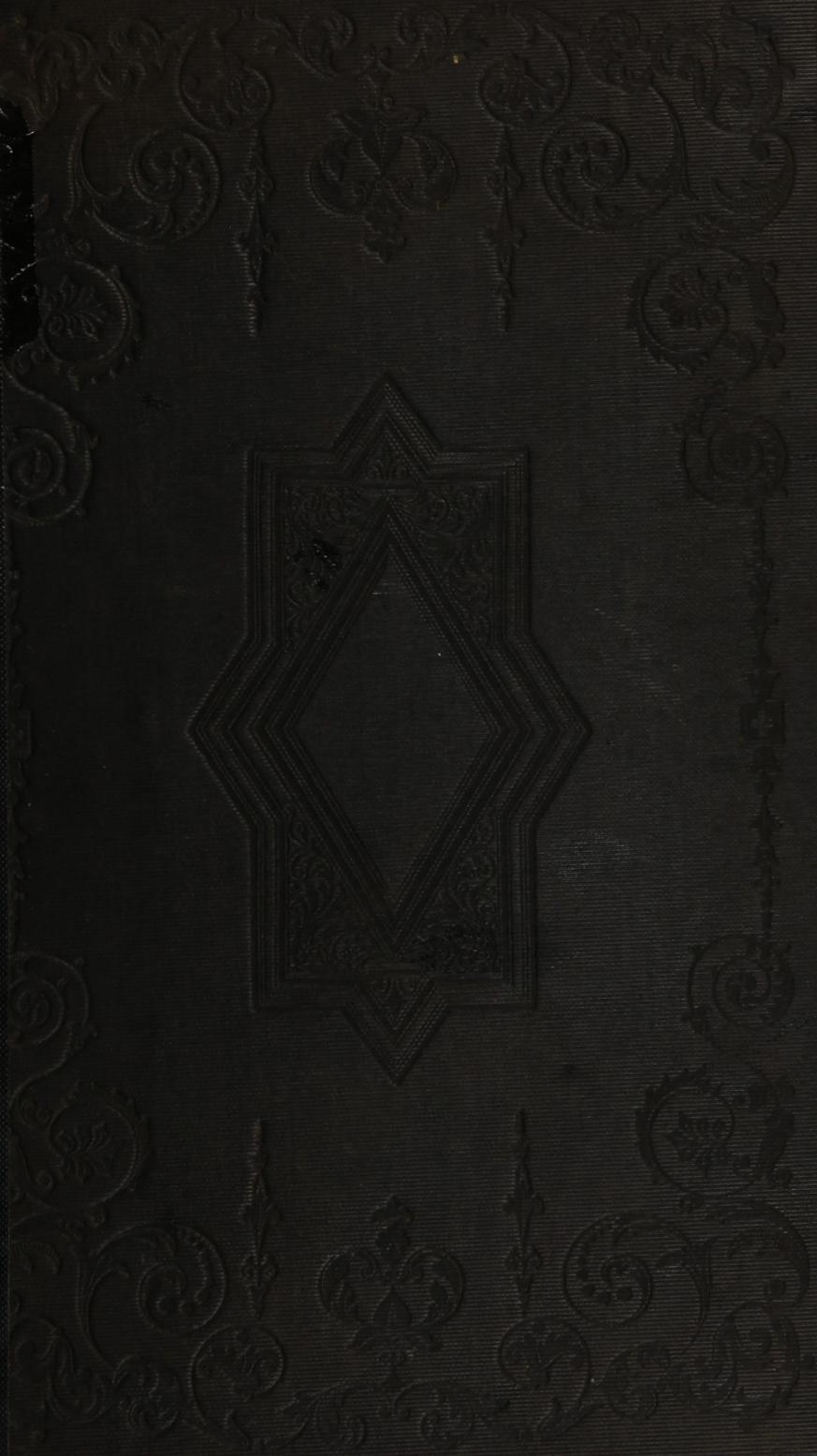


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ON

TREATMENT

OF

ULCERS ON THE LEG,

WITHOUT CONFINEMENT,

WITH

AN INQUIRY INTO THE BEST MODE OF EFFECTING

THE PERMANENT CURE

OF

VARICOSE VEINS,

BY

HENRY T. CHAPMAN, F.R.C.S.

LATE SURGEON TO THE ST. GEORGE'S AND ST. JAMES'S DISPENSARY; SOMETIME LECTURER
ON SURGERY AT THE SCHOOL OF MEDICINE ADJOINING ST. GEORGE'S HOSPITAL;
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WITH NOTES, SELECTIONS AND ADDITIONS

BY

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TREATMENT

ULCERS ON THE LEG

WITHOUT AMPUTATION

WITH

THE BEST MODE OF TREATING

Annex

PERMANENT CURE

WE

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1853

HENRY T. CHAPIN, F.R.C.S.

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INTRODUCTORY OBSERVATIONS.

Few surgical affections are brought under our notice more frequently than ulcers of the leg. In the better ranks of society they are very commonly met with, and under circumstances the most propitious to their treatment, often prove a source of great and lasting annoyance; but upon the lower classes, the evils they entail fall with tenfold severity; multitudes are more or less disabled by this malady, as the records of our hospitals, infirmaries, and dispensaries bear ample witness. Yet, numerous as are the cases treated yearly at these institutions, many are compelled to decline relief as out-patients, and not a few, wearied out by a long attendance, abandon all hope of a cure, and struggle on in laborious occupations for years under the infliction.

The extreme inconvenience resulting from the refractory nature of these diseases, more especially from their prevalence among those classes of community whose very existence depends upon a free and vigorous use of their limbs, coupled with the impracticability that much more than one-fourth of them can be admitted into the wards of a hospital for treatment,* appear to me sufficient motives for calling

* M. Parent Duchatelet, in his researches into the causes of the existence of ulcers of the leg among so large a proportion of the Parisian artisans, published in the twenty-eighth volume of the "Annales d'Hygiene Publique," states that, in eleven years, 3373 individuals were received into the hospitals of Paris with atonic or varicose ulcers of the leg. He further narrates that "out of 1565 who sought admission, the half of which were cases of a serious character, for want of room, only 337 could be

attention to any plan of treatment *not requiring confinement*, which, even if not *more* successful than those hitherto employed, possesses a decided superiority in point of simplicity, cheapness of material, and ready adaptation to the numberless modifications of the disease presented to our notice.

Such a superiority may fairly be claimed for the proceeding detailed in the following pages. My own experience, indeed, would lead me to conclude, not alone that ulcers of the leg, treated in this simple manner, get well as quickly and as soundly as under any other method, but that cases, unmanageable by any other system of treatment with which I am acquainted, will promptly yield to its judicious application.

Water dressing to wounds and sores of every kind is no novel practice; it is not even an improvement of modern surgery; we find it described by Hippocrates, and may, without much stretch of imagination, presume its origin to have been coeval with the earliest epoch of the cultivation of the art. Conformably, however, with that contempt for what is common so deeply rooted in human nature, its very simplicity has at all periods militated against its general adoption; and its restoration to notice, after more than one interval of neglect, has been due to the popularity it had first acquired at the hands of the charlatan; the beneficial operation of the simple element being ascribed to the virtues imparted to it by

received." Thus 1228 were rejected, not very far short of three-fourths of the sum total of those in need of assistance.

In London, it is probable that a still smaller proportion is admitted into the hospitals, the majority of applicants for admission being made out-patients, for the very sufficient reason that, if taken in, they would occupy the place of those suffering under more serious complaints; and a considerable number prefer attending as out-patients at these institutions, or at dispensaries.

charms and superstitious ceremonies. Much has been written on the subject during the last few years; and in our hospitals, civil and military, it has, in a great degree, superseded dressings of a more complex character.

By many surgeons it has been applied, in conjunction with the bandage, to the treatment of ulcers of the leg. Trifling, however, as the difference may appear between the modification described at p. 60, and the ordinary form of water dressing, the difference of effect is very considerable. I believe it to possess the advantages, without the disadvantages, of Mr. Baynton's method, with the important additional feature that it requires renewal much less frequently than strapping; and have long employed it, in preference to all other local treatment, in cases of large indolent ulcers, where no very high degree of morbid sensibility existed, but found myself at a loss what means to resort to, when, from excessive irritability, the sore would neither tolerate cold, nor the very lowest grade of compression.

The marked success obtained by the combination of warm water dressing, support, and warm bathing over the bandage, in Case XVI., after so great a variety of other measures had been tried in vain, during many months, induced me to repeat the same practice under similar circumstances, and with the most satisfactory result, as a reference to the cases in the Appendix will show.

The issue of these experiments having excited my attention, and directed it particularly to this subject, the necessity of endeavoring to define the conditions in which the cold or tepid forms of water dressing would prove most suitable, and place the choice upon better grounds than an appeal to the feelings of the patient, has led me on progressively, first, to

inquire into the mode which water, at the different temperatures employed, acted upon the minute vessels and nerves—by the agency of which the vital operations connected with the reparation of structure are conducted,—and secondly, into their pathological state in the several varieties of ulcers of the leg; in prosecuting which latter investigation, I have to acknowledge my obligation to Mr. Quekett, assistant curator to the Museum of the College of Surgeons, for the inspection of his hitherto unequalled preparations of injected ulcers.

Further, the inconveniences occasionally attending the treatment by strapping,—arising very commonly from its employment in cases to which it is unsuited,—and perhaps the disappointment of expectations too highly raised, have weakened confidence therein, and induced many surgeons to abandon it, and all other modes of treatment on the principle of support, and recur to the old practice of laying up the limb entirely. In recommending, therefore, a proceeding bearing a very close affinity to that of Baynton, I have been constrained to enlarge, unnecessarily, as some may think, upon the greater permanence of the cure effected by bandaging, and the principles on which its successful application depends. And, finally, although such a disclaimer is scarcely needed, I must disavow all pretension of putting forth an imperfect essay as a complete treatise on ulcers of the leg, or of advocating the merits of any one system of treatment to the exclusion of other measures.

Having been desirous of confining myself, in the body of the work, to points of practical interest, I have abstained as much as possible from theoretical speculation. The following remarks may not, however, here be considered out of place.

In accordance with the statements of nearly all who have recorded the results of a microscopical examination of the state of the capillary circulation during inflammation and granulation, I have spoken of the minute vessels in a granulating surface as dilated and *relaxed*, conveying thus an impression of debility. But the process of reparation is, according to Muller, "similar to the growth of all organized parts, only much more rapid," and the nerves and capillaries are described (p. 18) as "actively engaged" in carrying it on, which implies a contradiction in terms; since it is not easy to reconcile a diminished power in an agent with an increased exertion of its activity. Neither does the extraordinary vascularity of this rapidly organized structure appear consistent with a state of debility in the part; on the contrary, the manner in which the capillaries are seen to ramify throughout the new deposit, in the preparations just referred to, shooting forth even beyond the organized papillæ which sometimes constitute the free surface of the ulcer, impress the observer with the idea that what he is regarding must be the result of extraordinary vital energy. In short, to borrow the language of Hunter,* when commenting on the dilation of the capillary vessels in inflammation, may we not "suppose it something more than simply a common relaxation;" may we not "suppose it an action in the parts to produce an increase of size to answer particular purposes?"

A certain amount of relaxation or dilatation of these vessels may thus be a necessary prelude to the reparative process, for the purpose of retarding the flow of blood through them, in order to favor the deposition of what Bordeu has

* Treatise on the blood, inflammation, &c., p. 356.

termed so emphatically "la chaire coulante;" and perhaps to facilitate the development of new capillaries, described by Mr. Liston as projected into the new and adventitious structure from that beneath it.

Should this distention be excessive, as in an ulcer in a depending part, especially when the veins of the limb are varicose, the blood stagnates entirely, and, if hemorrhage does not occur, reparative action is interrupted. It would seem, moreover, that the pressure from within—uncontrolled by position or support—acting upon the yielding parietes of the capillaries, tends to generate a disproportionate vascularity in the new structure; a comparative examination of the large, purplish, semi-transparent granulations of what is termed a varicose ulcer, and the small, firm, florid granulations of a healthy sore,—together with the evidence of the state of the vessels furnished by Mr. Quekett's injections, (see p. 107,)—indicating that one of the most essential conditions to sound cicatrization is the maintenance of a due proportion between the vascularity and the rate of interstitial deposit in a granulating surface.

INTRODUCTION OT THE AMERICAN EDITION.

In offering the present work to the medical profession of this country, it has been my object to present them with a manual upon the subject of ulcers and varicose veins, which has long been required by them. Several authors have written upon these subjects, but as their productions have not been condensed or systematically arranged, their utility has been lost sight of, and their value but little appreciated. In order, therefore, to accomplish this arrangement, and render the subject of practical utility and interest, I have in undertaking the editing and republication of this work, added to it various notes and selections, the advantages of which I trust will be duly appreciated.

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87 West 7th Street, Cincinnati, Ohio.

ON THE

PECULIAR CHARACTERS WHICH DISTINGUISH

ULCERS OF THE LEG.

NOTWITHSTANDING the opportunities afforded for studying these affections, and the labor which has actually been bestowed upon the subject by a long list of writers, some degree of uncertainty appears still to prevail upon many points, both theoretical and practical, connected with it. Not only are the nature and source of the peculiarities which characterize ulcers of the leg matters of dispute; the very characters themselves which constitute the difference between them and ulcers of other parts are not very definitely determined; or, rather, scarcely any attempt is made to discriminate them. The epithets, healthy, inflammatory, erysipelatous, phagedenic, gangrenous, weak, irritable, indolent, callous, and varicose,—to say nothing of the vague terms, foul and ill-conditioned,—applied to these sores in treatises expressly devoted to this province of surgery, would almost lead to the conclusion, that so many distinct species of ulcer are met with in the lower extremity, each one differing

ON THE PECULIAR CHARACTERS WHICH

from the others in its nature and characters, as well as from ulcers occurring in other parts of the body. If, following the example of some influential authorities, to the catalogue above drawn up, be added those arising from specific sources, and from diatheses, the subject will really embrace a large segment of our entire nosology.

Many attempts have been made to reduce these multifarious affections to some order, grounded upon real or supposed points of resemblance, but none of the classifications hitherto proposed are perfectly satisfactory in a practical point of view.*

As the first step towards attaining this object, and, at the same time, dispelling much of the perplexity arising from their apparent variety, it seems to me that we must at the outset, draw a strong line of distinction between ulcers of the lower extremity impressed with features peculiar to that region—or, at any rate, which are so uniformly present as to be fairly regarded as characteristic—and those which they possess in common with ulcers of other parts. Tried by this rule, let us examine how far distinctions founded upon investigation

* Of these the best known and most elaborate is that of Sir Everard Home, four of whose six classes are based upon the old terms, healthy, weak, inflammatory and indolent; for which, however, he has substituted what he assumes to be the proximate causes of those conditions—the strength or weakness, excess or deficiency, of *action* in the part or constitution,—but without defining the precise meaning which he attaches to the word *action*; his last two divisions embrace specific ulcers, and those which are prevented from healing by a varicose state of the veins. Dr. Thomson avows that he prefers the old nomenclature; and Sir Everard himself very frequently recurs to it.

into the nature and peculiarities of ulcers generally will practically apply to those of the leg.

Ulcers, says Fallopius, are generally distinguished from each other by the causes which give rise to them, the symptoms they exhibit, and the parts they attack; grounds of discrimination recognized and adopted by subsequent writers, among whom I need only particularize Professor Thomson.

To the first head must be referred the divisions of ulcers into simple and specific, local and constitutional.

In treating of ulcers of the leg, however, distinctions founded on the primitive cause of the malady are of far less practical value than in similar affections occurring elsewhere, since, with the exception of specific sores, in which it is all-important to ascertain the original source of the disease, it is not so much with the cause which has given rise to an ulcer in this region that we are practically concerned, as with the source of its intractability at the time we are called upon to treat it.* Thus, the origin of a simple ulcer of the leg may be purely local, but its intractability may depend, in a great measure, upon constitutional causes, and *vice versa*—although as experience proves, the intractability peculiar to ulcers of the lower extremity is much more frequently the result of local than constitutional causes. At their origin, moreover it cannot be said that there is anything peculiar or characteristic in ulcers of the leg; whether simple or specific, local or con-

* "It is immaterial," says Sir Everard Home, "whether in its origin an ulcer was healthy, weak, or irritable; if not cured within a certain time, it becomes indolent."—Practical Observations on Ulcers of the Leg, p. 189. An admission which materially diminishes the practical importance of classifications.

stitutional, they do not, in their primary stage, differ materially from diseases of the same kind affecting other parts.

The symptoms or aspects of ulcers have likewise been made a ground of division, with what degree of success, Dr. Thomson has very fairly determined in the chapter on ulceration in his valuable *Treatise on Inflammation*:—"The appearances which different ulcers exhibit," he remarks, "seem, at first sight, to afford a good foundation for establishing distinctions between them. They do so in reality in many respects." . . . "It is to be regretted, however," he continues, "that the characters upon which the distinctions of ulcers, as well as of many other local diseases, are founded, are neither very uniform in their appearance, nor easy to distinguish from one another. Not only are the local appearances which present themselves in simple ulcers liable to great variations in the different stages of the same individual affection, but they are often apparently the same with, or, at least, not very easily distinguishable from, those which occur in specific diseases; and require for their cure peculiar modes of treatment."

The appearances of these sores, therefore, may afford useful indications by which their treatment may be regulated, but form a very insufficient basis for classification; and if this is true with ulcers generally, we shall find it more especially so with regard to ulcers of the leg, many of the various aspects, or phases, which have been hastily adopted as grounds of distinction, being but accidental features engrafted upon them.

Of the numerous epithets applied to them, some few denote characteristic features, and unquestionably lead to important practical distinctions; the majority, however, are derived

from appearances impressed upon them by natural or morbid processes common to the whole frame; thus, the inflammatory, erysipelatous, phagedenic, and sloughy varieties, are simply ulcers under the influence of different grades, or kinds, of inflammatory action; and the terms healthy, weak, and indolent, apply to stages or conditions of an ulcer, dependent upon a more or less active discharge of the vital functions of the part or constitution. The epithets indolent, callous, irritable, and varicose, may, with more justice, be regarded as characteristic of ulcers of this region, although, as will presently appear, the peculiarities to which even those characters are traceable may, strictly speaking, be regarded as accidental rather than essential.

[We cannot understand why Dr. Chapman should object to the usual classifications in this disease, for even if we admit that an "ulcer is an ulcer," and what authors discriminate as a species is only a condition, it is yet as rational as the author's own arrangement, and it is as well to say an indolent ulcer as to say an ulcer in an indolent condition. The same system might with propriety be urged against our present classifications of fevers or inflammation, and we doubt whether even the author would willingly lay aside our nosological arrangement in these diseases.—N.]

Since, then, it appears that neither the origin nor aspects of ulcers of the leg will afford us certain grounds by which to distinguish them one from the others, or from similar affections of other parts, let us inquire, in the third place, whether features more peculiar to them may not be derived from their

locality? To determine this, we must first define the characters of simple ulcers generally; and next endeavor to ascertain in what particulars ulcers of the leg differ from them.

What do we understand by a simple ulcer?

To answer this question, it is not necessary to occupy time by any inquiry into the nature of the ulcerative process, many sores being so denominated with whose origin ulceration has had nothing whatever to do; neither is it against that process that the treatment is directed, but against its results, in ulcers of the leg, frequently remote both in characters and period.

No definition of the term can be framed more accurate and comprehensive than that contained in the before-cited chapter of Dr. Thomson's work:—"A suppurating surface," he observes, "when it is long in cicatrizing, and when it passes from a healthy to a morbid state, may, according to the modern acceptance of the word ulcer, come under that designation, without ulceration having been developed in it. Every suppurating surface of long standing, taking the word in this extended signification, may be considered as an ulcer; at any rate, the epoch at which it ceases to be a wound or abscess, and becomes an ulcer, is not very clearly defined. This proposition is so far true, that in the definition and classification of ulcers, authors have always been obliged to commence with the healthy condition of the suppurating surface, or, in other words, to commence with what they term a healthy ulcer."
... "Between simple suppurating surfaces recently produced in a healthy subject, by a wound or burn, and which have a tendency to heal readily, and suppurating sores which manifest little or no disposition to cover themselves with a cicatrix; a great variety of morbid phenomena exists, which

it is necessary to distinguish one from the others, because they require different and even opposite modes of treatment."

A reference to the cases detailed by all who have written on the subject will show us that ulcers of the leg, as a class, do not belong to the grade, in Dr. Thomson's scale, of "suppurating sores which have a tendency to heal readily:" the ulcers treated were almost invariably of long standing,—in some instances, they had continued for periods of ten, fifteen, or even twenty years; their origin was extremely various; and, in order to convey an impression of their great diversity of aspect, the whole string of epithets quoted at the commencement of this section are exhausted. One trait, however, is common to them all—a sluggishness or indisposition to heal under treatment which ordinarily proves successful with ulcers situated elsewhere. It is from this circumstance, and the degree to which they cripple active exertion, that they derive their importance; it is this peculiarity—whatever may have been their origin, however various their aspect—which has attracted the attention of surgical writers from the earliest period, and has caused them to be treated of almost as a distinct branch of surgery.

Adopting Dr. Thomson's definition, therefore, ulcers of the leg clearly fall under the description of "suppurating sores which manifest little or no disposition to cover themselves with a cicatrix;" and it is to discover the source, or sources, of this intractability that the attention of the surgeon must be directed, in order to enable him to decide with confidence upon the treatment best adapted to overcome it in any given case.

