The use of electricity in the removal of superfluous hair : and the treatment of various facial blemishes / by George Henry Fox.

ELECTRICITY IN THE REMOVAL OF SUPERFLUOUS HAIR

GEO. HENRY FOX

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TREATMENT OF VARIOUS FACIAL BLEMISHES.

— BY —

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PREFACE.

During the past ten years the use of electrolysis has become an important agent in the treatment of certain affections of the skin. Its value is already thoroughly established and its general employment is simply a question of time. The recorded experience of a few American dermatologists has excited considerable interest both at home and abroad, but as yet the majority of the profession seem unaware of this new development in cutaneous therapeutics. Numerous letters have been received from time to time by the writer, containing inquiries as to the *modus operandi* of the electrolytic method of treatment in cases of hypertrichosis, wine-mark, etc., and his inability to answer all of these has suggested the republication of the following papers, read before medical societies or published in the journals. A few notes have been added for the purpose of amplifying certain points and presenting the results of more extended experience. It is hoped that this statement will serve as explanation and excuse for the disjointed character of the present publication.

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I.

ELECTROLYSIS.

The term electrolysis is derived from the Greek words ἤλεκτρον, *amber* (which, being readily electrified by friction, came to be a synonym of electricity), and λύσις, *a loosening*. It signifies decomposition of a substance by means of an electric current. This process takes place readily in liquids and most animal tissues when metal points or needles are introduced, and not brought into contact with each other. At the positive pole, or electrode, *i. e.*, the extremity of the conducting cord attached to the carbon element of an ordinary battery, oxygen and acids are set free, while hydrogen, alkalies and basic bodies collect around the negative pole.

The following simple experiments will serve to illustrate the action of the electrolytic current. If two wires, connected with the elements of a galvanic battery, are immersed in water, a separation of its constituents will take place. Fine bubbles of hydrogen gas will be seen rising to the surface from around the negative pole, *i. e.*, the wire connected with the zinc or positive elements of the battery. No visible action will take place around the positive pole, although the oxygen of the water is set free at this point. If a solution of iodide of potassium be used instead of simple water, the electrolytic action will become manifest at

either pole. The salt will be decomposed, and around the positive pole the water will become quickly discolored by the liberation of the iodine. The potassium set free at the negative pole will remain in solution and invisible, and only the bubbles of hydrogen will therefore be seen at this point. If the ends of the wires are immersed in blood, or any other albuminous solution, a coagulum will be formed around the positive pole.

From these experiments we may readily form an idea of what takes place when needles attached to the poles of a battery are introduced into living tissue. Assuming the current to be of sufficient strength, both as regards quantity and intensity, the following will be the result when both needles are inserted into the skin. The watery fluid contained in the tissue will be decomposed and the oxygen and hydrogen gases set free at the positive and negative poles respectively, will tend to produce a mechanical separation of fibres. The salts which are present in solution will likewise be decomposed, the acids going to the positive and the alkalies to the negative pole where they will exert a decided escharotic effect upon the tissue and produce a slough of greater or less extent. Should a steel needle be introduced into the skin in connection with the positive pole, the metal will become immediately oxidised or corroded and upon its withdrawal a black speck or small area of discoloration will remain. To avoid this undesirable result it is

customary in the removal of hair and in other cutaneous operations of a cosmetic nature to introduce only the negative needle. The circuit may be completed by means of a moistened sponge connected with the positive electrode and applied to the surface of the skin at any convenient spot.

For the production of an electrolytic current it is necessary to have a galvanic battery with a number of small cells. These are united in series, *i. e.*, the positive element of one cell is joined to the negative element of the next. Such a combination of cells furnishes a current which is distinguished for its *tension*, or power of overcoming resistance. It would scarcely warm a wire or needle introduced in the circuit. A battery composed of one or two large cells or a number of small cells with all the positive and negative elements joined in two groups will furnish a greater *quantity* of electricity and produce a current which will readily raise a platinum wire to a white heat. But while such a current is of great value for illuminating purposes and for galvano-cautery, it is worse than useless in electrolytic operations. The same may be said of the faradic or interrupted current. It would seem superfluous to make the above statements were it not that a very slight acquaintance with the subject of electricity has led some to attempt the performance of electrolysis with unsuitable batteries. The ordinary galvanic battery designed for medical purposes is the one which should be employed.

II.

THE PERMANENT REMOVAL OF HAIR BY ELECTROLYSIS—REPORT OF CASES.*

The growth of hair upon the female face, to the treatment of which I again invite attention, is a deformity which is very frequently observed. Perhaps few physicians have an adequate idea of its prevalence. In nearly every "museum of living curiosities" a bearded woman figures as one of the chief attractions, and it is quite probable that but a small proportion of bearded women are willing to advertise their misfortune for pecuniary gain. I think there are at least a half dozen of this class on exhibition throughout the city.

[The following bearded women have been on exhibition in various parts of this country during the past ten years:

1. Mrs. Viola Meyers has a full beard, the hairs being soft, dark and somewhat curly. The abnormal growth was noticed during childhood. A full report of this case was published by Duhring in the *Archives of Dermatology*, April, 1877.

2. Susie Conrad has a reddish-brown beard and weighs 300 pounds.

3. Annie Jones has a long dark-brown beard which began to grow in infancy.

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*From the Medical Record, March 11th 1882.

4. Millie Rose, a French-Canadian woman, has a heavy moustache and beard.

5. Mrs. Krebs has not only a heavy beard but a considerable growth of hair upon the arms.

6. Mrs. Squires has a full beard upon chin and neck but the upper lip is comparatively free.]

Of the number of ladies in private life, who endeavor, by artifice of various kinds, to conceal the unpleasant fact that they have, or might have a beard, it would be very difficult to form an estimate. I have no doubt that there are hundreds of such cases. I speak now merely of those who might raise a thick and long growth of hair which would deserve the name of beard. Of those who have a comparatively moderate growth upon the face, and particularly upon the chin, the number is beyond computation. We note instances of this hypertrichosis on every hand, in the drawing-room, upon the street, or wherever ladies congregate, and could we but know the secrets of the *boudoir* we would be surprised to find how large a percentage of our female acquaintances resort occasionally, if not habitually, to the use of the depilatory, the razor, or the tweezers.

Frequently the opinion and advice of the physician is sought respecting this abnormal and obnoxious growth—and what does he say? In all probability he will tell the patient that depilatories are merely palliative, advise her to pull the hairs out or to let them alone, and declare that it is a very trifling matter, and

perhaps add jocosely that it is not likely to cause death. Such an opinion never satisfies the patient, for no woman every yet derived consolation from the fact that ugliness is not fatal. Furthermore, the opinion is not sound. This abnormal growth of hair is not always a trifling matter. It may not kill the patient, it is true, but it is certain to occasion great annoyance. It is very apt to affect her disposition, and to injure her prospects in life, especially if she be young and unmarried; and it may eventually ruin both her health and her happiness by producing a mental disquietude which in many instances verges on melancholia. The frequent occurrence of facial hairiness among insane women has been observed by several writers, and although in such cases the insanity has usually preceded the abnormal growth of hair, I have no doubt that in many instances the mental worry caused by slight facial hairiness has acted as an exciting cause, and served to develop an insane tendency. Dr. J. C. White mentions the case of a lady who searched long for a surgeon who would flay the lower part of her face, and thus remove the obnoxious growth. I have certainly treated one or two females who were monomaniacs on the subject of their facial hairiness, even when this has been very slight, and the most satisfactory result of treatment in these cases has been the improvement in general health which has followed the removal of the hair, which served to make their lives unhappy. (See case 1.)

Of the advances which dermatology has made in recent years, the development of the operation for removal of hair is without doubt the most brilliant. In the *Archives of Dermatology*, five years ago, my friend, Dr. Duhring, of Philadelphia, reported the case of a bearded woman, whom many of you have doubtless seen on exhibition, and after an exhaustive description and discussion of interesting points concluded with the following paragraph: "In regard to the question which was asked me by the patient, whether the growth on the face could be successfully and permanently removed (and I need not add that it is to her a source of intense mortification and distress), I would say that the only justifiable means at our command is palliative, consisting in either the daily use of a razor or in the employment of a depilatory powder." This was written only five years ago, and represented advanced opinion at that time. I quote simply to show that dermatology in America is not a mere reflex of European thought, but that it is alive and advancing.

