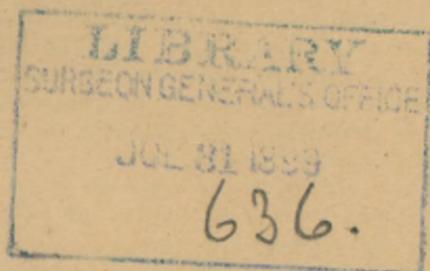
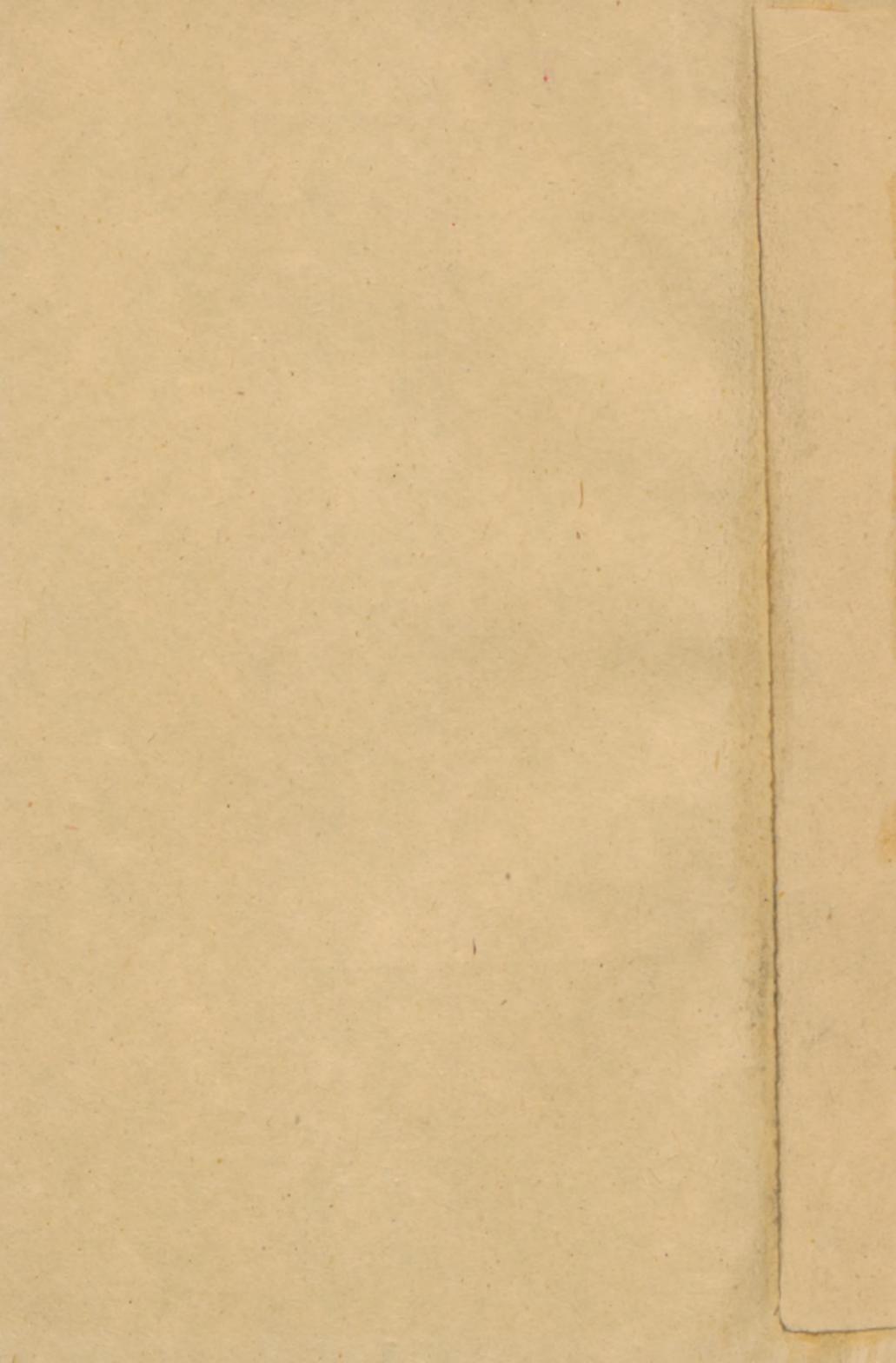


SMITH (G. S.)

A case of frog = skin  
grafting -





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## A CASE OF FROG-SKIN GRAFTING.