[Now this does not grow out of any specific cause when applied to ulcers of the leg generally, nor is there any difference of animal structure or organization in these parts which favor their development and continuance as may appear to some authors. This misconception no doubt has caused these separate classifications by most surgical writers. The true cause of this seeming difference undoubtedly depends only on the posture of the limb, not on the condition of the structure; for I have found in my own practice that these ulcers will heal as readily as on any other part of the body, if the patient is placed in a recumbent posture, and the limb prevented from assuming a perpendicular position.—N.]

CHAPMAN'S TREATISE ON ULCERS. 13

SOURCES OF INTRACTABILITY.

VARIOUS causes have been assigned for this extreme indisposition either to heal spontaneously, or to yield under treatment which ordinarily proves successful in curing simple ulcers affecting other parts. Assuming that the degree of vital energy in a part is proportionate to its remoteness from, or proximity to, the heart, and inferring, as a necessary consequence, that the reparative process must always be carried on less vigorously in the extremities than in any other region of the body, some writers have conceived that an originally defective vitality in the legs is quite sufficient to account for the peculiarity. By others, and those by far the most influential by numbers and authority, it has been ascribed, partly to this cause, partly to the mechanical impediment to the circulation arising from their dependent position.

Whatever may be the amount of influence exerted by the former of these causes, that of the latter may be easily demonstrated; as long as the limb is maintained in the horizontal position, no very perceptible difference can be detected between a simple ulcer of the leg and one situated elsewhere; but immediately the patient stands, or allows the foot to hang

down, the surface and circumference of all but the most callous of these sores present a tumid, livid aspect, a copious exudation of serous ichor takes place, and, not unfrequently, a gush of blood from the loaded vessels occurs;* let the leg be raised to its former position, and a rapid alteration for the better is observed; the turgidity of the vessels disappears, and a hue, more or less florid, succeeds to the livid tint resulting from the dependent posture.

The following details of an experiment recorded by Dr. Hastings,† in which he traced, by the aid of the microscope, the state of the capillary circulation, from the commencement of inflammation to the formation of a slough, and, subsequently during the granulating process, until cicatrization was completed—will enable us to form a more precise estimate of the extent to which reparation must be disturbed by this cause.

June 24, “By the application of liq. ammoniæ to the web of a frog’s foot, dilatation, first of the smaller vessels, afterwards of the larger arterial and venous trunks, was produced. The web, to the naked eye, seemed much inflamed. In seventeen minutes the majority of the vessels” were very red, and the blood was nearly stagnant.

“On the 25th, the web appeared inflamed to the eye, and was covered with dense mucus, which was readily washed

* See the case related by Mr. Hunter, and his deductions therefrom.—Treatise on Inflammation, chapter on Granulation, section 11. Mr. Whately’s tenth case is a still more striking illustration of the injurious effects of the dependent position on ulcers of the leg.—Whately on Ulcers of the Leg.

† Treatise on Inflammation of the Mucous Membrane of the Lungs, p. 84.

away. The blood in most of the vessels was of an arterial red color, and stationary.

“On the 30th, the texture of the web appeared less firm; the blood was stationary in all the vessels; in many it had become of a yellowish brown color, whilst in others it still remained red.”

A slough had now formed.

“On the 2nd of July, the vessels at the sides and edges of the web were regaining their size. The blood moved faster, and the globules began to appear. In the centre of the web the motion of the blood had quite ceased, and it was of a yellowish brown color. At one point the sphacelated had separated from the living part of the web.

“On the 3rd, the centre of the web had entirely sloughed away. An oval hole was formed in it. The edges of that part of the web from which the dead portion had separated were ulcerated. All round the ulceration the vessels were dilated.

“On the 4th, the vessels distributed on the ulcerated part, and its immediate vicinity, were much dilated, the blood was very red, no globules were seen, and it moved slowly. In all other parts of the web, the vessels had nearly resumed their natural size, and the blood moved in them with considerable velocity.

“On the 6th, the ulcer was healing. The capillaries around the ulcerated part were less dilated, and the blood rather lighter colored, but its motion was very slow.”

From the 8th to the 11th, the healing of the ulcer proceeded steadily, the dilatation of the capillaries diminishing gradually, and the velocity of the blood's motion increasing;

and, on the 12th, when it was perfectly cicatrized, the circulation had nearly recovered its natural state.

In three other instances, where ulceration was produced, similar results occurred.

The ordinary condition, therefore, of the capillary vessels of a part, during inflammation and the healing of an ulcer, is that of dilatation, apparently from relaxation or exhaustion of their tonicity; and the circulation in them, even up to the point when cicatrization is accomplished, is carried on more languidly than in health.

The correctness of these conclusions is fully established by the observations of Drs. Wilson, Philip, Kaltenbrunner, Gendrin, and others.

In his Croonian Lectures, published in the Philosophical Transactions, Sir E. Home has described the magnified granulations of a healthy sore as presenting an appearance of "eminences consisting of small clusters of tortuous blood vessels;" and in a paper by Mr. Liston, "On the Arrangement of the intermediate vessels on surfaces secreting pus," in the 23rd volume of the Medico-Chirurgical Transactions, illustrated by a profile sketch of injected capillaries of an ulcer, by Mr. Dalrymple,—of which, with that gentleman's permission, a copy is annexed,—he speaks of these vessels as "enormously and irregularly dilated—varicose, in fact." Some portion of this excessive dilatation may be the result of the injection, acting upon the yielding parieties of the newly formed vessels; but in that case it would only afford us a more faithful representation of the condition of the capillary circulation, in a neglected ulcer of the lower extremity.

SOURCES OF INTRACTABILITY.

A section of injected Granulations, magnified about four hundred diameters.



a. The free surface.

b. The attached surface.

From these observations we obtain a sufficient insight into the state of the capillaries, not merely during the granulating process, but throughout the preceding stages of the inflammatory attack. Into all the functions discharged by the capillaries, however, the nervous influence enters largely; and although we may not be able to define the nature of its agency, much less determine the share borne by each, the condition of the nerves in any part called upon to make an extraordinary effort must not be overlooked.

Following up this view of the matter, we may fairly divide the progress of an ulcer, from its origin to its cicatrization, into three periods, and inquire what is the state of the nerves and capillaries in each period.

In its first, or initial stage,—that of its origin in the destructive action, whether suppurative, ulcerative, or gangrenous, resulting from the inflammatory attack,—an areola of inflammation still surrounds the sore, the edges of which are more or less elevated by the deposition of coagulable

SOURCES OF INTRACTABILITY.

matter;* its surface presents no appearance of granulations, and the discharge is watery or viscid; the capillary vessels on the confines of the ulcers are dilated and relaxed, the nerves enfeebled, and, generally, morbidly sensitive.

During the second period—that space of time which intervenes between its outbreak and the establishment of healthy granulation—the lesion of nerve may have subsided, but neither nerves nor vessels have yet recovered tone sufficient to enable them to resume their functions. In those parts of the frame where no impediment to the freedom of the circulation exists, either from position or any other cause, a sore in a healthy subject passes rapidly through this period; of which we have examples daily in wounds of the scalp. But where a great degree of general or local debility, or any obstruction to the circulation, is present, an indefinite prolongation of its second stage occurs, and the ulcer acquires an atonic habit; granulations form very slowly, are large, flat, and pale, or of a purplish color; the discharge is more serous than purulent; and, after a time, the skin at the edges of the sore becomes thickened and white. It is now a confirmed indolent ulcer.

This is not only in itself a morbid state, but, as long as it continues, exposes the ulcer to other morbid actions; the slightest accident may excite phlegmonous, or erysipelalous, in-

* "Tous les troubles inflammatoires cessent aussitôt que l'inflammation s'est évanouie; mais quelques produits de l'inflammation restent encore dans les organes; c'est une relâchement des vaisseaux, un certain engorgement, et quelquefois une perte de substance."—Kaltenbrunner, *Recherches Experimentales sur l'Inflammation*. Repertoire General, t. iv. p. 223.

flammation, according to the general health of the patient; or excessive irritability may be superadded to its indolence.

“We see enough,” taught Mr. Abernethy, “in bodily disease, to warrant the opinion that weakness, when unexcited, is likely to degenerate into indolence, and when provoked, to manifest irritability.”*

In the third, or granulating stage, both nerves and capillaries are actively engaged, under favorable auspices, in carrying on the healing process, by the exercise of those functions of which they may be said to constitute the organ.† Of this we are made cognizant by the rapid growth of small, round, firm, florid granulations, covered with genuine pus, the well-known characteristics of what is usually termed a healthy ulcer.

Through these three stages, or periods, an ulcer may advance or retrograde, according as circumstances favor or re-

* Lectures on Surgery, p. 103.

† “The constant renovation of the organs when once formed,” says Muller, “seems really to depend on the influence of the nerves. . . . To the influence of the nervous system on the action of the capillaries may also be referred, the sudden changes observed in the condition of wounds after violent affections of the mind.” And in the section on Granulation, “The suppurating margins and base of the wound advance so as to diminish the size of the wound by the growth of particles already organized . . . by interstitial assimilation . . . a process similar to the growth of all organized parts, only much more rapid.” In interstitial assimilation “each particle in the meshes of the capillary network assimilates to itself more nutritive matter, while at the same time the number of capillary vessels increases in equal proportion with the volume of the solid tissue.”—Physiology, translated by Dr. Baly, pp. 373, 374, 377, 425.

tard the establishment of the restorative process; in other words, according as the nerves and capillaries—throughout that process in a feebler condition than natural—are aided, or obstructed, in the performance of their office by the state of the part or of the constitution.

In the lower extremity, where the heart and arteries have to contend against the gravitation of the blood in the veins, the circulation, even in health, is probably never so vigorously carried on as in other parts of the frame, as the very frequent occurrence of varix in its veins seems to testify. In ulcers of this region, accordingly, the capillaries, the immediate agents of regeneration, are placed in most unfavorable circumstances for conducting that process; since, without the evidence derived from Mr. Liston's injection of them, it is easy to conceive that the walls of the original vessels, which may not yet have fully recovered their tone, and those of the new capillaries, in which it is not yet matured—both of them wanting the natural support afforded by the skin—would be totally unequal to the execution of the operations required of them, unless the obstruction in front be removed by position, or they are enabled to overcome it by some other artificial assistance.

This impediment to the circulation, and, of necessity, to the establishment of the granulating process in the lower extremity, will obviously be greater when the veins of the limb are in a varicose condition; but this is merely an increase of that difficulty under which the capillary circulation of any depending part must always labor—namely, a distention sufficient to disturb the functions of these vessels in a degree proportionate to the gravitation of the blood in the veins.

To this cause, much more than to any defect of vitality in the extremities, is it owing that the simplest wounds in this situation manifest such a tendency to degenerate into chronic ulcers, as is abundantly proved, not only by the change of aspect, in correspondence with the change of position, alluded to in a former paragraph, but by the success of those plans of treatment which embody means calculated to counterbalance the obstruction, and place the leg as much as possible on a par with other parts of the body.*

And here I may remark, that sufficient importance does not appear to have been accorded, by any writer on this subject, to the circumstances in which the capillaries of a granulating ulcer in a depending part are placed by the loss of an elastic envelope like the skin. In the erect position this portion of the vascular system may be regarded as placed between, and acted upon by two forces:—the *vis a tergo* of the heart and arteries on the proximal side, and a certain amount of pressure, from the column of blood in the veins, bearing upon their distal extremities; which, however, the heart's action, seconded by the valves of the veins, overcomes without difficulty as long as the veins continue healthy.

That this pressure does, notwithstanding, offer no considerable impediment to the free transmission of blood through the capillaries will be evident to any one who examines the state of the veins of the legs after standing for some time.

On the other hand, the acceleration of the blood's motion du-

* In Case 1, the reader will find an instance of indolent ulcer of the hand, the consequence of a burn; in which, precisely as occurs in the leg, granulation had been long protracted by allowing the hand to hang down.

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ring rapidly repeated muscular efforts—when an alternate action and reaction between the muscles and the skin is kept up speedily emptying the superficial veins—is sufficient to prove that the skin, by its resilience, must afford a remote but essential aid to the circulation in the veins; and, since, as long as it remains entire, it thus exercises a constant and uniform control over forces tending from within outwards, it is obvious that the vessels of a granulating surface, deprived of this elastic integument, by a breach in its continuity, will have nothing but the feeble resistance of their own walls to oppose to the pressure from within.

If the correctness of this representation be admitted, it will go far to explain the larger share of success obtained by almost every method of treatment of ulcers of the leg upon the principles of giving support, and thus supplying the deficiency, from which they suffer in an especial degree, by artificial means.

The mischief produced, however, by this obstruction to the onward progress of the blood in the veins is not confined to the circulating system; not only are the capillaries, in such a state of congestion, engaged in a vain struggle to carry on the reparative process, but the nerves associated with them, oppressed and irritated by the over-distention of the blood vessels are not merely incapacitated from discharging their functions healthily, but must be kept in a constant state of morbid sensibility; hence the irritability so frequently a concomitant symptom of indolent ulcers.*

* "When it is considered," observes Dr. Hastings, "that the minute fibrillæ of nerves are plentifully distributed on, and intimately

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Morbid sensibility, however, amounts in many cases to something beyond a mere temporary affection symptomatic of the oppressed state of the circulation; it either becomes an enduring and distinctive character of the disease, as a consequence of the long-continued irritation to which the nerves have been exposed in neglected or mismanaged cases of long standing; or may have been an original feature from its earliest period. There is no invariable external indication of this disposition, which is manifested by ulcers of a great variety of aspect; but it proves an almost certain obstacle to healthy secretion and granulation. There can be no doubt that the nerves themselves are, under these circumstances, the seat and primary source of the morbid affection;* and it is to afford them relief that our remedial measures must be especially adapted.

connected with, the capillaries, and that when any part is inflamed these vessels are much dilated, it must appear evident that the nerves during inflammation are stretched.”—p. 109.

Dr. Henle, of Berlin, in an article in *Casper's Wochenschrift* for May 23, 1840, states, that “Purkinje has seen fine nervous twigs on the cerebral vessels of sheep; and Valentin both on them and many other bloodvessels;” and adds, “I have seen this winding of the nerves round the vessels only in very small portions of the latter, but I have observed it so often that I cannot regard it as an accident.”—*Brit. and For. Med. Review*, Oct. 1840.

Jobert de Lamballe's observations, also, on the re-establishment of sensibility in autoplastic flaps, seem to prove that the renewal of the connection with the nervous system is, in this case, accomplished by the medium of bloodvessels, and not by any demonstrable nerve-fibre.—*Med. Gaz.*, May 16. 1845.

* Dr. Billing conceives that morbid sensibility may sometimes be caused by inflammation of nerve, adding, “I know of no other term by which to express their lesion.”—*Principles of Medicine*, p. 146.

Indolent ulcers, which have existed for a great length of time, often become at last callous, sensibility is diminished below the natural standard—nervous action appears to be exhausted; the exuberant vascularity proper to a granulating sore having either never existed, or having long disappeared, no effort at reparation can be made; secretion is scanty and morbid,—a glairy fluid barely moistening the pale, bloodless, glassy surface, far removed from the creamy pus of a healthy sore. But the point which claims especial attention is the indurated and thickened margin of this variety of ulcer, so vividly depicted by Sir Charles Bell,* whose sketch I am tempted to transcribe:—"An ulcer is attended with an absorption of the adipose membrane beneath and around it; its edge is elevated by deposit of coagulable lymph, and these together make the sore appear deeper than it actually is It is of importance to notice the *welt* around the ulcer; for while it continues the ulcer will not heal. It has been described as a circumvallation which the ulcer throws up for defence. The idea is absurd, but it leads to a useful inference—that you must cause the absorption of this hard circle, or it will be in vain attempting to heal the sore."*

[I will give my views in full upon this point with my peculiar treatment in the appendix.—N.]

But, although the local impediment to the circulation arising from the depending position of the part, is the principal cause of that peculiar intractability which characterizes ulcers of the leg, the fact that it is not always overcome when the local impediment to recovery is removed, proves that other obstacles

* Institutes of Surgery, vol. i. p. 87.

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are not unfrequently superadded to those of a nature purely local ; these consist of certain morbid states of the constitution, which may be divided into two classes—general and specific.

The first comprises a morbid condition of the system, which exercises a pernicious influence over all local maladies. Of this kind are derangements of the digestive organs, and of the excretory apparatus connected with them,—of uterine functions,—a feeble discharge of all the vital operations, the result of general debility, or a cachectic habit,—irritability of the nervous system, often a consequence of that debility,—and other disorders of the animal economy, too subtle, perhaps, for detection, but sufficiently manifest in their effects. Against these disturbing influences our treatment must be directed, before the local measures employed for the cure of the ulcer can accomplish their object.

The second, the constitutional sources of local ulcers of a specific nature are various, and may give rise to a corresponding variety of sore, each, perhaps, differing from the others, and requiring a distinct mode of treatment. Of these we have examples in the fifth species of Sir Everard Home's classification of ulcers of the leg :—"Ulcers attended by some specific diseased action." Syphilitic, scrofulous, cancerous, and herpetic sores, are particularized by him ; but they are in no way distinguishable in the leg from similar results of specific maladies occurring in other parts, nor do they call for any material difference of treatment. It is true, that measures which are capable of successfully combating them elsewhere will often fail in completing the cure when the leg is the seat of the disease ; but this arises merely in consequence of the local cause of intractability peculiar to this region superven-

Leopold of Newton

ing upon that engendered by specific disease, local impediments to cicatrization frequently remaining active long after the original source of the malady has become extinct; when, in point of fact, the sore is converted into a simple chronic ulcer.

In attempting a classification, then, of ulcers of the leg, sores of a specific character should be at once withdrawn from the catalogue, and referred to the diseases from which they spring. It may not always be easy to determine the specific nature of an ulcer; but if the aspect will not furnish us with an infallible criterion, where doubt exists, it may generally be set at rest by a careful inquiry into the history of the case.

Confining our attention as closely as we can to simple ulcers, disregarding altogether their origin, and allowing a sufficient degree of importance to their variety of aspect to modify the treatment, the field will be reduced within much narrower limits, and a distinction of more practical value obtained, if we inquire, in the first place, simply—what is the source of intractability? and, according as that is traceable to the predominance of local or constitutional causes of a general character, class the ulcer under one or the other head. I say the *predominance*, because it rarely proceeds from purely local, or purely constitutional sources, generally resulting from a combination of the two in various proportions, although the preponderance is usually on the side of the local cause.

Notwithstanding, therefore that local and constitutional elements of intractability are more or less mingled, in almost every case of ulcer of the leg, the grounds of classification adopted in the foregoing pages appear to me to embody more

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correctly the peculiar characteristic of ulcers of the lower extremity than those deducible from any other sources, and to be quite sufficient for all practical purposes.

Recapitulating in a tabular form these grounds of distinction, at the same time that I retain the old terms, indolent, callous, and irritable, applied to them, I propose to consider the management of simple ulcers under the two following general heads :—

I.—Ulcers which are intractable from constitutional causes.

II.—Ulcers intractable from local causes.

[The reader will have learned the position taken by the author and as we have given them thus far in full, I propose now to give very full extracts from lectures on this subject by Dr. Geo. Critchett, F. R. C. S., London, which we quote from the *London Lancet*.* It will be seen that he differs from the author in many respects, but this should not prevent the physician from being well acquainted with the various views and treatment of the present day. Dr. C. remarks: N.]

“There are many ways in which the wide field of observation presented to us by a large hospital like this, may be made available for clinical instruction; and it behoves every clinical teacher to select such a method for himself as he believes will, in his hands, prove most instructive to his class, and present to them in the clearest manner what he thinks will be practically useful to them in their future professional life. Of the plan to be pursued, let each man judge for himself, neither influenced by precedent, nor fettered by anticipated criticism, but actuated alone by his own mental promptings. On the present occasion, I propose rather to present

* *London Lancet*, vol. ix, 3.

you with groupings of disease, than to select, one or more cases for your consideration; I propose fixing upon a common form of disease, bringing our experience, at this hospital as to its causes and treatment, to bear upon what is generally taught, and found in books, and thus, by collecting a large mass of cases, endeavor to reconcile whatever we may find contradictory, correct what is at variance with sound principles or successful practice, and by appealing humbly, but confidently, to the book of Nature, arrive at true surgical knowledge.

“The subject that I propose treating after this method, in this and the two or three following lectures, is, the Causes and Treatment of Ulcers of the Lower Extremity. I have been induced to select this subject, because I have, from circumstances, been led to devote considerable attention to this class of disease; because it is very common at this hospital, and very successfully treated here; because it is an intractable and painful disease, lingering on, and wearing the patients for many months, and often years; and because I believe that, even to this day, the true principles upon which the treatment of such cases should be founded, are most imperfectly taught by surgical writers, and consequently most imperfectly understood by the profession in general. And I have been the more anxious to bring this subject before your notice at this time, because we have lately had numerous surgical works issuing from the press, stamped with authority of some of the highest names our profession can boast, all more or less touching upon this subject but affording very scanty and imperfect information, having a tendency to perpetuate erroneous principles and injurious practice, and starting upon false pre-

mises a century old, and handing down the same even to the very time when I am addressing you. Thus it often happens, as in this instance, that an error is copied from one to another through a long series of years, and it requires all the authority of extensive practice, and of a large mass of cases, to break through old established authority, and to vindicate the true principles upon which such cases should be treated. As I proceed, I shall have occasion to refer to these writers, and to point out in what important particulars I differ from the instructions they inculcate—but it would be tedious to bring forward proofs of what I have said at the present stage of the inquiry.