In a paper read before the Fifth Annual Meeting of the American Dermatological Association, Dr. Heitzmann mentioned the case of a lady with a growth of hair upon chin and submaxillary region, who had consulted the prominent dermatologists in Vienna. All agreed that no one would promise a permanent eradication of such superfluous hairs but a regular charlatan. In the light of what has been ac-

complished by several in this country, it is apparent that, in one respect at least, we are in advance of our dermatological brethren abroad, who, as Dr. Heitzmann remarks, do not know anything about permanent and safe epilation.

[Hans v. Hebra (*Die krankhaften Veränderungen der Haut*, 1884,) speaks of making one trial of the electrolytic or "galvano-caustic" method and giving it up on acount of the unsightly cicatrices which were produced. Surely this unfavorable result was not the fault of the electrolytic method of treatment, but rather the result of a lack of experience in the performance of the operation.

Other European authors of a recent date appear unacquainted with this plan of treating superfluous hair, or merely mention it without giving any record of personal experience.]

The operation for the permanent removal of hairs by electrolysis, has been described by several who have written on the subject, and the descriptions differ merely in a few non-essential points. The operation is a simple one, which any physician with a steady hand and keen eye can readily perform, although, as in many other simple operations, a peculiar dexterity is required, and far more satisfactory results are obtained after a certain amount of experience.

[Without a considerable amount of experience the best results of this operation should not be expected. The operation may be fitly compared to rifle practice.

Without a steady hand and sharp vision expertness is utterly impossible, but even with the possession of these requisites, the highest degree of success depends largely upon practice.]

An ordinary galvanic battery is required and a fine needle, which is to be attached to the negative cord. The number of cells required for the operation depends upon the activity of the battery, the delicacy of the patient's skin, and the strength of the hairs to be removed, and should be determined in each case by the effect which is produced. I commonly use from ten to sixteen cells of a zinc-carbon battery, or a corresponding number of a chloride of silver battery.

Upon the style of needle employed depends, in a large measure, the success of the operation. A fine cambric needle, which has been recommended, may be successfully used, but on account of its stiffness it is more difficult to introduce it into the follicle without piercing the follicular wall than the hair-like flexible steel broach which I have recommended and invariably use. The cambric needle being larger is also productive of more inflammatory reaction, and more likely to leave permanent traces of the operation. Formerly I used a very fine platinum wire, pointed by means of a jeweller's file, but the delicate flexible broach, much finer than those commonly employed by dentists in extracting nerves, is far superior to any other needle which I have ever seen, and is almost a necessity in removing the hairs

from the upper lip without the production of a scar. The needle can be readily attached to the end of the battery cord by a few turns of copper wire protected by an inch or more of rubber tubing or a special handle may be made for the purpose.

[A fine irido-platinum needle has recently been highly commended by Dr. Hardaway. In my own practice I have tested needles of greater or less flexibility and brittleness, and the greatest satisfaction has been derived from the use of steel broaches of various degrees of fineness which may be obtained from any dealer in jewelers' supplies.

The needle-holder employed may be light or heavy, long or short, according to the fancy of the operator. The following cut shows the form of holder to which I have become accustomed. (Fig. 1.)]

Provided with battery and needle, the next thing is to get the patient in a proper chair and in a proper light. A high reclining-chair and a southerly bay-window are desirable, but the main point is to secure sufficient

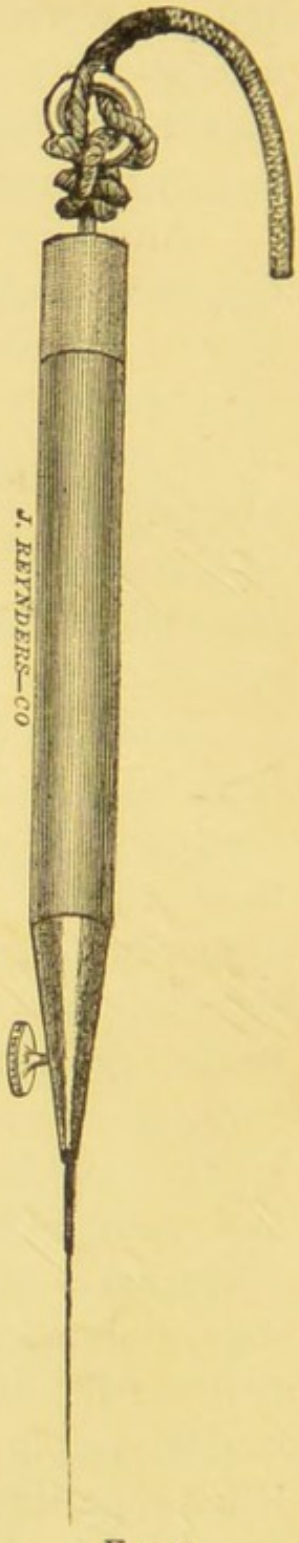

Fig. 1.

light and to have the operator's eyes upon a level with the patient's chin. The needle is now introduced into the follicle by the side of the hair. If this is skilfully done, no pain whatever is felt by the patient. The sponge-cup or sponge-tipped positive electrode should now be used to complete the circuit. This may be applied to the skin in the immediate vicinity of the hair if but a few cells are used, but it is usually more convenient to allow the patient to hold the positive electrode in one hand, and when the needle has entered the follicle, to ask her to complete the circuit by applying the moistened sponge to the palm of the other hand. The electrolytic action now manifests itself subjectively in the form of a sharp stinging sensation, and objectively in the form of a slight hyperæmia around the needle. In a few seconds the hyperæmia will give place to a blanching of the skin, and a little froth will appear at the mouth of the follicle. If the hair be now seized with a pair of forceps and the gentlest traction exerted, it will be found to be loose in the follicle in the course of from ten to twenty seconds, provided the needle has been skilfully introduced. Before withdrawing the needle the patient should remove her hand from the sponge, in order to avoid the slight shock which would otherwise be felt.

[Unna, of Hamburg, and others in this country, have advised the use of a needle-holder armed with a spring button by means of which the circuit can be

completed by pressure of the forefinger and broken at the will of the operator by removing the pressure. I have tried such a holder, but found the shock produced by the sudden closing of the circuit so unpleasant that I now prefer to have the patient hold the wooden handle of the positive electrode in one hand and apply the other palm to the moistened sponge or remove it at command.]

In a paper on this subject which I read before the New York State Medical Society, three years ago,* I recommended the extraction of the hair before introduction of the needle where the follicles were of large size. Under no circumstances, at the present time do I ever remove the hair until it is loosened by means of the electrolysis. In the paper mentioned I wrote as follows:

"The first effect of the operation is to produce a small whitish elevation around the mouth of the follicle—in fact an urticarial wheal. After a protracted sitting, the part operated upon will be acutely congested and somewhat swollen, and the number of hairs operated on can usually be determined by gently passing the finger over the skin and counting the number of small lumps resulting from peri-follicular exudation. On the following day the diffused congestion will have disappeared and left a number of red papules or small pustules at the mouths of the follicles."

*New York Medical Record, March 22, 1879.

At that time I was in the habit of using a much coarser needle than I do at present. With the finest flexible needle it is extremely rare to produce wheals or pustulation. In many cases the effect of the operation is simply to leave red points, which soon disappear.

The operation is by no means a pleasant one, but rarely does a patient make any complaint of pain. The majority say it is not as unpleasant as having teeth filled in a dentist's chair, and with the fine needle the painful sensation is greatly reduced. At the first sitting the patient is often nervous, and suffers really more than in a dozen subsequent operations. When the sitting is prolonged, and especially in a poor light, the removal of the hair is very trying to the eyes of the operator. At certain times I know that I have suffered quite as much or even more than the patient. The use of a lens held in the hand or fixed before the eye has been suggested, but for my part I find one of no value. A delicacy of touch and steadiness of hand, is more essential in this operation than an unusual keenness of vision.

[Butler has recommended the use of a modification of a jeweler's magnifying glass. It consists of a lens with a four-inch focus, set in a cork cap for the sake of lightness, and made of such a shape as to fit the eye and is readily held in place by a slight muscular contraction.

Piffard has devised a needle holder with a lens attached by means of a jointed and adjustable arm.]

As to the number of hairs which can be removed at one sitting, I would say that from thirty to fifty is the number which I usually expect to destroy in an operation lasting three-quarters of an hour. Upon the neck it takes much longer to destroy hairs than upon the chin or cheeks. I have removed over two hundred hairs at one sitting, when patients from a distance were anxious to leave the city; but I deem it far better to spare one's eyes and to be more thorough, even if it involves a greater number of sittings.

