Plastic surgery : corrective and palliative repair, in the treatment of malignant disease / by William Seaman Bainbridge, A.M., ScD., M.D., C.M., New York.

PLASTIC SURGERY—CORRECTIVE AND PALLIATIVE REPAIR—IN THE TREATMENT OF MALIGNANT DISEASE.

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New York.

Each year during the past decade it has been our custom, in a clinical lecture, to deal with some phase of the cancer problem, and to present illustrative cases, together with pictures, wax casts, and pathological specimens.

Ten years is a very definite milestone, and it may not be amiss, on this occasion, to recapitulate, briefly, the subjects covered during that period.[1] The special aspects of the question have been selected year by year because they seemed to be of great interest at the time, or because they fitted into some particular line of clinical or laboratory research, or

*Given in part as the Tenth Annual Clinical Lecture on Cancer at the New York Skin and Cancer Hospital, April 30, 1914. Read in full, with stereopticon clinic of illustrative cases, before the Bronx County Medical Society, March 17, 1915.

[1]The subjects covered in the preceding years are catalogued below:

1. A Clinical Lecture on Malignant and Nonmalignant Growths, *Atlanta Journal-Record of Medicine,* June, 1905.

2. Malignant and Nonmalignant Growths, *American Journal of Surgery,* August, 1906.

3. Some Phases of the Surgical Treatment of Cancer—A Clinical Lecture, *Ibidem,* November, 1907.

4. Irremovable Cancer, New York Medical Journal, October 3, 1908.

5. The Enzyme Treatment for Cancer—Final Report, *Medical Record,* July 17, 1909.

6. Arterial Ligation for Irremovable Cancer of Pelvic Organs—Technic Adapted and Amplified, *Woman's Medical Journal,* April, 1911.

7. The Campaign Against Cancer: Educational, Experimental and Clinical, *American Journal of Dermatology,* July, 1911.

8. The de Keating-Hart Method of Fulguration and Thermoradiotherapy, *Medical Record,* July 6 and 20, 1912.

9. The Surgical Treatment of Cancer, *International Journal of Surgery,* May, 1913.

both combined, which was being followed just then, or concerning which we wished to make a formal report. This year we come to a consideration of the possibilities of treatment of malignant disease by means of plastic surgery.

BRIEF HISTORY OF PLASTIC SURGERY.

Anaplasty, restorative or plastic surgery, is not a discovery of modern times. The ancient Hindus, to whom so many wonderful achievements are popular-

Fig. 1. Fig. 1a.

CASE 1. Fig. 1.—Tuberculosis of right ala nasi; condition upon admission to hospital. Fig. 1a.—Result of plastic operation.

ly attributed, are credited with having performed plastic operations two thousand years ago. The history of the City of Cut Noses perhaps gives the explanation of the early Hindu response to that necessity which has ever been the mother of invention.

It is recorded that a certain Hindu ruler imposed upon the inhabitants of a conquered city the retributive punishment inflicted by the cutting off of the nose, only infants and those who played wind instruments being exempt. This disfiguring punishment

was quite prevalent, according to accounts, in India, and quite naturally stimulated some of the inhabitants to make the attempt to repair the mutilated physiognomy just as a mason would repair a damaged wall, or a plumber a defective drainage system. Strange as it may seem, the tile makers, who are reputed to have been a more or less despised class in those early days, delegated to themselves the task of nose mending. Presumably the thought came to these particular artisans as a result of their familiarity with cements and different processes of repair calling for the adhesion of one substance to another. At any rate, the earlier attempts at plastic repair dealt with the "sticking on" process rather than the sewing or stitching on with which we are now familiar.

The very early history of plastic surgery seems to have been enshrouded in mystery all along, and to have been received with a goodly degree of skepticism. However, there is evidence that many of the leading lights of the medical world of olden times contributed to this particular field. The Surgical Bible of Celsus (*De Medicina*), contains references to his work in this connection. The *Ayur-Veda,* of Susrata, details this author's attempts at rhinoplasty. For centuries, however, plastic surgery seems to have had a fitful life, with periods of revival and of quiescence, until Kaspar Tagliacozzi, the celebrated rhinologist of Bologna, established the science and art upon such a footing that its subsequent history has been one of steady progress. Thus, from the presumably crude attempts of the tile maker plastic surgeons of ancient India, who are said to have reconstructed noses from skin taken from the gluteal region, and to have been quite adepts in skin grafting, there has been evolved a most important branch of surgery which deals with restorative and palliative plastic repair.

It is not within the scope of this paper to detail this evolution, nor is it our purpose to describe in full the various methods of skin grafting and of