“If it should seem to any gentleman present a subject too insignificant to deserve his serious attention, and to demand his best energies, rather than trust myself to dwell upon the importance of a topic in which I take a strong personal interest, and upon which I may have an undue bias, I would bring to my aid the matured judgment of that Nestor of our profession, Sir Benjamin Brodie, whose essays and clinical teachings, drawn from Nature with such close exactness, present such admirable summaries of long experience, and such highly useful and practical results to the junior members of our profession, that all his opinions must be received by us with deep respect and attention. In lecturing on this subject, he says,* ‘Ulcers of the leg are cases in which there is no question about the patient’s life or death; and I think it very probable that many among you may pass by the bedside of such a patient without thinking it worthy of attention. But I am not disposed to regard it in this manner. Although the patient may not die of this malady, yet without care it may

* Lectures on various Subjects. p. 157.

render him miserable for life. The disease may be very much relieved by art, and it is one of very common occurrence. You examine carefully a case of aneurism, a case of stone in the bladder, and so on; but these are things of comparatively rare occurrence, and which will not fall under your treatment in the beginning of your professional lives; but ulcers of the leg are cases of a very distressing nature, and such as meet you at every turn of your practice; and your reputation in early life will depend more upon your understanding a case of this kind than upon your knowledge of one of more rare occurrence.'

“ Before we can hope to arrive at any sound rational scientific views respecting the treatment of this class of disease, it is of the first importance that we should understand the causes which give rise to these ulcers, and which prevent the healthy process of healing; and these causes naturally divide themselves into predisposing and exciting, although the former often becomes the latter.

“ It must at once strike even a surgical tyro that that form of inflammation which we call ulcerative occurs much more frequently, and is much more persistent, in the lower extremity than in any other part of the body; and this rule may be carried out still further, for it is found that when ulcers occur in the lower extremity, the more remote the position of the sore from the center of circulation, (*ceteris paribus*) the more tedious and uncertain is the reparative process. This fact shows that *position* is an important element in the consideration of this subject; and in addition to this, it would seem to be a law of universal application, that whatever tends still further to impede the return of blood from the lower extremity to the

heart increases, in the same proportion, the liability to the formation of an ulcer, and the difficulty in healing it.

“ We may next inquire, what are the principal impeding causes to the return of blood through the lower limbs? A varicose condition of the saphena veins, from whatever cause it may arise frequently predisposes to this class of disease, and is so intimately bound up with the consideration and correct treatment of these ulcers, that you must allow me to digress and dwell for a short time upon the causes of this dilated condition of the veins, and the various efforts that Nature makes to relieve this condition. Females are much more liable to this state than males, owing to the pressure of the gravid uterus, which must therefore be ranked as the most frequent cause of this affection. The next cause in point of frequency, and which affects equally both sexes, is cramp in the muscles of the leg in its more aggravated forms. I am not aware that this circumstance has been alluded to by any writer on this subject, but I have so frequently observed it in connection with this condition of veins, that I cannot but regard them as cause and effect; and it seems to me to arise thus;—when the muscles are thrown into violent spasms, the deeper veins are much pressed upon, and thus the entire burden of returning the blood is thrown upon the superficial veins, which become inordinately distended. This process oft repeated, causes permanent dilatation. The constant habit of wearing tight inelastic garters may originate, and must always very much aggravate, this condition. The habit of remaining for many consecutive hours daily in the erect position, and a prolonged exposure to wet and cold, and great height of stature, are all causes of this affection. It would

seem that when the veins become dilated beyond a certain point, the valves, upon which a healthy performance of their function so much depends, become incapable of acting; the circulation becomes thus permanently impeded. Under these circumstances it becomes an interesting inquiry as to what course Nature takes to remedy or to alleviate this state of things, and we may trace at least five different ways in which this varicose condition may be said to terminate.

“First. As in valvular disease of the heart, and other obstructions, so here hypertrophy of the coats of the vein takes place; thus further dilatation is prevented, the circulation is carried on nearly as well as before, and a *statu quo* condition is established, which may endure for many years without producing much pain or inconvenience.

“Secondly. This dilated condition of the veins sometimes sets up chronic inflammation of the inner coat, with deposit of lymph, narrowing, or even entirely blocking up the calibre of the vessel; and thus, by diverting the current of blood into other channels, Nature establishes something like a radical cure of the disease.

“Thirdly. This varicose condition, instead of becoming arrested thus early, spreads to the capillary vessels of the skin and subcutaneous cellular tissue. This gives rise to a bluish sometimes brownish discoloration, which often becomes permanent; it also causes considerable thickening and induration, which often spreads itself over a large portion of the leg, and thus forms a thick shield or defence to the large weak veins. This state often gives rise to a very indolent and obstinate form of chronic ulcer, which may last for many years. In

certain aggravated forms of this condition, I have known the hypertrophy of the skin and cellular tissue to increase to an enormous extent, giving rise to a condition almost resembling elephantiasis, and resisting every mode of treatment.

“Fourthly. The enlarged veins, in some cases, continue to increase in calibre and in length, becoming twisted and convoluted upon themselves, and forming immense swellings in the thigh. This dilatation gradually involves the smaller veins; they thus become in their turn enlarged, and apparently multiplied, their coats become exceedingly thin; the skin over them also becomes attenuated, so that the limbs present a mottled-blue aspect; they also become permanently very much increased in size, and seem almost reduced to the condition and structure of a large nævus. In this state it gives to the touch very much the sensation of sponge, and however tightly it may be bound up, it always retains a soft elastic feel: I have denominated this condition as the ‘spongy leg,’ to mark a state of limb that must be familiar to every observer. If this sort of universal venous dilatation be permitted to pursue its course unchecked by the interference of art, the coats of the superficial veins sometimes become so thin, that they are unable longer to sustain the column of blood, and at some point they give way, and frequent and even alarming hæmorrhage takes place, which occasionally assumes a vicarious character. Thus does Nature make another, but less successful, effort to relieve herself of this condition of over-distended vessels.

“Fifthly. In this spongy condition of leg we sometimes find that instead of the veins giving way, a spot, generally about

the region of the ankle, becomes red and inflamed, occupying an area of three or four inches ; about the centre of this, a peculiar and very characteristic white patch is seen, irregular and undefined, and indicating that the skin is here separated, or nearly so, from the parts beneath. This is, in fact, a white slough of the skin ; a little serum forms beneath it, the part ulcerates, and thus a genuine and spontaneous *varicose* ulcer is formed, and by its constant discharge is doubtless another method by which Nature attempts to relieve herself of the burden of this accumulated column of venous blood ; and in this last case, a varicose condition of the veins becomes not a predisposing, but the immediate, cause of ulceration. Thus then, briefly to recapitulate :—We have seen that a dilated condition of the veins of the lower extremity, from whatever cause it may spring, may terminate in five different ways.—

“First. It may produce hypertrophy of the coats of the veins, and thus resist farther distension.

“Secondly. The principal veins may become plugged up more or less completely with fibrine, and thus by diverting the current of blood into other channels, the disease may become stationary.

“Thirdly. The capillaries of the skin and subcutaneous cellular tissue may become likewise dilated, giving rise to permanent discoloration of a large portion of the skin, and to thickening and firm fibrinous deposit beneath it, and thus the disease in the larger trunks would seem to be checked, if not arrested.

“Fourthly. The larger veins may become more and more

enlarged and elongated; the smaller trunks may become gradually implicated, until what I have denominated the spongy leg is produced; this condition sometimes relieves itself by hæmorrhage.

“Fifthly. In this spongy condition of leg a congeries of red vessels may form, in the centre of which a white patch appears on the skin, which is the immediate forerunner and indicator of ulceration, which being established is another way in which the congested veins are temporarily relieved.

“I have dwelt thus minutely upon this varicose condition in its various phases, because I believe it to be not only a very frequent cause of ulcers, but also a serious barrier to their successful treatment, and a very constant source of their recurrence. I reserve my remarks on the best method of managing this varicose condition in its different stages, until I come to the treatment of ulcers generally.

“I pass on now to the consideration of some of the other predisposing causes. A plethoric condition of the system will sometimes light up very severe and extensive ulceration, either spontaneously, or more commonly from some slight abrasion of the cuticle. An anæmic condition, resulting from any debilitating cause, but most frequently from a diet deficient in quantity, or defective in quality, gives rise to a peculiar form of ulceration of the lower limbs, easily recognised when once seen. Scrofula has its own peculiar form of ulcer; secondary syphilis is another cause. The suppression of the menstrual discharge sometimes finds relief in a peculiar form of ulcer in this region. Patients sometimes tell you their leg became bad after a fever, or in their own words, that ‘the

fever settled in their legs; and certainly I have observed ulceration of the lower extremity following a severe febrile attack, particularly of a low type. The most common exciting cause of ulcers in this part is external violence of more or less extent and degree; and in some cases where the predisposing cause is in full operation, so slight an injury as almost to escape notice is sufficient to set the mischief going; or it may arise spontaneously, and thus what we commonly regard as a predisposing cause, may become an exciting one.

“In the foregoing remarks, I do not profess to have fathomed and expounded to you all the causes of this class of disease. Some, perhaps, are still unknown, and others I may have omitted, but my special object has been to direct your attention to those causes which seem to have a practical bearing upon the treatment. I will proceed in the next place to attempt a classification of ulcers, and this I shall found as much as possible upon the various causes I have just enumerated, avoiding all minute distinctions, and keeping in view such subdivisions as have a practical bearing, reserving for after remark such uncommon forms as cannot be conveniently brought within the scope of my present classification. I propose, then, in the first place, to divide all ulcers into simple or local, and specific or constitutional.

“I again divide the simple or local into acute or spreading, subacute, chronic, healthy, irritable, and varicose; the specific or constitutional I arrange under the various heads of strumous, syphilitic, phagedænic, periosteal, menstrual, œdematous, and malignant. Each of these classes of ulcer has certain characters and symptoms by which it may be recognized, and requires for its successful treatment certain modi-

ifications of local and constitutional appliances; and as in medicine and surgery generally, so especially in the particular form of disease we are now considering, your success in curing will not depend so much upon the multiplicity of your remedies as upon your power of recognising the exact form of ulcer with which you have to deal, and the plan most suitable for that particular case.

I propose, then, to describe to you, seriatim, as far as my observation and experience will permit, the leading characteristics of the different classes above enumerated, and the treatment I believe to be most suited to each; but previous to entering upon this part of the subject, I am anxious to direct your attention to some general principles which are to guide us in the treatment of this class of disease, and if, in so doing, you find my opinions, as I have before hinted, somewhat at variance with most of our highest surgical authorities, I fearlessly appeal to a very large mass of successful cases thus treated by some of my colleagues and by myself, at this hospital, in vindication and confirmation of what I am now propounding to you, and I invite you, gentlemen, closely to scrutinize the result of cases treated upon these principles, and to make experiments for yourselves.

In considering, then, the principles upon which the treatment of ulcers of the lower extremity is to be conducted, I must again remind you, "that the reason why ulcers are more frequently found in the lower extremity than in any other part of the body, and are more difficult to heal, and more liable to recur in this situation, is on account of the weight of the superincumbent column of blood, weakening the vessels and impeding the circulation through the part. The truth of this

will, I imagine, be admitted by all surgeons, though it has not, I think, been sufficiently clearly and forcibly insisted upon by writers upon this subject. If this be so, it follows as a necessary consequence, that the chief aim and object, independent of any specific treatment that the case may require, is to place the circulation of the lower limb on a par with the rest of the body: this object once accomplished, there is no reason why ulcers so situated should not heal as readily and as quickly as in any other part of the body, and such is, indeed, found to be the fact.

The next important question is, how is this desirable result to be accomplished? The answer that at once suggests itself to the mind is, remove the weight of the column of blood by the recumbent position; keep your patient in bed, and at perfect rest, and the ulcer will heal; and this is found to be actually true of a large majority of these cases—perfect rest combined with the simplest possible treatment, will effect a cure; and in some few cases which I shall hereafter particularly point out, this plan is necessary. But there are many practical objections to this mode of treatment; persons engaged in the active pursuits of life, whether rich or poor, find it very inconvenient to keep their beds for two months, or even for a longer period sometimes. Then, again, a cure obtained on these terms is very apt not to be lasting; but as soon as the patient moves about again, and hangs down the limb, in spite of every precaution the weak cicatrix will give way, and the sore speedily becomes as bad as ever. Surgeons are unwilling, upon such terms, to admit these patients into hospitals, and thus both doctor and patients become tired of this plan, and the latter often put up with the pain and

annoyance of a bad leg for a considerable part of their lives, trying a thousand different nostrums, and at last giving it up as hopeless. I have met with cases of this kind that have never been healed for five and twenty years. Is there, then, no other way besides rest in which the circulation in the lower extremity can be brought to a par with the rest of the body? I reply, with a confidence based upon extensive personal experience, and upon extensive observation of the same practice in other hands, that there is a plan more rapid, more certain, and far more lasting, and more applicable to a large majority of these cases, than rest, and that is, "uniform and complete support to the entire limb, which, I maintain, cannot be obtained by the ordinary bandage, however skilfully applied, but is only to be efficiently accomplished by a proper application of strapping, so as completely to envelope the limb from the toes to the knee."

The only written account to which I can refer you for a correct view of the practice I am now about to detail to you is to be found in a work, published in 1828, by the late Mr. John Scott, formerly surgeon to this hospital, on the treatment of diseased joints. Owing to the extreme brevity of his remarks, to their being locked up, as it were, and hidden, in a work professing to treat upon a different subject—owing also, perhaps, to some little prejudice that existed in the mind of the profession against the author, and to the very limited circulation of the work, which might have been thought to contain too exclusive an advocacy of a peculiar method of treatment, and too lengthened an account of very successful cases;—from whatever cause it may have arisen, certain it is that these valuable remarks, suggested originally by the

eminently practical, acute, and self-taught mind of his father, Mr. Scott, of Bromley, have been almost entirely overlooked or neglected by the profession.

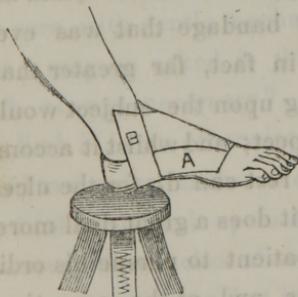
If, then, we would justly apportion merit, we must limit to Mr. Baynton the credit of being the first to recommend the use of adhesive strips in the treatment of ulcers. Here I contend his claim ceases. To the elder Mr. Scott is due the higher honor of working out the true principle upon which alone these adhesive strips can be safely and successfully used; to the junior Mr. Scott the profession owes the publication of these principles, and the teaching of these views to his pupils, of whom I had the advantage of being one; and to the London Hospital belongs the merit of having afforded abundant materials whereby the correctness of the principle and the efficacy of the practice have been extensively worked out and tested, and pupils practically qualified to carry out this system. Whence, then, I would ask, can the reassertion of this principle, so strangely neglected or unobserved by all professional authorities, more legitimately emanate, than from that hospital where it was first publicly taught and practically substantiated!

I will now proceed to explain to you, in detail, the method I recommend you to adopt, in order to accomplish a complete support of the entire limb. You must seat your patient opposite to you, and support his foot upon a small stool, about a foot and a half in height, and so constructed as to receive the point of the heel and leave the rest of the foot free. You should be provided with strips of plaster, about two inches in width, and varying in length from twelve to eighteen inches, according to the size of the limb. The

best material for this purpose is the simple emp. plumbi of the Pharmacopœia, spread upon soft, unglazed calico, and free from resin, which is often introduced to increase its adhesiveness, but which is very liable to irritate the skin. If the plaster be well made, and of the best materials, it will adhere perfectly; I have often found it unmoved for many weeks, and even months. It is convenient to provide yourself with a metallic warmer, made with a flat top, upon which you can lay three or four pieces, heated either by hot water or by small lamps, which are better, if you require it for any length of time. This form of warmer is far preferable to the circular one ordinarily in use, saving both time and trouble. But to proceed. You then take the centre of the first piece, and apply it low down to the back of the heel, and then, with the flat part of both hands, press the plaster along both sides of the foot. (*See A, Fig. 1.*)

This plan is very preferable to taking hold of the ends, and endeavouring to apply them,

Fig. 1.



as it ensures a perfectly smooth adaptation of the plaster to the part, and also because it enables you to regulate the amount of tightness, which is a very important point. As you proceed with the remainder, you must always remember the principle is to make one portion hold on another; you must therefore alternate them round the foot and ankle. Your second piece should be placed in a similar manner underneath the heel, then carried upwards, at a right angle to the last, so as to cover a portion

of each malleolus. (*See B., Fig. 1.*) The third piece should be again applied to the back of the heel, overlapping the first by about one-third. The fourth piece under the foot, and carried upward, each piece being pushed along, so as to allow it to take its own course; this must be continued until the foot and ankle are covered; the strips must then be carried in a similar manner up the leg, increasing in length as the calf increases, and extending as far as the knee, (*see Fig. 2.*) and in some few cases even above this. A calico bandage, about three inches in width and eight yards in length, varying, however, according to the size of the limb, must now be applied, to keep the plaster in its place. and the limb is

Fig. 2.



supported in the most complete and efficient manner that human ingenuity has yet devised. None but those who have practically tested the matter can estimate the immense difference between mechanical support so obtained, and the most accurate bandage that was ever applied; it is, in fact, far greater than mere reasoning upon the subject would lead you to expect; and whilst it accomplishes all that rest can do for the ulcer, in many cases it does a great deal more, enabling the patient to pursue his ordinary avocations, and at the same time healing the wound more rapidly, and far more lastingly, than the most complete rest would effect. In carrying out this method, we must remember that we have two objects to accomplish: the one is, to obtain a healthy

circulation through the entire limb, and the other, to act upon the dilated capillaries immediately surrounding the wound. Both these objects are frequently accomplished by the general support I have just described; but it sometimes happens, particularly in small ulcers situated in the hollow between the malleolus and the os calcis, that the diseased vessels immediately around the wound require an amount of pressure which the rest of the limb would not bear. Under these circumstances very great advantage is derived from applying, previous to the support I have just described, some pieces of strapping, about six inches in length and two inches in width, in a crucial manner, over the wound, so as to extend a few inches above and below it; these pieces, as they do not encircle the limb, may be applied with all the force and tightness the surgeon can exert. If this plan be superadded to the other in certain cases, it is of great assistance to the surgeon, enabling him to combine considerable local pressure upon the weakened and distended vessels immediately surrounding the sore, with gentle mechanical support to the entire limb. But it may be asked, is this complete support of the entire limb always necessary? I answer, certainly not. When the limb is in an otherwise healthy state, the congestion confined to the circumference of the ulcer, and the ulcer is situated tolerably high up in the limb, short strips applied so as to cover a few inches above and below the wound, will answer every purpose, but it is of the utmost importance that these pieces should not surround the entire limb, for reasons that I have before insisted upon; and I would lay it down as a rule without exception, that in every case in which it is necessary to apply strapping entirely round a limb, it must nev-

er be partially applied, but must encompass and support every part of the leg.

Having now described to you in general terms what I believe to be the best method of obtaining mechanical support, and the principle upon which it acts, it remains for me to offer some suggestions as to the particular cases to which it is applicable and where it is injurious, with certain modifications required for special cases, and some general rules to guide you in regulating the degree of tightness required for any particular class or stage of the disease—a most important point—as regards the success of your treatment. All this I must reserve for other lectures. But before I conclude, I would just briefly allude to some of the objections which have been, and which may be, urged against this method. It has been said that it is suitable to a very limited number of cases—that it sometimes causes very serious mischief—and that it requires a considerable amount of labour to acquire such an amount of dexterity as shall ensure average success.

I shall endeavor to show you, that inasmuch as it involves a general principle, and works out a universal law, it is applicable to a very large majority of cases of this description, and that those cases in which it is useless, or cannot be borne, form rare exceptions to this rule.

I grant that it is sometimes productive of mischief, and that when clumsily applied, or with too much tightness, or in unsuitable cases, it may produce serious consequences. But is not this an objection that may be raised against every useful and efficient remedy, each of which owes its curative power to the skill with which it is brought to bear upon the particular disease, and even to the particular stage of the disease to which it is exactly applicable?

With regard to the time and labour necessary for the acquisition of a fair amount of dexterity, I admit that it demands some practice and perseverance, and some courage, not to be daunted by early failures; but I can assure my young friends, from personal experience, that it is worth some pains; that practice makes each successive application more easy and rapid; and that when once they have triumphed over the difficulties, they will be most amply rewarded by the success that will attend their labours, and that, too, in a field where the "harvest is plenteous and the labourers are few."