If the operation is very skilfully performed, it ought not to leave scars, as a rule. In some cases it is impossible to prevent the production of minute punctate cicatrices, which, however, can only be seen on close inspection. I made a mistake in some of my earlier cases in operating upon two or more coarse hairs very close together, instead of taking one here and there at short distances apart. (See Case XI.) A little attention to this hint may serve to prevent the production of slight scarring by those who may attempt the operation. Here again I must refer to the fine needle, for its use greatly lessens the liability to the production of scars.

As regards the immediate success of the operation, it must be stated that, as a rule, a certain percentage of hairs will return and demand removal a second

time. I used to expect a return of from thirty to fifty per cent. of the hairs, while now I am surprised if from five to ten per cent. reappear. In one case (XII), in which I removed over fifty hairs with unusual care, not a single one has returned after an interval of three months. In some patients the growth of hair appears to have ceased, for some unknown cause, and when the hairs are destroyed the cure is effected. In other patients the fine hairs are constantly growing larger and darker, and after the most conspicuous have been removed a new growth will in time succeed, and appear, perhaps, like a return of those previously removed. (See Cases III, IV, VIII.)

[A difference of opinion exists among those who have practiced this operation as to the effect of the electrolysis upon the finer hairs which are not removed. It is certainly a matter of importance to know whether the removal of the coarser hairs upon a lady's lips or chin does or does not stimulate the growth of the finer ones, and yet it is a question not easily determined. In some cases the unknown cause of the growth is still active, and there is a marked tendency of the finer hairs to become longer and coarser. In such cases the patient usually believes that pulling out or cutting off the hairs increases the growth. I am skeptical on this point, as I have seen so many cases where the growth has steadily increased, although the patient has never cut or pulled a single

hair. In a large proportion of cases, on the other hand, the unknown cause of the growth has ceased to act, and the removal of the abnormally developed hairs leaves the face permanently free. As the growth of hair is undoubtedly the result of a perverted action of the nerves which should control the nutrition of the hair bulbs, it would seem plausible that an electric current would prove a healthy stimulus to the part, and restore the normal function of these nerves. But this is mere theory. As a matter of fact, I have observed in several cases where the tendency to an increased growth of the downy hairs has been marked, that the removal of the coarser hairs has been followed by a cessation of this morbid tendency. I believe, therefore, that if the use of electrolysis in the removal of coarse hairs has any effect whatever upon the development of the finer ones, that this effect is beneficial.

In this operation for the permanent removal of hair the question arises as to how the electricity destroys the papilla from which the hair springs. Is it by thermic or by electro-chemical action? A recent writer on the subject objects to the use of the term electrolysis as being a misnomer, claims that the heat generated in the needle by the passage of the electricity is the active agent in the destruction of the tissue, and suggests for the operation the name of *akido-galvano-cautery*. It cannot be denied that in this operation the temperature of the needle is slightly raised by its resistance to the galvanic

current, but surely not to such a degree as to produce a caustic effect. On the other hand, it is evident, from the frothing seen at the mouth of the follicle and other effects, that a decomposition of the water and salts contained in the cutaneous tissues is taking place around the needle and causing the escape of bubbles of hydrogen. This is certainly nothing more or less than electrolysis.

In conclusion, I would like to refer to the cause of facial hirsuties in females, and I shall speak briefly on this point, for I know very little about it. I have wondered and pondered by the half-hour while operating on cases, and endeavored to find some characteristic common to all of my patients, but in vain. Some are in fine physical condition, while others are debilitated. Some are extremely nervous; some are not so in the slightest degree. Some are stout and some thin. Some are dark and others of light complexion. Some are maidens from twenty to fifty years of age; while of others who are married, some have children and some have none. The somewhat common idea that the growth of a beard in the female is necessarily associated with masculine traits of character is certainly not founded upon fact, for most of my patients have presented the very highest type of feminine refinement. That facial hirsuties is dependent upon a malformation or imperfect development of the reproductive organs, as some have claimed, is, in my opinion, doubtful. Certainly, an intimate relation between

these two conditions has not been satisfactorily proven, save in a few exceptional cases.

[The relation which hypertrichosis bears to deficient menstruation is occasionally quite evident. The following case is an example: A lady, aged 28, of dark complexion, came to me with a soft silky moustache and a considerable growth of dark hair upon chin and neck. She was extremely nervous and despondent. Her menses had been suppressed since the birth of her second child, now over two years ago, and during the previous year the hair had appeared, not only upon the face, but upon the upper and lower extremities. Her voice during this time had become deep and masculine. Two years after I saw her, a decided improvement in her general health took place. Her menses returned and coincidently the growth of hair upon her body which had been steadily increasing, rapidly disappeared. The beard remained upon her face in spite of her improved condition, although its tendency to increase appeared to be checked.

I have quite recently been consulted by a lady who presented a thick and long growth of dark hair beneath the chin. Her menses stopped a year ago and she suffered severely from headache, the pain being felt at the base of the brain. Several months ago medical treatment restored her menstruation, whereupon the headache ceased, but the present growth of hair made its appearance. Without doubt the growth of hair in this case should be attributed to the amenor-

rhœa, or rather to the general condition which caused it, and not to the restoration of the menses.

The hereditary nature of hypertrichosis is noted in a small proportion of cases. I have treated a mother and two married daughters for this affection, but, on the other hand, many patients claim that no female relatives are similarly afflicted. When the affection is hereditary I am inclined to believe that it is transmitted from the paternal ancestry, the father's mother, *e.g.* But however this may be, it is certain that a very large proportion of patients suffering from hypertrichosis will state that they resemble their father. They often remark, "I am the very image of my father," "I do not look at all like my mother," or use some similar expression. Possibly the majority of the sex or an equal number of women with smooth faces would make the same statement.]

The relation of facial hairiness in females to derangement of the nervous system is a subject which has already commanded attention, but has not as yet been sufficiently studied. I have already spoken of the depressed mental condition existing in many of my patients, and which I believe to be not merely a result of the disfiguring growth of hair, but a symptom of general nervous disease, upon which the hirsuties in all probability depends. Excessive growth of hair, whether in the male or female, is an aberration of nutrition, and not a sign of excessive vitality. The Sampsons of the present day are clean-limbed,

and naturally short-haired specimens of the human race, and in our highest type of feminine health and beauty there is but a moderate growth of hair. The lady in the museum, whose luxuriant tresses trail upon the floor, is rarely, if ever, well-developed, and, like her bearded sister, furnishes unmistakable evidence of perverted nutrition.

An abnormal growth of hair, whether it be in respect to length or location, indicates an abnormal condition of the nervous system. Precisely what this condition may be, and how it may be remedied, I must leave for others to determine.

In the following report of cases, I have selected twelve of those cases in which the growth of hair was more or less abundant, and which will serve to illustrate some of the difficulties in the way of treatment, as well as its success.

Case 1.—Mrs. ——, aged thirty-one, married at sixteen, and has one child. Is quite stout and in fair health. Is greatly worried by a growth of hair upon chin and neck. Seldom goes out for exercise, but prefers "to sit and mope." Her sleep is often disturbed by the thought of her "misfortune." The patient is almost a monomaniac on the subject of her beard, and most of the time is greatly depressed in mind. The growth of hair upon the extremities is abnormal. The facial hirsuties appeared about two years ago, and pulling the hairs out seemed to increase the growth. As a proof that pulling makes the hairs grow

stronger, she cites the fact that the hairs on the right extremity of the upper lip, which she could pull more readily than on the left side, are now much more developed in size. There is no tendency to hirsuties among her female relations.

Applied for treatment in March, 1880. During the summer I removed over a thousand dark hairs, leaving an abundant growth of fine pigmentless hairs, which were scarcely noticeable at the distance of a few feet. At her urgent request, I continued to operate on these and removed a second thousand or more, most of which were so fine as to constitute no disfigurement whatever, but their removal produced a marked indirect effect upon her health and happiness. In this case about twenty-five hundred hairs were removed by count. How many of these reappeared and were removed a second time it is difficult to say. There was, evidently, a constant tendency for the fine downy hairs to develop in size and thickness, and at times I despaired of being able to effect their removal, but after eighteen months of intermittent treatment, success crowned my efforts, and her chin and neck appeared quite smooth and natural. In January, 1882, I saw the patient, at which time there were no conspicuous hairs, and she stated that she considered the operations to have been perfectly successful and that the results had far exceeded her anticipations.

