CUTTER (EPH.)

THE GALVANO CAUTERY;

ITS USE IN

Removal of Piles and Growths.

Read before the American Electro-therapeutic Society, at Philadelphia.

BY EPHRAIM CUTTER, M.D., L.L.D.,

President American Branch Society of Science, Letters and Art, of London; Corresponding Member Belgian and Italian Microscopical Societies; Physician-in-chief Heartrest Sanatory, New York.

Reprinted from THE TIMES AND REGISTER, November 14, 1891.

PHILADELPHIA:
THE MEDICAL PRESS COMPANY, LIMITED,
1891.

THE GALVANO CAUTERY—ITS USE IN REMOVAL OF PILES AND GROWTHS.[1]

By EPHRAIM CUTTER, M.D., L.L.D.,

President American Branch Society of Science, Letters and Art, of London; Corresponding Member Belgian and Italian Microscopical Societies; Physician-in-chief Heartrest Sanatory, New York.

GALVANO CAUTERY is employed to remove growths without bleeding, and generally with complete and perfect cure. That is, malignant growths are not apt to recur on site of removal; they may recur elsewhere.

The tissues heal healthily, so that it is difficult at times to tell whence the growth has been removed.

PRINCIPLES.

1. Have a good battery, with freshly prepared solution or well charged. If a storage battery, test it well as to connections beforehand, and be sure it is in order before you begin.

2. It is not a good plan to do more operations than what you intend.

3. I have seen storage batteries give out during an operation. Most of my work has been done with my own primary batteries. So long as the failure of the galvano-cautery comes from the batteries I have thought it best to invent my own, so that I could be sure that the batteries were all right.

4. I have used a large battery, with about thirteen and one-half square feet of surface, with advantage. But I like best a battery which has about one-eighth of the sensitive surfaces of the former, and is operated with one pint of solution. The weight of this appa-

[1] Read before the American Electro-therapeutic Society, at Philadelphia.

ratus is less than any storage battery I have seen. Its cost is less. It can be excited more readily, and, though it is not conventional to use such a battery, so long as it has done good work I see no reason why I should not use it.

5. I use heavy conductors of pure silver. These are less bulky and more flexible than copper. I got the idea from the late Dr. Louis Elsberg.

6. Carbon and zinc plates variously connected, so as to be portable and not break; to have broad connection with as few breaks as possible.

7. It is easy enough to generate a current, but the great thing is to insulate it, and give it a good track to run in.

8. In the ordinary coupling, with screw socket, there is not a typical connection. It is very much like shaking hands with one finger of your fellow in your palm. This kind of shake makes me feel mean. But if you want to have a good, hearty, strength-conferring, whole-souled handshake, palm must join palm. Here is a surface connection broad and large. Such handshakes are pleasurable, and have a fullness, are cheery and devoid of meanness, and force is thus conferred. It is so with the connection of batteries; they should have broad surfaces coming in close contact, flatwise; in the ordinary screw coupling the contact is linear and tangential; what the writer uses is broad flat surface to equally broad flat surface.

9. *Cam Coupling.*—These I like, for they do not easily come apart. Screw couplings get loose almost invariably. The cam couplers, properly made, will hold even if dashed against a brick wall; they are easier fastened, opened, and controlled.

10. *Cautery Holder.*—Mine is very simple.

First.—A tinsmith rolled up a piece of tin into a tapering tube six to eight inches long, one-fourth inch in diameter at one end, and one-sixteenth inch at the other. Two such tubes were mounted on a glass window plate four inches long, one and a half at one end, and one-half inch at other end, by flanges of tin, riveted through the glass, or held in place by India rubber bands. The tinman's primitive appliance I have would convey more current than the brass and nickel plated one made by the surgical instrument makers.

To Use It.—Simply run the ends of the conductors into the large ends, crowding them in so as to hold. Before this application, a fine platina wire, twelve or sixteen inches long, is run through the large end of one tube out of the small end, then through the small end of the other tube and out of the large end. This wire can be fixed by simply bending the free ends outward sharply over the tube.

11. Some principles about the wire:

(*a*) It must be small. All it is good for is to burn the adjacent tissues.

(*b*) It is not an ecraseur. Platinum is not strong enough to cut tissues as iron wire does, besides it is unnecessary for it to cut.

(*c*) Simply draw it in contact with the tissue, then pass the current by a switch or, better, by dipping the plates of the battery in the solution by means of an assistant.

(*d*) Stop the current when things are getting too hot. There is no need of the adjacent parts being burnt. Besides, slow and broken applications, allow of the sealing of the blood-vessels, so as to avoid hemorrhage. Rarely do I have a hemorrhage.

(*e*) After things have cooled, draw gently on one end of the platinum wire, and take up the slack, and fix by a sharp turn over end of tube. You are then

ready for another application of the current. This letting the wire cut its way by burning is much different from cutting as an ecraseur. In the method here used there is no disturbance of the adjoining parts. With the ecraseur all the surrounding tissues are drawn in, more or less, so that more tissue is taken in than needed. In the method here used there is no indrawing of tissue, and no taking more than is required. Important repetition.

(*f*) Another thing, the wire must be hot. A white incandescence is the best. Dr. Elsberg used to say that the reason why there was trouble with galvano-cautery was the wire was not hot enough. In my battery I have not been troubled by the method, which allows of unsealed blood-vessels and slow healing of parts. When the wire is at proper heat the cautery is a germicide, and seems to agree with the body tissues. This point will be brought out later.

