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CONCENTRATED RAYS OF THE SUN
(SOLAR CAUTERY)
AS A REMEDIAL AGENT.

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READ BEFORE THE SAN FRANCISCO COUNTY MEDICAL
SOCIETY, APRIL 11, 1893.

REPRINT FROM
PACIFIC MEDICAL JOURNAL
JULY, 1893.

W. A. WOODWARD & CO., PRINTERS, 12 SUTTER ST.



Concentrated Rays of the Sun (Solar Cautery) as a Remedial Agent.

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[Read before the San Francisco County Medical Society, April 11, 1893.]

Many years ago I commenced a series of experiments in the treatment of diseases of the skin and its appendages, and have continued them from time to time up to the present. My first experiments were with the use of heated needles which I had seen used by the late Professor Valentine Mott, M. D., of New York City, while a student at the medical department of the University of New York. The heated needles were applied for the destruction of erectile tumors and other morbid growths. For some time I continued the use of the needles whenever I could find a patient willing to submit to this delicate treatment. Many were the wails sent on high and sometimes sent to the regions below as the victims squirmed under the torture of this method of treatment. This was attended with only partial success at first. But with more experience in the use of the needles and selecting my patients with more care and better judgment the treatment proved more successful and satisfactory.

Medicated Needles.—My next experiments were with needles dipped before using into acids, alkalies and astringents, then thrust into the morbid tissues. I treated many cases of *nævi* or, more properly, capillary aneurism, in this way, using liquor ferri persulphatis, carbolic acid, etc. The needles were pushed through and through the vascular tissues. Inflammation followed, adhesion of the walls of the minute vessels supervened and the circulation was cut off, leaving the surface a more natural color. It was necessary to repeat these operations in order to produce a permanent cure. This treatment was attended with considerable pain and nervousness, consequently it became unpopular, especially among its victims.

Endermic Injections.—My next step was the use of the endermic syringe by which the medicated fluid was introduced



directly into the morbid tissues, in the quantity desired. Many cases were treated in this way, resulting in few permanent cures. The injected fluid generally destroyed the vitality of tissues, cutting off nutrition and sloughing followed. After cicatrization an unsightly scar remained to remind the surgeon, as well as the patient, ever afterwards that the treatment was unsuccessful and far from satisfactory. There was also more or less danger attending the partial coagulation of the blood in the vessels. Coagula might be detached and enter the general circulation, resulting in embolism and death. When I realized the number of operations of this character I am more than surprised that no accident followed this treatment.

Croton Oil.—I also tested the value of croton oil in the treatment of birthmarks and other discolorations of the skin. I used an instrument invented by a German physician, consisting of a cylinder holding the oil, at the bottom of which was a porous membrane pierced with some twenty fine short needles; these were connected with a spring. By applying the instrument to the part to be operated upon and pressing the spring the needles entered the skin carrying with them more or less oil. A vesicular eruption followed, adhesive inflammation intervened obliterating the capillary vessels, leaving the skin a more natural color. If necessary the application could be repeated until the cure was complete. Carbolic acid can be used in the same manner and purpose. I also used in my experiments ethylate of sodium and potassium for the removal of discoloration of the skin. The part is lightly covered with the ethylate which soon changes the skin to a dark brown color, after which a crust is formed. Within a few days this will loosen and come off, leaving the skin much lighter in color. The application can be repeated until the skin resumes its natural color. I have tried the freezing process; the skin is frozen, then with a scalpel the part is cut in parallel and oblique lines the sixteenth of an inch apart; press immediately upon the cut surface white thick blotting paper to absorb any blood that may ooze out. The object in view is to cut across the small vessels and destroy them; this treatment was attended with more or less success.

It has required much time, patience and perseverance in testing the value of these several remedial agents and great pains were taken in securing suitable cases for treatment. Great care and much caution was needed in the applications to avoid, if

possible, any permanent injury. These experiments have not proved altogether satisfactory, although many cases were treated successfully. Still I am compelled to acknowledge numerous partial or complete failures. More or less trouble was experienced in getting patients to submit to the treatment, especially women and children and the more timid of the sterner sex. The old adage, "A burnt child dreads the fire," deprived me of the opportunity of repeating the operation which was absolutely necessary to success. On the whole, however, much valuable knowledge has been obtained which can be utilized in future practice.

We now come to the most important and instructive portion of this paper. The application of the concentrated rays of the sun (solar cautery) in the treatment of the following diseases, to wit: capillary aneurisms, varicose veins, indolent, chancroidal and rodent ulcers, epithelial cancers, birth, India ink and powder marks, bleeding vessels and surfaces, hemorrhoidal and erectile tumors, morbid growths, such as warts, moles, small wens and all diseases of the skin of a parasitic nature.