Case 2.—Miss ——, aged twenty-four; a tall blonde, in good health. Applied for treatment in

October, 1879, on account of a growth of light hairs on both sides of chin, about an inch in length. She had consulted the eminent dermatologist of London, Prof. Erasmus Wilson, and stated that she had been advised by him not to touch the hairs, and informed that absolutely nothing could be done in her case. Her extremities were quite hairy, and the hair of her head was thick and long. The hair on her chin had mostly grown during the previous year, and after a severe fever. In this case I removed three hundred hairs, operating upon the left side of the chin by electrolysis, and upon the right side by the method suggested for the mechanical destruction of the follicle, consisting in the introduction and rapid twisting of a barbed needle. In April, 1880, the patient returned to the city, and I found that nearly all of the hairs on the right side had returned, while there was a perceptible diminution of the number upon the left side of the chin where the electrolysis had been employed. In April I removed one hundred and fifty, and in June one hundred hairs of a finer growth than those first operated upon, which left the face quite free.

Case 3.—Miss ——, a young lady, aged twenty-six; tall and of fair complexion; in good health, though delicate in appearance and inheriting a tendency to pulmonary disease. Applied for treatment in December, 1879, on account of hairs growing on either side of chin, which had appeared within three months. There was a very light moustache on the upper

lip, though scarcely more than is commonly seen. In two operations I removed sixty hairs from the right side, and sixty-five from the left side of the chin.

In May, 1880, about ten of the long dark hairs previously operated on, appeared to have returned. I removed twenty-five from either side of chin, most of them being fine and light colored.

In October, the patient reported that she had been free from the capillary growth during the early part of the summer, but during the past two months a few fine hairs on either side of the chin had rapidly increased in size. These were removed, and, as I have recently been informed by a member of her family, there has been no subsequent appearance of the hair.

Case 4.—Miss ——, aged thirty-two, tall, of blonde complexion, and lymphatic temperament; health good. Applied for treatment in June, 1880, on account of long curling hairs on the sides of the chin and a mole on the neck. She had been in the habit of pulling them every three weeks. There was no hirsuties of other portions of her body, nor were any female relatives affected similarly. Her hair, a lock of which turned gray at sixteen, appeared quite gray in front, while the back hair was of a natural brown hue. Upon her legs a singular condition had existed for two or three years. The hair upon the tibial region, instead of being normal or in excess, had almost entirely disappeared, and the existence of many follicles, either

inflamed or distended by an accumulation of epidermic cells, showed plainly that the loss of hair was the result of the affection which is known as lichen pilaris. The hair upon her chin had been growing for five years or more.

In June and July I removed one hundred and sixty hairs.

In November I removed eighty, much finer than those first operated upon.

In June, 1881, there were but seven to be removed.

In January, 1882, I removed twenty-five, which were evidently of recent development, and not a return of those previously operated upon.

Case 5.—Miss ——, a maiden lady, aged forty-six; tall, thin, and of dark complexion; health poor. Applied for treatment in July, 1880, on account of numerous fine black hairs upon either side of chin. She had been in the habit of cutting them close or pulling them out, and at the time of her first visit they were about half an inch in length. There was no excessive growth of hair on other portions of the body. The hairs on chin had begun to grow at eighteen years of age, and she stated that a sister and two paternal aunts suffered in very much the same way. During the week in which she remained in the city I removed five hundred of the largest hairs in six operations.

In September she returned to the city with appa-

rently as luxuriant a growth as before, and no indication, at first glance, of any having been removed. Close inspection, however, showed a few red points, especially on upper lip, where hairs had evidently been destroyed. I now removed six hundred in four operations, including many finer hairs, and used a stronger current and far more care in operating than I did at first.

In November the number of hairs was evidently decreased, and I removed less than a hundred.

In June, 1881, there were but few conspicuous hairs. I removed one hundred more, however, most of them being very fine.

In October there were but seven dark hairs, which I removed with twenty-five downy ones, which appeared as though they might develop and become conspicuous. A few minute cicatrices were visible upon close inspection. The patient has since written to me as follows:

"The result of the operation is very satisfactory. There are no hairs perceptible on lip or chin, and the few scars are not noticeable."

Case 6.—Mrs. ——, a married lady, aged twenty-five; quite stout, of dark complexion, and in fair health. Applied for treatment, in August, 1880, on account of long, dark, curling hairs upon either side of chin, for which she had been recently applying a depilatory. She had a luxuriant growth of hair upon the head, and said that no female relative was affected

with hirsuties. The growth of hair upon her face was first noticed at eighteen years of age. She began to pull out the hairs three years ago at long intervals, but more frequently of late. She thinks that the epilation increased the growth, but not so much as did the depilatory powder which she used.

In twelve sittings, extending through a year, I removed four hundred and fifty hairs, one-half of them being quite fine and evincing a marked tendency to develop in size. After a six months' interval the patient writes that the operations have proved satisfactory, although the growth has not been entirely removed, and a little more must be done to make a complete cure.

Case VII.—Miss ——, a maiden lady of forty-six; small, thin, and dark; in fair health, although of delicate appearance. Applied for treatment in October, 1880, on account of dark, curling hairs on sides of chin, and dark hairs at either end of upper lip. The growth first appeared on the lip fifteen years ago. This had been treated by applications of sulphuric acid, which had lessened the growth of hair in the centre of the lip, and given it a whiter appearance than the rest of the face. The hair first appeared on the chin three years ago. Her mother had four or five hairy moles on her chin.

In October I removed one hundred and twenty-five hairs.

In the following June, 1881, the patient returned

to the city, and I removed seventy-five hairs. It must not be inferred that over one-half of the hairs upon which I first operated had retured, as in this second operation I removed many fine hairs which had been left.

In November there were but one or two hairs at all conspicuous. These I removed, with a few more fine ones, and the patient returned to her home well pleased with the results of treatment.

Case VIII.—Miss ——, aged about thirty; tall, dark, and of extremely nervous temperament; health good. Applied for treatment in January, 1881, for a slight growth of hair mostly on the right side of chin, which had appeared during the preceding year. She had always noticed a tendency to a slight excess of hair upon the extremities, although upon the scalp her hair was rather thin.

At two operations, in January and February, I removed thirty-two hairs from the chin and left cheek.

In June there were but five hairs to remove.

In February, 1882, I removed twenty-seven fine hairs, which were evidently a recent development, and not a return of those previously operated upon.

Case IX.—Mrs. ——, a married lady, of about forty-five, with no children; tall, thin, and of dark complexion; health poor; applied for treatment in March, 1881, on account of a few fine and long hairs on chin, and a fibrous mole on right cheek, from which

a few hairs sprung. She had first noticed the growth of hairs about three years before, and had resorted to depilatories and epilation.

In March I removed forty-five hairs from the chin and inserted the needle at several points around the base of the mole, which was the size of a split pea.

In June, there was scarcely a trace of the mole, and no hair on chin, save a very few fine ones, which I removed. I have heard through friends of the patient since, that the growth of hair was permanently removed.

Case X.—Mrs. ——, a young married lady of twenty-eight; of rather weak constitution, but in fair health. Applied for treatment in April, 1880, with an abundant growth of fine, soft hair on cheeks, chin, and neck, which, if allowed to grow, would undoubtedly have produced a fine, thick, soft beard. The upper lip was free from an excess of hair, and there was no tendency to hirsuties on other parts of the body. The growth of hair began at the age of fourteen, and there had been no perceptible increase during the past three or four years. For nine years she had been in the habit of pulling out the hairs at intervals of three days, and necessarily devoting a liberal amount of her time to this procedure. Attempts had been made to destroy the hairs by hypodermic injections of carbolic acid, but with no result save the production of a few disfiguring scars. The pa-

tient stated that her mother had a remarkably fair complexion, and that no female relative suffered from hirsuties.

During the months of May and June I operated daily, and sometimes twice a day upon the patient's face, and removed upward of five thousand hairs. I operated rapidly—too rapidly, as the sequel proved —and removed from one to two hundred hairs at a sitting.

In October, 1881, the patient came again to New York, and at first glance I could not see that very much had been accomplished. She expressed her opinion, nevertheless, that the operations of the previous year had proven quite satisfactory, inasmuch as they had lessened the growth of hair decidedly. I accordingly resumed the treatment, and with the assistance of Dr. Conover, removed about one thousand hairs. This left the face much smoother and more free from hair than after the first series of operations.

Case XI.—Miss ——, aged thirty-five; of dark complexion, and in fair health; a teacher by occupation. Applied for treatment in December, 1879, with a thick and strong growth of black hairs on cheeks, lip, chin, and neck. Indeed, she would have had as perfect a beard as almost any of the women on exhibition if she had allowed the hair to grow, but for over fifteen years she had been using both a depilatory and the tweezers. Four hours at a time she was in the habit

of devoting to the painful operation of removing the hair. Neither her mother nor any of four sisters manifested any tendency to hirsuties, and the patient herself did not, except on the face.