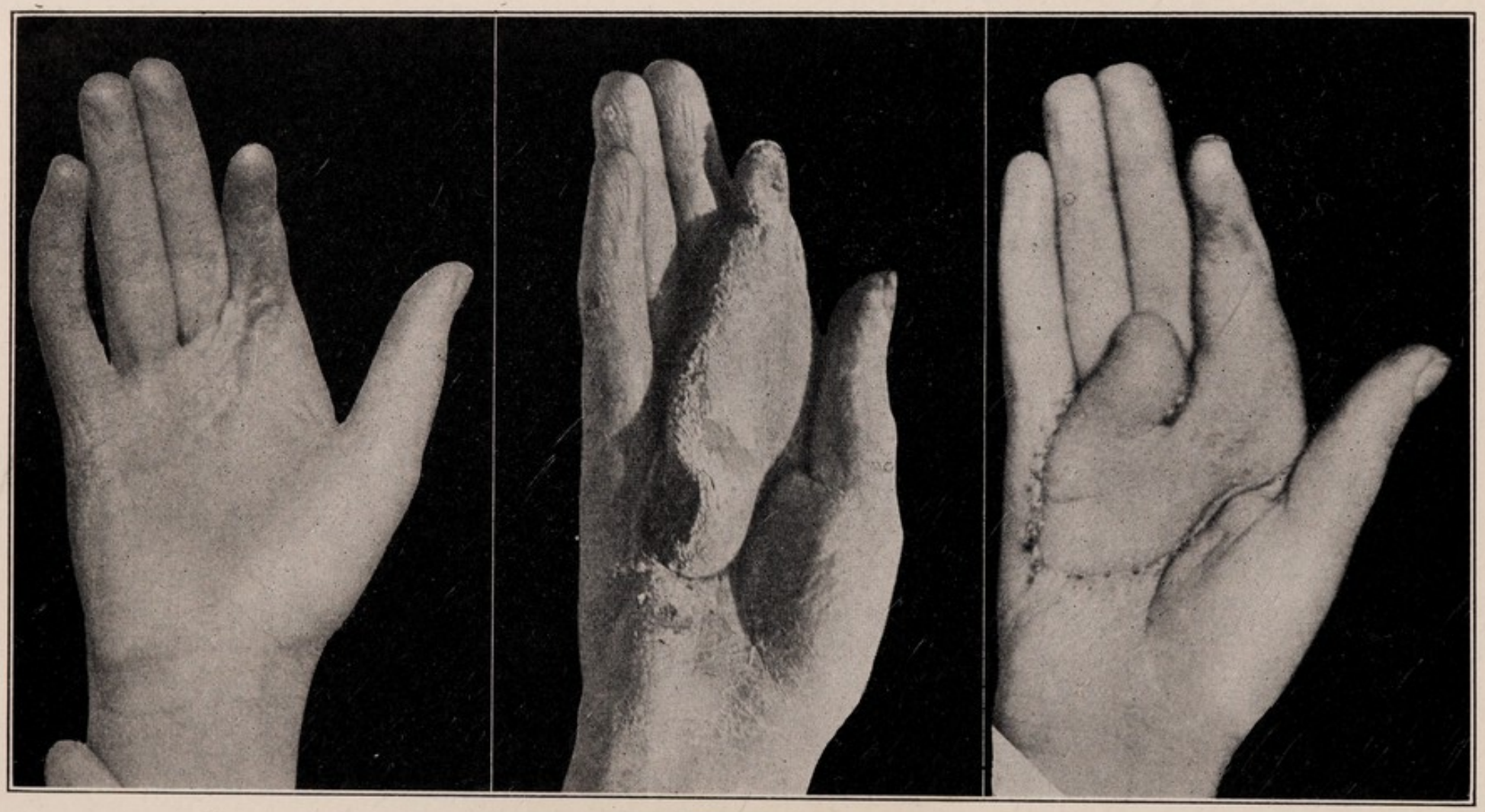


Fig. 2. Fig. 2b. Fig. 2c.

CASE II. Fig. 2.—Cicatricial contraction of palm and index finger, following burn. Fig. 2b.—Hand after detachment of flap from abdomen. Fig. 2c.—Condition two months after plastic operation, which time flap was thinned and moulded.

