

BULKLEY (L. D.)

Presented by
the Author

ON THE USE OF THE
SOLID RUBBER BANDAGE

IN THE TREATMENT OF

ECZEMA AND ULCERS OF THE LEG

BY

L. DUNCAN BULKLEY, A. M., M. D.

Physician to the Skin Department, Demilt Dispensary, New York; Attending Physician for Skin and Venereal Diseases at the Out-Patient Department of the New York Hospital; Permanent Member of the American Medical Association; Fellow of the New York Academy of Medicine; Member of the New York County Medical Society; Member of the New York Dermatological Society; Member of the American Dermatological Association; Translator and Editor of *Neumann's Hand-book of Skin Diseases*; Editor of the *Archives of Dermatology*; etc.

[REPRINTED FROM THE "ARCHIVES OF DERMATOLOGY," JULY, 1878]



NEW YORK
G. P. PUTNAM'S SONS
182 FIFTH AVENUE

1878

With the Compliments
ON THE USE OF THE *L. S. Bulkley M.*

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ON THE USE OF THE SOLID RUBBER BANDAGE IN
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FEW cases of chronic affections of the skin are more distressing to the patient and annoying to the physician, than those of eczema and ulcer of the leg which are dependent upon varicosity of the veins; and it is the fact these cases occur in those who are least able to rest, and to put themselves in a condition for recovery that makes them more rebellious to treatment. Every one can recall cases of chronic eczema of the legs (often erroneously called erysipelas), and of ulcers, which either, they have treated for a time with moderate success only, until the patient was tired of treatment, or else in which they have simply advised the wearing of a bandage, or a laced- or elastic-stocking, hardly expecting more than a palliation of the troublesome symptoms. My mind runs back, during the past few years, to many many such cases in Dispensary practice, when relief has been given time after time, only to be again sought for when some unusual amount of standing or exhaustion has occasioned the old enemy to break out anew. And these cases often occur in hard-worked house-wives, the mothers of large families, whose very existence depends upon their being on their feet all the day, like as not at the tubs or ironing table; the same is seen in men or women who stand continuously as cooks, waiters, factory hands, etc. And these cases are also very commonly seen in those in whom poverty has also had its share in producing the lesion, and scanty and poor food has so relaxed the tissues that the veins easily become distended, and the capillaries readily dilate and rupture.

Now to attempt to put such patients in bed is utterly out of the question, and even when it is possible it is well known that the results of treatment in bed are often temporary, and that when the patient resumes the standing position the eczema or ulcer may and frequently does return.

* Read before the New Hampshire Medical Society, June 19, 1878.

If an ordinary bandage, or an elastic- or a laced-stocking is used to keep the disease in check, we have the constant distress and aggravation of the trouble occasioned by the sticking of the dressing to them, or to cloths placed beneath them, while the firm, non-elastic tension of the cotton bandage and the laced-stocking is often really distressing to the patient: the cost of elastic web stockings and the necessity of their frequent renewal is a serious obstacle to their use in very many cases.

For these reasons the solid rubber bandage promises, I think, to effect a revolution in the treatment of such cases, and will be hailed with pleasure by multitudes of physicians and patients.

One year ago Dr. H. A. Martin, of Boston, brought the subject before the notice of the American Medical Association,* and his claims for the solid rubber bandage were so extraordinary that I determined to make use of it on the first opportunity, feeling assured that this was just the means I had long wanted for the cure of a certain class of my patients whom I felt certain were not receiving all the relief which medical skill should furnish them. The article fell under my notice some months after it was delivered before the Association, so that my time for testing the matter has been somewhat limited, (shortened also by sickness and consequent absence from work and from the city), and the actual number of my cases is small compared with the several hundred cases in which Dr. Martin has employed it.

But the subject has appeared to me to be of such vast importance, and my results with this method of treatment have been so uniformly good, as have also those obtained by others to whom I have recommended it, that I feel it my duty to again present the subject, somewhat modified, and to urge with all my powers the immediate attention of the profession to this new and exceedingly valuable addition to our therapeutical resources in the management of some of the worst cases which can distress both patient and physician. Not claiming originality in the matter, I shall consider myself free to use Dr. Martin's valuable paper as best I may in developing the subject and impressing it upon my hearers; and, as my experience has been identical with his, I shall of necessity refer to many of the points to which he calls attention, and shall not always refer to him, but here give him all credit for his work, and advise my hearers to read or re-read his paper in connection with this. He treats of the use of the bandage in ulcers and varicose conditions of the leg, also in certain surgical aspects of diseases and injuries of the joints, etc., but does not mention eczema, although he alludes to having used the bandage in some cutaneous affections of the legs, "to which" he says, "very learned words of sesquipedalic length are applied in the jargon of dermatology," "that great science of words," as he styles it in another place.

My practice being confined to diseases of the skin I purpose to

* *Chicago Med. Journal*, October, 1877; *Transact. Am. Med. Asso.* Vol. 28, page 589.

give you my experience in the use of this measure in eczema and ulcers of the leg, as it is only in these lesions that I have myself employed it; I will afterwards briefly allude to other conditions in which it has been or may be successfully used. I will very briefly mention the cases, because more impression is thus made than if simply the results of treatment are stated in a general manner.

CASE I. *Long standing eczema of the leg with great induration.* The most striking case perhaps, was the first one to which I applied the bandage, and as this patient has been the longest under observation, both before and since its application, it is perhaps to me the most instructive and valuable of all.