During the first six months of treatment I removed over twenty-seven hundred hairs. During the following year about twenty-three hundred were removed, making five thousand hairs in all.

The patient is still under occasional treatment for the growth of hair upon the upper lip, from which would grow a strong moustache. The removal of this is very tedious, since with a view to the prevention of even minute scars, she only allows a dozen or more isolated hairs to grow at one time upon the lip. The left side of her face, exclusive of the upper lip, is, and has been for the past eight months, perfectly free from the objectionable growth. Upon the right side the hairs were removed with less care at first, and some fine ones have been lately removed. There have been many minute cicatrices left by the needle, but they are of little account, and the result of the prolonged treatment has been most satisfactory both to myself and to the patient.

Case XII.—Mrs. ——, a large, handsome lady, aged twenty-five, and apparently in perfect health; married four years and no children. Her skin was unusually fine and delicate, and with the exception of fifty-seven hairs growing upon her neck and a single small mole upon right side of chin, there was

no tendency to an abnormal growth of hair upon the face or other portions of the body.

This patient's skin seemed unusually sensitive, and as an exception to the rule, she complained of the pain produced by the operation. Small wheals, like mosquito-bites, were produced at the points where the needle was inserted.

These fifty-seven hairs were removed in November, 1881. Two months later she wrote me in accordance with my request, and stated that the red marks caused by the needle still lingered, "but so surely did the instrument do its work that the objectionable hairs seemed to be permanently eradicated, *not one* having reappeared. The mole on the chin had entirely gone."

[I might add notes of a hundred cases and upwards in which a large number of hairs have been removed, and of other cases in which a slight growth or small hairy moles have been destroyed, but deem it better to merely state in a few words the results of experience gained since the foregoing paper was written.

The operation is no longer an experiment but has proved itself to be an eminently successful method of removing a most annoying disfigurement. It is the only method thus far devised which has fully accomplished its object, the only one which has evoked favorable reports from various dermatologists, and the only one which can be recommended. It is true that some

have tried the method and been disappointed in the results obtained, but this has been the fault of the operator and not of the operation. Without the requisite skill which comes only from practice, an unnecessary amount of pain is usually inflicted upon the patient. A considerable degree of inflammation of the skin is occasioned; disfiguring scars are apt to be produced, and a large proportion of the hairs operated upon are certain to return. But when the operation is properly performed the pain is slight, the inflammatory reaction is scarcely noticeable, no disfiguring scars result, and the permanent removal of the hair is assured.

As to the amount of pain occasioned by the operation it may be stated that the most sensitive and nervous patients rarely complain of it. The introduction of the fine needle into the follicle ought to be quite painless. It should never prick the skin or draw the slightest drop of blood. The stinging or burning sensation produced by the electric current is not a pleasant one, but the majority of patients tell me that the operation is not as disagreeable as having the teeth filled, and many state that it is no worse than merely pulling out the hairs, as they have been in the habit of doing from week to week.

The inflammation excited in and around the hair follicles after the performance of the operation varies in different patients. In some cases a few red pinhead sized points are produced, which speedily dis-

appear. In others, no trace of redness is apparent on the following day. When many hairs are removed from the same locality on successive days the skin may in time become reddened and thickened and require several weeks before it resumes its normal appearance. The "wheals," or small red lumps, which I mentioned in my earliest paper on this subject, as resulting from the electrolytic action, I rarely, if ever, see at present. Their occurrence indicates an extreme irritability of the skin, a faulty introduction of the needle or the use of too strong a current.

In the majority of cases it is possible to remove hair from the face without leaving any permanent mark, but unless an unusual amount of care is exercised a number of faint punctate cicatrices may sometimes be left as a result of the operation. But these are usually insignificant, being only apparent upon a very close inspection of the skin in a good light, and they are rarely thought worthy of consideration by the patient who is rejoicing over the permanent removal of the hairs. If due care is observed in avoiding the removal at one sitting, of coarse hairs growing close to one another the tendency to the formation of these minute cicatrices is greatly lessened, and there is never any occasion for producing unsightly or conspicuous scars, such as generally follow the use of acids and hot needles. Tendency to scar formation depends largely upon a peculiar quality of the skin. A clear and beautiful complexion will often show no

trace of repeated operations, while a thick muddy or doughy skin belonging to a patient with a strumous diathesis will sometimes present, after treatment, a few small pits, especially upon the sides of the chin where the hairs were unusually numerous or upon the lip or cheek near the angle of the mouth where the skin is comparatively thin.

The possibility of permanently removing a growth of hair from any part of the body, no matter how abundant it may be, is beyond all question. In every case the patient may be assured of this fact, which has now been proven by ample experience. But the process is often a tedious one, involving many operations, repeated at intervals during many months. Caution should therefore be observed in stating the number of sittings required to effect a complete removal of the growth lest disappointment and discouragement arise. When the hairs have been constantly pulled out by the patient, it is impossible to estimate the number which will require removal. In such cases it is always necessary, after removing those which are present, to expect a second growth of hairs which have not been operated upon. These may be removed a few months later, when the face will be left comparatively free. When the hairs have been allowed to grow, or merely cut close to the skin, the first operation or series of operations will be far more satisfactory, but even in such a case there will be a few to demand attention a few months later, and as

fifty hairs appear almost as conspicuous as five hundred, the patient is liable to become disheartened by this reappearance of the growth unless attention has been called to this point at the outset. It generally happens that a few of the hairs operated upon are not permanently removed by the first operations, but it is a very difficult matter to determine just what proportion of the hairs may be expected to return. While it is possible to use such extreme care that every single hair operated upon will be permanently removed, it is the rule, especially when the growth is abundant, to expect a return of a certain proportion of the hairs, and this may range from five to twenty per cent. While it is never advisable to attempt the removal by electrolysis of a fine, colorless, downy growth of hair, it is absolutely certain that, with patience and perseverance, every conspicuous hair upon a lady's face can be permanently removed.

III

DISCUSSION OF ELECTROLYSIS IN THE REMOVAL OF SUPERFLUOUS HAIR, BY THE NEW YORK COUNTY MEDICAL SOCIETY.*

Dr. Fox's paper being open for discussion, Dr. C. Heitzmann said that, at the meeting of the American Dermatological Association, in 1880, he gave an account of a series of experiments which he had made upon the face of a woman in order to permanently remove superfluous hairs, all of which, as well as experiments made by others, proved to be failures. His attention at that time was drawn to a new method which a few years before had been brought forward by Dr. Hardaway, of St. Louis, who, although not the first to suggest the plan, that being done by Dr. Michel, of St. Louis, was the first to try the method upon the face of a living patient. Dr. Heitzmann had since then resorted to this method and could corroborate all that Dr. Fox had said concerning its success. Drs. Michel and Hardaway were to be congratulated for the operation, but Dr. Fox was entitled to special credit for having animated it and kept its practicability before the profession. With regard to the avoidance of large needles, mentioned by Dr. Fox, because they were likely to leave scars, Dr. Heitzmann had not had exactly the same experience. He had usually employed what might be called

* At the meeting held February 27, 1882.

large needles, and had not produced scars, except in one case, and in that they were very slight. He was of the opinion that the skin of some persons was more prone to leave scars than that of others, irrespective of the size of the needles. But the scars were usually so insignificant that they were not detected except upon close inspection.

With regard to the precise agent which did the work, the thermic action of the electric current, he based his opinion that it was the heat and not the electrolytic process, upon a series of experiments made several years ago with reference to life in cartilage, and he did not see why we should assume it was the action of electricity when its existence was not established. The heat was present and aided in destroying the hair he believed; but what else occurred to aid the loosening of the hair, besides the thermic action, he did not know.

Dr. George M. Beard's interest and experience concerning this subject were rather historic than otherwise. Some years ago he made a number of experiments and was considerably pleased with the results. He did not use so small a needle as the one recommended by Dr. Fox, but the ordinary glover's needle. He was annoyed, however, by the return of the hairs after he had supposed they were destroyed. He had found that the practical difficulty of applying the method, on account of the pain, was of no special consequence, for the most nervous soon became ac-

customed to it, and bore whatever there was with the greatest courage.