Many years since I commenced the use of the concentrated sun's rays (using a common sun-glass) in the treatment of diseases of the skin and its appendages. I was lead to the use of this treatment by the merest accident. My first experiments were directed to the removal of moles and warts and were crowned with perfect success. I soon realized the necessity of obtaining larger and more perfect lenses, which I obtained in New York City. I then widened the field of operations, working carefully and cautiously, and watching every step of the process that no permanent injury might result from the use of so positive a remedy.

During this time I searched the medical literature of this and the old world for some notice or hint that the concentrated rays of the sun had been utilized in surgical practice, but in vain. Soon after the War of the Rebellion I came across a short article in the London *Lancet* in which the use of the sun's rays as a cautery was noticed. A surgeon whose name I have forgotten succeeded in removing a wine-mark from the face of a lady and had also succeeded in destroying a malignant growth with the same remedy. The wound had healed readily and up to the time the article was published there had been no symptoms of the disease returning. This renewed my confidence

and zeal. I continued the treatment whenever an opportunity presented itself. Success attended a large majority of the cases operated upon.

One drawback to this treatment, especially in the Eastern States, where I resided many years before coming to this coast, is the uncertainty of sunny days. For more than six months of the year sunny days are the exception. I have been compelled to keep patients waiting for more than two weeks for a bright sunny day, as we could not operate in any other. What a contrast to this sunny clime. "Old Sol," with his bright, effulgent face, is ever smiling upon his creatures, imparting life and energy to all animated nature. During a practice of more than a quarter of a century I have found no caustic or cautery to compare with solar heat in its beneficial results. Unlike other caustics it can be applied with perfect safety upon the most delicate tissues and is at all times under the control of the operator. It has other advantages—the system receives this treatment kindly. The irritation and inflammation following its application is surprisingly slight and of short duration. Another point in its favor, the pain subsides immediately upon the removal of the lens. I have burned the skin of nearly the whole of one side of the face at one sitting, destroying the cuticle; within five minutes the burned surface would be free of pain. There is a curative power in the chemical rays of the sun yet unexplained. I avoid blistering, carrying the burning beyond this point, carbonizing the tissue.

In the treatment of morbid or malignant growths, we destroy most fully the morbid products. Upon this depends the success of the operation. The morbid tissue having less vitality than the normal, succumbs to the cautery before the natural structures adjoining are injured. This enables us to attack boldly the malignant or morbid growths without any fear of injury to the healthy tissues surrounding them.

In the primary treatment of chancre, or chancroid, this treatment stands unrivaled. Within the space of two minutes the infectious chancroid, or the true Hunarian chancre, is deprived of its contagion and changed to a simple ulcer. Hemorrhoidal tumors, when external to the sphincter, are bodily destroyed, and the part heals without unpleasant symptoms. Indolent ulcers of long standing take on new life after the application of solar heat. In the course of a few days healthy granulations

appear, which continue to a favorable termination, especially when the general health is looked after. Granular surfaces, which are inclined to bleed from the slightest touch, are changed to a healthy state. Hemorrhages from small arterial or venous vessels are checked almost instantly with the solar cautery.

Diseases of the skin of a parasitic nature are treated with marked success. Cases that have withstood the repeated attacks of the usually prescribed remedies, have succumbed to one or more applications of solar heat. I believe that the pustules of small pox can be aborted, and pitting prevented with this agent. What seems surprisingly strange to me, is the fact that a remedy of so much curative power and value, and one so easily utilized, should have remained unknown to the medical profession so long. From the time I first tested the virtues of solar heat, as a remedial agent, up to the present, I have kept back nothing of value from the profession, have been willing and ready at all times to impart any knowledge acquired, and have urged my professional brethren to use this agent in their practice. I am sorry to confess, however, that the liberality on my part has not at all times been met by a fraternal response. I have been misrepresented and even accused of quackery.

But we must not forget the fact that many of the new discoveries in surgery and therapeutics, on being introduced to the notice of the profession, have been traduced and criticised and their virtues misrepresented by a class of critics found in every department of social life. Even Jenner, whose name stands on the pages of history as a bright, effulgent star, and whose memory will be revered and honored by generations yet unborn, suffered the most positive opposition and criticism before public sentiment gave him credit, and acknowledged the great benefits accruing from vaccination in destroying the predisposition to small pox.

I will close by noticing a few cases out of many treated successfully by the solar cautery. Case I. Mr. M. C., of Petaluma, Sonoma county, aged some 50 years, came under my care for treatment of an ulcer of the neck, just below the angle of the lower jaw. It dipped down under the edge of the sterno cleido mastoid muscle, immediately over the carotid artery. The ulcer measured one and a half inches in diameter, circular in form, and presented a dark crust superficially, cracked and furrowed. The floor was depressed below the raised margin of

the ulcer. The sinuous raised molding which surrounded the ulcer, was of a cartilaginous hardness of a faint pink color. A part of this rim was being broken up by ulceration, with symptoms of malignancy, bleeding upon the slightest touch. Still in most respects a characteristic rodent ulcer. The history of the case was a remarkable one. Twenty-four years previous to this consultation he was kicked by a young colt, producing the wound upon the neck, since which time he had failed in his efforts to heal the injured surface. I commenced the treatment of this case by concentrating the rays of the sun through a large and powerful lens, destroying the raised margin to a level with the healthy skin and also cauterized most thoroughly the floor of the ulcer; the slough came away the fifth day, the wound exhibited to all external appearance a healthy ulcer, granulations soon appeared and healing commenced and continued with few interruptions. When it became necessary I repeated the operation until every vestige of the morbid material was destroyed. The wound healed in a few weeks, leaving a very slight cicatrix.