Mrs. E. F., a large and rather fleshy woman of 45 years, applied for treatment at Demilt Dispensary, in February, 1877. She then had well marked tubercular syphilis about the nose and upper lip, with many cicatrices from the same on the forehead and elsewhere. Her right leg presented a most distressing state of disease, which had existed more or less severely for over nineteen years. It was enlarged from the knee down to and including the ankle, so as to be twice the size of the other; was hard with the thickening of the skin; its surface exhibited a raw and exuding eczema to nearly its entire extent; and there were numerous ulcers, especially about the ankle, with hard, sharply-cut edges and indolent bases. The leg itched intensely and she scratched it more or less; it also gave her almost constant pain while standing, which she was obliged to do continually, washing, and caring for the family. Some of the ulcerations of the leg had very much the appearance of those of tubercular syphilis, and I had great hopes that the treatment for that disease would also be of much benefit to this portion of her body.

Not to enter too much at length into clinical details, suffice to say that she attended the Dispensary quite faithfully, and was treated assiduously until August; but that the leg entirely refused to heal, although the syphilitic lesions on the face yielded to proper measures. This medication would often seem to make the eczematous element on the leg worse, and yet when the anti-syphilitic was discontinued the tubercular eruption reappeared. Various local measures of approved kinds were also ineffective on the leg, owing, undoubtedly, to the insurmountable obstacle of her occupation.

On November 22d the rubber bandage was applied at the Dispensary, and the internal treatment for the syphilis was continued.

On December 4th she was exhibited before the gentlemen attending my clinic, and the note was made that the leg was better than it had been for nineteen years. The limb was then reduced at least one-half in size, and was hardly larger than the other; the entire surface was smooth and dry, and very red, the enlarged papillæ showing distinctly beneath the thin layer of epidermis; many of the ulcerations had healed: she experienced no pain or

itching in it, and she had been on her feet all the time as before. There had been no local treatment employed of any kind, except the application of the elastic bandage, as will be described later.

In three weeks more the ulcers had healed, and the leg appeared as well as the other, except the red, glossy condition, which still remained. This patient has been under observation and treatment ever since, for her syphilis; the leg remains perfectly well, and although she still continues to wear the rubber bandage for the support it gives the limb, she has no signs of her former trouble; the leg is the same size as the other, every trace of the very great thickening is gone and, consequently, there is no itching or pain. Varicose veins seem to have played a very small if any part in this case.

CASE II. *Acute eczema accompanying ulceration of the leg.* This case is almost as striking: Mr. J. P. B., aged 41, a mercantile reporter, presented himself at my clinic at the Out-Patient Department of the New York Hospital, March 11th, 1878, for the treatment of eczema of the leg with numerous ulcerations, with the following history:—

Nine months previously he had had acute inflammatory rheumatism, affecting principally the ankles. This was followed by swelling of the leg, with enlarged veins and the appearance of several ulcers. For the ulcers he had been for six weeks laid up in the hospital, and as the ulcerations were in part healed, and his business prevented further confinement, he applied at my clinic for subsequent treatment. When first seen, the whole of the left leg was greatly enlarged from the knee down; about the ankle there was much œdema: the surface was red and glazy, much of it exuding copiously, and with a number of rather small ulcers in various situations. It was done up in lint, covered with a cotton bandage; he had on a large cloth shoe, and was quite disabled by the bulk of the limb, and the pain and itching. All the dressings were removed and a rubber bandage applied.

March 15, four days afterward, it was recorded that there was great improvement; very much of the swelling was gone; the leg was hardly three-quarters the previous size; many of the eczematous spots and some of the smaller ulcers were healed. There was little or no itching and no pain. He had returned to his business immediately after the application of the bandage, and on the preceding day had walked six miles.

March 20. All the ulcerations but two are healed. No eczema remains; the leg is about the natural size and he walks all day with ease.

March 27. The leg is about as well as ever: he is now for the first time put under some constitutional treatment for eczema on the arms.

CASE III. *Severe chronic eczema rubrum of both legs and thighs; one only treated by bandage.* Mr. H. L., a large, rather corpulent gentleman, aged 56, seen in private practice, has had eczema of

both legs, for a year and a half, gradually extending so as to cover the entire limbs, to the groins, during the past four months. He has been under approved treatment at the hands of a well-known New York physician during a considerable period, who finally referred him to me. He gives the history of having had eczema over much of the body during the first seven years of life. He has had asthma since a boy, until the last few years, when he has remained free from it. During the past year and a half he has been constipated, depending on the compound cathartic pills for movements from the bowels.

When first seen both legs, from the ankles to the groins were the seat of a red, exuding eczema, terribly itchy, and showing many signs of the results of scratching. Both legs were covered with cotton wadding and bandaged firmly, and he was in the habit of removing this two or three times a week, and washing the legs thoroughly, and coating them with camphorated vaseline. There was also more or less eczema upon the arms. He was treated in a general way with considerable relief to the itching, and on

May 23, the rubber bandage was applied to the right leg, from the toes to the groin, two twelve-foot, three-inch bandages being used.

May 25. To-day it is recorded that there is great improvement in the limb to which the rubber bandage was applied; all itching has ceased in it; when removed, the surface is red and shiny, but perfectly dry and with a moderately firm epidermis. The left limb, which was left in the cotton, still exudes, is itchy and has a considerable amount of scaly crusting upon it.