With reference to whether the destroying agent was thermic action or the electric current, he thought there could be really no question. The action was a chemical one. To be sure there was, incidentally, a thermic action, and so was thermic action generated whenever electricity was made to go through any substance, and the greater the resistance the more intense the heat. In all electrolytic operations, heat was developed—slight when a small needle was used—but it was an incident. The main action was chemical decomposition, and it was through chemical effects that the results were obtained. He admitted that some results could be obtained by the use of heat, but in the present instance he thought it impossible to get heat into the follicle as well as electricity could be sent there.

With reference to the relation which the hairy growths, referred to in the paper, had to the nervous system, he felt that Voltaire's saying was especially applicable: "The more we know the less we are sure." Probably the condition was due to some modification of nutrition, the exact nature of which was still unknown.

Dr. A. Jacobi remarked, with regard to pulling out the hairs during the operation, that perhaps the plan he had followed in a few instances might prove acceptable. He does not pull the hair out, but leaves

it as an indicator whether or not the effect has been sufficient to destroy it. If sufficient, the hair will be gone when the patient returns; if inefficient, it will remain, and the next application will suffice to make its destruction complete. With regard to the hyperæmic condition at the insertion point, he had not seen it. It was true that reaction came on afterward, and, subsequently, the localized small swellings. Occasionally there was a little tinge of color when the current was applied, but the immediate effect certainly was the production of anæmia.

IV.

THE TREATMENT OF WINE-MARK BY ELECTROLYSIS.*

From *Archives of Medicine*, April, 1882.

Two years ago I had the privilege of making some remarks before this Society on three methods of treating the superficial nævus, or "wine-mark." These methods were: by linear scarification, as recommended by Mr. Balmanno Squire, of London; by puncture, or so-called "tatooing,"[3] as recommended by Dr. Sherwell, of Brooklyn; and by electrolysis. The success which has attended the use of electrolysis in the removal of superfluous hair, first led me to think that the electrolytic needle might be used to advantage in the treatment of wine-mark, by a subcutaneous destruction of the capillary vessels. I did not start with the idea that this plan of treatment would remove a wine-mark and leave the skin in a perfectly normal condition, but it occurred to me that by creating numerous minute cicatrices upon the surface of the patch the color could be so reduced that the mark would present little contrast to the surrounding skin. At the same time there would be no danger of producing a smooth scar of a dead white hue and contractile character, which would be scarcely less disfiguring than the original deformity. At the meeting

* Read before the N. Y. State Medical Society. Feb., 1882.

of the Society referred to, I suggested this operation, and mentioned a case in which I had resorted to it with partial success, To-day, with more experience in the treatment of this affection, I can recommend electrolysis as being, in my judgment, the best method, except for the mildest cases, in which a simpler plan will suffice. The object aimed at in electrolysis, as in scarification and puncture, is to excite sufficient inflammation to destroy the fine network of blood-vessels. As the galvanic current is more active, and at the same time more manageable than acid adhering to the point of a needle, it is not strange that this method should produce the desired effect in the speediest manner and with the least injury to the surface of the skin.

The operation is quite similar to that which I have already described in a paper read before this Society, on "The Permanent Removal of Hair by Electrolysis." A single needle, or an instrument containing a dozen or more needles with points upon the same plane and about two millimeters apart, is attached to the negative cord of a constant-current battery. If these needles are fine and with sharp points they can be quickly pressed into the skin without inflicting much pain, and the electrolytic action which takes place around them as soon as the galvanic circuit is complete, serves to destroy the capillary net work upon which the existence of the wine-mark depends. This it does with but slight injury to

the skin itself. The instrument which I have employed is a small brass disc, with from four to twenty holes, through which are crowded fine cambric needles. This disk (fig. 2) screws on a handle about the size of a short pen-holder. A sliding cylinder may be added to protect the needles when not in use. (Fig. 3). When the needles are introduced into the affected skin and the patient completes the

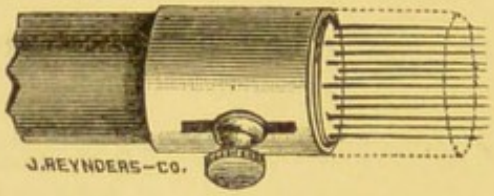

FIG. 3.

circuit by grasping a moistened sponge electrode attached to the positive cord, a blanching of the tissue around the needles is immediately observed. With ten or fifteen cells of an ordinary zinc and carbon battery in use the needles should be allowed to remain in the skin from ten to thirty seconds, the exact time depending upon the delicacy of the skin and the effect observed. The blanch-

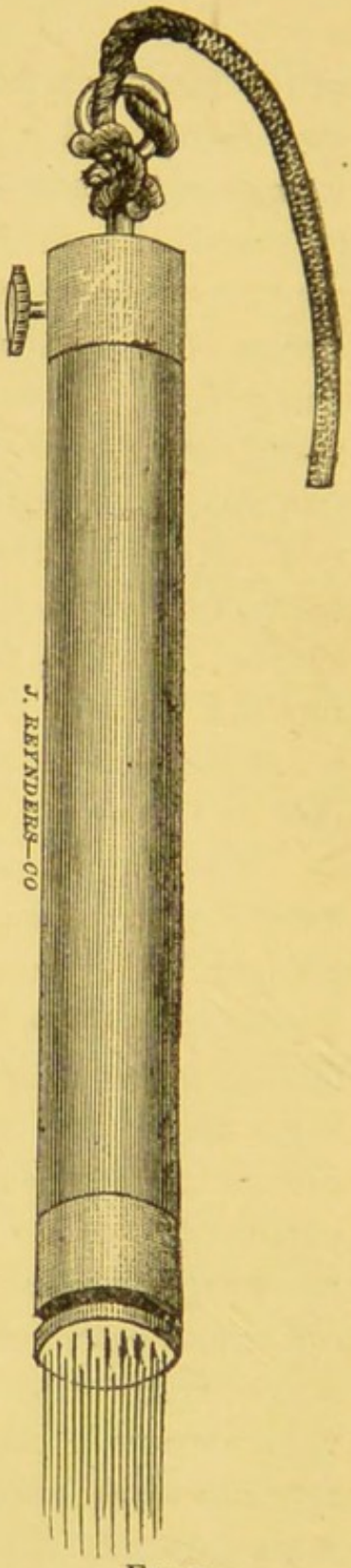

FIG. 2.

ing of the skin around the needles disappears in a few minutes, and nothing is seen but the punctures. In a day or two a group of dark pits or minute crusts are observed where the needles were introduced. In about three weeks the effect of the electrolysis becomes manifest, although the change may be so slight as to indicate a repetition of the procedure. In a case where a dark patch has existed, and the instrument has been repeatedly employed, the change consists in the transformation of color from purple to dark-red, and through varying shades from red and pink to a light-orange. At the same time the surface of the patch, upon close inspection, will be found to be covered by minute whitish dots. These are the cicatrices caused by destruction of tissue at the numerous points where a needle was introduced into the skin, and are of so slight a character that they are only apparent upon close inspection.

In every case of wine-mark of a severe grade characterized by a deep purplish color and a tendency to the formation of angiomata or small venous excrescences, the use of the multiple needle instrument, in the manner which I have suggested, will certainly produce a most marked improvement in the appearance of the patient in a few months or even weeks. It will not suffice, however, for a complete removal of the mark. Indeed, where there is dilatation of the deeper plexus of blood-vessels, as is frequently the

case in an aggravated form of the affection, there may be slight tendency towards a return of the purplish hue, after this has been removed by the operation. In such cases it is advisable to employ a very fine and flexible steel needle, and to introduce this in an oblique direction beneath the skin to the depth of a centimetre or more. By this plan it is possible to destroy some of the larger vessels through which the blood flows in its passage to the superficial capillary network. In this connection it will be remembered by some that Mr. Balmanno Squire, in his first publication of the treatment of wine-mark by linear scarification, advised that the incisions be made perpendicular to the surface of the skin. Later, however, he found that much better results could be obtained by making oblique incisions.

In an extensive wine-mark of the face involving the eyelids the single needle must necessarily be used, and I have been surprised and pleased to note the decided change in the expression of a patient's eyes when the dark color of the lower lid and malar region has been removed. In a case where the upper lip was involved by the nævus and projected considerable at the angle of the mouth, a diminution of size was effected by piercing the lip with a fine electrolytic needle. But the injection of a few drops of pure carbolic acid beneath the mucous surface of the lip proved to be a more effective and less painful mode of treatment.

