower margin where there is a purulent discharge. The lip is firmly united. The wound on the nose is granulating, and presents a favorable appearance. To-day I changed the dressing of the wound on the temple, and found it in a good condition. For several days past, extensive ulceration has occurred at several points on the left side of the forehead, where cicatrization had taken place. At those parts I have removed the collodion dressings, and have applied lint smeared with ung. lap. calamin. The ulceration involves a large part of the integument between the transplanted flap and the parallel incision which was made to relieve tension, but does not involve any part of the flap.

March 10. Patient's general health has greatly improved. The flap transplanted from the right temple has become firmly attached to the surrounding parts, and the ectropion on that side has almost disappeared, except when the patient winks, or attempts to close the lids. The tarsal margin of the upper lid does not descend to meet the lower lid, but the conjunctival lining becomes everted, and descends so as nearly to close the eye. The space on the temple, from which the flap was cut, is filled with granulations, and is gradually contracting. The sores on the left temple and left side of the forehead are healing favorably, and the position of the left upper lid is much improved. The incisions on the nose are nearly healed, and there is a marked improvement in the appearance of the organ.

April 7. Since the last report the general health of the patient has been satisfactory, and the process of cicatrization has gradually advanced. The vertical space on the left temple, from which the flap was transplanted on the 22d December, 1876, is almost entirely healed. The sores on the left side of the forehead are also very nearly cicatrized. The wounds of the nose and lip are entirely healed, as is also the whole circumference of the flap on the right side of the forehead. The vertical space on the right temple, from which the flap was transplanted on the 5th February, is much reduced in size, and cicatrization is steadily advancing. To-day the patient sailed for her home in Norfolk, Va., promising to return in the early part of May, to undergo certain supplementary operations for improving the form of her eyelids, and of her upper lip.

May 14. The patient returned from the South on the 11th instant much improved in her general condition; but the sores on her forehead have not entirely healed.

To-day I performed the following operation on her left upper lid. I made a transverse incision at the margin of the lid, separating the skin from the tarsal fibro-cartilage, carrying up the' dissection about half an inch from the margin. I also made a vertical incision through the skin upwards from the external canthus, and another on the temporal side of the internal canthus. I then excised a triangular portion from the tarsus near the external canthus, about a fifth of an inch wide at the base, and brought the edges together with fine sutures, thus shortening and straightening the margin of the lid. I then reattached the integument to the margin of the tarsus with fine sutures. The effect was to diminish the elevation of the margin of the lid, and also slightly to diminish the eversion. But I was disappointed that there was so little immediate improvement resulting from the operation. I also operated on the lower lip near the left angle of the mouth, excising a longitudinal wedge-shaped piece from its vermilion border, and bringing the edges together with fine sutures, to diminish the abnormal thickness of the lip.

26th For nearly a week after the operation the weather was intensely hot, the thermometer several times indicating 90° in the shade. A portion of the separated integument of the eyelid sloughed. The surface is now granulating, and cicatrization is commencing. The wound of the lip united by the first intention. The margin of the lip towards the left angle is thinner and softer than before, but it is below the level of the rest of the lip, leaving a superficial notch.

June 4. The sloughing of the integuments at the margin of the lid seems to have destroyed the bulbs of the cilia. 'Cicatrization is yet incomplete. I operated to-day on the lower lip for the purpose of removing the notch near the left angle of the mouth. I excised with scissors the margin of the depressed portion of the lip, carrying the incision beyond the angle of the mouth, outwards and a little upwards into the cicatrical tissue of the cheek, to the extent of two-thirds of an inch. I then excised a horizontal wedge-shaped portion of the cheek above the line of the commissure of the lips, the base of the wedge towards the angle of the mouth being a third of an inch in thickness. I then drew the margin of the lower lip upwards and outwards, until the left extremity of the uncut margin of the lower lip corresponded with the left extremity of the vermilion border of the upper lip. I secured the parts in apposition by means of two pin sutures and five interrupted thread sutures.

9th. The sutures have become loose, and I removed them all to-day. The wound seems to have united on its posterior or mucous surface, but not on its anterior or cutaneous surface. As the patient was very averse to the introduction of another suture, I determined to make an effort to hold the edges of the wound together with strips of adhesive plaster. I accordingly applied three narrow strips, commencing on the right side of the face near the zygoma, passing them under the base of the jaw, and bringing them upon the left side of the face over the wound, and terminating near the zygoma. They seemed to give a good support to the wound, but they prevented the mouth from being opened to any considerable extent.

15th. The strips of adhesive plaster have been renewed every

other day. The wound is healing satisfactorily.