June 1. The right leg to which the bandage was applied is virtually well. At night when it is covered with cotton batting, there is no exudation and no itching. He begs to have the same applied to the left leg, which is still scaled and crusted, and at times intolerably itchy; formerly the right leg was the worse.

CASE IV. Cath. S., aged 65, applied at Demilt Dispensary, in November, 1877, with chronic eczema rubrum of the left leg, of two years duration. As she was obliged constantly to be on her feet, she was treated with but indifferent success.

Feb. 19. To-day a rubber bandage was applied.

Feb. 26. Leg very much better.

March 5. Still marked improvement. She did not return after this date, and as she had paid for the bandage and it gave satisfaction we may believe that the ultimate result was good.

CASE V. Ellen C., aged 50, applied at Demilt on February 20th, 1878, with eczema rubrum of the right leg; she was treated with moderate success for a while.

March 2. A rubber bandage was applied and other treatment stopped.

March 16. The leg is much better, the swelling has disappeared, and the limb presents a smooth, moist, and slightly exuding surface, over which the enlarged papillæ are plainly evident. The

patient expressed herself as much relieved; she has not been seen since.

CASE VI. George C., a fairly developed young man of light hair and delicate skin, aged 17 years, applied at the New York Hospital Out-Patient Department, May 3d, 1878, with an eczema of the right leg, the result of an injury two months previously. Under appropriate treatment there was considerable improvement, when on

May 20, the rubber bandage was applied and other treatment stopped.

May 24. Considerable improvement; much of the raw surface is healed, there being very little exudation when the limb is bared. The itching, which was previously considerable, ceases while the bandage is on. Several small ulcers which existed are healed, and there is some artificial eruption excited by the bandage, in the way of small, scattered, acutely inflamed, and very superficial pustules; for these he is ordered first to cover the limb with thin muslin, and then to apply the bandage.

May 27. Very considerable improvement; the acute irritation has disappeared and most of the eczema is well.

CASE VII. Thomas C., aged 56, a night-watchman, applied at Demilt, November 3d, 1877. The whole right leg was the seat of an eczema from the knee down, largely due to varicose veins, the result of his occupation, although there was also some eczema on the arms. After a short course of treatment with diachylon ointment and a cotton bandage, on November 24th, the rubber bandage was applied in the presence of the class, and all other treatment was discontinued.

Dec. 1. Very great improvement, much of the moist surface is smooth, dry and glossy; the itching has ceased: he has continued his occupation, and remains standing all night with ease.

Dec. 8. There is still very great improvement, and the surface is largely covered with healthy epidermis; there is no itching, and none of the aching pain from the varicose veins. The patient expresses himself in the highest terms as to the very great relief to all the symptoms afforded by the bandage. Three days after this his wife came bringing the bandage, saying that the patient had met with an accident, breaking his thigh, and as he was removed to a hospital the bandage would not be needed.

CASE VIII. William McC., a laboring man aged 53 years, was first seen March 11th, 1877, at the Out Patient Department of the New York Hospital. He had a patch of chronic, thickened eczema, about four by two inches in diameter, over the middle of the left tibia: it had been of at least three months duration. A rubber bandage was applied without other treatment, and on

March 15th, it was recorded that there was great improvement in the appearance of the patch, and that the itching which had before been distressing had about ceased.

March 27. Still great improvement, the patch is nearly well.

The treatment was ordered to be continued and the patient did not return.

CASE IX. Mrs. S., aged 53, a fleshy lady, who had always enjoyed excellent health, came to my office April 6th, 1878, with a patch of hard, thickened, rough, and dry eczema on the right instep; also with some eczema on the left foot and on the right forefinger. The patch on the right instep extended nearly around the ankle, and was nearly three inches in width; it itched excessively. She had had a similar eruption two years previously, and had been treated for the same by another practitioner with little benefit, from February to June, 1877.

She was given treatment suited to her case, and made slow but steady improvement.

May 18. The surface on the right ankle is now dry and scaly, and still gives much annoyance by the itching. The thickening does not yield to considerable stimulation, and a rubber bandage is applied from the toes to the knee.

May 25. The affected patch has improved greatly beneath the rubber, the itching ceased while it was on. Three days ago she left it off and the same day was greatly exposed to cold, riding a long distance; the following day she had a severe chill with high fever, and yesterday the upper part of the leg became hot and red in blotches, swollen and burning, and to-day there are large patches of congestion along the whole middle of the leg. She feared that this was caused by the bandage, but was assured to the contrary; the eruption did not at all resemble the very superficial eruption of minute pustules which the bandage sometimes occasions; it was probably due to the sudden and severe exposure of the leg to the cold, after the tissues had been relaxed by the profuse sweating which occurs beneath the rubber. She was ordered a cooling lotion of lead and opium, with elevation of the limb, and an alkaline diuretic.

May 28. The acute eruption has subsided, leaving the original patch much improved by the rubber treatment, though there is still redness and thickening.

June 17. To-day there is very much less thickening; there is no itching while the bandage is on; but when removed at bed-time, the desire to scratch the part is still severe. For this she is directed to rub the diseased surface with the compound tincture of green soap, and to apply diachylon ointment during the night, carefully removing it wholly before replacing the bandage in the morning.