In recommending electrolysis in the treatment of wine-mark, it is but just to speak of its objectionable features. In the first place, the operation is a somewhat tedious and painful one, and consequently not adapted to the treatment of children who are not old enough to be annoyed by the disfigurement, and who are therefore unwilling to suffer a little pain for the sake of its removal. I have experimented with local anæsthesia, but have failed to find it of any particular service. Very likely others might have better success with it. In the second place, there is a slight danger of causing suppuration and superficial sloughing of the skin in some cases, and a tendency in other cases to the formation of small outgrowths of a keloidal appearance. In one case I was quite annoyed at an unexpected ulcer, of the size of a split pea, which resulted from my treatment, and left a slight depressed scar upon the cheek; and in two cases trifling ulceration was followed by the development of small, firm, vascular nodules. These were suggestive of keloidal growth at first, but they disappeared in the course of a few months, leaving the skin perfectly smooth. Some who have attempted the removal of wine-mark by Squire's method have reported failure and the development of keloid as the result of their endeavors. Whether these resulting excrescences were really keloidal growths is a question, but the tendency to the formation of vascular nodules, before as well as after operations in

cases of wine-mark, has been noted, and in using electrolysis the production of even minute ulcers should be carefully avoided.

Finally, I would remark that in recommending a new method for the removal of wine-mark, I feel chary of speaking too confidently of its merits, bearing in mind the fact that other methods of treatment which have been recommended to the profession with more or less ardor during the past ten years, have failed to stand the test of time and trial at other hands. I do not believe it is possible to remove a wine-mark and leave a perfectly normal skin, but I do assert that the most unsightly and disfiguring patches can be greatly improved, if not entirely removed, by the production of numerous punctiform cicatrices, so small as to be scarcely noticeable save upon close inspection. I do not claim that the operation which I have practiced accomplishes all that could be desired, but I am sure you will agree that a brilliant and most satisfactory result is accomplished, if we do no more than transform a dark and unsightly stain into a smooth patch of a light pink hue.

As a summary of my experience, I may state briefly that wine-mark is not, as is commonly imagined, beyond the reach of surgical skill; that the most unsightly and disfiguring cases can be greatly improved, if not entirely removed; that in few, if any cases, can the mark be taken away without leaving faint scars, or, at least, a change in the character of the skin; that

electrolysis, in my judgment, furnishes the best means of treatment, and that it is especially adapted to those cases in which the mark is more or less venous in character and of a dark purplish color.

[Subsequent experience in the use of electrolysis in the treatment of wine-mark has not enabled me to say more nor less in its favor. The operation has not undergone any improvement of which I am aware, and therefore has not proved as successful as I had hoped. Nevertheless, in the class of cases mentioned it is probably as efficient a remedy as has been devised. As a modification of this operation may be mentioned the plan of treatment adopted by Churchill, of London. This surgeon uses a needle cautery in place of electrolysis but with the object of forming hundreds of microscopic equidistant scars. At the last meeting of the American Dermatological Association (1885) Dr. Hardaway read a paper on the treatment of port-wine mark by electrolysis, and I was pleased to learn therefrom that his experience and estimate of the value of the operation coincided very nearly with my own. He reported cases in which the results had been gratifying, and stated his belief that electrolysis afforded the most agreeable and successful means of treating this affection. In the discussion of the paper, Dr. White said that he had used electrolysis in the treatment of wine-mark, and that great improvement had taken place in every case.

V.

THE USE OF THE ELECTROLYTIC NEEDLE IN OTHER FACIAL AFFECTIONS.*

Having demonstrated to you the methods by which superfluous hair may be removed from the face, an operation which is now thoroughly established, and explained to you the somewhat similar method of treating the superficial vascular nævus, an operation which is comparatively new, it remains for me to speak briefly of the value of the electrolytic needle in the removal of certain facial blemishes of lesser importance.

Telangiectasis.—We will begin with that dilated condition of the capillary vessels which is known as telangiectasis. This affection presents itself in a variety of forms; the most common is that which is seen upon the wings of the nose, either alone or in connection with rosacea. The dilated vessels may be of a bright red hue, or they may appear purplish and tortuous, as in the swollen nose of the drunkard. In either case they are unsightly and call for local treatment. Heretofore this has consisted in slitting up the vessel and applying nitrate of silver or perchloride of iron. More recently multiple puncture or scarification has been employed, but by far the simplest and most effective method of treatment is that recommended by

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**Extract from a Clinical Lecture, Med. News*, Aug. 12, 1882.

Dr. Hardaway, viz., the use of the electrolytic needle. With a fine and sharp needle, connected with the negative pole of the battery, the dilated vessel is pricked at the point where it appears to emerge from the corium and make its appearance upon the surface of the skin. The circuit being now completed by touching the sponge-tipped positive electrode to the cheek, hand, or any portion of the body, the characteristic blanching is quickly observed around the needle, and in a few seconds the vessel has become white for a short distance from the needle. The object of the operation is to excite enough inflammation at a given point to cut and ligate the vessels as it were, and the number of seconds required to accomplish this end will depend upon the strength of the current, and the distance between the electrodes. Here is a well-marked case of rosacea in a man who is evidently not an advocate of total abstinence—in practice, at least. You see the swollen and tortuous venules upon the sides of the nose, slightly elevated above the level of the skin. In this case we will use twelve cells of a zinc-carbon battery, and apply the sponge to the patient's cheek. You now see the chemical action taking place in the tissue around the needle, and those of you who are near enough can see the bubbles of hydrogen coursing through the vessel and its branches, like the blood corpuscles seen beneath the microscope in the web of a frog's foot. To destroy all of these vessels upon the side of the nose, it is necessary to introduce

the needle repeatedly, and allow it to remain each time from five to ten seconds.

In this next patient, a young woman who has come to the clinic on account of another skin affection, you notice upon the cheek a small, bright-red point from which a few fine tortuous vessels radiate. Its spider-like form has given to this affection the name of *nævus araneus*. The patient states that the spot made its appearance a few years ago without any known cause. Very likely it resulted from the prick of a pin or some other trifling injury. It manifests no tendency to increase in size and gives the patient no annoyance, but still she is willing and even anxious to have it removed, if this can be done without much pain. I now insert the point of the needle in the centre of the red spot, which naturally occasions a slight pricking sensation. The patient will now grasp the moistened sponge connected with the positive cord of the battery, and she now undoubtedly experiences a sharp stinging sensation, which is by no means agreeable, although it is not particularly painful. You see that the redness has already disappeared, and in about a minute or two, having now removed the needle, a slight swelling will take place similar to that which usually follows a mosquito bite upon a delicate skin. The result will be a destruction of the bloodvessels and a fine punctate cicatrix, which will be unobservable except upon the closest inspection.

Angioma.—In one or two patients who have been

partially stripped in the clinic, I have called your attention to the existence of numerous little vascular tumors of the size of a pinhead or lentil, and projecting slightly above the surface of the skin. These small angiomata are of no consequence when situated upon the body, but when, as occasionally happens, they occur upon the face, it is a very easy matter to destroy them by this simple operation.

When they are as large as a small pea, it is advisable to introduce two needles, one connected with either cord of the battery, and have their points almost touch. Angiomata of larger size (the vascular nævus described in works on surgery) can usually be successfully treated by introducing two or more gold-plated needles of larger size. A preferable plan of treatment for these vascular growths, however, and one which I hope soon to have the opportunity of demonstrating, is the application of the ethylate of sodium.

Nævus Pigmentosus.—Let me call your attention now to another trifling affection of the skin, which is so common that it may be found upon the skin of a large minority, if not the majority, of healthy persons. I refer to the little pigmented spots which like permanent freckles are so often found upon the face, the backs of the hands, and upon covered portions of the body. They are either congenital or develop in early life, and in persons of a dark complexion they may be very numerous. Usually they are not much larger than a pin's head. I will pass around the photograph of a

man who had an unusual number of these small pigmentary nævi upon his arms and body. I remember this patient telling me that, although the spots never disappeared, they were much darker in summer than in winter, even upon the covered portions of the body. Such spots when not elevated above the surface of the skin occasion no annoyance whatever, except when they happen to occur upon a lady's face. Treatment now becomes an important matter, and again electrolysis comes in play. It is not necessary to insert the needle into the deeper portion of the skin, for you will remember that the pigmentary deposit is situated in the cells of the epidermis just above the papillary layer of the true skin. All that is necessary is to produce a small blister upon the surface of the black spot, and by touching it repeatedly with the point of the needle, we can accomplish this end as readily as by the application of a caustic, and with less likelihood of leaving a noticeable scar. For pigmentary nævi of large size, I will not recommend the electrolytic needle, as I have had no experience in its use in such cases.