March 18, 1878. Soon after the last report the patient returned to her home in Norfolk. A few days ago she returned to the hospital in New York. To day I performed another operation on the left upper lid (see Plate V.), which remained considerably everted, presenting a raw edge covered with an incrustation. I made an incision through the integument of the lid about a quarter of an inch above its margin, through its whole length, and then attached the margin of the upper lid by a series of fine sutures to the margin of the lower lid, thus overcoming the eversion. I then dissected a flap of integument three-fifths of an inch wide and between two and three inches long from over the masseter muscle, and turned it horizontally upward and inward, attaching it by fine sutures so as to fill up the vacant space occasioned by the recession of the edges of the wound of the lid. By means of three pin sutures and a number of fine thread sutures, I drew together the edges of the wound over the masseter muscle. But as there was great tension, I made a parallel incision three-fifths of an inch in front of the wound, and the tension was thus relieved. The open wound thus made was dressed with dry lint.

19th. The transplanted flap has a good color, and the patient's condition appears in all respects favorable. I directed the dry lint over the open wound to be pencilled three times a day with a liquid composed of carbolic acid 3ss and glycerine 3ij.

22d. The edges of the flap have united with the adjacent parts throughout by the first intention. The edges of the wound from

which the flap was taken have also united. To-day I removed all the pins and the alternate sutures.

25th. I removed all the remaining sutures, excepting those which attached the upper to the lower lid. Adhesion remains perfect, as at the last report.

April 1. I removed the sutures connecting the upper with the lower lid. The conjunctiva appears somewhat inflamed, and there is some intolerance of light. I ordered a collyrium of a solution of two grains of sulphate of zine in an ounce of water.

8th. The condition of the conjunctiva is improved. To-day I divided the neck of the flap, untwisted it, and inserted it between the lips of a horizontal incision towards the temple, where it was secured by sutures.

12th. I removed the sutures; the flap is in a sound condition. 18th. The patient's appearance has been greatly improved since the operation of March 18th The eversion of the left upper lid has been completely overcome, except at the very margin, which is much thickened, and presents a granular surface covered with an incrustation. To remove this remaining eversion, and to reduce the thickness of the palpebral margin, I performed the following operation. I first made a vertical incision through the lid upwards from the outer canthus to the extent of about half an inch. I then everted the lid, and excised a wedgeshaped section from its margin, extending from the outer canthus nearly to the inner canthus, the broadest part of the base of the wedge being towards the outer canthus, where the palpebral margin was most thickened. I then brought the edges of the wound together by half a dozen very fine sutures connecting the skin with the conjunctiva. I also excised with scissors a small flap of surperfluous conjunctiva, and drew together with fine sutures the edges of the vertical wound extending upwards from the outer canthus. When the wound was dressed, the eversion seemed to be completely overcome.

22d. Removed all the sutures. I found that no union had taken place at the margin of the lid between the skin and the conjunctiva. The edges of the wound were swollen and inflamed.

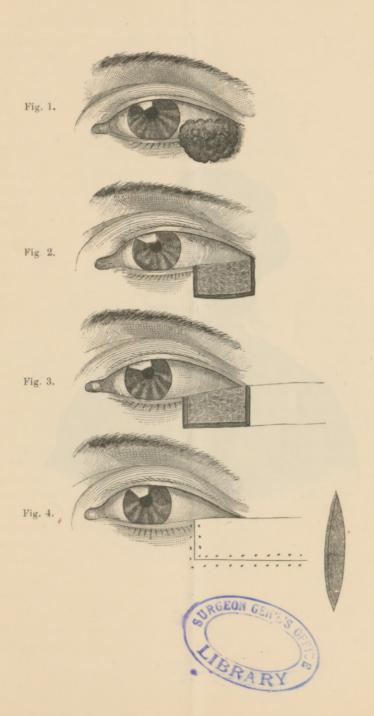
30th. The swelling and inflammation have in a great measure subsided. The appearance of the eye has much improved. The eversion is entirely removed, and is replaced by slight inversion. To overcome this, I excised, from the recently transplanted flap of skin, a narrow strip of three-quarters of an inch long, and