CASE X. Elizabeth O'H., aged 36 years, was first seen by me at Demilt, January 17th, 1878. She came for the treatment of large and painful ulcerations on the left leg, mainly about its middle and upper part, with the history of their having developed from a scratch received five months previously. The whole leg was the seat of a large, smooth, somewhat contracted cicatrix from a scald early in life.

Although there was considerable varicosity of the veins, the

ulcers had so much the appearance of syphilis, that in spite of the absence of corroborative history, (which is so often wanting in women) she was placed upon an anti-syphilitic treatment, which was continued for over six weeks without producing any improvement in the sores.

At the end of this time an eczematous eruption developed spontaneously upon the right leg, which was also somewhat varicose, and on March 14th a rubber bandage was applied over the eczema; a mixture containing acetate of potassa was given, and the ulcerated left leg was still treated with a mild calomel ointment.

March 26. The itching of right leg has about ceased, and the condition is much improved; no change in left leg.

April 11. Still improvement in eczema; no other local treatment but the bandage.

April 26. The eczema is about well: bandage continued on account of the varicose veins.

June 15. The results of the treatment of the eczema were so good, that the patient has cut the bandage in two, in order to have the same applied over the ulcerated limb, and still to continue the support to the varicose veins in the right leg.

The two following cases of eczema treated in this manner, are furnished me by my friend, Dr. F. B. Lawson, who employed the bandages at my suggestion:

CASE XI. Mrs. A., German, aged 38, married, with seven children; besides attending to household duties, she stands many hours behind a lager-beer bar. She was found in bed, pulse 110, temperature 102° , complaining of great pain in right leg; bowels constipated, has headache and backache. The right leg below the knee was enormously swollen, hard and hot, and the whole surface red, or covered with thick crusts, a perfect type of eczema rubrum, with varicose veins.

The bowels were relaxed with compound cathartic pills; a diuretic was given, and the crusts were removed by means of repeated, cold flax-seed poultices; on the following day a rubber bandage was applied from the toes to the knee, and a towel was directed to be kept wet with cold water over the bandage.

Three days later the patient was going about the house as usual, and said that her leg had not felt better for years; there was great reduction in the size of the leg, and the redness had almost disappeared. She applied the bandage herself with ease, washing the part every evening on removing it. Two small ulcers which existed near the internal malleolus were healing well.

Four days later she called at the office, the leg looking well and the ulcers healing.

May 1. Nine weeks later, the affected leg was about well, and a common roller bandage was ordered in place of the rubber one. The left leg was found to be swollen and tender about the ankle; a rubber bandage was applied, but it gave so much pain that it was removed and a thin layer of cotton interposed.

June 2. The right leg is quite well of the eczema, and the left was very comfortable until she left off the rubber bandage a few days ago, when it again became swollen and hot; she had been standing much. She is several months pregnant.

The very great severity of the case, and the very rapid yielding of the disease to the rubber bandage, even during pregnancy, are points of special interest.

CASE XII. Mrs. C., aged 63, a widow, who had had ten children, presented herself with an eczema of the right leg, especially marked near the ankle; it itches and burns, and at times discharges serum; there is a small ulcer over the malleolus. A rubber bandage was applied, with instructions to cleanse the leg and re-apply the bandage daily. She was not seen again for many weeks, when the affected leg was found to be entirely well. She said that the improvement had begun immediately on the application of the bandage.

CASE XIII. J. E., aged 38, was admitted to the New York Hospital, service of Dr. G. A. Peters, April 15th, 1878. He had had the femoral artery ligated two years previously for popliteal aneurism, and since that time has suffered from eczema of the leg. He was given a wash of bi-carbonate of soda, a drachm to the pint, to be applied on sheet-lint, and a rubber bandage over it.

At the end of three weeks he was discharged cured.

CASE XIV. The following case exhibits the value of this plan of treatment in chronic dermatitis, a state often closely resembling eczema, but due to local causes entirely. In this instance it was owing to the woman's occupation which necessitated her being all the time on her feet: Caroline McC., an English woman of 50 years, came to me at Demilt at the end of September, 1877. She had a considerable amount of varicose veins, and the whole right ankle was surrounded by a mass of inflamed and thickened skin, which made standing very painful. Some portions of the diseased skin showed immensely hypertrophied papillæ, which stood out separate of a brilliant purple color, and which bled easily when much irritated. The condition had lasted many, many years, and at times she was almost, if not quite, laid up with her sore foot.

She had long had treatment from many hands, and seeing that mild measures had always been futile, she was given a pretty strong caustic potash wash, with directions to rub and stimulate the parts excessively once a day, and then to cover them with a zinc ointment (3j ad $\frac{3}{4}$ ss.) To accomplish this she promised to rest for a while. There was very considerable improvement following this plan of treatment, whenever resorted to, but as she got relief each time, she would then neglect the matter, and would return with the foot as bad as ever; she dreaded the pain of the caustic application, and begged for other treatment.

February 9. Rubber bandage applied from toes to knee.

February 23. The leg is very much better; the thickening has

largely diminished, and with it the pain; the papillary prominences have about disappeared. She feels that she cannot do without the bandage.

May 7. The leg is all healed, and the thickening of tissue gone. She still has pain in it at times.