Fibroma Simplex.—Upon the cheek of our next patient, a woman of forty-five, you see a little excrescence of the size of a small pea. Such a growth is commonly spoken of as a "wart" or a "mole. Frequently it is pigmented, and the seat of a few stiff hairs, and is called *nævus verrucosus.* The growth in this case is of firm consistence, with a smooth surface and slightly redder than the surrounding skin. It is simply a

hypertrophic growth of the fibrous tissue of the corium, and constitutes a blemish which is very frequently seen upon the face of persons of middle and advanced age. Its removal is by no means imperative, and the fear expressed by our patient that it is likely "to turn into a cancer" is unfounded. There are ladies who affect to regard an unsightly excrescence of this kind as "a thing of beauty," but you will find that when they learn that it can be removed with very little pain, and without the use of a knife, they will be very willing to part with it. In this case we will use fifteen cells of our constant current battery, and transfix the growth with the needle upon a level with the surrounding skin. You now see that the growth is turning white from the action of the current, and that the needle can be moved forward and backward with perfect ease. We will now transfix the growth again, the needle being at right angles to its former direction, and allow the electrolytic action to proceed as before for about ten seconds. What will be the result? For about twenty-four hours the growth will be slightly swollen and inflamed, and although it is not necessary, it may be advisable for the patient to keep a hot fomentation over the part. In a few days the growth will shrivel away, possibly forming a minute crust or slough, and in a few weeks there will be nothing but a slight cicatrix to denote the site of the operation.

In the case of multiple fibromata which occur upon

the body and extremities, the tumors are usually too large for this treatment, and they should be removed, if it is deemed necessary, by the knife or galvano-cautery.

Xanthoma.—Another facial blemish, which you may be called upon to treat, is the affection which is known as xanthoma or xanthelasma. This appears usuallly in the form of oval yellow patches upon the upper eye-lids near the inner canthus of the eye. One or both upper lids may be affected, and in some cases fainter yellowish patches are noticed beneath the eye. Patients affected with xanthoma are apt to have hepatic derangement, and to present a sallow complexion with dark rings around the eyes. The principal, if not the only, treatment which has been employed in these cases is excision, a remedy which, in the estimation of many patients, is worse than the disease. In the case of a lady who recently applied to me for treatment of xanthoma, and who was averse to any cutting procedure, I resorted to the use of the electrolytic needle and succeeded in removing the growth. I will not presume to recommend this plan of treatment on the strength of my limited experience, but I shall certainly adopt it in the next case with which I have to deal.

There are some other cutaneous affections in which the electrolytic needle might be employed to advantage, but what I have already said will give you an idea of its value and extended application. It acts

like a caustic in destroying the cutaneous tissue, but is more efficient in many respects and under our control to a far greater degree than any ordinary caustic which could be used. It is not a true caustic in an etymological sense, for it destroys tissue by chemical action, and not by the generation of heat as in the platinum wire connected with a galvano-caustic battery. And now, before closing, let me say a few words in answer to questions which might otherwise be asked respecting the character of the battery employed for the purpose of electrolysis, and the number of cells which it is necessary to use. It seems almost superfluous to say that the battery should be of the kind which is known as the galvanic or constant current battery, and yet I have known physicians to attempt the use of electrolysis with a faradic battery, *i. e.*, one with an interrupted current, which is wholly unsuited to the purpose. The galvano-caustic battery, though producing a constant current, is constructed for the sole purpose of heating a platinum wire, and is equally unsuited for electrolysis. There are a number of galvanic batteries with different elements, any one of which will answer the purpose of electrolysis, but the ordinary zinc-carbon battery is the one commonly employed. I have used here in the clinic a chloride of silver battery with cells hermetically sealed, and which is therefore adapted to being carried about. It can be tipped over without any danger of ruining a carpet by spilling the contained fluid, but it is an expensive battery, and

one very liable to get out of order, and hence not to be recommended for general use.

In the operation to which I have referred, from ten to fifteen minute cells may be required. If the battery fluid is fresh, the sponge in connection with the positive electrode well moistened, and applied to the skin as near as possible to the needle, the current will be at its maximum strength, and a smaller number of cells required than when the battery fluid is weakened by use, the sponge dry, or nearly so, or when the circuit is completed, by placing the positive electrode in the patient's hand—and the resistance to the current thereby increased. These points being borne in mind, a sufficient number of cells should be employed to produce the desired effect, viz., a gradual dissolution of the cutaneous tissue at the point where the needle is inserted. It is always advisable to introduce the needle before completing the circuit, and to break the circuit before withdrawing the needle. By observing this rule an unpleasant shock may be avoided.

VI.

ELECTRICITY IN THE TREATMENT OF ACNE AND ROSACEA.

Various writers have mentioned and recommended the use of electricity in the treatment of acne and rosacea, but I imagine that few physicians are in the habit of employing this remedy in treating these very common affections. Some, perhaps, have not the necessary battery at command; others may find its use involves too great an expenditure of time and patience, while the majority are wedded to some time-worn and routine course, such as prescribing arsenic internally and soap, sulphur, etc., locally. The text-books on dermatology have very little or nothing to say on this subject, and we may therefore infer that most of those who are specially interested in the treatment of skin diseases make little or no use of this valuable therapeutic agent.

My own experience has led me to place a high estimate upon the value of electricity in the local treatment of acne and rosacea, and while it should merely be regarded as an adjunct to dietetic and other hygienic and medicinal measures, I feel that I can confidently recommend it as serviceable in the great majority of cases. In the form of galvanism I employ it constantly, and there is scarcely a local application from which I can secure such certain and permanent benefit.

Its action is that of a cutaneous stimulant, and its effects upon the deeper blood-vessels and glands is far more decided than that produced by soap frictions and the use of irritant ointments and lotions. Its primary effect is to quicken the circulation of blood through the skin, and thereby to favor the absorption of inflammatory products. A secondary effect is to lessen the calibre of the vessles, and thus to relieve congestion and the tendency to the formation of new papules and pustules. By its peculiar effect upon the nerves the normal function of the sebaceous glands is restored, and the skin assumes that *tone* or vitality which has so long been lacking. In cases of acne where the skin is oily or dotted with numerous comedos or small superficial papules, the chemical and mechanical action of soap ought not to be dispensed with, and in cases of pustular or indurated acne the employment of the acne lance and curette will always prove to be of the utmost service. But when the deep-seated collections of pus and masses of cheesy sebum have been evacuated from the scattered nodules and the oily secretions upon the surface have been removed by appropriate measures, then electricity will perhaps do more to restore the skin to a perfectly normal condition than any other plan of local treatment.

In using galvanism in the treatment of acne, two moistened sponge electrodes may be employed with a tolerably strong current. It has been suggested that one electrode be placed in front of the ear or on the

nape of the neck. but it has seemed to me that equally good or better results are obtained by paying no attention to the distribution of nerves, and simply placing the sponges in close proximity upon the cheek or forehead and moving them from one place to another until the skin is sufficiently reddened. In place of the sponge electrode attached to the negative cord, I am in the habit of using a small metal button for application to the red blotches left after evacuation of the contents of inflamed nodules or a metallic roller of oval shape which can be passed rapidly over a considerable portion of skin. Of course the current is felt to be much stronger when the metal is used in place of the sponge, but considerable time can be saved by use of this roller electrode.

The susceptibility to pain of different parts is so varied, especially as regards the sensation produced by an electric current, that it is impossible to state how many cells of an ordinary galvanic battery should be employed, but it is advisable to begin with a weak current of six or eight cells and to increase the number until the patient begins to wince. The application may last about five minutes, at the end of which time the skin will be perceptibly reddened, and this procedure may be repeated with benefit two or three times a week. The reddening of the skin may last at first for several hours. Later in the course of treatment it will disappear much sooner, and for the rest of the day the face will appear unusually pale. In

one or two cases where I have used the galvanism only on one side of the face for a few applications, a very notable contrast in the appearance of the two sides has resulted, and thus demonstrated the blanching effect of the treatment.

In cases of rosacea the galvanic current may be employed in like manner, with either sponge or metallic roller, for the purpose of dissipating the erythematous and nodular condition of the nose and adjacent portions of the cheek. For the destruction of the superficial and dilated blood-vessels the electrolytic needle serves an excellent purpose as has been previously stated.

In both acne and rosacea faradism may be employed in place of galvanism with perhaps similar results. In my own practice I have usually employed the latter and am unprepared to make a statement as to their comparative merits. I can assure the reader, however, that both are worthy of a trial.

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