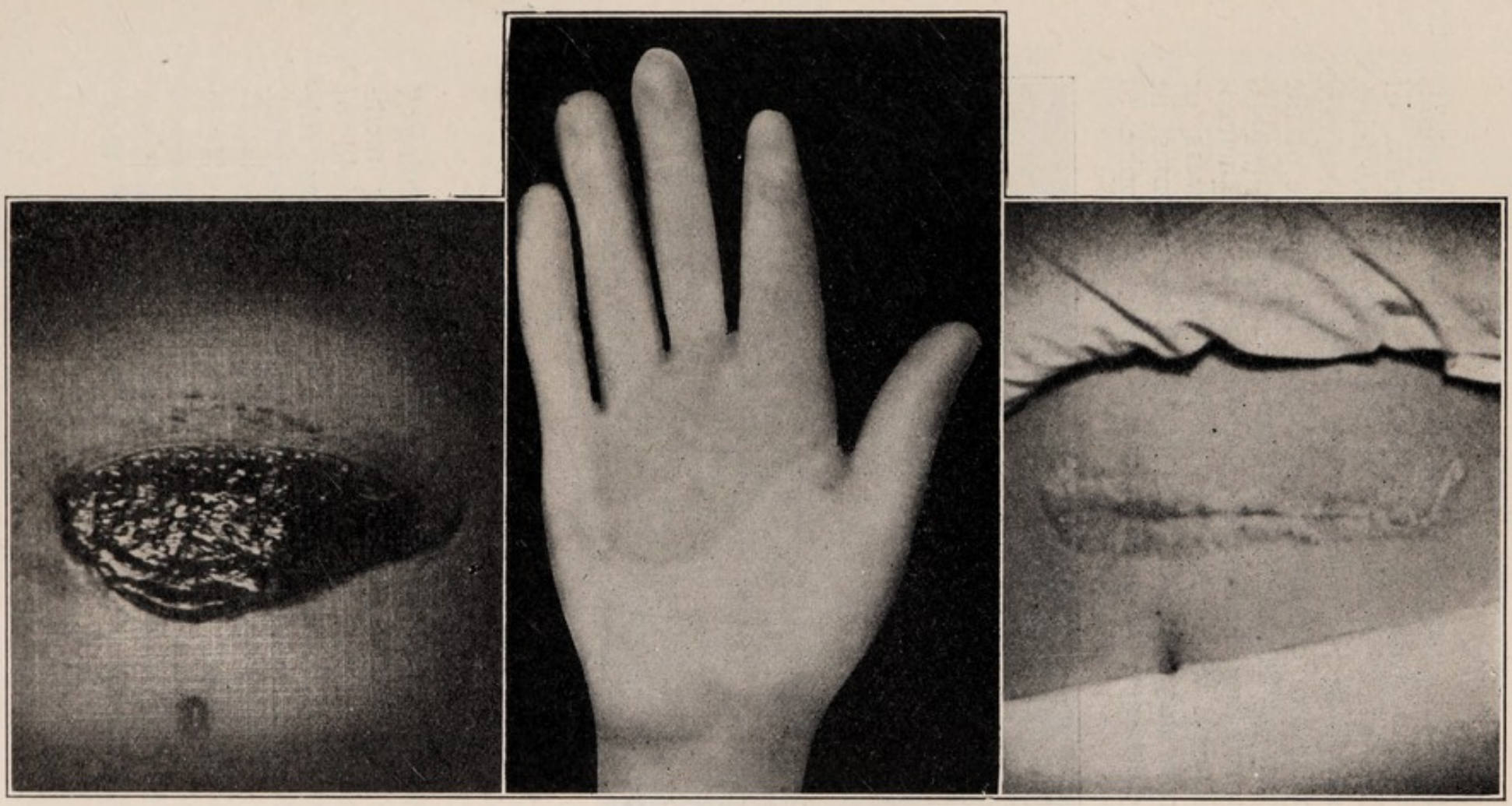


Fig. 2a. Fig. 2e. Fig. 2d.

CASE II. Fig. 2a.—Abdomen, after removal of autoplastic flap. Fig. 2e.—Condition of hand March 15, 1915, sensation completely restored in hand. Fig. 2d.—Wound in abdomen, made by removal of flap, closed.

anaplastic surgery in general. The various methods of skin grafting, such as that of Reverdin, of Thiersch, of Wolfe, and the flap graft of Ehrenfried, as well as the different modifications of these, are matters of common knowledge. The source of the graft or flap—whether from animals (zooplastic), from other human beings than the patient (heteroplastic), which includes tissues from cadavers, or from the individual subject (autoplastic)—must be determined by circumstances. The same applies to

Fig. 3. Fig. 3a.

CASE III. Fig. 3.—Epithelioma of nose; condition when admitted to hospital. Fig. 3a.—Growth removed, down to cartilage, wound fulgurated.

the material used, such as "epithelial scrapings," worts, corns, callosities, blister skin, egg membrane, sponge grafts, etc. The entire field of anaplastic surgery furnishes a fascinating subject for study and investigation to those interested. The principles of plastic surgery as employed in the treatment of other conditions are applicable in the management of malignant disease. The surgeon who operates upon patients with cancer has perhaps greater opportunity for the utilization of these

methods than has the surgeon who passes these cases on to his confrères. He has not the opportunity, to be sure, of scoring as brilliant results from the point of view of the "beauty specialist," that the general surgeon or the orthopedist enjoys, but he is amply rewarded by comparing, in his imagination, the condition of the victim of malignant disease who has been given the benefit of plastic restorative or palliative repair, with the state of the one who has been left to go through the remainder of life with a harrowing and painful disfigurement.

Fig. 3b. Fig. 3c.

CASE III. Fig. 3b.—Condition after fulguration. Fig. 3c.—Result of plastic operation.

Furthermore, the surgeon who brings to bear modern methods of plastic surgery in the treatment of some of these patients, has the comforting realization that in many instances by applying these methods, after the removal of as much as possible of the external cancer, he may be able to hold the malignant process in abeyance on the surface of the body, thus mitigating suffering, knowing that meanwhile the patient is being carried on to the grave by incurable internal cancer. It is possible, many times,

to clear up and repair the external ravages of the disease so that the patient dies without knowing that the cancer had recurred or had extended to internal organs.

Anaplastic surgery, as applicable to cancer, may be considered under the two subdivisions: 1. Corrective or restorative repair; 2, palliative repair.

CORRECTIVE OR RESTORATIVE REPAIR.

The conditions to which corrective or restorative repair is applicable may be classed as:

Fig. 4. Fig. 4a.

CASE IV. Fig. 4.—Advanced stage of malignancy—epithelioma of nose. Before operation. Fig. 4a.—After removal of growth.

1. Precancerous conditions, or conditions which, in accordance with the irritation theory of the cause of cancer, may be presumptive forerunners of malignancy.

2. Removable cancer, or cases of cancer in which all macroscopic evidence of the disease is amenable to surgical removal, but in which physical defects resulting from the disease or from its removal, are to be repaired.

Precancerous conditions. The following cases

are illustrations of the first class. All diagnoses in the cases herein reported were both clinical and pathological.

CASE I. J. P., female, aged fifty-nine years, admitted to the New York Skin and Cancer Hospital, April 14, 1913.

Diagnosis: Tuberculosis of right ala nasi (Fig. 1).

Previous history: Seven years before admission patient was treated by another physician by means of a "caustic paste." The "sore" disappeared after three applications, and for six years there was no recurrence. Six months before admission a recurrence took place, and, despite the advice of her family physician to submit to its surgical removal, the condition was neglected, until it had assumed

Fig. 4b. Fig. 4c.

CASE IV. Fig. 4b.—Flap taken from arm in position before final operation. Fig. 4c.—After plastic operation.

the proportions shown in the first picture. She then consulted us.

Operation, April 17, 1913: Curettage, with de Keating-Hart fulguration.

Plastic operation: After a period of observation to determine whether recurrence took place, and none having occurred, plastic operation was performed. Fig. 1-a, which shows the condition on October 23, 1914, gives the result of plastic corrective repair of the defect after curettage and fulguration.

CASE II. L. S., female, aged nine years, admitted to the New York Skin and Cancer Hospital, January 6, 1912.