The following cases exhibit the value of this solid rubber bandage in ulcers of the leg:

CASE XV. *Very painful varicose ulcer of left leg.* Christopher O'H., a laborer, 53 years of age, applied at Demilt Dispensary, August 18th, 1877. He then had a varicose eczema of the posterior surface of the left leg, upon which an ulcer soon developed in spite of careful treatment, in consequence of his being on his feet continually. He attended quite faithfully, and at times the ulcer would almost heal, when his work would oblige him to neglect it, and it would become very much irritated.

February 29. The ulcer is very painful, about an inch in diameter, situated on the back of the calf on the lower half of the leg. He is confined to bed with it, and says he could not rise if the house were on fire. It bleeds very easily; the veins of the leg are considerably varicosed. A rubber bandage is applied from the toes to the knee while in bed.

February 23. To-day he presents himself before the class, and says that immediately after the application of the bandage he rose from bed, and has been up and around since, feeling perfectly comfortable. The ulcer bleeds as the bandage is removed. The day following the application of the bandage he walked several miles with perfect ease.

March 16. Ulcer healed; feels very well.

April 25. The leg remains well; patient is at work. He still wears the rubber bandage, and finds it a great comfort to the varicose veins.

CASE XVI. *Hard-edged varicose ulcers of right leg.* Lawrence G., a waiter-man, aged 57 years, came to the New York Hospital, Out-Patient Department, on March 3d, 1878, with very painful varicose ulcerations of the right leg. There were several indolent ulcers, with hard, everted edges, and unhealthy bases. He was quite incapacitated from work, and had failed to find relief from various remedies. A rubber bandage was applied at once from the toes to the knees, no other dressing being used. He was directed to remove it in the evening in bed, to wash the leg and the ulcers with tepid water, and to leave it without dressing during the night. The bandage was to be cleansed, and hung up to dry, and to be put on again in the morning, before stepping out of bed. In the day time he is directed to walk considerably.

March 10. There is great improvement; healthy granulations fill the cavity, and much of the hardened edges have melted away.

March 25. The ulcers have cicatrized from the sides, and all of them are about well. There is but one very small spot, one-quarter by two-thirds of an inch in diameter on the ankle, yet unhealed.

The patient did not return, and as the progress had been so extremely satisfactory to him, it is fair to suppose that he became, and remains quite well.

CASE XVII. Michael G., a laborer, first came to me at Demilt Dispensary, October 9th, 1877, with a varicose ulcer on the back of the right leg. He was treated with the ordinary stimulating treatment, with varying results, the leg being better and worse, until March 12th, when a rubber bandage was applied, and he was instructed how to apply it himself every morning.

As he had been a faithful patient, and was a hard working man, it is fair to suppose that his failure to return was due to the perfect relief afforded by the bandage.

CASE XVIII. Peter C., a laborer, aged 53 years, applied at my clinic at Demilt, March 5th, 1878. He had an ulcer on the left leg, probably due to varicose veins, as it possessed all the features ordinarily seen in such. I may here remark that these lesions are exceedingly common among those of the poor of this city, whose occupations require them to be long upon their feet. He was treated with a balsam of Peru ointment (3 j ad $\bar{3}$ j), which produced some benefit for a while. On March 23d a rubber bandage was applied, and the patient shown how to re-apply it, with directions to wear it until well. As he was at work, he did not return to report results.

CASE XIX. James F., a clerk, aged 48, applied in the service of my colleague, Dr. Morris, as an out-patient at the New York Hospital, in August, 1877. He had varicose ulcers of the leg, which were treated by approved methods, with but indifferent success.

In March Dr. Morris applied the rubber bandage, and in a few weeks the ulcerations had entirely healed, no other treatment being employed.

The following cases, occurring in the New York Hospital, in the service of Dr. Geo. A. Peters, are kindly furnished me, with his permission, by the house surgeon, Dr. S. S. Kahn.

CASE XX. G. H., aged 37, was admitted April 15, 1878, with a varicose ulcer of the leg, four by two inches, which had existed for two years. It was treated by strapping and stimulating ointment for two weeks, with no improvement. A rubber bandage was then applied, and changed every second day. Cicatrization took place very rapidly, and in seventeen days he was discharged cured.

CASE XXI. *Ulcer after severe laceration of leg.* F. M., aged 8 years, received a lacerated wound of the leg, eight inches long, from being run over; the muscles were torn, and the bone exposed. The wound was under the Lister treatment for fourteen days, when there resulted a granulating ulcer, eight by two inches in size. A rubber bandage was applied, and in three weeks it had cicatrized up to two and a half inches by one-half inch, and is progressing very rapidly at the time of this report.

CASE XXII. *Ulceration of the foot after severe laceration.* R.

D., aged 40, was admitted on March 2d, with a contused and lacerated wound of the dorsum of the foot, with compound fracture of the toe. When the slough separated, the anterior half of the dorsum of the foot was gone. The resulting ulceration was treated with usual measures until April 15, when it was about one-half its original size, but it had stopped healing, the edges became indurated, and the base indolent. Active stimulation failed to produce any effect; actual cautery failed to induce repair, and no change took place in it, until on May 15th a rubber bandage was applied.

June 3. The ulceration has made rapid progress in healing since the application of the bandage, and to-day there is a small, healthy, level, granulating surface, one-fifth the size of the original ulcer, which is healing very rapidly.

CASE XXIII. *Abscess over ankle.* J. L., aged 38, was admitted to the New York Hospital April 15, 1878, with an abscess of the ankle, which had opened spontaneously prior to admission. There was found a small opening from which sinuses ran in different directions; everything appeared sluggish. He was treated by astringent injections, and an ordinary bandage for six days, with little or no change.