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THE restoration of the integrity of the skin through grafting will always prove of interest to the medical profession, restoring, as it does, the epithelium of the part, and thereby preventing the deformity, and loss of function which would follow if the process of granulation were allowed to mature.

The following is the report of a case where both human epidermis, and the skin of the frog, were used for the purpose, and in some ways it is one of peculiar interest.

Necessity compelled me to look about for a substitute for human skin, and it was fortunate that my resources were thus taxed, for the subsequent course of the case showed that frog-skin not only *took* in a larger percentage of cases than human skin, but that its ultimate growth and proliferation was more rapid.

In August of 1893, while in Cleveland, O., I was called to see a case of very deep and extensive burn in a child five years of age. On July 18th, four weeks previous to my first visit, the boy's clothing caught fire, and before the flames could be extinguished the entire thickness of the skin had been destroyed over a large area of the trunk, face and neck.

The part involved may be traced by a line running from the thyroid cartilage, down the median line of the body to within an inch of the umbilicus, and from



here following the band of the trousers around to the median line of the back; up to the external occipital protuberance; to the malar bone, on the left, including a portion of the ear; diagonally across the face to the right corner of the mouth, and completing the area by connecting this point with the thyroid cartilage.

I found the entire surface covered with healthy granulations that bled freely upon the slightest touch. In other respects, however, the case had received but little attention, a fact which was emphasized by the fold of the axilla being firmly adherent, through neglect to separate the parts in dressing.

As a consequence the arm was firmly bound down, and my first care was to break up these adhesions under ether.

It being evident from the first that healing by granulation would not only require many months, but would eventually result in considerable deformity, it was decided to resort to grafting. Here the first difficulty presented itself, as the surface was so extensive, and the boy in such a weak and nervous condition, that any attempt to have taken the necessary epidermis from him would have been highly imprudent.

It being very difficult to secure human contributions, I finally determined to resort to experiment, and frog-skin was tried, with the gratifying results already alluded to — results far beyond my fondest hopes.

On the 29th of August, operations were begun by planting upon the chest twenty pieces of skin, each a quarter of an inch square. They were placed in two rows of ten each, each graft being separated from its neighbor by a space of half an inch. In two days the skin had become identified with the granulating surface, and in five days the grafts had lost their original color, and each had sent forth embryonic epithelium meeting that of its neighbor.

This gave to the surface much the appearance of tile work. The embryonic epithelium was transparent at first, giving to the granulations underneath a slightly glazed appearance. In time this epithelium lost its transparency and then assumed the character of normal skin. In the course of a week the original grafts were dissolved leaving, instead, an embryonic epithelium such as has just been described.

Pieces were taken from the belly and legs of the frog, and also from the *back*, in cases where the frog was small, and the skin not too thick. In every instance the skin lost its original color in from five to ten days. It was found that the comparatively thick skin from the *back* took more satisfactorily than that from the belly or legs.

The case was dressed and grafted every second day, and on each occasion from twenty to eighty frog-grafts, and from ten to twenty human-grafts were used. The latter were very small (about one-sixteenth of an inch in diameter) and were placed upon the face and neck until it became evident that the frog-skin would not retain its color.

The method used in dressing was as follows: The surface was first cleansed by irrigating with a warm solution of carbolic acid (one to forty), and after the detritus had been entirely cleared away the parts were washed with a stream of sterilized water. The latter step was to assure asepsis, grafts not thriving under conditions of antiseptics. Each graft was then firmly pressed into the granulating surface. Following this, a dressing of boric acid and vaseline (a drachm to the ounce) was spread upon strips of compress cloth, and applied so as to fit the parts snugly. Outside of this was placed sterilized gauze, and as a final step the roller bandage was used.

At first an attempt was made to hold the grafts in

place by strips of gutta-percha ; but it was soon found to be impracticable, as the surface was so extensive, and the child so nervous it was impossible to keep him still. The method employed although not so elegant proved effective, and few grafts were lost.

On October 5th, seven weeks after my first visit, the parts were all grafted in ; nearly a thousand frog-grafts and about four hundred human-grafts having been planted. The skin, however, was soft and immature, and required constant care and dressing for three months thereafter.

The child attended school during the following spring, and at the time of the present writing (December 12th), has entirely regained his former robust health. He is able to throw his burned arm vertically over his head with no apparent effort. There is absolutely no contraction, the arm being full size where the burn encircled it.

I have recently seen frog-skin used in another case with very gratifying results, and I strongly recommend it as worthy of trial in cases where the destruction of skin is extensive, and it is deemed imprudent for the patient to furnish the epidermis required for the operation.