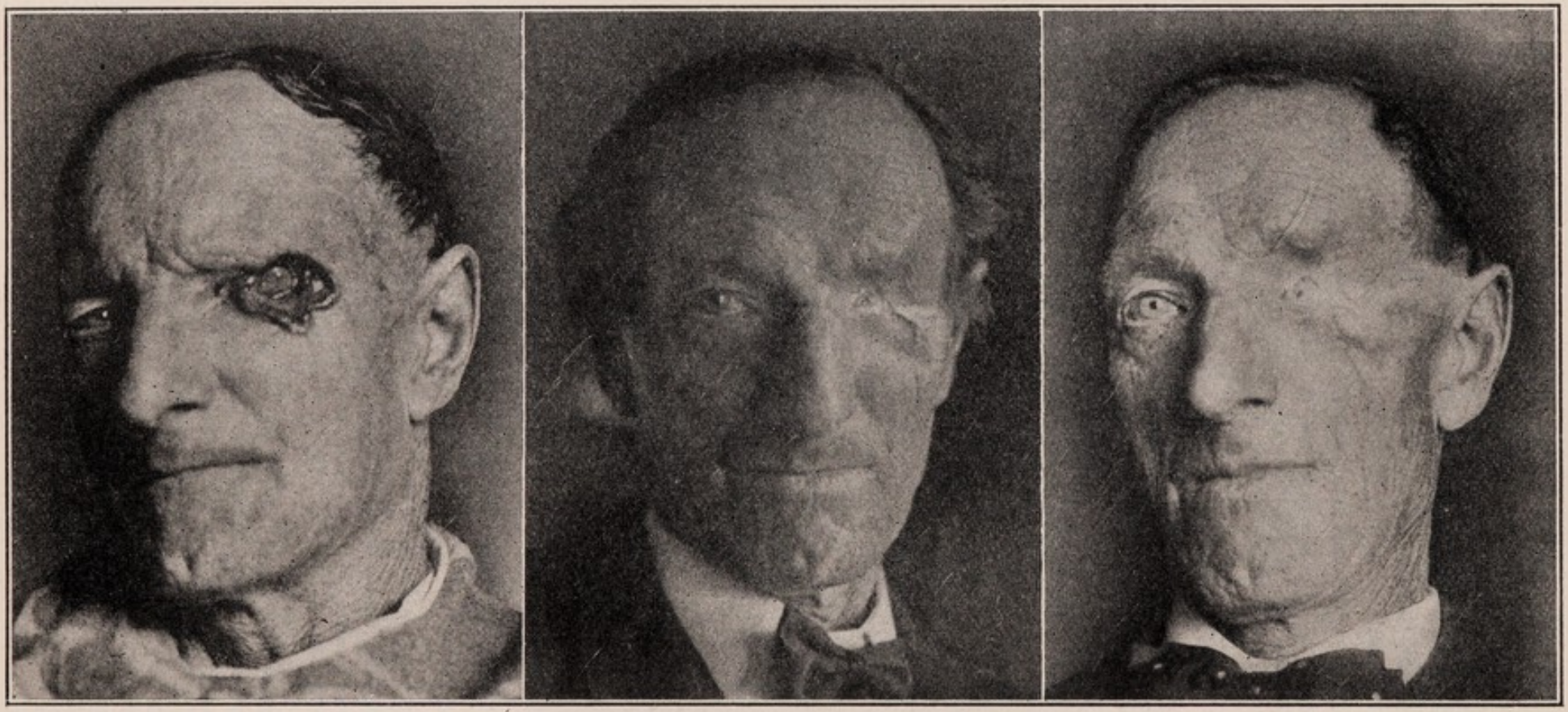


Fig. 5. Fig. 5a. Fig. 5b.

Case v. Fig. 5.—Epithelioma of orbit. Before operation. Fig. 5a.—After plastic operation. Fig. 5b.—Condition April, 1914.

Diagnosis: Cicatricial contraction of both palms, resulting from burns sustained when thirteen months old. Fig. 2 shows condition of right hand, with contraction of index finger. Spot of suspicious degeneration in centre of keloid, foreshadowing possible malignancy.

Operation, January 8, 1912, for removal of cicatrix on palmar surface of left hand. The skin between the thumb and the index finger was cut through and sewed at right angles to the incision, thus releasing the pull on the finger.

Plastic operation, April 29, 1912: Fig. 2-a shows denuded area of abdomen, from which an autoplastic graft was removed for correcting the deformity of the right hand and finger. The hand was kept to abdomen for three and a half weeks, then released. Fig. 2-b shows the hand after detachment of the flap from the abdomen. Fig. 2-c represents the condition June 8, 1912, at which time the graft was moulded and thinned. Fig. 2-d, taken January 15, 1915, shows the wound in abdomen, from which graft was removed, closed. Fig. 2-e, made on the same day, gives the present condition of the right hand. There is absolute return of sensation in the skin of the palm, not only vascular, but nervous connections as well, having developed. The child is an art student, and is using her hand perfectly well.

Removable cancer. In many instances cancer which is completely removable so far as all macroscopic manifestations are concerned, may leave a defect of such magnitude as to be of serious annoyance and inconvenience if not corrected by plastic surgery. The following cases illustrate this class.

Case III. M. J. A.,[2] female, aged seventy-seven years, admitted to the New York Skin and Cancer Hospital, May 13, 1912. The condition at that time is shown in Fig. 3.

Diagnosis: Epithelioma of nose.

Previous history: Twenty-five years ago, after striking her nose, a small red spot, the size of the finger nail, appeared. This was elevated, wartlike, and soon began to bleed. She was treated by her physician with salves and solutions, without benefit. The growth was finally excised, and the bone curetted. There was no recurrence for five years. Recurrence then took place in the scar. This was treated with local applications and x rays, without benefit. The patient was then referred to me for operation.

Operation, May 16, 1912: Growth removed down to cartilage of nose, and nose cavity entered on left side. The wound was then fulgurated, according to the de Keating-Hart method. Fig. 3-a shows the condition after ful-

[2]Reported in the *International Clinics*, 1913.

guration. Recovery uneventful. Wound fulgurated again, March 20, 1913.