Having endeavoured to explain the principal predisposing and exciting causes of ulcers of the leg; having arranged them in classes, and suggested the principles upon which the treatment of such cases should be conducted; and having, in furtherance of this object, shown you the best method of accomplishing complete mechanical support of the entire limb. I will proceed to give you some general practical rules with regard to the application of this remedy to the various cases that come before your notice. I am anxious to explain to you when this treatment is inadmissible, and would prove injurious; when the support must be firmly and when loosely applied, and what are to be your guides in determining this important point; when it will alone suffice for a cure, and when it requires the aid of other applications; when you must enjoin rest, and when locomotion is not only allowable, but advantageous; what are the signs proving that the case is progressing favourably, and the contrary; when you may give a good prognosis, and when the case is likely to fail; glancing, at the same time, at some of the other methods of treatment that have been recommended for these cases. It is

in explaining these various points that I cannot but feel that I enter upon the most important and difficult part of the subject—important, because your success must very much depend upon your recognition of these practical distinctions—and difficult, because it must be admitted that mere words must ever convey to the mind but a faint idea of morbid appearances. I trust, however, to be able to give you the principal outlines, and study and observation will enable you to fill in the details. I think I shall best accomplish these objects if, adopting the classification I have already given you, I take up each form of ulcer in succession, marking the more prominent and characteristic signs that distinguish each, and suggesting such modifications of treatment as my experience has shown me to be advantageous. You will remember that I divided ulcers into simple or local, specific or constitutional. The simple or local I again subdivided into the different conditions of acute, subacute, chronic, healthy, irritable, and varicose; the constitutional into strumous, syphilitic, phagedænic, menstrual, œdematous, and malignant. I am aware that this classification is open to objections; thus local or simple ulcers are in many instances modified by the constitution of the individual in whom they occur, and the specific forms present differences resulting from the condition of the limbs in which they are found, and would seem to persist in this situation as a local disease, long after the constitutional taint or defect to which they owed their origin has entirely subsided; and I may further remark, that as in the world of animated nature unity of law is found to coexist with endless diversity of manifestation, so in the whole range of disease, and certainly in the cases I am now considering, this twofold

phenomenon displays itself. Thus, though we have but one law regulating the process of ulceration, the different aspects under which it presents itself to our notice are most numerous and complicated, and can scarcely be brought within the scope of any classification, however varied and complete. I have first, then, to consider that form of ulcer to which the term acute, as indicative both of the condition of the sore itself, and of the surrounding parts, may be applied. This state of things may be said to exist at the commencement of nearly every form of simple ulcer, and may be suddenly set up at any stage of its course. Some of the specific forms of ulceration would seem never to have an acute stage, as I shall hereafter explain. I will now describe the principal symptoms by which this stage of ulceration may be recognised, and the most suitable treatment to be adopted.

The acute form of ulcer is almost invariably attended with severe suffering, which is aggravated to an intolerable degree when the limb is placed in a depending position; there is a sensation of great heat and tension, and the pain is of an aching, gnawing character. The ulcer looks uneven and glassy, the edges are irregular and undefined, sloughs varying in size are often seen on the surface; the discharge may be slight or abundant, but it is invariably thin and ichorous, sometimes mixed up, however, with the debris of the ulcer; the surrounding parts are of a bright-red color, or sometimes of a peculiar speckly red-and-white aspect, difficult to convey in words, but very characteristic of this condition; the swelling may be slight, or it may extend over a considerable portion of the limb. On making continued and firm pressure upon the parts in the neighborhood of the sore, the pit

showing a state of local œdema, which I have almost invariably found to exist in acute ulceration of the lower limb, and which is very rarely found in the subacute and chronic stages, except when there is general anasarca—a condition of things which does not belong to the present inquiry. Some authors speak of applying pressure to get rid of the œdema of old ulcers; I can confidently affirm that such a condition rarely, if ever, accompanies chronic sores; it is a sure indication of acute inflammation and ulceration, and becomes a very useful and unerring guide in practice, more particularly in determining the point as to whether the limb will bear mechanical support, inasmuch as wherever this state is found, support is contra-indicated. The bright-red color of the surrounding parts is another important indication; when these inflamed vessels are pressed upon and emptied, they refill with such rapidity that the interval is scarcely appreciable. It will be useful to contrast this with a similar experiment during the chronic stage, which I shall hereafter allude to. I dwell upon these diagnostic remarks, because they are most important in practice. Any attempt to apply mechanical support during the acute stages of ulceration is invariably attended with most injurious effects, and has a tendency to bring a remedy that is of the utmost value, when judiciously selected, into unmerited discredit. In regard, then, to treatment: the recumbent position must be constantly maintained, and is, in general, the only one that can be borne; additional benefit is sometimes derived from the use of the inclined plane, by which the limb is elevated more or less above the rest of the body, and then the return of blood is still further facilitated. Soothing applications are the best suited to this condition;

water dressing, either warm or cold, as is most agreeable to the patient. Poultices of various kinds (though it is the fashion for Young Surgery to condemn them wholesale) often afford relief when all else fails to do so, and are still, I am convinced, in some cases,—in spite of the obloquy and ridicule now cast upon them by the modern school,—by far the best method of obtaining uniform warmth and moisture to an inflamed surface. If the sore be foul and sloughy, a solution of the chloride of lime, or soda, is a useful application; the strength must be regulated by the feelings of the patient, the object being to produce a slight tingling sensation not amounting to pain. I generally commence with half an ounce of Fincham's solution of the chloride of lime to a pint of water—in foul, angry, sloughing sores, I have met with no application so useful—it rapidly removes all unpleasant odour and produces a healthy granulating surface. In ulcers of an acute character, with a considerable amount of surrounding inflammation, some surgeons recommend local depletion, applied to the circumference of the sore, either by means of leeches, or small lancet punctures. I must enter a strong protest against this plan of treatment. I do not deny that occasionally temporary benefit and relief from pain may result from it, but on the other hand, I have so frequently seen cases in which these artificial wounds, slight though they seem, have become troublesome sores, and in which no improvement has been produced in the original ulcer, that I am convinced that the possible advantage is very much more than counterbalanced by the probable injury that may result from this plan.

My chief object has been clearly to define the leading symptoms of acute inflammation and ulceration, and to prevent you from confounding it with the subacute and chronic stages of this disease ; deeming it quite as important to guard you against attempting mechanical support in those cases in which it is indispensable and injurious, as it is clearly to point out those forms of disease to which it is applicable.— Before I quit this part of the subject, I would offer you a few practical observations on the management of simple abrasions of the skin. When they occur in other parts of the body, such an accident is quite unimportant, but on the leg it becomes a matter of great moment to heal up the injury at once. If the abrasion occurs in a part that has been previously ulcerated, it is almost sure to reproduce the ulcer exactly as it before existed, both in regard to size and shape ; or if it takes place in a limb in which there are varicose veins, or a congested condition of the capillary vessels, it will generally baffle all your efforts to establish a rapid cure, and will pass into a condition of acute, ulcerative inflammation. When, however such an accident occurs in a tolerably healthy person, and in a limb in which the circulation is normally maintained, you may generally succeed, by judicious management, in preventing these ulterior disasters ; and I am satisfied, that at this early stage it mainly depends upon the treatment pursued, whether this simple abrasion closes at once or passes into an inflamed and troublesome sore. The grand point to aim at is to produce a dry scab ; this Nature will sometimes accomplish for herself, if not prevented by meddling surgery. The process may be sometimes aided by applying, in slight cases, gold-beater's skin, or the moist lin-

ing membrane of the egg-shell, or in more extensive abrasions, a semi-fluid solution of gum or hot air to dry the part, each having the same object—viz., the production either of a natural or an artificial scab. The scab should be allowed to separate from the limb spontaneously, when the part beneath will generally be in a sound state; if this should not be the case, the same application may be renewed. I have on several occasions known a slight injury of this kind converted into an obstinate ulcer by the application of what are commonly, but in this case, and indeed in most cases, I presume, ironically termed “healing ointments.”

I pass on now to that division of the simple ulcer which I have termed subacute. It is somewhat difficult to define, presenting as it does, every gradation, from the acute to the chronic stage. The acute stage may be said to cease when the ulcer no longer increases either in size or depth, and the œdema has either subsided or given place to a firmer deposit. The surrounding parts present a somewhat deeper shade of red; the surface of the ulcer is still uneven, glassy, of a yellowish color, tinged in spots with red, with no sign of granulations; the edges are uneven, and sometimes undefined; the discharge is still thin, and there is some pain and heat in the part. As this subacute stage gradually subsides into the chronic condition, the surrounding deposit becomes firmer, the circumferential redness assumes a deeper shade, and gradually merges into a blue or bluish-brown tint, and on making pressure, the vessels, which at the commencement of the subacute stage are very easily emptied, and as quickly refill, now require a firmer and more prolonged pressure

to empty them, and much more slowly resume their former color. So that the chief practical points to attend to in this subacute stage, in order to enable you to distinguish its various phases, are the color and temperature of the surrounding parts, and above all, the amount of pressure required to empty the vessels and the rapidity with which they refill.— This last test has not been mentioned, so far as I am aware, by any writer; but I have found it a most valuable guide in determining the difficult points, as to whether mechanical support can be borne, and if so, with what degree of tightness it should be applied.

What, then, is the treatment to be adopted in these subacute ulcers? If the skin remains of a bright-red color, rest must be still enjoined; and it is owing to the extreme difficulty in inducing your patient to submit to this entire rest for a sufficient length of time, that this subacute stage is often prolonged. Strips of lint or linen may be dipped in cold water, and applied so as to give a little support, and over this strips of oil-silk are a useful application in the early stage; some slightly astringent lotion may sometimes be substituted for the cold water with advantage.

When you first begin to strap a case of this kind, if the ulcer is situated high up in the leg, if the surrounding redness is not extensive, and if the general circulation through the limbs is tolerably healthy, the short strips, applied as I directed in my last lecture, and not allowed to surround more than half the circumference of the limb, will sometimes be sufficient. The entire foot and leg must then be enveloped in a bandage, which may be moistened over the sore with cold water. If, however, there is not a speedy and marked

improvement in the aspect of the sore after two or three dressings, and yet the case is clearly one requiring mechanical support, you must at once apply strapping to the entire limb, in the way I have before recommended: and if this is done carefully, and with very gentle uniform pressure, a marked improvement will speedily follow. It has frequently happened, that in treating a case of this kind I have commenced with the short strips, hoping to save trouble and plaster; but I have afterwards been compelled to adopt the more complete method, and have found that I thereby, in the end saved both. Whenever the limb is swelled and puffy, the circulation through it is feeble, and the parts surrounding the wound are extensively involved, as is shown by the discoloured and dilated condition of the capillary vessels, and by the subcutaneous deposit, the short strips alone are sure to fail, and the limb must be completely supported and enveloped in strapping—still continuing the cold water, if it afford relief. The indication is, in commencing strapping, to apply it very gently, and sometimes even loosely; for the very contact of the plaster, without any apparent circular tightness, appears to give very marked support to such a case.—If all progresses favourably, you will find, when next your patient presents himself, that the strapping you applied has become still looser, owing to the swelling having diminished. The surrounding redness is now of a deeper shade, or even of a bluish colour, and the discharge is somewhat thicker. I should strongly recommend every surgeon to remove the dressing himself, as the state of the strapping and the nature of the discharge are valuable guides to him in determining the progress he is making and the proper tightness

with which to apply the next dressing; for this, as I have before said, is one of the most important elements in the success of this method of treatment. I may add, that I have found the feelings of the patient another most useful guide in determining this point. If the swelling is much diminished, and the colour of the surrounding capillary vessels of a deeper shade, and refill more slowly when emptied by pressure, you may venture to apply the strapping more tightly, and to discontinue the cold water, and you may then promise yourself a speedy and satisfactory cure. If, on the other hand, the pain has been increased by your application, the patient complains that it has felt tight and uneasy, and the discharge is thin, you must apply it again more loosely. If still there is no improvement, it is better at once to give it up, and to return to your soothing plan, and rest: either it has been used prematurely, or too tightly, and in either case it is useless to persevere. I have never met with an instance in which, if the first two or three dressings were not beneficial, it was possible to recover lost ground, and obtain a healthy action, without an entirely fresh start, after the limb has been brought into a favourable condition by rest and other suitable treatment.

In speaking of chronic ulcers, I shall at present confine myself to those that are simple and free from any decided constitutional peculiarity. They differ in a remarkable manner in the amount of pain they occasion; in some the pain is aggravated by moving about, in others by rest. Night is sometimes the period of the most severe suffering, particularly in those cases that are complicated with varicose veins; and again, I have met with some few cases of many years'

standing, in which the patient seemed scarcely to suffer.— There is no heat; the surrounding parts are of a blue or of a brownish colour, this discolouration sometimes involving a considerable part of the leg; and it is a singular circumstance that this dark-brown stain never disappears, even though the limb in other respects may have become perfectly healthy. This probably depends upon some permanent change in the capillaries of the skin. There is often a considerable amount of firm, inelastic thickening and deposit around the wound, varying in extent according to the length of time the disease has existed, giving to the sore an appearance of considerable depth; the sore itself presents a flat, even surface, without any signs of granulations, but covered by ill-formed lymph; the discharge is thin, varies in quantity, usually being slight. Ulcers may exist in this condition for an almost indefinite period, varying slightly at times from accidental, local, or constitutional causes, but maintaining nearly the same size and appearance for many years. I have met with cases of this kind, that, according to the patient's own account, have never varied materially for five and twenty years. The only real change that goes on is a very gradual thickening and deposit in the cellular tissue surrounding the ulcer, giving rise to those raised and callous edges, which are so characteristic of these ancient cases.— The age of some of these ulcers is an unanswerable proof of the inefficiency of every attempt made for their cure, and yet this has not been in consequence of any deficiency either in the number or variety of the applications and plans recommended. Nearly every stimulating and astringent ointment and lotion in the pharmacopœia, and many not found

within its extensive vocabulary, have been at one time or another enlisted in the service; other methods, both local and constitutional, have from time to time been suggested, some of the principal of which I will just briefly notice. Celsus recommends these callous edges when much raised to be shaved off with a scalpel previous to commencing other treatment, a plan I have never tried, and one that I imagine would be deemed somewhat too heroic by English surgeons.

I have tried all the most approved local stimuli, both in the form of ointment and lotion, and although I have frequently observed an improvement in the condition of the wound, it has always been very temporary. Many cases of long standing that have come under my notice have previously exhausted a great part of these applications, both vegetable and mineral, but without obtaining permanent relief; and this seems to me to be only what common sense would lead us to expect. No application to the wound can get rid of the surrounding congestion and morbid deposit, upon which the ulceration depends, and to which it owes its continuance; and this is, in truth, an answer to the majority of the plans proposed for their cure. I have put issues in, and kept them running for many months, but without ever being able to trace the slightest benefit; and here again I think pathology teaches us to expect such a result, for we frequently meet with two or more sores on the same limb, and yet one does not exert a favourable influence on the other, which ought to be the case if the principle of using issues were correct. You will often find that when these cases first present themselves to your notice, the surface of the ulcer is foul and unhealthy; it is desirable, if possible, by means of a few days'

rest and suitable applications, to obtain a healthy surface to start with, as it renders the subsequent treatment more immediately efficacious, and hastens the cure. Still, it will often be found in practice that even this short period of repose is most difficult to obtain, involving perhaps serious loss and inconvenience to the patient; and though desirable, it is by no means necessary to ultimate success, as I have had abundant proof in my own practice.

If, then, you carefully apply the strapping in the way I have directed, and regulate the tightness by the rules I have laid down, you will almost invariably find, when your patient again presents himself at the end of two or three days, that the strapping you applied tightly has become loose; this is not because it has in the slightest degree given way, but because the swelling and intercellular deposit has been to a certain extent removed by the effect of the pressure; this is a very favourable sign. The strapping must now be reapplied as tightly as before, and in two or three dressings the wound will assume a healthy aspect, and the discharge will become thicker and more creamy. In cases where there is a considerable amount of thickening and induration, it often happens that the ulcer will not commence healing until all this has been removed by the pressure; it is necessary to renew the application more or less frequently, according to the size of the wound and the nature of the discharge. If the wound is large, it is better to dress it at first every day; whenever, also, the discharge continues thin, it is necessary to change it frequently, but as it gets thick, every third day is sufficient; and there is a class of cases sometimes met

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with in which the discharge is very thick and tenacious, and clings to the sponge, in which the wound heals rapidly, and the strapping may be allowed to remain on for a week. I should say, as a general rule, that twice a week is sufficiently often for the majority of cases. If you steadily pursue the plan I have now detailed, it matters not how considerable the deposit may be, nor how long the ulcer may have existed, (I could almost say, from my own experience the longer the better.) You will almost invariably succeed, not only in healing the sore, which is, after all, but half a cure, but also in getting rid of all thickening and enlargement, and restoring the limb to its natural shape, and the vessels to a comparatively healthy condition, bringing out the malleoli into "relief," as artists say, which may have long laid buried beneath a mass of morbid deposit."]

TREATMENT.

I.—OF ULCERS ON THE LEG, THE INTRACTABILITY OF WHICH IS TRACE-
ABLE TO CONSTITUTIONAL CAUSES.

The constitutional sources of intractability already enumerated are disorders of the digestive organs, of the kidneys, bladder, and urethra, and of the uterine functions; general debility ensuing upon other maladies, or the consequence of insufficient nourishment, bad air, or intemperance; and irritability of the nervous system, original or acquired. Any change, in short, which affects the general health, will produce a corresponding impression upon the ulcer; thus, the whole of the newly organized structure in a sore just cicatrized, has been known to disappear in a few hours, as a consequence of diarrhœa; mental anxiety will arrest the progress of a healing ulcer, and sudden changes of the weather often exert a marked influence over these cases. Sir E. Home mentions that, in 1778, at a time when there were some hundreds of ulcers under treatment in the Naval Hospital at Plymouth, whenever the weather changed from dry to wet, the ulcers invariably assumed an unhealthy appearance, but put on a better aspect as soon as the weather became dry again.

As with ulcers of a specific nature, in all cases where the constitutional malady predominates, it must first be treated, and its prejudicial influence over the local affection counteracted, before the local treatment can be brought to bear ef-

fectively upon the ulcer; in many instances the constitutional and local measures may proceed hand in hand.

As the medical treatment must be conducted on the general principle that in all local maladies we should endeavor to correct any evident derangement in the functions of the different organs of the body, and keep them in a state as much as possible approximating to that of health, it will be unnecessary to do more than touch upon the most prominent points connected with this branch of the subject.

In ulcers of the leg characterized by atony—which constitute so large a majority of these cases—measures which tend to invigorate and give tone to the general health are especially indicated. With this view, the organs of nutrition claim our first attention; sources of irritation, arising from habitual constipation, hepatic obstruction, and improper diet, should be removed before we can attempt to strengthen this function; but when this is accomplished, caution in the use of purgatives is necessary—purgings being rather calculated to retard than forward the progress of indolent ulcers.

In administering tonics, bitters combined with the mineral acids, or with ammonia, ordinarily agree better with a weak stomach than bark and steel; but in that prostration of the bodily and mental faculties resulting from an addiction to ardent spirits, or in the low, feeble, cachetic state of health induced by a want of the necessaries of life, and confinement to the unwholesome air of the wretched, ill-ventilated abodes of the destitute lower class in large cities, bark, in larger doses than ordinary, surpasses all other remedies; in proof of which, the following case, related by Mr. Abernethy,* may

* Lectures on Surgery, p. 119.

SOURCES OF INTRACTABILITY.

be cited:—"There was a young woman in St. Bartholomew's Hospital with an ulcerated leg, which had sometimes been a little better, and at others worse again, during a period of eighteen months. That the disease in this case depended on constitutional causes was rendered evident by her having, during that interval of time, suffered from ulcerated sore throat, and cutaneous eruptions and ulcerations. Her case had been treated in various ways. She had taken decoction of sarsaparilla; used mercury so as slightly to affect the mouth; taken nitric acid and decoction of bark; also large quantities of conium and hyoscyamus, with a view to soothe nervous irritability; and had even tried arsenic;—but all without producing any great or permanent benefit.

[This kind of treatment will not cure cases of this kind. The records of Surgery proves this conclusively, and very few physicians of any school of practice now make use of mercury and arsenic in the treatment of ulcers. I have found such cases as above described, to yield to the free use of the compound Syrup of Stillingia and Iodide of Potassa as an alterative as follows:

℞ Comp. Syr. Stillingia, ℥iij.

Iodide of Potass. ℥ij,

Give one drachm every three hours until it produces slight nausea and uneasiness in the frontal region of the head; after those symptoms are fully developed, I lessen the quantity and frequency so as to keep up these symptoms during the effort of the medicine.

As regards the use of local applications in such cases I advise the Sesqui-carbonate of Potassium. See cases in Appendix.]

I showed the case to an old surgeon of a provincial hospital, (Mr. Simmonds, of Manchester,) who said, 'We should in our hospital give her the bark in the largest doses she could get down, even till it nauseated.' She was ordered the sulphate of quinine, and the dose was increased to five or six grains three times a day; and under the administration of this medicine the sores healed rapidly. The medicine being at this time scarce and high priced, she occasionally did not receive her full allowance, when the sores never failed to become deteriorated; so that the necessity for maintaining the full effect of the remedy was made evident. By perseverance in the use of the medicine, however, a permanent recovery was obtained."

In cases where the power of the stomach has been weakened by habitual intemperance--more particularly when the patient suffers from frequent attacks of diarrhœa, I have more than once found the sulphate of copper, in doses of from a quarter to half a grain three times in the day, of signal service as a tonic.

[The sulphate of quinine, cornine, or hydrastin, I know to be superior to the sulphate of copper.]

In accordance with the general indication of the treatment laid down, the diet ought to be nutritious rather than spare. As Dr. Underwood quaintly expresses it, "lower than too many like to indulge in, and rather better than some people allow themselves." Porter in moderation is almost always necessary in hospital cases; and in confirmed spirit drinkers, no experienced surgeon would venture to prohibit altogether the accustomed stimulus. Even in those troublesome ulcers with thickened edges on the dorsum pedis, ascribed by Si

E. Home to an indulgence both in high living and indolent habits, a moderate allowance of wine or malt liquor is an essential part of the treatment.

In opposition to the opinion and practice of the earlier writers on ulcers of the legs, who insisted upon the absolute necessity of confining the limb to the horizontal position, Sir Everard admits the great importance of air and exercise in their management; but no one has inculcated this more strenuously than Dr. Underwood; not merely as a means of supporting and improving the general health, but from a conviction that cicatrization accomplished by rest and position, was seldom so sound and permanent as when effected by methods of treatment which could be employed whilst the patient was taking exercise, and following his ordinary occupation. These views will be discussed more at large when the local treatment of ulcers is under consideration.