A rubber bandage was then applied, and in six days more he was discharged cured.

CASE XXIV. *Ulcerations from burn of arm and forearm.* J. S., aged 42, was admitted December 20, 1877, with extensive burns of the face, back, neck, both arms and right ankle, received at the Barclay Street explosion and fire. After the immediate effects of the burn had passed off, including an erysipelas on the sixth day, the resulting ulcerations were treated by strapping, with frequent applications of nitrate of silver, and repeated skin graftings. Some of these latter took, but at the end of three months after the accident there was still a very extensive ulceration of the right arm, which progressed very slowly towards recovery.

March 24. The ulceration on the right arm extends from the wrist to two inches above the elbow, involving the entire anterior surface, and at the middle of the forearm reaching entirely around the member. A rubber bandage was applied over the whole forearm.

April 14. The ulcerated surface is becoming less; he is discharged, and made an out-patient, returning every second day; still to wear the bandage.

May 20. There are now but four or five ulcers left on the surface of the forearm, an inch and a half in diameter; the bandage to be continued.

CASE XXV. *Enormous ulcerations of arms after a burn.* G. H., aged 17, another victim of the Barclay Street disaster, was admitted December 20th, 1877. He was frightfully burned, much the same as the last patient, and was treated similarly for three months, with the result of having both arms covered with granulating surfaces, which refused to heal.

March 22. Rubber bandages are applied to both arms, which are the seat of enormous masses of exuberant granulations.

May 27. The healing has progressed rapidly and steadily, and now on the right forearm are only two spots of ulcerative surface, two inches in diameter, very healthy looking, and on the left arm there are also two ulcers, each about an inch in diameter. The granulations are level with the surface, and cicatrization is progressing well. The patient is still in the hospital.

CASE XXVI. *Ulcerations from a scald of thigh and leg.* R. S., aged 27, was admitted December 22, 1877, suffering from an extensive scald from escaping steam. The entire outer side of thigh and leg and ankle were implicated. On the separation of the slough at the end of a week, there was an ulcerating surface down the whole extent, to the breadth of four to five inches. It was strapped from January 12th to March 22d; grafted freely (about 40 grafts took); burned with nitrate of silver, etc.; and at the last date there was still a mass of exuberant granulations over almost the entire extent, which refused to heal.

March 22. Rubber bandages are applied from the foot to the groin.

May 20. The progress of cicatrization has been very rapid beneath the rubber; the improvement could be seen daily. By the end of a week the granulations were on a level with the skin. There is now but a single spot of ulceration on the thigh, an inch and a half in diameter, and one of about the same size on the leg. The discharge was very profuse for the first few days, so that the bandage was re-adjusted several times daily; this gradually diminished as the cicatrization progressed. The direction of the bandage was reversed every alternate day, to overcome irregularities in the granulations resulting from unequal pressure.

The contrast in the labor and expense of the dressing was very striking in this case. Before the use of the bandage about two yards of adhesive plaster were consumed daily in each dressing; with the bandage no other measures were required.

CASE XXVII. *Extensive and severe burns from nitric acid.* Edward D., aged 38, was admitted to the New York Hospital April 17, 1878. After the separation of the sloughs, rubber bandages were applied to the forearm and leg. The result up to June 3d has been a prevention of exuberant granulation, and a reduction of the size of the ulcerating surfaces about one-half their original dimensions. There were, however, some drawbacks in the case: sloughing took place unexpectedly over the crest of the tibia for about four inches. Although only moderate pressure was applied by the bandage, it was perhaps more than the weakened vitality of the tissues could bear. On the left forearm the bandage did well for a few days, when severe hemorrhage occurred twice beneath it, which finally required Paquelin's cautery before it was controlled.

In addition to the cases here detailed, I have employed the rub-

ber bandage in other cases, and I have reports of its use in the Mount Sinai Hospital, where certain cases did excellently under it; they need not be given. The bandage has also rendered excellent service in the hands of several other of my professional friends. The cases here narrated are quite sufficient to illustrate the subject, and all the experience I have thus far obtained confirms in every respect the claims made for this method by Dr. Martin; claims which are so extraordinary as to possibly give rise to a doubt as to their truth in the minds of those who were not assured of the writer's veracity, and who applied neither reason nor experience to prove or disprove the facts.

A few remarks in regard to the details of this method of treatment may render the subject more clear to my hearers, and may perhaps assist some in employing it.

First, in regard to the bandages: they are made of the best, solid, pure rubber, and are very elastic. They are twelve feet long and three inches wide, as I have employed them, though they may, of course, be made of any desired dimensions.* On one end a piece of cloth is cemented, an inch or so wide, to give firm attachment to the tapes which are to tie the free extremity. These tapes should, of course, be rolled inside, and the bandage prepared for application exactly as any other roller bandage. With a little care these bandages may be worn for a considerable length of time. In the first case I have given, the patient has worn one of Dr. Martin's bandages for more than six months, and it is now as good as when first applied, with the exception of one slight tear. Dr. Martin has known a single one to be worn two, three, or four years, and has even cured several successive poor patients with the same bandage, which was yet perfectly serviceable. It is to be remembered, however, that grease or glycerine must not be applied at the same time, for they will soon destroy the elasticity and worth of the bandage. That this is not necessary will be seen from the history of the cases, and from what will follow.