Plastic operation, April 3, 1913: Flap brought down from forehead, with skin surface turned in, leaving raw surface outward (Fig. 3-b). Flap cut at its pedicle, April 24, 1913, and fitted into place and sutured. Raw surface covered by skin grafts. Result Fig. 3-c. No recurrence April 30, 1914.[3]

CASE IV. S. S.,[4] female, aged sixty years, admitted to the New York Skin and Cancer Hospital, February, 1905.

Fig. 6. Fig. 6a.

CASE VI. Fig. 6.—Showing scar on forehead, resulting from removal of epithelioma. Also condition of nose before operation. Fig. 6a.—Condition after plastic operation.

Diagnosis: Epithelioma of nose and jaw, as shown in Fig. 4.

Operation, February 15, 1905, for removal of all diseased tissue, which included a portion of the nasal process of the superior maxilla, as shown in Fig. 4-a.

Plastic operation, March 15, 1905: Edges of wound freshened, flap dissected up from inner surface of arm of affected side, arm placed over head, flap sutured by its inner margin to the face, and head and arm encased in plaster of Paris. At the end of sixteen days the flap was detached from its base and left in place on the face, as shown in Fig. 4-b. The condition after plastic work was complete is shown in Fig. 4-c.

[3]Slight recurrence noted in February, 1915.

[4]Reported in Malignant and Nonmalignant Growths, *Am. Jour. of Surg.*, Aug., 1906.

Fig. 7. Fig. 7a.

Fig. 7c. Fig. 7d.

CASE VII. Fig. 7.—Lupus and epithelioma of eyelids, left side. Condition after excision of diseased tissue, and fulguration. Fig. 7a.—Condition after excision of recurrent epithelioma. Fig. 7c.—Another stage of plastic work. Fig. 7d.—Result of plastic operation.

This case illustrates the possibility of controlling, at least for a time, the external and visible progress of cancer. This patient had been treated for thirteen years, before we saw her, in various cities and by various methods. While all macroscopic evidence of disease was removed before the plastic operation, it would have been impossible to remove all from the bones of the jaw without practically removing half the face. The plastic operation seemed to hold the disease in check, and the patient lived nearly three years, with no external recurrence,

Fig. 7b.

CASE VII. Fig. 7b.—First stage of plastic work.

oblivious to the fact that she still had cancer. She died of an acute affection entirely apart from the malignant disease.

CASE V. D. P., male, aged sixty years, admitted to the New York Skin and Cancer Hospital, May 18, 1908.

Diagnosis: Epithelioma of orbit, as shown in Fig. 5, of four years' duration, starting from a small pimple under outer corner of upper lid.

Operation, May 21, 1908: Incision around orbital margin, and removal of all diseased tissue, with a one half inch margin of healthy tissue.

Plastic operation, August 25, 1908. Autoplastic flap from cheek. Fig. 5-a shows the condition shortly after the plastic operation. Fig. 5-b represents the condition in April, 1914.

Fig. 8.

Fig. 8a.

Fig. 8b.

Fig. 8c.

Case VIII. Fig. 8.—Epithelioma of outer canthus of eye; condition when admitted to hospital. Fig. 8a.—Condition after first operation for removal of growth and fulguration. Fig. 8b.—Flap taken from cheek for plastic operation. Fig. 8c.—Result of plastic operation.

CASE VI. M. C., female, aged fifty-seven years, admitted to the New York Skin and Cancer Hospital, March 31, 1907, for treatment for what proved to be epithelioma of the forehead, scar from which is shown in Fig. 6. On April 1, 1913, patient was admitted again, for treatment for the nose, condition of which at that time is shown in Fig. 6.

Diagnosis: Epithelioma of nose.

Operation, April 3, 1913: Excision of diseased area, with margin of healthy tissue.

Plastic operation, March 3, 1913, result of which is shown in Fig. 6-a. No recurrence, April, 1914.

CASE VII. M. L., female, aged about forty years, ad-

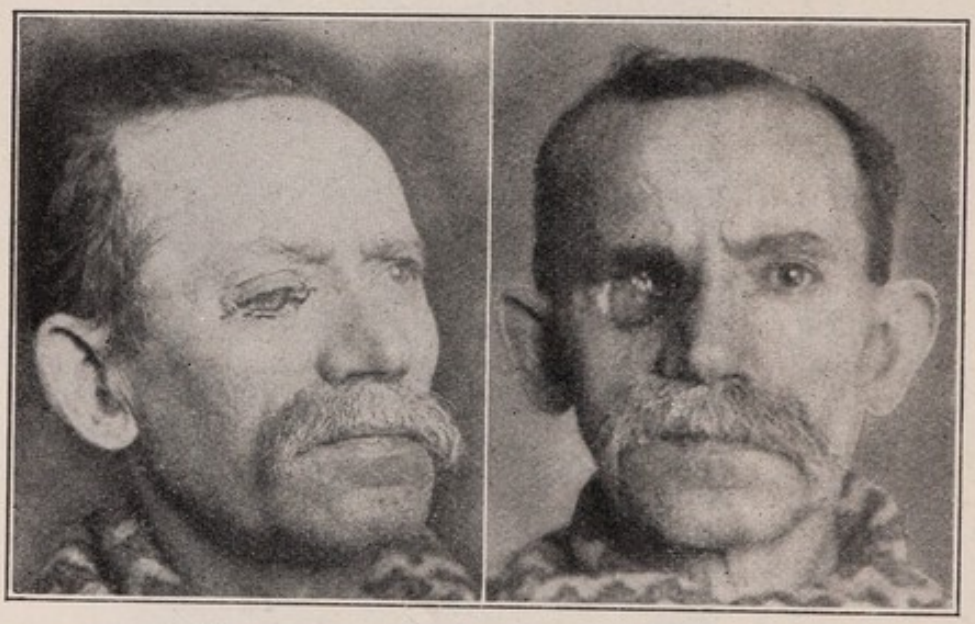


Fig. 9. Fig. 9a.