In cases of long standing, which have obstinately resisted all varieties of local treatment—especially in those which are both indolent and irritable—alteratives frequently produce a wonderfully rapid change of character. The bichloride of mercury has long been a remedy in high repute in the treatment of these affections, in consequence of the influence it occasionally exercises over such cases. It should rarely be continued long enough to excite salivation; and its beneficial operation is enhanced by combining it with the decoction or essence of sarsaparilla. As an alterative in very irritable ulcers, Sir A. Cooper preferred calomel and opium to the oxymuriate of mercury.

Opium has been brought under the notice of the profession

within the last few years, by Mr. Skey,* as a remedy capable of exerting an almost specific power in healing the "chronic or callous ulcer affecting the legs of old persons."

[The use of mercurial preparations are now entirely superseded by the use of the combination of medicine, referred to in the first note in this chapter.]

"In many cases," says Mr. Skey, "a very palpable effect is produced by eight drops of the tincture twice a day; but I rarely commence with a less dose than half a grain of the extract night and morning." This dose may be increased, if necessary, up to two grains night and morning, and that without producing the ordinary effect of opium—constipation. "The sensible effects of the medicine," he states, "are a general glow of warmth throughout the body, with a uniform degree of perspiration, proportionate to the quantity taken." He believes that it rouses "the dormant energies of local health through the means of the circulating system."

[I have in many cases used the opium as recommended by Dr. Skey, and in place of "arousing the dormant energies of the system," it has in every instance in my hands produced the reverse, when given in quantities that produce more than a gentle sudorific effect upon the system.]

As one of the class "alterantia nervina," or narcotics, which, in small doses, produce a stimulant effect upon the nerves, (see Muller's Physiology, p. 625,) opium brought into contact with them by the blood in the extreme ramifications of the capillary system, may excite both nerves and blood-vessels to healthier action, and thus tend to keep up the ani-

*On a New Mode of Treating Ulcers and Granulating Wounds. 1837.

mal heat, and renovate the powers of the reparative function, exhausted by age, or other debilitating causes.

[This is certainly a mistake, for opium does not possess any curative property.]

In this manner, I believe, it operates as a valuable auxiliary to measures bearing more directly upon the local malady; but in treating by this remedy alone the kind of cases indicated by Mr. Skey, I have not met with the same degree of success which attended the employment of opium in his hands.

In Case xxxi., the ultimate healing of a suppurating surface so extensive, under circumstances in all respects so unpropitious, may, with great probability, be attributed, in part, to the sustaining influence of the laudanum, administered for the purpose of procuring sleep. In this instance, the patient was entirely relieved, as long as he continued to take this medicine, from prurigo senilis, which had previously been a source of constant and extreme annoyance.*

I have also had experience of its beneficial operation, administered in the manner recommended by Mr. Skey, in unhealthy ulcers of other parts—particularly in a case of obstinate herpetic ulcer on the pubes, which healed under the exhibition of opium alone, after a great diversity of local and constitutional means had been tried in vain.

When we have to treat extremely sensitive sores, opium

*Dr. Holland, in his Medical Notes and Reflections, speaks of opium as probably the best remedy in this harassing complaint. His judicious observations, Chap. 19, "On the Medical Treatment of Old Age," contain much which may be studied with advantage in connection with this division of our subject.

must be given to relieve pain, but is somewhat uncertain in its action; a small dose frequently affording complete relief; at other times, doses of three or four grains producing very little effect. Nor can we place greater reliance upon it in cases where the morbid sensibility of the sore is a consequence of general irritability of the nervous system, which may often be tranquilized by hyoscyamus, or conium, when opium has failed.

As this irritability, however, is, in most instances, a symptom either of derangement of some organ, or of general debility, instead of prescribing for the symptom, measures which are calculated to remedy the disorder, or invigorate the general health, will best relieve it. But although the morbid sensibility of the ulcer may have originated in general irritability of the nervous system, when once it has acquired this habit, it reacts upon the general system, and we shall find it extremely difficult to treat the primary derangement until the local irritability has been subdued by suitable topical remedies.

Upon this point, Mr. Abernethy, who has sometimes been reproached with advocating too exclusively the constitutional treatment of local maladies, thus expresses himself:—"It is not meant by these observations to depreciate the utility of topical applications to diseased sores, but merely to show how much they depend on the state of the health in general; for some of them, which have remained uncorrected by a great variety of local applications, will get well under simple

* "On disorders of the digestive organs which obstruct the cure of local diseases."—Surgical Observations, Part II. p. 135.

dressings, when the state of the constitution is amended.

“It is not, however, to be expected that this will generally happen; for local diseased actions have been excited, are established, and may continue, independently of the cause which produced them. Topical remedies will, under these circumstances, be employed with the greatest advantage. Again: topical applications are of the highest utility in general practice, because an irritable sore affects the whole constitution, and aggravates and maintains that disorder by which it might have been originally caused. The disorder of the digestive organs cannot, in many instances, be corrected till the fretful state of the local disease is diminished. I may further mention, with relation to this subject, that I have seen patients, who scarcely ever slept, from the pain of the local disease, whose stomachs were greatly disordered, and who had a distressing purging, which could only be controlled by opium, sleep without interruption during the night, regain their appetite, and have their bowels become tranquil and regular, when, after various trials, a dressing has at last been applied which quieted the irritable state of the sore.”

CASE III. is an example of sympathetic relations between the bladder and an ulcer on the leg; in which, as soon as the stricture which gave rise to the irritation of the bladder was cured, the sore rapidly got well under simple local treatment.

Irregularity in the discharge of the uterine functions, is likewise not unfrequently a cause of intractability. Menorrhagia, or leucorrhœa, may suspend healthy action in a sore, in the same manner as any other source of general debility. Whenever this sluggishness is coincident with imperfect

menstruation, or a total suppression of the function, and this disorder appears to arise from an evident want of energy of the system generally,—evinced by inability to bear fatigue, acceleration of the pulse and respiration on muscular exertion, tendency to anasarca, and the peculiar complexion of chlorotic subjects,—local treatment will produce little or no impression upon the ulcer, until the derangement of the health is rectified by steel, in one or other of its various forms.

In some of these cases, until the function is restored to its natural course, vicarious menstruation from the surface of the ulcer takes place; and, almost invariably, a periodical foulness of the sore and aggravation of the symptoms occur.

As additional evidence of the mutual relation which exists between the local affection and the general health, and the manner in which they react one upon the other, a curious case, related by Wiseman, (Book 2, chap. ix.) may be mentioned. An ulcer on the leg, in a young woman suffering from amenorrhœa, had long resisted every plan of treatment employed by himself and others, until he succeeded in curing it by means of his laced stocking. The woman's health now improved, and the catamenia speedily returned.

Connected with this part of the subject, also, is the question, whether the cure of ulcers which have existed for many years, and to which the constitution has become habituated, may not operate injuriously to the health? It is an article of popular belief, that old sores on the extremities act as drains for the removal of impure humors from the system, and that the life of elderly persons not unfrequently falls a sacrifice to their suppression; an opinion confirmed by, if not originating in, the circumstance that ulcers of long standing

sometimes dry up spontaneously shortly before death. The recorded experience of all the more recent medical writers who have directed their attention particularly to this class of diseases is not only opposed to the popular impression, but goes far to prove that in very many instances the health is materially benefited by the healing of these sores.

[I have never found any difficulty arise from the healing of these ulcers, except in cases where the lungs sympathise with long standing cases of Fistula in ano. But when this does not exist, I have healed these ulcers without any subsequent difficulty, even in cases of fifteen years standing. N.]

After referring to the opinions, rather emphatically expressed, of Avicenna, Heister, Le Dran, and other authorities, on the risk thus incurred, "I have ventured," proceeds Dr. Underwood, "to cure ulcers of many years' standing in very old people, and one, many years ago, in a lady upwards of eighty years of age, whom a very eminent surgeon had cautioned against suffering it to be healed; all of whom have since enjoyed good health, and the ulcers have shown no disposition to break out again." (p. 137, note.)

In Mr. Whately's practice, although the ulcers had existed, in some instances, ten, fifteen, and twenty years, in individuals whose ages ranged up to seventy-nine, not only did no evil consequences ensue, but several lived to a great age, and with improved health. Similar statements are made by Mr. Baynton and Sir E. Home. Nevertheless, since in many cases a manifest influence is exerted upon other maladies by these sores, in order to guard against any possible mischief from healing them, it is advisable to continue to pay

very close attention to the preservation of the general health; and whenever a tendency to plethora, or any determination of blood to the head exists, the establishment of an issue in the arm would be but a measure of prudence. Some few instances have come to my knowledge in which, this precaution having been neglected, death has followed within a short period of the cure of the ulcer, under circumstances which have been sufficient to raise a well-grounded suspicion that the *post hoc* may not, in all such cases, have been mistaken for the *propter hoc*.

[I have never met with but two cases in my practice, where there was any tendency to determination of blood to the head; these were, however, persons laboring under other morbid actions. I use an application of cold water to the head—bathe the feet in hot water, and apply the ligatures to the arm sufficiently tight to control the circulation. n.]

TREATMENT.

II.—OF ULCERS ON THE LEG WHICH ARE RENDERED INTRACTABLE BY LOCAL CAUSES.

HAVING satisfied himself that the intractability of an ulcer on the lower extremity arises from a local cause, or, by the removal of constitutional impediments to its cure, having brought it to the state of a local affection, the attention of the surgeon must be directed to ascertain, as nearly as possible, the precise nature of the local obstacle, modified as the peculiar characters of this malady so frequently are by accidental circumstances.

I have before remarked that these cases are usually presented to our notice in their second or intermediate stage, in which, owing to locality, they may linger for an indefinite period; the prolonged duration of this stage, when the ulcer is left to nature, exposing it to a variety of morbid actions, generally the result of inflammation and its consequences; but through all this diversity of aspect, its distinctive feature, inactivity, or inaptitude to originate and carry on the operations necessary to repair the injury, must never be lost sight of.

Thus, the great majority of ulcers of the leg are of the simply indolent kind, of which the varicose is but an accidental, although perhaps an aggravated modification, and the callous ulcer the extreme result; the supervention of inflammation will convert the atonic ulcer into an inflammatory, phagedenic, or sloughy sore; and where great excitability

of nerve exists, the character of morbid sensibility will be further impressed upon it.

Assuming, from the premises laid down in a former section that the chief local sources of intractability in these cases are either debility both of the vessels and nerves of the part, or debility of the vessels combined with extreme morbid sensibility of the nerves, the remedies which have obtained an established reputation for the relief of these conditions will naturally resolve themselves into two classes; first, such as stimulate the feeble contractility of the weak vessels, and at the same time, excite healthy nervous action; and, secondly, those which subdue excessive sensibility, (morbid or perverted nervous action,) and, at the same time, stimulate contractility.

The first class of remedies, namely—

Those which stimulate, or afford succor to the feeble contractility of the vessels, and excite healthy action of the nerves,

will best fulfil the indications on which the treatment of indolent ulcers is based.

The origin of these troublesome maladies may be a wound or injury of a serious character from the first, but it is more commonly so trifling that surgical aid is rarely sought during its early stage. A slight graze received on the shin, a scratch from the nail, it may be whilst asleep, or any injury of a similar stamp, neglected by the patient, may give rise to ulcers as refractory as those resulting from much more severe accidents.

It is difficult to impress the patient with the importance of attending to so slight a matter, until its necessity is forced

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upon him by the inflammation speedily supervening on the merest breach of surface in this situation, if he continues to take his ordinary exercise. No treatment will subdue this inflammation, and cut short the incipient ulcer, unless he can be induced to confine his leg strictly to the horizontal position. All measures short of this precaution are more than counterbalanced by the obstruction to the circulation, so often alluded to, occasioned by the dependent posture of the limb. If the leg be laid up for a day or two after the receipt of the injury, the simplest treatment will ordinarily effect its cure. Fomentations and bread poultices, or lotions, will soon get rid of inflammation; after which, any mild dressing and a bandage will, if no other obstacle exists, heal the sore speedily.

Treated thus, wounds of the leg cicatrize, *ceteris paribus*, almost as rapidly and favorably as similar injuries in any other part of the body, passing at once from the first to the third stage. No such precautions being taken, their progress is arrested during the second, or intermediate period, and they become indolent ulcers. The local source of this indolence having been traced to the suspension, or weakened discharge of the functions of the capillary vessels of the part, resulting from the stress thrown upon them by the gravitation of the blood during the dependent position of the limb, the main object of the treatment must be to determine what are the means best adapted to counteract this state.

This object may be at once attained, by placing and maintaining the limb in an elevated position, a proceeding regarded as the first step towards the cure of ulcers of the leg by all the older surgical writers, and still held to be indispen-

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sable in the management of some of the more obstinate varieties of the disease. Few patients, however, can, or will, submit to the irksomeness and inconvenience imposed by such a plan of treatment, as long as they retain the power of locomotion; and as experience has demonstrated that this mechanical obstacle to the capillary circulation may, in the majority of cases, be overcome, and the reparative process be carried on, at least as successfully, without confining the patient, or depriving him of the use of the limb, few surgeons would now propose it until all other means had failed. I need scarcely add that the means by which these ends are attained is careful bandaging; the support thus given, preventing accumulation in the veins, enabling the capillaries to make and sustain the effort necessary to repair the injury, and afterwards preserving the newly cicatrized surface from the danger of a relapse. The practical efficacy of this part of the treatment has been so long and fully established, that it may be thought superfluous to dwell upon its merits; but as a disposition has been manifested of late to depreciate its value, and revive the old opinion of the supreme importance of rest, even in the management of ulcers of a simply indolent character,* and as one of the chief aims of the following pages is to extend it to cases in which it has hitherto been considered as inapplicable, or, at any rate, in which its application has not been very successful, a brief survey of the evidence in its favor, and the principles upon which its bene-

*“As regards ulcers,” says Mr. Liston, “the paramount advantage of an elevated position of the affected part must be sufficiently obvious.”—*Med. Chir. Trans.* vol. xxiii. p. 91.

cial operation depends, will neither be unnecessary, nor, I trust, unprofitable.

Various methods of affording the necessary support have been suggested. Wiseman recommended a lacing stocking for the purpose, doubtless because it could be more effectively applied by the patient than a roller; but rollers of flannel or calico, are now justly preferred, their careful application by the surgeon himself being very properly insisted upon by all recent authorities on the subject. This is an item of the treatment, the importance of which is not always duly appreciated, failure or success depending much more frequently on the manner in which the bandaging is performed, than upon any other particular.

The several writers who advocated this practice, from Wiseman to Mr. Baynton, speak generally of *tight* bandaging as the mode by which they effected a cure, and ascribed their success to the *pressure* thus exercised. Sir Everard Home pointed out the mischief arising from the indiscriminate application of compression; and his observation of the evils resulting from their abuse, probably led him to give a less prominent position to bandages in the treatment of ulcers of the leg than they really deserve. Sir Everard's objections, however, appear to be mainly levelled at *tight* bandaging; and, in cases attended by inflammation, or by a high degree of morbid sensibility, pressure would undoubtedly prove most injurious. In the management of varicose ulcers, he admits that it is an auxiliary of the greatest value, although not applicable to every case of this nature, "as, however," he concludes, "those patients who cannot bear bandaging at all are but few, they must be rather looked upon as exceptions,

and uncommon cases, than as affording any argument against the general treatment.”*

In the preceding section I glanced at the very decided opinion advanced by Dr. Underwood as to the greater permanency of the cures effected under a system of regulated exercise, than when the patient is confined to the horizontal position. He ranks the means for accomplishing the intentions necessary to the cure of these cases under four general heads—External applications, Bandage, Exercise, Diet and Medicines. After remarking “how greatly prejudicial it must be to general health for a person accustomed to labor and exercise, to be confined for a length of time to an inactive state, and the greatest part of it in an almost horizontal position,” he exclaims, “has it the most remote tendency to perfect the cure; I mean, to make such a cure as shall stand?” (p. 79.) A question which he thus resolves in another part of his work; “the frequency, I had almost said the constancy, with which large and old ulcers on the legs are found to return, is greatly owing to their having been healed in the horizontal position of the limb;” (p. 53)—which statement the experience of Messrs. Whately and Baynton, and Sir E. Home, in a great measure corroborates, although the question relates not merely to the advantages or disadvantages of the cure by position, but to the comparative efficacy of the treatment with or without the bandage.

By Mr. Baynton, and Mr. Whately, who treads closely in the steps of Dr. Underwood, the bandage is regarded as not merely accessory, but primely instrumental to the cure; they claim for their respective methods a superiority over the old

*Practical Observations on Ulcers of the Leg, p. 286.

system of confining the limb to the horizontal position, affirming that ulcers of the leg heal *more* speedily and soundly under the treatment laid down by them, whilst the patients are taking exercise, than when absolute rest is enforced. The modes of bandaging employed by these gentlemen are too well known to require a detailed description here; of the two, Mr. Baynton's proceeding has been more universally adopted, and may, in fact, be said to have superseded that of Mr. Whately.

Mr. Baynton ascribed the greater success attending his plan of treatment chiefly to the approximation of the opposite edges of an ulcer, effected by the agency of adhesive strapping; in confirmation of which he cites the smaller size and greater soundness of the cicatrix when it has been employed. Mr. Whately denies that a smaller cicatrix is produced by Mr. Baynton's bandage than by his own proceeding; and one of Mr. Baynton's own correspondents, Mr. Sandford, of Worcester, in a letter appended to the second edition of his Essay, states that he sometimes succeeded still better when the adhesive plaster was spread only at each end of the straps, and not over the centre, and consequently had never been in contact with the ulcer, or its edges.

A little consideration will show that, although it may approximate the margins of small, narrow ulcers, secreting scantily, in those of greater extent and more severe character, its beneficial operation, in the manner and with the object attributed to it by Mr. Baynton, has been much overrated.

In the first place, the resin contained in adhesive plaster—as Mr. Baynton himself acknowledges, and general experience has confirmed—proves, in many cases, too irritating;

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in contact with a healthy ulcer, its secretions are often found to change for the worse; a thin, acrid sanies is poured forth freely, excoriating the surface of the skin for some distance round the ulcer, and completely destroying the adhesion of the straps. Erythematous or eczematous ulceration is thus frequently superadded to the original malady.

With the view of remedying these disadvantages, other forms of plaster have been substituted for the adhesive.—Lead plaster alone, a mixture of Emplast. Thuris and Empl. Saponis, or the Empl. Saponis simply, have been recommended, any one of which is free from the objections urged against the resin plaster; the smallest quantity of secretion, however, from a perfectly healthy ulcer, is quite sufficient to prevent adhesion near its edges. But if this separation be not effected by the discharge from the sore, the constant affusion of cold water counselled by Mr. Baynton must speedily accomplish it; so that whatever modification of his treatment may be adopted, whatever kind of strapping employed, within a very short time of its application, its adhesion to the skin near the sore will be more or less loosened, and its agency limited to the support or pressure afforded by it. To this alone (excepting in those cases where its stimulating effects may be brought into play beneficially upon an atonic or callous ulcer),—as a substitute for the lost skin, and as a means of enabling the vessels of the granulating surface to bear that moderate exertion of the muscles by which the circulation in the veins is so materially promoted,—its salutary operation, in conjunction with the bandage, is to be attributed; and to the circumstance that the new structure is thus habituated, throughout the reparative process, to exercise with the

limb in the dependent posture, is, doubtless, owing the greater permanency of the cure under the influence of bandaging.

In corroboration of this view of the mode of operation of the strapping in Mr. Baynton's plan of treatment, in lieu of plasters, many surgeons attain an almost equal degree of success by employing strips of linea, or calico, spread with Pott's soap cerate, or Kirkland's neutral cerate. Their adhesion to the leg beneath the bandage is sufficient to give a considerable degree of support, but no approximation of the edges of the ulcer can be affected by them.

The same objections do not apply to the plan of treatment followed by both Underwood and Whately, who recommend flannel bandages as the best mode of giving the requisite support. Nevertheless, suggested for the management of ulcers of the leg without confinement, one serious obstacle exists to its general adoption, namely, the discomfort sustained by a patient taking exercise with his leg enveloped in a heating flannel roller. Flannel may be the best material for bandaging the legs of elderly persons, with whom it is an object to prevent the animal heat from sinking below the proper standard; for the same reason, it may be often advantageously resorted to with other subjects, during the colder seasons; but under ordinary circumstances, where elevation of temperature forms one of the most prominent symptoms of the case, the accumulation of heat it occasions is often insupportable, and must be injurious to the well-being of the ulcer.

Mr. Whately admits that common calico bandages "answer the purpose very well," but he considers flannel to be preferable, on account of its greater softness and elasticity.

The surgeon is not, however, now confined to this material, where a softer and more elastic bandage than calico is desirable, since the cotton stocking roller manufactured by Churton, of Oxford-street, possesses these qualities in an equal degree with flannel, at the same time that it sits lightly and pleasantly on the limb.

In practice, therefore, Dr. Underwood and Mr. Whately avoided the evils incidental to tight bandaging, as they employed support rather than pressure; but Mr. Scott was the first to recognise, as a principle, the distinction between them. This distinction, however, is one mainly of degree, pressure being the medium by which support is given. For example,—the slightest compression applied to a highly sensitive ulcer, not only cannot be borne, but, if attempted, would prove extremely mischievous; as the heightened sensibility subsides, moderate support may be given to the dilated and weakened vessels in a gradually increasing ratio, till, in the insensible, fungous state, it amounts to considerable pressure, which Sir E. Home considers to be far more effectual than escharotics in keeping down an inordinate growth of granulations, and promoting sound cicatrization.