Second, as to the cases to which it is applicable: I have treated of eczema principally because this disease comes under my notice more than any other. Dr. Martin laid more stress on the treatment of ulcers. I may remark then, first, in regard to the principles of treatment involved, that the *idea* of the rubber bandage is the protection and support of the tissues, and where these are indicated it will do good. Much of the eczema of the lower leg is associated with, and more or less dependent upon, a

*The bandages I have employed are made by the Goodyear Rubber Curler Co., 729 Broadway, New York, and cost a dollar and a quarter each, for those of the dimensions given. Those employed by Dr. Martin are made of rubber twice as thick, and are of various widths and lengths. For those ten and a half feet long by three inches wide, I paid two dollars and a half each, or double the cost of mine. They may be obtained of T. Metcalf & Co., 39 Tremont Street, Boston, Mass.

varicose condition of the veins, and it is generally this element which makes the disease so rebellious to ordinary measures; and even where the veins are not distinctly enlarged, still the natural condition of eczema is one of capillary enlargement, and the gentle compression of the bandage remedies this.

The rubber bandage, then, is applicable to and serviceable in a large share of the cases of ordinary eczema, it being more especially valuable in chronic cases, such as ordinarily resist all measures commonly employed. I have put it on when there was an acute or sub-acute inflammatory condition, and again when there was simply the infiltrated tissue left after an eczema, with no inflammatory phenomena, and with equally good results, as the cases narrated show. The bandage may, and often does, for a short time, sometimes for a longer period, cause an eruption of its own, namely, a few scattered minute pustules, running their course rapidly; but this need not interfere with its employment. If it is annoying, a cotton bandage or piece of thin linen, well fitted, may be placed beneath the rubber, but as a rule this is not required, for this condition will cease of itself under the continued use of the bandage.

Not less serviceable, if indeed not more valuable, will this plan of treatment be found in that very large mass of cases which are now suffering from long standing, uncured, and that otherwise almost incurable condition of ulcer of the leg. To these the solid rubber bandage is of almost universal application, and of well nigh certain efficacy. Indeed, Dr. Martin states that of many hundred cases to which he has applied it during the last twenty-five years, "all, without exception, have been perfectly and absolutely cured." A strong statement, but one which my judgment and experience leads me to accept as true. In thus speaking, it is not affirmed that every case to which every practitioner may give a rubber bandage will be cured; but, with due care, and a little experience in selecting the cases and applying the bandage, and with a proper instruction to the patient, and obedience to directions on his part, together with, at times, some other treatment which the individual case may demand, I believe that it will be possible for every one of my hearers to cure all of the cases which apply to them for relief. And this is a very important assertion when we remember the thousands of uncured cases now taking their weary journey through life, with that most distressing clog, an uncured ulcer of the leg. Those, of course, which are syphilitic in origin cannot be permanently cured thus, but even in these it is of considerable service.

In addition to these uses of the rubber bandage, it is useful in ordinary varicose veins, even where there is no skin lesion, and as it can be adjusted day by day to suit the condition of the parts, it is much more manageable and satisfactory to the patient than either the laced or elastic stocking, while its continual yielding and contraction render it far superior to the ordinary inelastic

cotton or flannel bandage. At first patients will complain of the heat, and of the retained perspiration, but after a few days these will cease to give annoyance, and the comfort of the bandage will be appreciated.

Some of the cases I have given show the value of this method of treatment in ulcerations from other causes, as burns, etc., and the results in these cases are so striking as to leave no doubt of the very general applicability of this form of dressing, where protection, support, and pressure are required.

I have not had opportunity of testing the rubber bandage in other conditions, but, as suggestions for those who may not have access to Dr. Martin's paper, I may mention the other uses to which he has put this method of treatment.

In injuries and diseases of the joints, particularly of the knee and ankle, it has been found especially serviceable. In ordinary sprains it gives the greatest relief, and the patient may with advantage take exercise, the rubber answering in place of the ruptured or strained ligaments.

In effusion into the synovial sacs Dr. M. has found the rubber bandage of the greatest service, also in distension of the bursa mucosæ, as "house maid's knee." In this he has had perfect success in seven cases, the bandage being worn night and day for a month, the sac having been first thoroughly evacuated.

In œdema and anasarca of the limbs most perfect relief is afforded by this means. Dr. Martin has recently informed me that he has used this means with great service in phlebitis. Likewise in certain injuries of the bones, as in "green stick" fracture, the gentle, constant pressure of the elastic bandage over a splint has restored the normal condition.

In rheumatism and neuralgia about joints Dr. M. has found much benefit from the application of the rubber bandage, the warmth, moisture and pressure causing absorption of effused matter.

In regard to other conditions of the skin in which the rubber bandage might do well, I may mention psoriasis, exfoliative pemphigus, pityriasis rubra, xerosis, ichthyosis, lichen ruber, pruritus, true prurigo, elephantiasis Arabum, etc.

Third. A few words may be added as to the method of applying the bandage: the first care to be exercised is that it be not too tight, for it is possible by means of it to force all the blood out of the limb, and quite check the circulation, as when employed in Esmarch's bloodless operations. Ordinarily it need be drawn only just tight enough to perceive that there is the slightest possible stretching of the rubber, no more. The bandages should be applied from the toes, and with a little care they can be made to fit the limb perfectly with but little stretching, and they need never be "reversed," as in bandaging with cotton or flannel bandages; the heel as a rule need not be covered. I always apply them myself first, and have the patient watch very carefully, taking pains to give a little instruction as I make the turns, and

I find that even more ignorant patients in dispensary practice can apply them afterwards very satisfactorily.