CASE IX. Fig. 9.—Epithelioma of eyelid, orbit, and eyeball; condition upon admission to hospital. Fig. 9a.—Condition after removal of eyeball, excision of diseased tissue, and fulguration.

mitted to the New York Skin and Cancer Hospital, November 6, 1912.

Diagnosis: Lupus and epithelioma of eyelids of left side.

Operation, November 17, 1912: Excision of diseased tissue, and fulguration, by the de Keating-Hart method, of the affected area. Fig. 7 shows the condition on December 5, 1912.

Admitted to hospital again, January, 1914, recurrence having taken place. Fig. 7-a, taken January 17, 1914, shows the condition after excision with fulguration of lupus and epithelioma. Incidentally small ulcer of neck excised and sutured. Figs. 7-b and 7-c give different stages of the plastic work, the flap being taken from the patient's cheek. Fig. 7-d shows the result of the plastic operation.

CASE VIII. S. S., female, aged thirty-five years, ad-

Fig. 9b. Fig. 9c. Fig. 9d.

Case IX. Figs. 9b and 9c.—Successive stages of plastic operation, showing flap taken from forehead. Fig. 9d.—Result of plastic operation.

mitted to the New York Skin and Cancer Hospital, January 26, 1912.

Diagnosis: Epithelioma of outer canthus of left eye. This, according to the history, developed upon a lupus scar left six years before.

Operation, January 28, 1912: Excision of epitheliomatous area; fulguration by the de Keating-Hart method. Condition after this operation is shown in Fig. 8.

Recurrence took place, and the patient was again admitted to the hospital, March 5, 1914, at which time the

Case x. Fig. 10.—Epithelioma of orbit and adjacent structures; reproduction of wax cast of growth, taken upon admission.

condition was as shown in Fig. 8-a. Area of disease again excised, fulgurated, and prepared for plastic operation.

Plastic operation, March 5, 1914: Flap taken from cheek, as shown in Fig. 8-b, March 12, 1914. Fig. 8-c shows the result of plastic treatment, May 4, 1914.

Case IX. L. H., male, aged fifty-nine years, admitted to the New York Skin and Cancer Hospital, January 5, 1914.

Diagnosis: Epithelioma, involving right eyelids, orbit,

Fig. 10a. Fig. 10b. Fig. 10c.

CASE X. Fig. 10a.—Granulating cavity after excision of epithelioma. Fig. 10b.—Result of plastic operation. Defect filled in with flaps from neck and forehead. Fig. 10c.—Patient wearing specially constructed glass.

and eyeball, as shown in Fig. 9. Condition complicated by diabetes.

Operation, January 22, 1914: Removal of eyeball, excision of epitheliomatous tissue, fulguration. Fig. 9-a shows the condition on March 5, 1914.

Plastic operation, March 26, 1914: Autoplastic flap taken from forehead, as shown in Figs. 9-b and 9-c. Raw surface left on head covered by skin grafts from thigh. Fig. 9-d shows the condition on August 1, 1914.

CASE X. B. G.,[5] female, aged forty-six years, admitted to the New York Skin and Cancer Hospital, April 26, 1909.

Diagnosis: Epithelioma of orbit and adjacent structures, involving eyeball and extending to the dura mater. Fig.

Fig. 11. Fig. 11a.

CASE XI. Fig. 11.—Angioma of face. Fig. 11a.—Showing condition after removal of angioma, and before removal of redundant tissue.

10, reproduction of wax cast taken upon admission, shows the condition before operation.

Previous history: The growth began eight years before, as a small ulcer on the lower lid, following a local infection during an attack of diphtheria. It developed slowly at first, and very fast for about one year before admission to the hospital. No treatment whatever had been received previous to admission.

Operation, April 26, 1909: The entire growth was removed, including the contents of the orbit, together with its inner wall, down to the dura mater. The wound was packed with gauze and allowed to granulate preparatory to doing a plastic operation.

[5]Reported in The Campaign Against Cancer: Educational, Experimental, and Clinical, *Am. Jour. of Dermatology*, XV, 7, 1911.

A subsequent slight recurrence necessitated a second operation, when an area of the dura which was involved, about the size of a ten cent piece, was removed, exposing the brain. The cavity was again packed. For a time the cerebrospinal fluid came from the wound. Finally, however, the area granulated over. Fig. 10-a shows the granulating cavity after excision of epithelioma but before plastic operation. The lines of incision converging toward the ear may be seen, showing the flap which was turned back for the purpose of removing the parotid gland, and the lymphatics and fascia lying along the ramus of the inferior maxilla, with the glands in the superior carotid triangle.

Plastic operation, December 29, 1909: Flaps were taken

Fig. 11b. Fig. 11c.

CASE XI. Fig. 11b.—Condition after removal of redundancy and shaping of lip. Fig. 11c.—Patient when eleven years old, taken a short time before his death from appendicitis.

from forehead and neck and the defect filled in, as shown in Fig. 10-b. Fig. 10-c gives a good idea of how the patient looks wearing the specially constructed glass over the affected side. There is no recurrence, and the patient is perfectly well at the present time.

CASE XI. J. R.,[6] male, aged five months, was admitted to the New York Skin and Cancer Hospital, May, 1904.