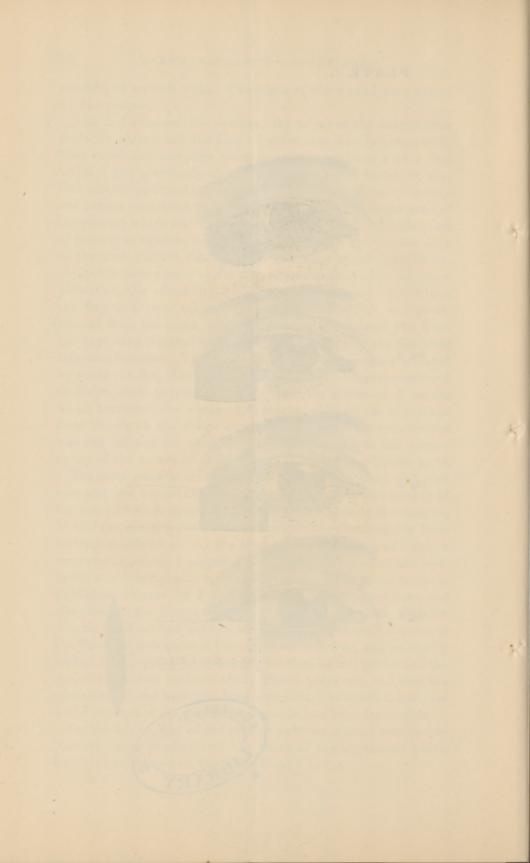
one-fifth of an inch wide. The edges of the wound were united by fine sutures.

May 2. I removed the sutures; the edges of the wound were perfectly united, and the line of union was hardly perceptible. This rapid and complete union was in accordance with a fact which I had previously observed in a number of instances, viz., that wounds in recently transplanted flaps undergo more speedy and perfect reparation than corresponding wounds in portions of integument which maintain their normal relations. Another fact of interest in relation to this case has reference to the sensibility of the transplanted flap. In the two flaps which were transplanted from the temples, for a considerable time after the transplantation, the sensibility was referred to the part from which the flap had been taken. But in the flap which was transplanted from the cheek, the sensibility which existed was from the beginning referred to the position occupied by the flap after its transplantation. The reason for this difference was attributed by me to the fact, that the flaps taken from the temples continued to derive their nervous influence from the filaments of nerves which traversed the necks of the flaps, while in the flap taken from the cheek the direct connection with the nervous centres was cut off, and the sensibility was mainly due to the anastomoses of the nerves of the flap with those of the adjacent parts.

The most remarkable feature of interest connected with this case was the reproduction of the eyebrows from the growth of the hairs from the cutaneous flaps transplanted from the temples. In this respect, the result of the successive operations has been entirely satisfactory. At the time of the operation, and until a very recent period, I supposed that the reproduction of the eyebrows was original with myself, but on looking over the recently published volume by Dr. Atkinson, entitled "Physicians and Surgeons of the United States," I found a statement that Dr. Joseph Pancoast had performed a similar operation. I wrote to Dr. Pancoast to inquire if the statement was true, and he kindly replied to my query by informing me that he had performed the operation on two patients about fifteen years ago, and that the operation in one case had been completely successful, and that in the other case the success on one side had been incomplete.

On the 4th of May of the present year my patient returned to Norfolk, much pleased with the result of the operations which had been performed on her. (See Plate VI.)











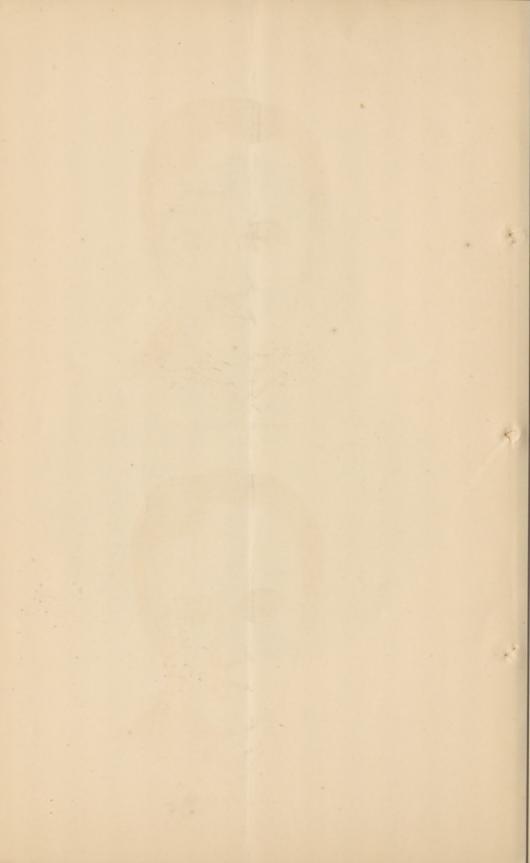


PLATE IV.



Operation of Dec. 22, 1876.

PLATE V.



Operation of March 18, 1878.