It is better to apply the bandage while the patient is in bed ; that is, before he leaves it in the morning, and to remove it while in bed, after undressing, and I direct patients not to put the foot to the floor without the bandage. On taking it off at night, the rubber is to be immersed at once in water, and if the odor is very fetid, the water may contain thymol (1:1000), or a small proportion of carbolic acid. The leg is then to be washed off with lukewarm water and dried carefully ; if there is still a discharging, eczematous surface, it may be covered with cotton batting, and an ordinary roller bandage or other dressing applied for the night. If there is a raw, exuding ulcer, it may be covered with a rag and any mild protective ointment, as simple cerate, to prevent it adhering ; this grease must be well removed by wiping, in the morning, before the application of the rubber bandage. After the leg is dressed for the night, the bandage is to be removed from the water, dried and hung up to air for the night ; in the morning it is to be rolled up and applied while in bed, as before stated.

Sometimes I further aid the treatment by having the foot of the bedstead elevated with a couple of bricks, that the blood pressure of the limb may be lessened during the hours of sleep. If the leg is very hot and painful, much relief and benefit may be obtained by making cool applications outside of the bandage, as was done in Case XI.

A caution may be here given in regard to the removal of the bandage. In Case IX. it was left off on a very cold day, and the body was much exposed to cold, and, as a consequence, acute congestion of many parts of the skin of the leg occurred, which nearly developed into eczema, but which happily yielded to prompt treatment ; the tissues being softened by the rubber, and the sweat glands having been very active, the chill of the surface produced a congestion, which threatened serious trouble. In cold weather it might be prudent always to advise some extra protection to the limb for a while after leaving off the rubber bandage.

Care must also be exercised not to leave off the bandage too soon ; indeed, it should be worn for a shorter or longer period after the eczema or ulcer is apparently well ; when there are varicose veins the patients are very willing and desirous of continuing the application on account of the constant sense of relief experienced.

A very important point to bear in mind in relation to this method of treatment is, that as a rule, if the bandage is well applied, walking and exercise is a benefit rather than a drawback. In Case II., the patient with sub-acute eczema walked six miles a few days after the application ; and Case XV., with a very painful ulcer, rose immediately from bed and walked several miles on the following day, remaining on his feet working, until cured.

Thus far, I have said nothing in regard to cases to which this

method is not applicable, and for the reason that such cases have not yet presented themselves to me. Undoubtedly, cases will occur where the rubber bandage cannot be borne, and this side of the subject remains to be yet developed. I can only say that I have absolutely no negative experience to offer.

A word in reference to other or previous mention of the use of rubber tissue in the treatment of skin lesions. The only suggestion of its use at all similar to this of Dr. Martin's, is by Dr. Turney*, of Circleville, Ohio, who reported having treated seven cases of ulcer of the leg with the application of an Esmarch bandage wound very tight, "as long as it could be borne," (for ten or fifteen minutes) each day. Six of the cases were cured, the seventh one disappeared before the cure was completed; one of the cases was in a woman eighty-five years old, in whom the ulcer had existed for fifteen years. It will be seen that the *idea* in this was quite different from that of the continuous, lightly applied rubber bandage, as described in this paper.

In 1869, Hebra†, made a report on the treatment of certain skin lesions with vulcanized rubber cloth, which he had employed on the suggestion of Hardy, of Paris, made in 1867. In this he reports a certain amount of good results in eczema, and considerable benefit in pruritus and in diseases exhibiting epidermal thickening. But the applications of rubber here suggested are quite and entirely different from those I have described; the applications of Hardy and Hebra were made of rubber *cloth*, totally inelastic, and the element of pressure and support to the part are entirely wanting; whereas, the bandages here described are of pure, solid rubber, are extremely elastic, and the pressure and support afforded by them is an all-important element in the treatment.

I have used the impervious dressings as advised by Hebra, and have had some most excellent results in eczema of the hands from wearing rubber gloves, that is, of rubber cloth. I have also tried the impervious dressings on eczema elsewhere, but have never obtained results on the legs which satisfied me; whereas, with the rubber bandage as here described, the results have far surpassed my expectation.

More recently, Mr. Balmanno Squire‡, of London, has advocated rubber suits of clothing in psoriasis, and has reported some cases in which the eruption was removed in a remarkably short space of time. But this again is but a development of the method of Hardy and Hebra, the suits are made of rubber *cloth* and there is no pressure exercised.

I have made these references because some, who may have tried the simple application of rubber cloth, or who have even

* *London Practitioner*, May, 1876, page 367.

† *Archiv für Dermatologie und Syphilis*, 1869, page 1.

‡ *British Medical Journal*, Vol. I., 1876, pp. 311 and 586, and Vol. II., 1876, p. 43.

bound it on firmly with a roller bandage, and who have not had good results, might be led to think that the same might be expected from the method advocated in this paper. To these I can only say that there is the greatest difference imaginable between the firm, resisting, non-elastic cotton bandage, and that of soft, pliable rubber, which yields with every motion and yet exercises its ceaseless pressure and support, to an extent which can be regulated to the utmost nicety, with each day's changing condition of the part.