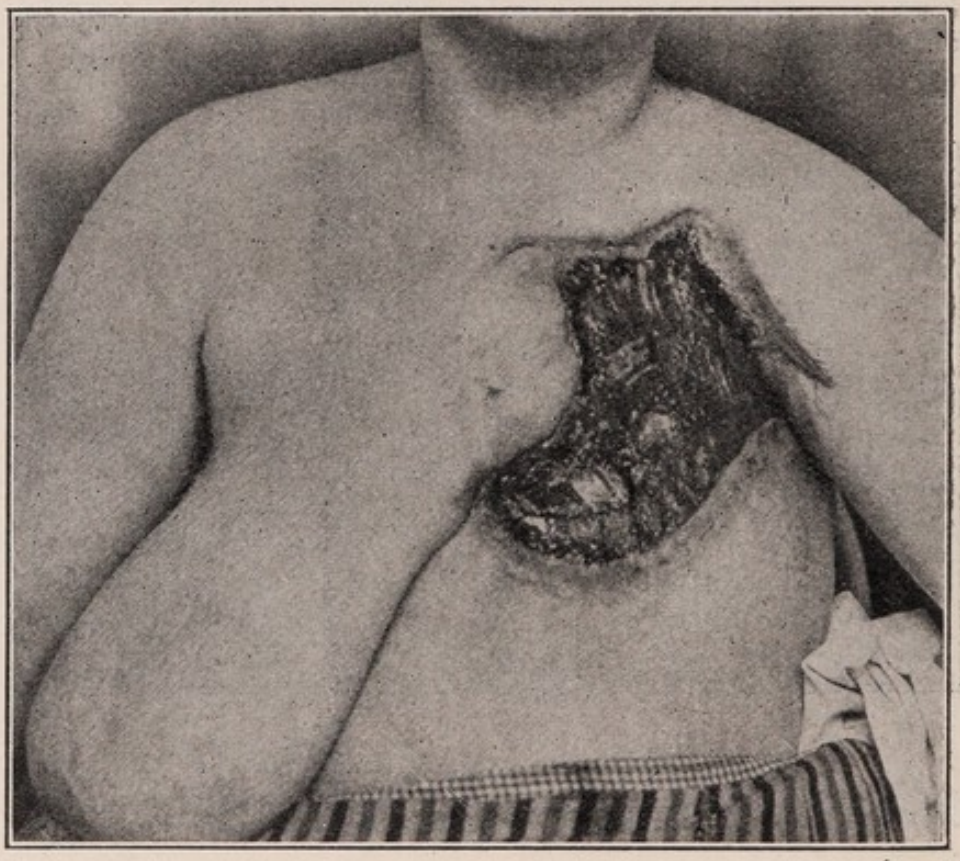
Diagnosis: Angioma of face rapidly growing. Clinically malignant.

Previous history: When patient was two weeks old the family physician noted a blue spot under the skin of the upper lip, just below the septum nasi. This grew rapidly, and in a month was as large as a marble, forming quite a

[6]Reported in Two Cases of Special Interest, *Buffalo Medical Journal*, April, 1905.

projection in the upper lip, as shown in Fig. 11. At six weeks of age treatment was begun by the attending physician with injections of boiling water, from an ounce to an ounce and a half being injected into the growth once a week. Five successive treatments were given. There was considerable sloughing after the second injection. The growth remained apparently quiescent for four weeks after these treatments, then began to grow very rapidly.

Operation, May 6, 1904: Extirpation of the growth, as



Case XII. Fig. 12.—Recurrent cancer of pectoral region, following cancer of breast. Autoplastic palliative repair.

complete as possible. Each ramification (there was no apparent limiting capsule) was followed and freely excised, the incision being extended on to the septum in both nostrils, and around the alæ nasi almost to the junction of the superior maxilla with the nasal bone on either side. Flaps from the adjacent tissue of the cheek were freed, and by means of catgut and silk sutures the parts were brought into apposition. There was considerable tension above, and to prevent sloughing it was deemed advisable to leave some redundancy of the mucous membrane of the lip at the vermilion border. This is shown in Fig. 11-a.

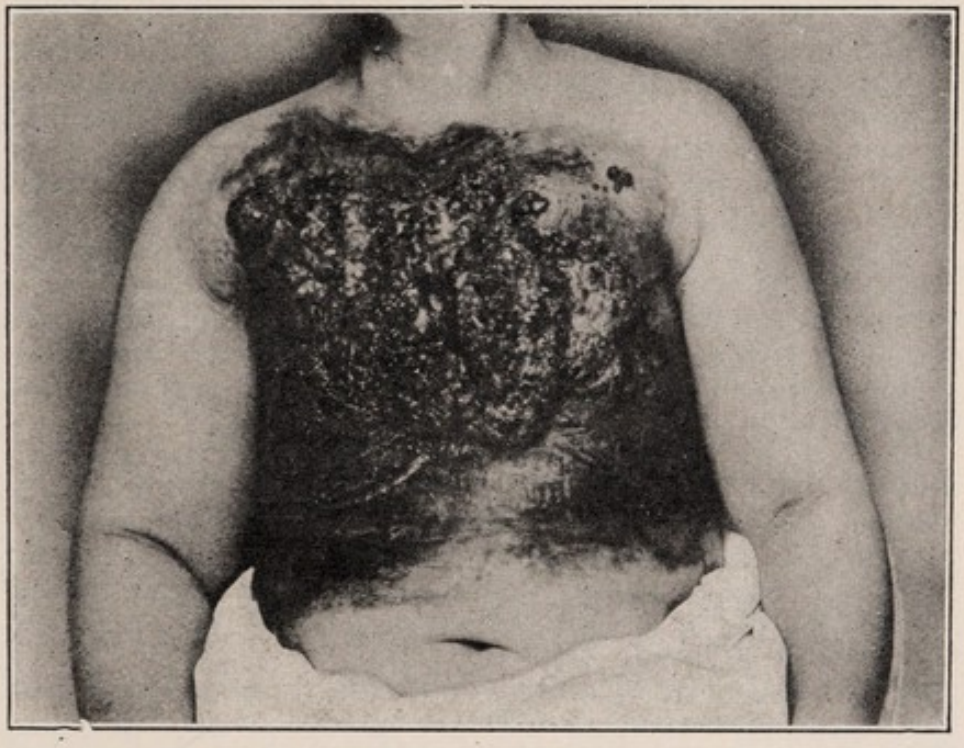
Plastic operation, October 17, 1904: Upper lip shaped by

removal of the projection of mucous membrane. Fig. 11-b shows the result, April, 1905.