In callous ulcers, compression has been resorted to with another object. The marked feature of this variety of the disease is the elevated and thickened margin surrounding it, (alluded to in p. 20,) and the almost total absence of any attempt at reparative action. At the same time, therefore, that stimuli are applied to the surface of the ulcer, in order to excite that vital action upon which vigorous circulation, secretion, and granulation depend, pressure is absolutely necessary to cause the absorption of the indurated welt with

which it is encircled, and which, as long as it exists, opposes no inconsiderable barrier to the free transmission of blood. It is thus that compresses of thin sheet lead proved successful, in the hands of Mr. Else and others, in effecting the cure of obstinate ulcers after all the ordinary means had failed; a practice sanctioned by Sir E. Home, though now fallen into unmerited neglect.

The existence of a considerable degree of morbid sensibility however, does not contra-indicate the bandage; gentle compression, or support, will often remove it as completely as, and more effectually than, rest in the horizontal posture,—since, under the latter treatment; a change of position will always renew the pain, whereas, tolerance of the bandage, once established, moderate exercise may be taken, not only without risk of provoking a return of the irritability, but with a beneficial effect upon the progress of the ulcer.

Pressure has long been employed with the greatest advantage in the treatment of chronic ulcers in the groin, attended with induration, so frequently resulting from open buboes; and as a further illustration of its influence, it can scarcely be considered irrelevant to mention, that it has been applied with some success to a variety of ulcer on which it might, *a priori*, have been expected to produce an injurious rather than a salutary impression. In a paper published in the Dublin Journal for September, 1838, Mr. Hugh Carmichael records the result of his experience of compression, by means of adhesive straps and slips of sheet lead, as a mode of arresting venereal phagedenic ulceration, and converting a spreading sore of this kind into one of a florid, healthy aspect, with contracting margins. “Great irritability,” says Mr. Carmichael,

"being one of the most prominent features of the disease, I was induced to imagine that pressure (an agency used with so much benefit in ill-conditioned, unmanageable ulcers generally, where morbid sensibility is a very leading character) might probably in these be likewise adopted with some advantage. In some instances," he states, "I have been enabled by means of it alone, to perfect the healing of the ulcer, unaided by any other measures; while in others, (and those the greater number,) its phagedenic nature was only removed, a morbid diathesis still remaining, which appeared incapable of being overcome entirely without more active remedies."

I have found this practice very serviceable in arresting ulceration, exciting healthy granulation, and hastening cicatrization, in ulcers of the frænum preputii, after that septum has been eaten through by ulceration, or its division completed by the knife; employing for the purpose small compresses of lint, and strapping externally.

The utility of compression in subduing inflammation and relieving pain,* in circumstances where this result could still less be anticipated, is exemplified also in the treatment of inflammation of the testicle by adhesive strapping, suggested by Dr. Fricke, of Hamburg, and now very generally adopted. The extreme pain suffered in this malady is most probably occasioned by the pressure of the distended vessels upon the nerves contained within the membranous envelope of the or-

* "A part inflamed," observes Mr. Hunter, "by being pressed is made easier; thus a person with an inflammation of the finger will find relief by gently pressing it on the hand."—Treatise on the Blood, p. 73. The throbbing produced by the momentum of the column of blood at each diastole of the supplying artery is thus controlled.

gan; and in the aggravation of the symptoms when the testicle is unsupported, the relief afforded in either case by compression, as well as in the proneness of the veins both of the leg and of the testicle to become varicose, not a little analogy may be traced between the state of the vessels and nerves in hernia humoralis and in ulcers of the leg.

Support and pressure, then, are to be regarded but as different degrees of the same agency; and in order that the full advantage derivable from it may be obtained, and all inconvenience avoided, it is essential that the degree of pressure given by the bandage should be carefully graduated to the nature of the case, and more especially that it be uniformly the same. It is quite impossible to ensure this unless the application be made by the surgeon himself; and it must be steadily persevered in until cicatrization be complete,—a single day's neglect at a critical juncture, or one unskillful application of the bandage, may undo all that has been gained by a month's care and attention. Nor, indeed, in the treatment of large ulcers is it safe to lay aside the bandage for some time after cicatrization is perfect: if support be abandoned too early, the new skin will often give way, and the sore will speedily relapse into its former state.

I have thus endeavored to establish that the principle upon which the several morbid conditions of an ulcer of the lower extremity, traceable to local obstruction to the circulation, may be most successfully combated, without subjecting the patient to a discipline repugnant to his feelings and habits, and more or less prejudicial to his health, is regulated compression, varying from the most moderate degree of

gentle support up to actual pressure. The only cases in which this principle is conceived, by its warmest advocates, to be inapplicable—in which no degree of pressure can be borne—are ulcers complicated by inflammation, or by the existence of a high degree of confirmed sensibility.

The next point for consideration is the various topical applications which have been recommended as dressings to ulcers of the leg.

DRESSINGS.

“It is impossible to be serious while we enumerate the thousand remedies which have been applied to ulcers.”—Such was the exclamation of John Bell, when passing in review the claims advanced by the partisans of each new method of treating them; and, to make good his assertion, he proceeds, in humorous strain, to lay before his readers a catalogue of incongruous substances, which might well provoke a smile, were it not for the evidence it affords that a disease, for which so vast a store of infallible means of cure are provided, must in turn have baffled them all.

The highest authorities admit that the choice of a suitable application in these cases must be more or less empirical; that is to say, although peculiar appearances, familiar to the practised eye, but which cannot be well described, may frequently indicate peculiar modes of treatment, “the greatest experience,” says Mr. Abernethy,* “does not enable a surgeon to select with certainty a successful application; for every candid surgeon must allow that, after having tried a round of applications without benefit, one has at last been employed from which no great good was anticipated, but which has, nevertheless, completely allayed the morbid feelings of the sore.”

Influenced by the same conviction, Sir Everard Home conceived “a number of different medicines to be necessary,

*Lectures, p. 110.

which may be used in different degrees of strength, so as to adapt them to the peculiarities of different cases, even of the same species of ulcer;" and he strongly advises the young surgeon to "spare no pains in storing his mind with as extensive a stock as possible of this kind of knowledge." The applications suited to the peculiar modifications of each variety of ulcer are distributed by him under five heads:— Those employed in the form of vapor; in a moist state; in a dry form; in an unctuous form; and finally, bandages. As bandages ought rather to be looked upon as the most effectual means of counteracting that local state, arising from situation, in which the indolent character of ulcers of the leg originates, it would be more just to consider them as the necessary super-addition to, or complement of every dressing employed, than simply as an application called for by certain peculiarities of the case. Messrs. Whately, Baynton, and others, have satisfactorily proved that, in comparison with this prime feature of the treatment of indolent ulcers, all other measures are but of secondary importance. At the same time that Mr. Whately admits that "there are certain conditions of an ulcer which will not bear compression," he expresses his surprise that a practical surgeon, like Sir E. Home, should pass over "so slightly this most essential part of the cure, and even speak of it as frequently injurious," an impression which, he thinks, can only have arisen from a negligent application of bandages.* This is scarcely a fair representation of Sir E. Home's estimate of their utility; but he certainly has not allotted to them the position

*Whately on Ulcers, Preface.

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they deserve to occupy. So convinced was Mr. Whately of their paramount efficiency, when properly applied, that he concludes his remarks upon Sir E. Home's opinions by affirming that, according to his experience, "a great variety of remedies can very rarely, most probably never, be necessary." In this he appears to be borne out, it must be acknowledged, not only by the cases he records, but by those reported in many other treatises on these affections, scarcely any variety having been admitted in their management.

Nevertheless, even were it conceded that success under Mr. Whately's proceeding, or any other modification of the treatment by bandaging, is the ordinary result, and intractability the exception, it is still necessary to be provided with a variety of remedies to which we may have recourse in cooperation with it, when compression alone fails; it is moreover, one of the characteristic features of the indolent ulcer, that although its progress towards cure may have been materially expedited on the first application of any given remedy, unless the stimulus be repeatedly changed, it soon relapses into its former sluggish habit.

Emollient applications, as steam, fomentations, and poultices, must be employed for the purpose of allaying inflammatory symptoms, or extreme morbid sensibility, whether occurring as the ordinary characteristics of the early stage of the disease, or supervening at a later period; but when they have accomplished that object, and a disposition to granulation is manifested, a persistence in their use enervates the ulcer and the surrounding parts, and helps to produce that sluggishness which renders simple injuries in this locality so intractable.

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Instead, therefore, of attempting to obviate this, and excite healthier secretion and more vigorous action, by dressing the sore with stimulating ointments, lotions, or powders, beneath the poultice, as soon as inflammation is subdued, and morbid sensibility calmed, emollients should be discarded altogether. Up to this period, rest and the maintenance of the limb in the horizontal position are indispensable; the emollient measures cannot otherwise be put in force. It is now that bandages are brought to bear upon the case with the best effect. The gentle support at first afforded by them, generally removes any remaining morbid sensibility, keeps up the healthy tone of the vessels, and enables them to discharge their functions with due energy. If they are resorted to at the proper juncture, before an indolent habit is established, and the secretions have become depraved, granulation and cicatrization will proceed favorably, under the simplest topical applications; all that is required of them under these circumstances is, that they shall be perfectly un-irritating *per se*, calculated to protect the sore from external sources of irritation, and prevent its surface becoming dry during the intervals between the dressings.

The difficulty of devising a dressing capable of fulfilling these several indications completely, has been felt by all who have paid attention to the subject. Mild unctuous substances, which are commonly employed, are objected to, for their liability to turn rancid, by Sir E. Home, who suggests, as the most soothing application, fresh cream, if it can be obtained, or, in lieu of it, artificial cold cream of the simplest manufacture. Mr. Whately is evidently no great advo-

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cate for unctuous dressings, although he employed hog's lard, spermaceti ointment, and calamine cerate, as the best materials with which he was acquainted for preventing evaporation, and consequently the formation of dry crusts at the edges of the ulcer. To ensure this object, he filled the wound with successive strata of lint spread with the ointment, covering them with a large pledget of tow likewise embued with it, and enveloping the whole with compresses of linen, over which his flannel bandage was applied. There is, however, another objection to ointments, besides their proneness to turn rancid; unctuous dressings never absorb the discharge from the surface of the ulcer. As long as the bandage is properly applied, and secretion is small in quantity and healthy in quality, the most rancid dressings may be, and frequently are, employed with perfect impunity; but when it becomes profuse, and of an acrid nature, the freshest blandest ointments may prove mischievous, by aiding its diffusion over the surrounding skin, and thus exciting extensive inflammation, very commonly running on into superficial ulceration. At best, they are filthy applications, and require the greatest attention to cleanliness, to prevent their combining with the discharge, and forming crusts round the ulcer beneath which fresh ulceration is often developed.

Mr. Baynton, who dwells especially on the high degree of heat present in the majority of his cases, inveighs strongly against "those non-conducting substances, improperly termed cooling ointments," and presages their neglect and disuse when experience shall have established the superiority of his method of treatment; a prediction in a great measure accomplished, as far as simply indolent and callous ulcers are

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concerned. Applied to irritable ulcers, however, or even to insensible sores of large size, attended by much discharge, Mr. Baynton's treatment would often prove more injurious than that objected to by him, were it not for an adjunct to the adhesive strapping employed by him,—“a remedy of singular utility,” he remarks, “in almost every case of local inflammation,”—the free application, to wit, of cold water.

Fixing his attention on the high temperature of the part, as one of the chief symptoms against which the treatment should be directed, he hit upon this very simple method of keeping the surface of the sore moist, and, at the same time, cool. Its importance is almost as much insisted on by Mr. Baynton as the employment of the strapping; and a perusal of the cases reported by him will show that, in very many of them, to the cold affusion little short of an equal share in the success was owing.

In his second edition, Mr. Baynton appears to be in some alarm lest too great a proportion of the merit due to his method of treatment should be imputed to the auxiliary “the mere application of cold water;” and he hastens to assure his readers that his “later experience has proved that in some cases a part of those means, and what he formerly deemed an essential part, (alluding to the cold affusion,) may be dispensed with.”

[I have in some cases found it so inconvenient for the patient to be confined to the recumbent position long enough to undergo a systematic treatment as recommended in this and the preceding chapters, that it was necessary to resort to other methods; and as regards the use of ointment in such

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cases, I agree with the author generally, yet I must say that I have found the Unguentum Plumbii Compositum of the Eclectic Dispensatory of great value in many cases; and in some, I have healed them after the other forms of treatment had failed; this should be used according to the direction in the Dispensatory.]

Mr. Baynton's correspondent, Mr. Sandford, in the letter already referred to, seems to be of opinion, that, of the two, the adhesive plaster may be better dispensed with, since he states that he sometimes met with greater success where its omission at the middle of the strap allowed the water to come into more immediate contact with the ulcer. His patients, too, as an incidental remark at page 80 shows, judging, no doubt, by the relief it gave, regarded the water as mainly instrumental in effecting the cure.

On the whole, then, I believe I shall not overstate general experience on this point, if I say that, allowing to Mr. Baynton's method all the merit which he claims for it in the indolent and callous varieties of ulcer, when we have to treat the more aggravated cases, even of indolent sores, where heat is a prominent symptom, strapping, however modified, unless accompanied by constant and copious affusion of cold water, frequently proves so injurious that it becomes necessary to abandon it, and once more have recourse to the poultice and recumbent position.

I have dwelt more particularly upon this adjunct to Mr. Baynton's treatment, because, since the introduction of water dressing, it has been extended to the management of indolent ulcers of the leg; and many surgeons now employ this

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simple topical application and a bandage in preference to the ointments formerly in vogue.

Water dressing is as bland and innoxious as Sir E. Home's suggestion, fresh cream, and possesses the advantage of being renewed much more readily. At the same time that it keeps the surface of the ulcer, and the skin surrounding it, moist, it is capable of absorbing that redundancy of secretion which the simplest oleaginous dressing has a tendency to diffuse injuriously. Its qualities, however, are not merely negative, since it likewise enables us to avail ourselves of the operation of temperature upon those functions of the animal economy over which it is found to exercise a powerful influence. Futhermore, by the medium of moistened lint all the various mutations—from emollient to astringent, stimulant, sedative, and escharotic—which these maladies call for, may be readily administered at any degree of strength; nor does it exclude the employment of powders to the surface of the sore, in cases to which remedies in this form are considered suitable.

Reserving for future consideration these more complex applications, I shall inquire, first, into the *modus operandi* of water dressing, with reference to its adaptation to the several varieties of the disease, and then proceed to describe what are according to my experience, the best methods of employing it in concurrence with the bandage.

WATER DRESSING.

The therapeutic operation of water as a topical application to ulcers is to be ascribed, mainly, to its agency as a vehicle of temperature; but some share in the effects produced must be conceded to the medium itself. As long as it is maintained in contact with a suppurating surface, it prevents evaporation from it, and consequently, the formation of crusts or scabs, which often interfere materially with the granulating process. Even when the application of water is not continued, the lint protects the sore quite as effectually as unctuous dressings, and being capable of absorbing, to a certain extent, redundant secretion, that injurious diffusion of acrid discharge, which they so directly contribute to produce, is avoided.

As, however, the operation of water upon the animal tissues depends more upon the influence exercised by its temperature, than upon any property inherent to it, the gradations of which vary infinitely, the chief point in this inquiry will be to determine, as nearly as possible, what are its effects applied locally at certain specified grades of temperature.

The mode of action of temperature upon the body consists of an abstraction of heat from, or a communication of heat to, any part of the surface; an important influence being thus exercised over its vital functions—in other words, over its sensibility, contractility, and the evolution of animal heat.

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The great power possessed by water of conducting and diffusing heat, enables us to regulate this influence, by its intervention, with more facility and uniformity than could be accomplished by any other medium.

Fixing, then, upon the two grades of cold and tepid water I shall proceed to examine the actions on the sensibility and contractility of healthy tissue peculiar to each.

ACTION OF COLD WATER—under which designation may be included a range of from 40° to 70° of Fahrenheit.*

On the nerves: stimulant; augmenting sensibility, and rousing into extraordinary activity those vital functions by which the evolution of animal heat is effected to resist the invasion of external cold, or rather, to supply the loss occasioned by the unusually rapid abstraction of heat. As long as the part retains sufficient vitality to enable it to respond thus to the stimulus of cold, it excites healthy action; when vitality is reduced below this point, its depressing or destructive action commences.

On the blood-vessels: constricting; producing an increased exertion of their contractility.†

*Dr. Currie's cold affusion comprised a range of from 40° to 65° ; his cool grade from 75° to 87° ; his tepid affusion from 87° to 97° .—Reports on the Effects of Water, V. i.

†With reference to the vital tonicity of the arteries, Muller remarks, that although admitted by Parry, Weber, and Tiedemann, "it had not been actually observed until Schwann made his experiments by the application of cold water to the mesentery of the frog and rana bombina. After having extended the mesentery under the microscope, he placed upon it a few drops of water, the temperature of which was some degrees below that of the atmosphere. The contraction of the vessels soon commenced, and gradually increased, until, at the expiration of ten or fifteen

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In considering the action of cold upon the peripheral circulation, the degree to which the capillaries may be affected by the vital contractility of tissue, particularly of the skin, must not be overlooked.

On discontinuing or interrupting its application, reaction takes place; the constringent influence of cold being removed, the capillaries relax and admit a larger quantity of blood than in their previous condition, and animal heat is evolved in excess.

These phenomena are usually evanescent; but the vitality of the part may be so far reduced as to leave it in a state of congestion or chronic inflammation, of which result chilblain is a familiar example.

The stimulant action of cold upon the nerve may likewise provoke violent reaction in excitable subjects, or under peculiar circumstances, notwithstanding the continued application of a low temperature; and phlegmonous inflammation of a serious character may ensue, as the following case will testify. Some years ago, I was sent for to visit a wheelwright, who had divided the ulnar artery just above the wrist. Having secured both mouths of the bleeding vessel, I directed linen, soaked in Goulard's lotion, to be applied, and kept constantly wet. Four or five hours afterwards, I was again summoned, and found my patient in a state of the highest

minutes, the diameter of the canal of an artery in the mesentery of a toad was reduced to one-half or one-third; the area consequently to one-fourth or one-ninth of its previous dimensions. The arteries then dilated again, and at the expiration of half an hour had acquired nearly their original size. By renewing the application of the water, the contraction was reproduced; in this way the experiment could be performed several times on the same artery."—p. 206.

excitement; the hand and forearm were tensely swollen and red, and the heat thrown off from the surface so great, that a continued cloud of vapor rose from the moistened linen.

Shortly after I had left him, the lotion having, perhaps, been negligently applied, the wound had become painful and hot. As the heat and pain increased, the man called for a bucket of the coldest water that could be procured, and for more than two hours, had subjected the whole limb to unceasing cold affusion. So far from giving relief, the pain was now insupportable; his pulse full and bounding, and high constitutional disturbance already stirred up. Conceiving that the cold might have provoked the mischief, I determined at once to try the effect of warm fomentation in place of the cold affusion; and in less than half an hour after the change was made, saw the pain soothed, the heat, throbbing, and the tumefaction subsiding, and the state of extreme phlogosis, just described, rapidly disappearing.

Whether this intense reaction resulted from the excitable temperament of the man, or from the nature of the injury—the ligature of an artery being generally followed by heightened temperature of the surface of the limb—it places in a strong light, not merely the inadequacy of cold, under certain conditions, to arrest inflammation, but the aggravation of the symptoms which may actually be produced by it, if in ignorance or disregard of such a contingency, its use be indiscriminately persisted in. I recollect another instance, when house-surgeon to St. Bartholomew's Hospital, in which an attempt to put down inflammation of the hand and arm by an injudicious perseverance in the application of cold, ended, after extreme suffering, in the formation of an exten-

sive vesication containing thin pus. This was a case of phlegmonous inflammation, not erysipelas.

ACTION OF TEPID WATER; or water at a temperature of from 80° to about 95° .

On the nerves: sedative throughout its application; allaying undue excitement; maintaining the part as much as possible in a state of ordinary sensibility, and aiding them in keeping up the animal heat where the vitality of the part, or of the constitution, is at low ebb.

On the blood-vessels: gently constricting, in a degree proportionate to the difference between the temperature of the water and that of the blood circulating in the part.*

Bearing in mind the distinct effects produced by these two grades of temperature upon the nerves and vessels of healthy tissues and their pathological conditions in the several varieties of ulcer on the leg, cold water obviously ranks with that class of remedies which stimulate feeble contractility, and excite healthy nervous action; tepid water with such as tend to subdue excessive sensibility, the result of actual lesion of nerve.

* In Kaltenbrunner's experiments with tepid water, the circulation was moderately accelerated, and the walls of the vessels moderately tense, affording evidence of increased contractile action.—*Experimenta circa statum sanguinis et vasorum in inflammatione.*

TREATMENT,

BY COLD WATER DRESSING AND THE BANDAGE, OF ULCERS ON THE LEG WHICH ARE INDOLENT AND IRRITABLE AS A CONSEQUENCE OF THE MORBID CONDITION OF THE VESSELS.

The capillary vessels in a suppurating surface, according to Mr. Liston's description of them, are "enormously and irregularly dilated—varicose, in fact." The small arteries in the parts immediately adjacent, of which the capillaries of the ulcer are the continuation, for some time after the cessation of the inflammation remain in a state of relaxation, their tone being more or less impaired, the circulation sluggishly carried on, and all their functions discharged feebly. In parts favorably situated, tonicity is gradually recovered, and, with very little assistance from art, nature completes the reparative process.