Case II. Miss B., of this city, aged 20 years, consulted me as to the removal of a port wine colored mark situated upon the entire left side of the chin, commencing at the median line of the lower lip, extending to the angle of the mouth, down to the lower edge of the jaw bone. She came into my office thickly veiled. It required no little coaxing on my part to get her consent to uncover her face, that the mark could be seen. She remarked that "she always wore a veil outside of her immediate family." She readily consented to an operation for the removal of the discoloration, as she had suffered great mortification and mental distress, especially since budding into womanhood. With a powerful lens of a focal diameter of four lines, I cauterized the whole discoloration at one sitting, and applied to the part a dressing of zinc ointment, as a protection from the air. The burned crust came off in one week, leaving the skin much lighter in color. Two weeks later I repeated the operation, and then waited the final results of the treatment. Two months from the first operation scarcely a trace of the mark could be noticed. I lost sight of this young lady for some eighteen months, then met her one evening at a small party, at a mutual friend's, but did not recognize her. As I was about to leave she accosted me and said in a whisper, "Doctor, have you forgotten your old

patient?" After looking her in the face a moment, I answered by asking, "Are you the young lady from whose face I removed a mark?" She replied, "I am," and signaled me not to expose her. I noticed, however, that the treatment had proved a perfect success.

Case III. A lady with a daughter of 16 years, residents of this city, called at my office to consult me about the daughter, who had upon the left side of the face, two inches below the eye and near the nose, a small tumor, the size of a walnut, on the surface of which was an ulcer, which was subject to frequent bleedings. The commencement of this tumor dated back some three years. Its growth was slow but continuous. The mother informed me that she had consulted some twenty physicians and surgeons, only one of whom advised its removal. The advice generally given was, "Let it alone, don't molest it." Upon examination it proved to be a very fine specimen of epithelial cancer. The consent of the patient was readily given for its removal by the solar cautery. She was brought under the influence of an anesthetic, the cautery was applied and the morbid growth was destroyed in some four minutes. Five days afterwards the slough came off, a simple ulcer remaining, which under suitable dressing was healed in a very short time, there remaining a small cicatrix as the only evidence of the previous disease. Eight years have elapsed and there has been no return. I have been happily surprised to find, in nearly all of the operations with the solar cautery, after the healing of the wound, so slight a cicatrix, much less than other modes of treatment, not even the cutting of the knife excepted.

Case IV. India ink mark. Mr. B. and wife called for advice; the latter had upon the outside of the leg below the knee, two large Roman letters, produced with India ink. I noticed that the husband was more than anxious for their removal. There was a little romance connected with this case, as I learned afterwards. The young lady while residing in a seafaring town, had a lover—a sailor boy. After their engagement he took the liberty to print upon her limb the initials of his name. As ever, true love rarely runs smoothly at all times, the lovers became estranged, and the present husband became her Benedick. These large beautiful Roman letters seen upon the limb of his wife, was a constant reminder that he was not her first love. The solar cautery was brought to bear, however, upon these

ghostly letters, as he conceived them, and they were soon obliterated, leaving no trace of their former self.

Case V. Mrs. B., aged some 40 years, of Petaluma, Cal., came under my care some nine years ago, for the treatment of a disease of the right breast, mostly confined to the nipples and the tissues surrounding it. The nipple had receded more than an inch into the body of the gland, leaving an aperture the diameter of which was equal to that of my index finger. It was lined with a granular membrane secreting pus. The adjoining structures were hardened and the skin of a dark red color. The patient informed me that the disease commenced some fifteen years since, with an ulcerated nipple. During these long years of suffering she had been unable to get any permanent relief from the physicians she consulted. I commenced the treatment of this case by placing her in a position to apply the concentrated rays of the sun, directly to the aperture left by the receding nipple, using a lens of a focus of two lines. With this I most thoroughly cauterized and destroyed the granular membrane as well as a small layer of the parts adjoining. The burned material came away within a few days, leaving the surfaces in a satisfactory condition. With treatment to improve the general health and the use of suitable dressings, I was enabled in a few weeks to produce a permanent cure. There has been no return of the disease.

I selected these few cases from a list of many others that were successfully treated with the solar cautery. You will notice that each differs in material points from the others. I did this to show that the concentrated rays of the sun could be utilized in the treatment of a large class of surgical diseases.