The child remained well, with no recurrence of the growth, until February, 1915, when he died in another city of appendicitis, at the age of eleven years. Fig. 11-c was taken in February, 1915.

PALLIATIVE REPAIR.

Irremovable cancer. In many cases in which it is impossible to rid the patient of all macroscopic evidences of cancer, great relief may be afforded, both



Case XIII. Fig. 13.—Extensive recurrent cancer involving entire chest and upper abdomen. Heteroplastic palliative repair (flap from cadaver).

physically and psychically, by clearing off the affected area, fulgurating, or otherwise cleaning up the ulcerating surfaces, and then applying autoplastic or heteroplastic flaps or skin grafts to the denuded area. It is sometimes possible to succeed in getting very large areas covered in this manner. It is obvious that the patient is far more comfortable afterward than would have been possible with an ulcerating open wound. And, as we have already said, these patients sometimes remain "clean" so far as

the external cancer is concerned, perhaps dying of internal cancer without knowing, except in obstructive cases, that they have not been entirely cured of the disease. Internal cancer is, as a rule, a far more merciful affliction than external cancer, and the comfort which the patient experiences with the covering over of the cancerous area is compensation enough for the care expended in the plastic work.

CASE XII. L. P., female, aged thirty-two years, admitted to the New York Skin and Cancer Hospital, February 7, 1912, suffering from irremovable, recurrent cancer of the left pectoral region, following cancer of the breast. It was impossible to remove all the diseased tissue, but by cleaning up the surface, removing as much as possible, and covering over the area with autoplastic flaps taken from the abdomen, the patient was rendered far more comfortable for the remainder of life than she would have been with such an enormous defect. By cleaning up the surface, eliminating as nearly as was feasible the possibilities of further mixed infection, the inroads of the disease could be checked to a certain extent, and life rendered more tolerable, by palliative repair. Fig. 12 shows the condition when cleaned up ready for plastic operation.

CASE XIII. R. A., female, aged forty-eight years, admitted to the New York Skin and Cancer Hospital, November 11, 1911. The condition upon admission is shown in Fig. 13. Of course, with such an extensive recurrent process it was impossible to do more than clean up the surface as nearly as could be done, and to give the patient the benefit, however doubtful it might appear to be, of palliative repair. This was done, and she was rendered far more comfortable for the remainder of her life than there is reason to believe she would have been had we left this large ulcerating surface uncovered.

In this case a heteroplastic flap was used, taken from a cadaver, a method first suggested by Colrat, in 1871.

It is well to note, in connection with the use of tissue from the dead, that extreme care must be exercised in the selection of the subject, in order to obviate the possibility of the transmission of disease from the dead to the living. It is understood that autoplastic flaps, either of skin or deeper tissues, "take" better than others. For many reasons, however, it is sometimes impossible to obtain such flaps or grafts, in which event one must resort to other measures. As a general rule, when autoplastic ma-

terial is not available, heteroplastic tissue from the living can be utilized. There are cases, however, especially of very large defect such as existed in Case XI, when sufficient tissue cannot be obtained to cover the denuded surface. It is then permissible, under proper precautions, to use flaps from persons recently dead of traumatism.

My first experience with grafts of this kind was in 1895. The patient, a Bohemian girl of about twenty-eight years of age, had sustained a very severe burn over the entire trunk, front and back, and on the arms. The burns were of such severe degree as to cause death in the usual case, but with the exercise of extreme care her life was saved. It was necessary to keep cutting down granulations, and for a time it seemed impossible to cover over the burned areas. Autoplastic grafts were repeatedly tried, but would not "take." Finally, one day, a strong robust young man was brought into the hospital immediately after sustaining a severe, and what proved to be a quickly fatal accident. He had no friends, it seemed, and the body was unclaimed. Autopsy revealed the fact that the man was in perfect condition aside from the accident. Skin was taken from his body to cover the denuded areas resulting from the burns which the girl had sustained. Sixty-five per cent. of the grafts took, the entire surface was covered, the girl left the hospital in a few months, perfectly well, and was well when last heard from.

In the case of young or otherwise healthy persons, particular care is necessary, as we have said, in the selection of the dead subject from which grafts are taken, and cadavers are to be resorted to only when all other sources have failed.[7] Care is to be exercised also in cancerous patients, though in very rare instances it may, with the patient's consent, be permissible to take seemingly greater chances than would be advisable in other classes of patients.

In fact, in these very distressing patients with ir-

[7]Skin of amputated parts from those without disease may be used.

removable external cancer, one is sometimes impelled to resort to rather extreme measures in one's efforts to save suffering and to prolong life. The human body, aflame with what has been called the "red plague," may be compared with the house on fire. Extreme measures must often be employed in either case in order to extinguish the flames, or to hold them in check. When the signal comes to the fire department to extinguish flames which are about to destroy a house, the firemen go prepared to tear down walls, if need be, to pull up floors, and otherwise to demolish things in order to save the house from complete destruction by the flames, and to prevent the breaking out anew of the fire. When their work is finished, the plasterers, paper hangers, and other repair men are summoned to reconstruct the damaged parts and otherwise conceal the destructive inroads of the flames.

So, with the surgeon who is summoned to check the ravages of the physical fire, cancer. Sometimes he must do what appears to be needlessly destructive work in order to find and destroy every vestige of the devastating element. Sometimes walls of bone and flesh must be cut apart in order to find and subdue the foci of flame, metastases, which menace the bodily mansion. When all this is accomplished, and the destructive agent is under control, he must, like the plasterer and the paper hanger, repair the external evidences of demolition.

Thus, in many instances, patients who would be left to the fate of utter destruction by the fire of cancer, or who would be doomed to go through the remainder of life with disheartening disfigurement, may be made fairly comfortable and presentable by means of restorative and palliative repair.

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