In ulcers of the leg, when the limb is dependent, or if the veins are varicose, even when elevated to the horizontal position, the small arteries and capillaries have the additional obstacle arising from accumulation of blood in the veins to contend against, and require all the artificial aid that can be afforded them. The application of cold, an agent so powerful in exciting vascular contractility, is one of the simplest and most effectual means we possess of restoring and maintaining the tone of the vessels at the point which will enable them to accomplish any extraordinary effort required of them.

The principle upon which depends the successful applica-

tion of cold in *inflammation* is, that—the grade of temperature calculated to stimulate the contractility of the dilated capillaries, without depressing too much the vitality of the part, having been ascertained—attention be directed to the uniform maintenance of that degree of cold throughout its application; an object which is attained with the nearest approach to certainty by the system of irrigation, beneath a sheet of oiled silk, as recommended, some years since, by Messrs. Josse* and Berard,† and adopted by Dr. Macartney,—the fluctuations which are the inevitable result of the ordinary modes of reducing temperature‡ by unrestrained evaporation, and the alternate chill and reaction consequent thereupon, being thus avoided.

In the employment of cold water as a topical remedy in ulcers, at least an equal degree of caution is necessary to avoid the application of too low a temperature—not alone to prevent the extreme consequences which may ensue, the extinction of all vitality in the newly formed structure—but to guard against the vitality being reduced to a degree incompatible with vigorous reparative action. Evaporation ought, therefore, on this account, to be controlled, as in irrigation, by enveloping the part of the limb affected in a sheet of oiled silk.

There is not, however, in these cases, the same liability to

* *Melange de Chirurgie pratique*, 1835.

† *Memoire sur l'emploi de l'eau froide*, *Archives generales de Medicine*. T. vii. 1835.

‡ Mr. Abernethy, in his surgical lectures, always objected strongly to the term *reduction* of temperature, as a mode of expression likely to mislead; and suggested instead of it the "regulation of the temperature."

reaction from the irregular application of cold, nor the same mischief to be apprehended from its occurrence, as in inflammation. On the contrary, so far from being injurious to the progress of an ulcer, I am persuaded that the reaction excited by the renewal of the cold application is a beneficial stimulus to indolent and callous ulcers; and as the oiled silk is rather calculated to foster this reaction, at the same time that it guarantees the part from all undue reduction of the temperature, I never employ cold in these maladies without directing the patient to cover the dressings with an oiled silk envelope.

As soon, therefore, as all inflammatory action has been subdued by emollient and antiphlogistic measures, these may be advantageously exchanged for cold water dressing and support, applied in the following manner. The sore being dressed with a compress of lint dipped in cold water, folded once or twice, or three times, according to the degree of compression which the surgeon may deem suitable to the case, three or more moistened strips of linen or calico, about two inches and a half in width, are to be carried smoothly round the leg. These strips must be applied precisely in the same manner as the strapping recommended by Mr. Baynton; the middle of the first strip being placed upon the back of the leg, with its upper edge opposite to the lower margin of the ulcer, the ends are brought round to the front, drawn firmly, and laid down smoothly one over the other; the second strip must cover the upper third of the first; and the same proceeding be followed with as many strips as the size of the ulcer may require. Over the strips a calico bandage is applied, the greatest attention being paid to its equable adjustment,

so that the compression be distributed evenly over the entire surface, and its amount regulated by the sensibility of the ulcer. Where the leg is slender above the ancle, the roller is apt to fall into plaits, and furrow the skin; to guard against this inconvenience the hollows immediately above the malleoli should be filled up by compresses of lint. The whole is then to be soaked with cold water, and the moistened bandage enveloped with a sheet of oiled silk, re-opening it from time to time, to renew the old affusion. The wet strips of linen adhere to the limb, even before the application of the bandage, almost as closely as adhesive strapping, and are capable of affording a support scarcely inferior to that derived from it. In the case of a gentleman whose legs were extremely bulky, and where they were applied from the toes upward, after the mode of strapping the leg followed by Mr. Scott, the patient was in the habit of removing the roller in the afternoon, and, drawing a silk stocking over the strips of linen, trust solely to the support afforded by them until the following morning. If the ulcer secretes abundantly, it is better at first to repeat the dressing daily, although the lint will absorb much of the discharge; very shortly, however, under the action of cold; large, shining, semi-transparent granulations become compact and red, and a thin and copious secretion diminishes in amount and improves in quality, rendering a daily renewal of the dressings quite unnecessary; and, after a time, this necessity becomes still more rare; in several of the cases hereafter recorded, an interval of three, four, or even five days sometimes elapsed between each dressing, without any interruption to the onward progress of the ulcer.

The frequency with which the cold affusion is practised must be regulated by the temperature of the part, and the state of the patient's feelings; heat, uneasiness, and irritability being at once relieved by it; the age and temperament of the patient, as well as the season of the year, must also be taken into consideration. In proportion as the ulcer advances towards cicatrization, it is required much less frequently, and in the last stage of the cure may often be altogether dispensed with.

In the early management of very deep ulcers, I have found it requisite to modify the water dressing as follows: unless the cavity be filled up to the level of the surrounding skin, and its surface participate in the support given to the rest of the limb, granulations rise very slowly from the depth of the sore; successive layers of lint, according to Mr. Whately's practice, or scraped lint—the *charpie rapée* of French surgeons—were not, I found, well adapted either to absorb the discharge, or to imbibe the water, and convey it freely to the deeper portions of the surface; in fact, such a mass soon became as impenetrable as an unctuous dressing.

Instead of lint, therefore, in such circumstances, I make use of soft sponge, torn up into very small shreds, and soaked in water; these are dropped lightly into the ulcer, and covered with a single layer of lint, over which the bandage is carried, as in shallow sores; gentle support being thus conveyed to the entire surface, and tone communicated to the minute vessels, granulations spring up uniformly and vigorously, and fill the hollow of the ulcer, often with surprising rapidity, of which Case xvii. is an example. The sponge acts, as far as its compressing power is concerned, on the

same principle as the wax dressing poured into deep ulcers, in the manner suggested by Mr. Stafford; according to my experience, however, it is not only a more convenient mode of effecting the same object, but accomplishes it more speedily and completely. The shreds of sponge should be well soaked, and lightly distributed, in order to avoid any ill consequences from too much pressure by their subsequent expansion.

Under this simple plan of treatment, I am satisfied that the granulation and cicatrization, in a large majority of cases of indolent ulcers of the leg of long standing, even when attended with a high degree of irritability, will proceed more favourably and expeditiously, and occasion less inconvenience to the patient, than under any other method whatever.

Having expressed myself thus strongly in its favour, it must not be inferred that I regard other measures as entirely superfluous. I have already entered my protest against all such exclusive views. A long practical familiarity with the working of Mr. Baynton's mode of treatment, under all its modifications, has impressed me with too strong a conviction of its value to permit me to speak slightly of it; there are many cases in which it may justly claim a preference to every other method; some in which its efficacy may be but equal to that of the plan just detailed;—nevertheless, a very considerable proportion remains, in which so much mischief occasionally follows its employment as to leave a fair field open for the trial of other means which are exempt from the inconveniences entailed by it.

Dr. Underwood, Sir E. Home, and others,* have pointed

*“Necesse quoque est varia adesse medicamenta, viribus pariter et virium gradibus distincta.”—Ambrose Pare, cap. ix. lib. 12.

attention, moreover, to the circumstance that variety in the local remedies is indispensable to the management of ulcers of the leg: however favourable the progress of the case on the first application of any given remedy, its influence soon declines, and a change becomes necessary to keep up the flagging energy of the part. Still we are to be guided by the same principle on which the beneficial operation of cold is grounded; the tone of the vessels must be maintained by recourse to more powerful astringents; and for changes which have this purpose in view, water dressing is especially adapted. Nothing is more easy than to dip the compress of lint, used in water dressing, into a solution of sulphate of copper, sulphate of zinc, nitrate of silver, chloride of lime, or into a lotion of dilute nitric acid, or a decoction of oak bark, the strength of any of which preparations may be varied to meet the exigencies of the case.

Should the aspect of the sore lead to the belief that alterative topical remedies would prove beneficial, black wash, or weak solutions of the bichloride of mercury—one grain to an ounce of lime-water—may be employed in the same manner, or, the favorite application of Wiseman and Dr. Underwood, red precipitate, may be sprinkled over the surface of the sore, in addition to the water-dressing.

[There is no doubt but it is absolutely necessary to make use of topical remedies for the reason assigned by the author; he appears to have in view the effect and not the Agent. I know that the mercurial preparations recommended will in some cases produce serious effects upon the general health, and for this reason would advise as heretofore the sesqui-carb. potassa, the oak bark extract, or even the sulphate

of zinc of the author is preferable to the mercury, and I may say here, that I recommend such in all cases in preference. N.]

A few applications of the nitrate of silver* are generally required towards the conclusion of the case, to repress exuberant granulations, and prepare them for the skinning process. On this point Sir E. Home judiciously observes, that it is better to prevent the granulations rising above the surface of the surrounding skin, by an early recourse to remedies which will fulfil that object; increased pressure is regarded by him as one of the most effectual means of accomplishing this,—but he speaks in still higher terms of the advantage derived from occasionally dusting the sore with powdered rhubarb. The new structure is thus rendered more firm and compact, and the cure is more likely to be permanent. Sores that are allowed to skin over prematurely are very apt to give way as rapidly.

For more ample information on the numerous topical applications which have been recommended in ulcers of the leg, I refer the reader to the work of Sir E. Home, and other treatises on the subject.

There are several methods, however, of treating refractory ulcers of the indolent kind, as well as the callous ulcer, which deserve particular mention, as recent additions to our store of means for coping with such cases, and overcoming their stubbornness.

* Soon after the publication of Mr. Higginbottom's Essay on the Employment of Nitrate of Silver, I made numerous trials of this remedy, in the manner indicated by him, for the cure of ulcers on the leg; but met with very little success. I have noticed its failure in these cases in a paper on the Use of Nitrate of Silver in some Diseases of the Skin, which appeared in the Medical Gazette for October 14th, 1837.

TREATMENT OF INDOLENT ULCERS.

Dr. Bresciani de Borsa,* physician to the Hospital at Verona, states that in very old ulcers, especially those of the leg, which resist every other mode of treatment, he has obtained sound cicatrization by instituting a new ulcer, by means of caustic potass, in the vicinity of the old sore. In a piece of adhesive plaster a hole is made, somewhat smaller in size than the artificial ulcer is to be; it is then applied at one or two fingers' breadth from the original ulcer, and caustic potass is rubbed on this space until an eschar is formed. During the consequent inflammatory and suppurative processes, the old solution of continuity, which had so obstinately resisted treatment, closes up, and the cicatrix, in general, continues sound.

If the healed ulcer had resulted from a disordered constitution, to the appropriate internal treatment he adds, either an issue in some usual spot, or places a small portion of wax in the artificial ulcer itself, when nearly healed, so as to convert it into a common issue,—by which prudent precaution he has never seen any mischief produced in the constitution of those who had long been subject to obstinate ulcers by their cure. If the ulcer were produced by a traumatic cause, after it has been healed, the artificial one may also be cicatrized, as soon as possible, without any injury resulting.

More than a hundred cases, he adds, have been cured in this manner, and many instances of cure have occurred, in the Hospital, of ulcers of twenty or thirty years' standing.

Dr. Bresciani does not speak of the occurrence of any

*Medical and Chirurgical Review, April, 1846.

such accidents, but the circumstance mentioned by Mr. Skey,* in his paper on the Treatment of Varicose enlargements of the Veins by Caustic, that the sores thus produced were sometimes very tedious, requiring three or four months for their cure, leads me to apprehend that the same disadvantage must occasionally follow his plan of treating ulcers.— Mr. Whately gives a case of ulcer of the leg, originating in an issue made below the knee, the cure of which occupied two months.

In the same paper, Dr. Bresciani expresses his surprise that creosote, as an application to very obstinate ulcers, appears to be going out of use. He finds it a sovereign remedy; the best flesh-producer known in surgery, in these morbid affections. The formula is six drops of creosote to four ounces of water, increasing the strength gradually to ten or twenty drops. "Has the remedy," says Dr. B., "some specific action on the capillaries? for, even in twenty hours, a foul surface may be seen covered by luxuriant granulations; and old, indolent ulcers become benign and active." As a powerful astringent, it has long been employed in these cases to stimulate the contractility of the vessels, the action of all this class of remedies; but it is scarcely competent to perfect the cure, unless seconded by rest in the horizontal position, or by the bandage.

Very much akin, in principle, to Dr. Bresciani's practice, by means of counter-irritation, is the ingenious mode of dealing with these cases suggested by Dr. Golding Bird, of which Mr. Bransby Cooper gives the following details in his surgi-

* Medical Gazette, Aug. 1846.

cal lecture, published in the *Medical Gazette*, for October 1, 1847:—"When these ulcers prove very stubborn, and resist all the constitutional and topical remedies usually employed, I have lately witnessed the best results from stimulating their surface by subjecting it to a stream of negative electricity, by a method I shall describe, and which was recommended by my colleague, Dr. Golding Bird.

"At a convenient distance from the indolent ulcer, (not less than five or six inches,) a portion of cuticle is raised from the cutis by the application of a piece of emplastr. lyttæ, of the size of a half-crown. The cuticle is detached by a pair of scissors, and on the exposed cutis a piece of zinc foil is placed, of the same size as the denuded spot. A plate of silver foil is laid on the original ulcer, and the two plates connected by means of a thin copper wire. The size of the silver plate is immaterial. Both zinc and silver are now covered with pieces of moistened lint and oilskin, and the apparatus, as recommended by Dr. Bird, is complete.

"In a few hours the surface beneath the zinc becomes white and a slough begins to form, which in a short time is thrown off, leaving a healthy ulcer behind. In the meanwhile a great change has taken place in the original ulcer; it has thrown aside its indolence; granulations are sprouting and contracting; new skin is forming at the margin, and the whole surface looks healthy and animated.

"The rationale of the action of this contrivance is simple enough; there occurs a decomposition of the water and chloride of sodium naturally existing in the blood and tissues; the result of this is the formation of soda, (oxide of sodium,) and the evolution of hydrogen and chlorine; the former es-

capas at the silver plate, while the latter mingles with the zinc to form chloride of zinc, which produces the above speedy escharotic effect."

In a letter addressed to the *Lancet*, for Jan. 8, 1848, by Mr. Wallace, surgeon to one of the British vessels lying in the Tagus, Sir William Burnett's solution of chloride of zinc is highly commended in cases of the kind under consideration, which have resisted all the ordinary modes of treatment.—Mr. Wallace first employs the solution, as an escharotic, to destroy the unhealthy surface of the sore; afterwards diluted, with from twelve to sixteen parts of water, to promote granulation and cicatrization.

[I have used the chloride of zinc in a large number of cases with the most happy effect, and will give the treatment of one case which will fully illustrate its value in this form of ulcer.

Mr. C., of this city, in 1849, was the subject of varicose enlargement of the veins of the lower extremities, and had been suffering from this cause for several years. While attempting to draw on his boot, his finger slipped and the nail coming in contact with one of those veins, it was ruptured; It was followed by copious hemorrhage, which lasted at intervals for several hours. The compress and bandage was applied, and prevented any further escape of blood. But instead of healing as was desired, it soon presented the worst form of the indolent ulcer, so much so, that the attending physicians finally, after treating it for several months by various plans of medication discontinued the treatment, and advised Mr. C. to have his leg amputated, as the only means of cure; he declined to comply with their request.

I was then called to take charge of the case, and immediately applied the chloride of zinc after dissolving it in a sufficient quantity of water to form a cream-like consistency; to this I added enough flour to form a paste, and then covered the ulcer with it. It produced severe pain which lasted several hours. I continued to apply this plaster every day until all the indurated edges, and so far as I was able to judge, the whole morbid structure was submitted to its action, I then applied the Elm bark mixed with cold water until the eschar sloughed off which required five days; after which I applied the "Unguentum Plumbii Compositum" of the Eclectic Dispensatory, (the same as referred to in my note on page 87.) Such was the effect of this treatment in this case, (and I will add in many others,) that the ulcer was perfectly cured in three weeks. N.]

I have spoken, a few pages back, of the advantage derived from an oiled silk envelope in treating indolent ulcers by water dressing. This material, in combination with cleanliness and gentle friction, is also very serviceable in the management of callous ulcers, to excite healthy action of the skin, the functions of which are often entirely obstructed by the accumulation of unctuous, and other substances employed as dressings,—to promote absorption of the indurated margins of these sores,—and to aid in rousing the part from its torpid habit. When this is once effected, by the means just detailed, by escharotics, stimulants, galvanism, or by any other agency, granulation will generally proceed under water dressing and the bandage, as in the simply indolent ulcer.

In ulcers complicated by a varicose condition of the veins, the dilatation of the capillaries, as might have been anticipated, is greater than in other varieties of the disease.— In the very beautiful preparations of injected ulcers of the leg, by Mr. Quekett, referred to in the introductory observations, one of them was taken from a subject in whom the veins of the leg were varicose. The capillary vessels, in this specimen, are certainly more dilated and convoluted than in the rest of the series, and the interstitial deposit occupies smaller space; in the other preparations, the proportion between the injected vessels and the newly deposited structure is very much the same as in Mr. Liston's section, of which a delineation is given at page 16.

In the treatment of this aggravated modification of the indolent ulcer, it is against the diseased condition of the veins that the surgeon's efforts must be chiefly directed; if the dilatation be sufficiently serious to warrant a recourse to any one of the operations for their cure which will presently be described, this additional source of intractability will be removed. If the radical cure of the varices cannot be attempted, the only effectual palliative, by which their injurious influence upon the sore can be counteracted is the employment of pressure, either by the medium of tight bandage and compresses along the course of the enlarged veins, or by applying strapping to the entire limb, from the toes upward, as practised by Mr. Scott. In proof of the efficiency of the strips of calico applied with water dressing, I may state that I have found the compression exercised by them, upon a limb affected with varix, quite equal to that produced by adhesive strapping, and the cure of the ulcer accomplished as speedily; but

they certainly require more care in their equable adjustment, and are also more liable to be deranged by the application of a tight bandage over them.

After cicatrization is perfect, unless the limb be still supported by a bandage or elastic stocking, the ulcer will, very commonly, break out again. When the cure is effected by rest, this is almost invariably the case.

TREATMENT

BY TEPID WATER DRESSING, THE BANDAGE AND TEPID AFFUSION, OF ULCERS ON THE LEG IN A STATE OF MORBID SENSIBILITY THE RESULT OF ACTUAL LESION OF THE NERVES; ALSO OF ULCERS IN INDIVIDUALS WHOSE GENERAL VITALITY IS LOW.

AGAINST these morbid conditions the second class of topical remedies come into operation—that is to say,

Measures which subdue excessive sensibility, support weak nerves, and, at the same time, stimulate contractility.

The cases in which the influence of cold may be expected to operate most beneficially and unexceptionably have been defined in the foregoing section; the subjects to whom it is more especially adapted are youthful, sanguine, and robust individuals, whose powers have not been impaired by disease. But whenever, on the one hand, we have an irritable temperament, or parts in a state of extreme morbid sensibility to deal with, or, on the other, find the general vitality low—whether these deviations from the healthy standard be original or acquired—we must exercise great caution in applying a low temperature. A very moderate degree of cold where these conditions are present, may produce effects equal to those resulting from intense cold acting on a higher vitality or a lower amount of sensibility. In the first instance, morbid sensibility may be aggravated by the means employed to

subdue it, many irritable sores becoming more exquisitely painful under the application of cold; in the second, sloughing may be produced, as happened in Case xv.

Both these morbid conditions will be more effectually relieved by warm or tepid applications than by cold. At the same time that excitability of nerve is soothed, and redundant irritability disposed of, the gentle constringent action of tepid water upon the vessels supports their tone, thus placing both nerves and capillaries in a more favourable position for playing their respective parts in the reparative process. Being several degrees below the heat of the blood, it effects a gradual reduction of the temperature without depressing animal heat and vitality too much; and in cases where the surface is actually cold, by communicating warmth to the part, it sustains the feeble vitality. In the first class of cases, those characterized by excessive morbid sensibility, rest and confinement in the horizontal position are commonly regarded as the only resource, and to this the patient has no option but to submit, however reluctantly.

I have already remarked, that there is no invariable aspect by which an irritable ulcer can be recognized.

Sir E. Home, indeed, describes rather minutely certain features by which he believes these sores may be distinguished; but, as Mr. Abernethy observed in his lectures, this description merely "corresponds with the appearances attending the heretofore designated the initial stage of an ulcer,—namely, conclusion of the ulcerative process,"—that state which I have its origin in the destructive process, before any reparative action has commenced. And whatever may be the appearance of the ulcer, as long as its sensitive character continues, it is incompatible with healthy granulation.

This disposition appears to attach more frequently to ulcers in certain localities: thus, there is no situation where it is more often met with than in sores upon or below the malleoli, and very refractory cases they prove.

A confirmed morbidly sensitive ulcer is not, however, merely in a state of inactivity, as far as relates to the healing process,—a change extending beyond the suspension of the functions of the capillaries is observed, the nerves themselves are in a morbid condition.