12. The connections of the battery are so arranged that they cannot come in contact with the fluid. This is done by the battery being shorter than the plates. It is a good plan, after use, to wash cell and battery thoroughly in water, and then to dry, before restoring plates to cell.

13. Sometimes the battery will not work, though there seems to be no good reason for it, save polarization. In this case let the battery sleep over night; probably the next day it will run all right. The battery should be kept away from the dust. It takes but a little observation to see what a vehicle the atmosphere is of all sorts of morphological things; some seem to act on the battery connections as lichens on rocks. It is wonderful how little will interfere with the conductors of a battery. In the writer's latest attachment the conductors and connecting-bars of the zinc and copper are fixed so as to draw out to

be polished with a sand-paper, and returned in a few minutes.

14. The fluid best for battery is saturated solution of bichromate of soda with sulphuric acid, 1 oz. to 11 ozs. of solution. *It should be cold.* The battery works best while cold.

The potash salt is used the most, as it is the cheapest, but it does not dissolve so well as the soda salt. If there was a demand for the soda salt, it would be much cheaper than the present price of chromate of potash, as sodium abounds more in nature than potassium.

Anæsthesia.—This is not always needed, as if the wire is properly heated it destroys the nerves, as it burns, with little pain.

CASES.

CASE I.—Mrs. ——; 1878. Cauliflower tumor of vagina. This was a growth with sessile base and an umbrella expansion, much like a mushroom. The site was one and a half inches within the vagina. Case had been said to be hopeless. Age, seventy-four years. The growth was removed by the galvano-cautery, so that the site was smooth and flexible as the cheek under the zygoma. There was no recurrence at site, but disease involved the uterus, of which patient died four years later; so that life was prolonged to this extent. Anæsthetic used; no hemorrhage.

CASE II.—Mr. ——; 1876. Dense piles surrounded the whole anus, which were painful and sore. Anæsthesia. Three-fourths of the periphery were burnt off with the wire. No hemorrhage. One pile, that made up the remaining fourth, was removed with the ecraseur, to see if the mode of ablation made any difference; it did make a great difference. Whereas those sites where piles were removed by the galvano-cautery immediately healed and were absolutely

painless, the site of that removed by the ecraseur was painful and a long time in healing. The subject said he wished the whole had been burnt off. The piles have never returned.

CASE III.—Mrs. ——, aged sixty-five; cauliflower growth right popliteal space. Another just above the right breast. Both these were removed by the small battery, referred to above, two years ago. They have shown no signs of re appearance, and their sites are hardly discernible. No anæsthesia.

CASE IV.—Mr. ——, husband of foregoing case, seeing her growth removed so easily, at his wife's request, showed me a tumor over the spinnous process of the third cervical vertebra. It protruded like the last joint of a man's thumb; was dense and hard; not painful. I thought the battery would hold out, though I told him that it might not. It held out till the growth was nearly cut off. Then the battery had to be excited with dilute sulphuric acid. This heated it so that it did not work very well, and I was not so well pleased as in his wife's case. Still the case did well. The site is almost invisible, flexible, and there is no disfigurement by a scar. No hemorrhage. No anæsthesia; had I been prepared for this case it would have been more expeditiously performed.

CASE V.—Mrs. ——, aged seventy-eight years; 1879. A hard, angry-looking tumor of the size of a split pea on the right upper eyelid. It was mobile and somewhat painful. This was removed by the small battery. No anæsthesia. It healed up so well that there was no scar or mark to indicate its presence in two weeks. Considering the age of case and the location, it seems as if this was good surgery. Her son, a boss joiner, said afterwards that he considered it a pretty nice piece of carpenter work. I was assisted by my son Dr. John A. Cutter, then in college. No assistance in cases III and IV, which

were operated upon in a country village in Connecticut.

CASE VI.—Capt. ——, aged sixty years; 1891. A small growth on chin, ugly looking and increasing in size. Operated upon in office, assisted by my son. Small battery used. Cocaine anæsthesia. Three weeks later, case called in my absence, and my son reports that he could find no scar or trace of operation.

CASE VII.—Miss ——, aged forty-two years; 1891. Operated upon at Heartrest Sanatory, assisted by my son. Voluminous and sensitive piles. Patient came under ether badly. Had to give chloroform before anæsthesia was effected, and then patient tumbled and kicked so as to interfere with operation seriously. This was not done to entire satisfaction, still the final result was good and the parts resumed normality.

CASE VIII.—Mrs.——, aged forty-five years; 1882. Cancer of left groin. Was assisted by Dr. William G. Wheeler, of Chelsea, nature's nobleman. Tumor large as a hen's egg. Anæsthesia; operation difficult because of its sessile nature and cancerous lymphatic glands of the groin. Still I succeeded in removing it, and the upper margin of cavity contracted so much as to cover the burned area well. It healed well. But the disease recurred in right Poupart's ligament and womb, and destroyed life.

With these few cases I close this paper, trusting that the Fellows of the Society will another year report more cases. It seems to me that this operation is almost an ideal one for piles and small growths.

THE ARISTON, BROADWAY AND 55TH STREET, NEW YORK.