Irritability is often a consequence of debility alone, a high degree of morbid sensibility may also be produced by the irritation arising from excessive distention of the capillaries. In both instances, the relief which a well-applied bandage and cold water dressing is calculated to afford to the vessels will be communicated to the nerves, and their extra sensibility will yield under the same influence which restores and maintains the tone of the vessels. Aggravated by time and neglect, it may become the prominent symptom; the nerves being now more directly and permanently affected, are themselves the source of the irritability, which no longer subsides when the stress upon the vessels is removed; extreme pain is suffered under these circumstances, even when the leg is constantly laid up, sometimes accompanied by a considerable disengagement of heat,—the heightened sensibility of the part inducing the patient to believe that this increase of temperature is greater than is actually the fact; in other instances, I have found the surface of most sensitive ulcers, and the skin surrounding them, absolutely cold.

No degree of pressure can be borne until this morbid affection of nerve has been allayed; emollient and soothing

measures with rest will generally accomplish this; but these means, exclusively resorted to, have a tendency to weaken still more the tone of the capillaries, and render them incapable of carrying on those operations which are essential to healthy granulation. The great desideratum appeared to me to be a combination of these apparently incompatible measures, if they could be brought to act in unison; a method by which the morbidly irritable nerves might be soothed and gradually inured to the compression requisite for the support of the vessels and the part generally.

Instead of abandoning support and recurring to the use of poultices, until the excess of morbid sensibility was reduced, I determined to try the effect of emollient fomentations in co-operation with the bandage.

In very many of these cases, a variety of treatment having already been employed, it is necessary to commence by carefully cleansing the skin for some distance round the ulcer with mild soap and warm water, defending the sensitive sore with a pledget of lint dipped in sweet oil. This preliminary is generally required, when unctuous dressings have been employed, for the removal of crusts, scales, and sordes; or, in the best tended cases, to get rid of any greasy matter remaining on the surface, which has a tendency to heat the part and increase irritability; adherent crusts or scales must be cautiously detached with a blunt spatula.

The leg is then to be bathed for some time with tepid water, decoction of poppies, or a fomentation composed of equal parts of poppy decoction and spirit of wine, and the ulcer dressed with a piece of soft lint dipped in the same.— A watery solution of opium may be used when the pain is

very severe. Moistened strips of soft linen must next be folded round the leg as smoothly as possible, in the same manner as in the treatment by cold water dressing, and drawn tightly enough to prevent plaits forming under the bandage. Over them the roller, soaked in warm water, is to be carried lightly, and the whole freely bathed for some time with tepid water, or poppy decoction. The tepid bathing must be persevered with until the pain, which is generally severe on the first application of the bandage, is relieved, and repeated as often as any exacerbation of the morbid sensibility occurs, the leg being enclosed, during the intervals of the tepid bathing, in a sheet of oiled silk. During the first twenty-four hours, sometimes for a longer period, it is expedient to confine the limb to the horizontal position; before that time has elapsed, however, the morbid sensibility will have in a great measure disappeared, and the patient will begin to experience the beneficial operation of the gentle support upon the part. Permission may now be given to use the limb cautiously, still continuing the tepid affusion. After a time, to be determined by the state of the sore, and the feelings of the patient, cold affusions may be tried, and, if not found to disagree, may be advantageously substituted for the tepid fomentation; not unfrequently, however, this change provokes a return of morbid sensibility, and tepid dressing must be pursued until the cure is completed.

The necessity for the oiled silk envelope is still greater with tepid affusion than when cold water is employed,—evaporation will otherwise take place so rapidly, that a greater reduction of temperature will be ultimately effected than by the direct application of cold, none of that tendency

to reaction, which counteracts the depressing influence of cold, being excited by tepid water.

As an auxiliary to this combination of lenient measures and support, perhaps no remedy is so uniformly serviceable in irritable ulcers as the nitrate of silver. A single application, in the solid form, to a sensitive surface is often sufficient to induce tolerance of the bandage; and this point once gained, morbid sensibility will very commonly soon disappear altogether.

Dr. Underwood attributes the same sedative influence over many irritable sores, to the red precipitate, at the same time admitting that it may sometimes excite inflammation. He adds, (in a note, p. 105,) "Wiseman, speaking of such an ulcer, has this bold expression, which I doubt not was the result of experience, 'The best anodyne had been to have filled it with precipitate.'"

Cinnabar fumigation is another application by which the irritability of these sores may frequently be diminished. For this purpose, it was highly commended by Mr. Abernethy.

Erythematous, or eczematous inflammation and excoriations, sometimes arising idiopathically, sometimes as a consequence of the employment of strapping to ulcers secreting profusely, may be classed with irritable sores; they are generally indicative of an unhealthy state of the constitution, calling for alterative and tonic measures, and prove very troublesome. Unctuous dressings increase their morbid sensibility, and encourage the disposition to spread; cold applications, which are calculated to moderate the discharge, will check their extension, and dispose them to heal, when they can be borne. In elderly persons, however, or those whose

TREATMENT OF SLOUGHING ULCERS.

general powers are enfeebled, cold will depress too much the vitality of the part, and either increase the irritability, or produce superficial sloughing; warm fomentations and poultices agree better, but against poultices objections are alleged, on the score of their weight, liability to become rancid, crust at the edges, and thus excoriate the sound skin; and tepid water dressing is now, by many surgeons, advantageously substituted for them. In the cases under consideration, these objections are certainly valid; and, in lieu of a bread poultice, I have long been in the habit of employing, in co-operation with tepid water dressing, a thin layer of sponge, soaked in warm water; inclosed by a sheet of oiled silk, its moisture is retained for some hours, and may readily be renewed as often as is needful. It is more cleanly than the poultice, more easily applied by the patient, and does not spoil the sound skin.

The fomentation of poppy decoction and spirit of wine in the proportion of one-third, or even one-fourth of the latter, to two-thirds or three-fourths of the decoction, often agrees well with these superficial ulcerations; which sometimes heal under the use of the bandage, tepid water dressing, and tepid affusion alone.

Sloughing ulcers may be the result of acute inflammation supervening upon any variety of the disease, or of morbid matter applied to the surface of any wound or sore,—as in hospital gangrene and sloughing phagedæna. I pass by these conditions of an ulcer, as belonging to the diseases from which they spring, and not being peculiar to those of the leg.

When sloughing takes place in sores on the leg simply from local debility, stimulants will frequently put a stop to it, by exciting healthier action in the surface. Thus, the balsam of Peru, and bituminous substances, especially the Barbadoes tar, have acquired a reputation in the treatment of these cases. Mr. Abernethy and Sir A. Cooper recommended a dressing of very dilute nitric acid, (mxx. or mxxv. to a pint of water :) and it may sometimes be necessary to destroy the morbid surface, as practiced in hospital gangrene, by the strong mineral acids, by nitrate of mercury, or by the solution of oxide of zinc, employed by Mr. Wallace, in the paper referred to, p. 105.

Whenever this sloughing from debility occurs in aged persons, or in individuals whose strength is exhausted by disease, or impaired by other debilitating causes, besides endeavouring to support the waning powers, and infuse vigour into the system generally, such means as act especially upon the feeble capillary circulation, foster the development of animal heat, and economise its expenditure, will be found in the highest degree serviceable.

One of the most effectual means of thus exciting both nerves and capillaries to a more vigorous performance of the functions carried on by their conjoint influence, is the administration of opium, in the manner recommended by Mr. Skey, (see page 60.)

Among the local measures calculated to keep up the animal heat in such subjects, one of the best is enveloping the part in layers of carded wool over any other dressings which may be employed. This is a favorite application of Sir B.

Brodie, and will afford most essential aid in enabling a weak part to throw off a slough, establish healthy granulation, and ultimately perfect the healing of solutions of continuity so formidable as to threaten a speedily fatal termination. As a remarkable instance of the beneficial effects both of opium and the envelope of carded wool, I have given the particulars of Case xxxi.

[I will now introduce the various methods in which water has been used in Surgery as given by Alphonse Auguste Amussat of Paris, in a Thesis submitted when a candidate for the Doctorate in Medicine, and translated by F. H. Hamilton, M.D., with notes by C. H. Cleveland, M.D., of Waterbury, Vermont. N.]

“The various modes in which water has been used in surgery may be arranged under three grand divisions, viz., *water-dressing, irrigation and immersion.*”

“*Water-dressing.*—In surgery we give the name of ‘Dressing’ to objects which are applied to a wound, and the name of ‘Water-dressing’ to these same objects wetted and kept moist during more or less time.”

It was by means of “water-dressings” that this agent was mainly employed by Lombard, Percy, Larrey, Treille, &c., as has been noticed in the historical part of these papers; and in fact this was the method mainly adopted by the ancients, who were accustomed to apply lint, pieces of sponge, and other substances moistened with water, either simple or medicated, or mixed with the oils, and of a mild temperature and of moderate thickness, so as not to incommode by too great weight. When sponges were used, they were sometimes applied immediately to the wounded surface, and at others, an-

other substance was interposed, but in all cases the water, which was lost by evaporation or absorption, was supplied by frequent additions, and by this means they were able to keep the wound cool and free from pain, and while they added greatly to the comfort of the patient, they also expedited the cure.

In regard to the most suitable material to be used in *water-dressing*, there has been a diversity of opinions; and some curious experiments have been made for the purpose of avoiding the inconveniences of some of the articles used, and at the same time retain the advantages presented by others. Percy says:—"If we take a piece of linen, another of common cotton cloth, a third of fustian, a fourth of English-dressed flannel, and a fifth of soft flannel, all of the same size, and saturate them with distilled water; if now we suspend them side by side, at the same height, exposed to the same degree of heat, on a summer's day, we shall find that the linen will dry almost immediately, the cotton soon after, the English flannel will be three times longer, and the soft flannel will remain wet some hours after the others are dry.

"It is true that the soft flannel will have absorbed the most, and progressively each will be found to have absorbed less and less, until the linen will have absorbed the least of all; but by multiplying the pieces, or by folding them together, and thus making them absorb the same quantity of water as a simple piece of soft flannel, we shall still see that the linen with all its folds will dry six times as soon as this flannel. It will be proportionally the same, also, with the other fabrics mentioned.

WATER DRESSING.

“Without doubt, the best vehicle for water used as a topical application, and that which ought to supply the place of cataplasms, fomentations, etc., is soft flannel, which, in addition to its property of retaining much more of this liquid than any other tissue or material, prevents also its becoming suddenly cooled, being, as we say, a very bad conductor of caloric.”

But while the advantages to be derived from the use of soft woolen flannel (*molleton de laine*) are admitted to be such as are ascribed to it by Percy, yet it should not be forgotten that it is by no means free from some serious objections, especially in winter, or in cold, damp countries, when to obtain continuous moisture, it is best to saturate the cloth with tepid water, and over that to lay a bladder, oiled, or a piece of oiled silk, or some other impervious substance, to prevent evaporation.

Professor Liston, and the other surgeons of the hospital of the University of London, the atmosphere of that place being cold and humid, have adopted a plan similar to the above, and Mr. Morton says, that in that establishment they have banished every form of greasy dressings, and that they proceed as follows in employing simple water, or occasionally water medicated; they take a thick piece of charpie (lint) which is to be moistened more or less with tepid water, according to the indications; then place it on the wound, and cover it with oil cloth to prevent too rapid evaporation of the liquid. From time to time, usually every three or four hours, the lint is removed and dipped in water, and if the suppuration is very abundant, or of bad quality it is renewed each time.

Josse and A. Berard employed at first compresses wet

with water; but they soon became dissatisfied with this method. The part under treatment was found to be subject to frequent alternations of heat and cold, since the moistened compress became rapidly heated, when not regularly renewed. A. Berard also remarks, that such constant attention as this mode demands is sufficiently difficult during the day, but during the night it is almost impossible. It is easily comprehended how many circumstances may interpose to prevent a regularity in the temperature, and to induce a transition from cold to heat, or from heat to cold. Hence these two surgeons were led to adopt the *continued irrigations*, and this was a great step in the progress of Surgical Therapeutics.

“Water-dressings, that they may prove useful, and be exempt from the inconveniences heretofore urged against them, must fulfill the following indications :

“1. They must permit the pus to escape freely as fast as it is formed, and to be absorbed by the dressings.

“2. They must be kept constantly moist.

“3. Evaporation must be prevented, lest the part should become chilled, or in other words, a uniform temperature must be preserved.”

MM. Amussat, father and son, think they have been able to accomplish the above indications by a water-dressing, which they have invented and used, which is formed of *four* pieces of different tissues, one above the other, which they have styled, the *sifter* (*crible*), the *absorbent*, the *humectant*, and the *inevaporant*.

“*Sifter*.—The *sifter* is a tissue perforated with a great number of holes, to allow the pus to escape as fast as it is

formed, and to separate the wound from the substance which absorbs the purulent matter.

“The necessity of not permitting the pus to rest upon the surface of the wound has long been understood, and surgeons have been accustomed to cover the wound with a perforated compress spread with cerate. But the perforated linen used in hospitals, and in civil practice does not fulfill the indications which we seek to obtain. Indeed, the holes being too small and too wide apart, and the pus becoming mixed with the cerate, the perforations are easily closed, and it serves no purpose whatever. With a view to remedy this inconvenience, my father first laid aside the cerate and dipped the compress in water, but the pus still accumulated as before; he then used the ordinary gauze instead of the wetted compress. The spaces which separated the threads in the tissue were too small and the difficulty was not remedied. Finally, he tried common *tulle* with very open tissue, which perfectly answered the indication. This is the tissue which he decidedly prefers, and which he has named the ‘Sifter.’

“If *tulle* cannot be obtained, we may use linen with larger and more frequent perforations, or strips of linen arranged in quadrille form, with larger spaces than are usually left.

“*Absorbent*.—Isolation of the wound being obtained, in the manner which we have described, my father next sought what would be the best means of absorbing the pus as fast as it was formed.

“After having tried many tissues he has concluded that old rags from linen or cotton, sufficiently worn, answered this purpose best. He places a disk of proper size, after having moistened it with tepid water, over the *sifter*. This piece of dressing has received the name of *absorbent*.

“*Humectation*.—Humectation being the principal indication to answer in water-dressings, it became important to ascertain what substance would best accomplish this.

“After having tried, successively, discs of sponge, of soft flannel, of soft cotton, agaric, &c., my father has finally given the preference to punk (*amadore*), prepared without saltpetre or gun powder. This substance with little volume, absorbs much water, is soft to the touch, and yields its water to the *sifter*, more easily than those which we have enumerated; we, therefore, generally prefer it. This piece of dressing has received the name of *humectant*.

“*Inevaporant, or impermeable tissue*.—A last condition remains to be attained, that is, to prevent the evaporation of the liquid, as much as possible. This indication has already been observed and answered by Percy, who placed over the compresses wet with water, an impermeable tissue. In the same manner, we also protect the water dressings. Almost any impermeable tissue will answer the purpose, but it is proper to mention, that, as in the country the means are not always so abundant, a hog's bladder, soaked in oil, does very well. If we desire to prevent the evaporation completely, we must not neglect to make this cover larger than the other portions of the dressing, otherwise there will be along the borders of the dressing, a slow evaporation, producing a coldness, especially in winter.”

Dressings of the fingers, of the great toes, and of the penis, ought to be completely enveloped in the impermeable tissues, so as to form a sac, within which the moisture shall be retained. A piece of intestine or of caoutchouc, made into a pac and placed over the member, will serve an excellent purpose.

COLD WATER DRESSING.

As it is usually desirable to produce an emollient effect, it is desirable to apply pure soft water of a temperature of from 64° to 77° F., and if the member be of a different degree of heat, the water will soon be reduced to the same, especially if the impermeable tissue extends to a considerable distance beyond the border of dressings underneath; but if it does not, and evaporation is allowed to occur, the dressings may become dry, and chilliness result.

As regards the time which the application should be allowed to remain without removal, this must vary with the effect to be obtained, as well as with the condition of the parts. If there be active inflammation, or a profuse secretion of pus, the dressings should be removed, and renewed quite often, but in cases where there is but little phlogistic action, and but a moderate purulent discharge, the dressings will not need to be renewed oftener than once in four to six, or even eight hours.

This mode of dressing possesses the very great advantage of not confining the patient, and if the wound be upon an extremity, of allowing him to attend to his occupation or amusement, if there be nothing else to contra-indicate it.

Water-dressing should not be discontinued too abruptly, as otherwise there will be danger of a recurrence of all the unfavorable symptoms. But we may gradually allow a longer time to elapse between each of the dressings, and also lessen the quantity of water applied to the compress, until it is finally omitted entirely.

It is only necessary that a trial should be made of this mode of dressing wounds, to convince any who *can* be con-

vinced, of the very great superiority of water, over all classes and kinds of cataplasms and fomentations.

“*Irrigations.*—In surgical language, irrigation (from the word *irrigare*, to irrigate), is the bathing of a part; but thus considered, as M. Malgaigne has shown, the sense of this word is vague, for affusions, injections, *douches*, etc., are bathings, and according to this definition, ought to be called *irrigations*. I think it is more suitable, and conforms better to common usage, to reserve the word irrigation, to designate the uniform flow of a liquid over the surface of the tissues.

“*Irrigations demanding special apparatus.*—I will pass in review successively those means which have been employed by the various surgeons who have given most attention to this subject, and I will explain finally, an extemporaneous method to which we may resort when the appliances are not at hand for any of the ordinary modes.

“*Apparatus of M. Josse.*—M. Josse describes as follows, the apparatus which he has employed for irrigations.

“A vessel, having a spigot near its bottom, is filled with water, and placed upon a narrow and high table, at the bedside of the patient. The table should be about eighteen inches above the wounded limb. An oil cloth is laid so as to protect the bed, and facilitate the escape of the water into a pail placed below, and into which the extremity of the oil cloth is made to extend. This apparatus may be modified in a thousand ways, according to the circumstances attending each case. But it should be especially borne in mind, that the parts must not be kept exposed to the air.

“*M. Buschel's apparatus for irrigation.*—We should have

WATER DRESSING.

two large pails, one full of spring or well water, and the other empty. The latter is placed at the foot of the bed of the patient, to receive the water which bathes the limb. We suspend the pail containing water to the tester of the bed, by a strong block or rope, or in any other way; we arrange it so that the bottom of the pail shall be directly over the wounded limb, and one or two feet above it. Then we must have a small glass or tin tube, of about the size of the little finger, bent at a very obtuse angle near its middle, so as to represent the letter U, with unequal branches of about three or four feet in length. We place one branch of this tube in the pail of water, and the other hangs over the wounded limb, the middle resting upon the edge of the pail. By a well-known law in hydrostatics, the water may be immediately made to pass from the pail through the tube, and be thus conducted upon the diseased limb, in a jet. In order, however, to set the current in motion, it is necessary to produce a momentary vacuum in the tube, by applying the mouth to the extremity of the outer branch. The water now passes in a continuous stream through the tube, upon the limb. But to secure all its possible advantages, two conditions are necessary. First.—The water must not fall from too great a height; and this is why it is important that the external branch should be very long, or the pail be hung as low as possible. Second.—The stream of water must be very fine and continuous; which may be effected by a small perforated cork, adjusted to the outer extremity of the tube, or by what answers the purpose equally well, a bit of sponge introduced in the same manner. This water, after having impregnated the compresses, the bandages and the lint, which

envelope the limb, passes to the limb itself, bathes it, and falls upon the oil-cloth, to be conducted from the bed into the empty pail of which we have spoken. The surgeon or attendant, has only to renew the water in the pail above as often as it becomes empty. The bandages and the dressings of the wound should be removed every second or third day, or even less frequently, according to the judgment of the surgeon.

“*Apparatus of A. Berard.*—The apparatus of A. Berard is like that of Buschet; except that in place of a single metallic syphon, the mouth of which is closed with a cork more or less fluted, he employs one, or several tubes of glass, of small diameter, according to the degree of refrigeration which he desires to employ.

“M. Velpeau has figured in his *Operative Surgery* (vol. i. p. 265, of the original, and vol. i. p. 217, of the translation by Townsend, T.) a pail furnished at the bottom with a spigot which communicates with a horizontal tube of the length of the limb to be bathed, and from this tube spring six other vertical tubes, which direct the water upon the surface of the limb.

“*Apparatus of Mathias Mazor.*—A vessel of some kind, appropriate to contain water, and to be suspended above the patient, must be pierced with one or more little perforations, destined to receive the ends of pack thread, smaller than the perforations. The vessel being now filled with water, it will escape and be conveyed along these threads to the parts we wish to irrigate, and upon which these conducting filaments have been laid.

“ The property which fluids possess of coursing along a material easily procured as pack thread, and the facility of adjusting these strings so as to enable us to regulate at will the quantity of water, and its direction, these qualities, I say, are invaluable, and demand consideration. But what is of still greater consequence, the water follows these threads wherever they are placed, even when they lie very obliquely. This liquid, in fact, does not easily leave its conductor, except when the direction of this conductor is nearly horizontal, or when it touches another object, or when there is a knot loosely tied in the course of the thread.

“ In the second place, we can in this manner conduct the water from a distance, for however far the threads are stretched, they still continue to serve as aqueducts.

“ A third fact to be noticed is, that the flow of water will be proportional to the size of the filiform conductor, the current being larger, and the reverse.

“ A fourth point of importance is, that the conductor is soft and flexible, and therefore harmless if pushed against the sensitive parts, or if these are accidentally thrust against the apparatus.

“ A fifth circumstance favorable to this plan is, that the liquid passes *imperceptibly* upon the part, and does not irritate by its fall; while a liquid cannot descend from tubes without a kind of shock being always felt at the place where it strikes the limb.

“ A sixth consideration, and one which results directly from this absence of percussion on the part of the water, and from its gradual diffusion, as well as from the flexibility and suppleness of the conduit, is, that the water reaches its destina-

tion even when there is some motion in the vessel or the threads, or in the part itself which is submitted to irrigation.

“We can easily distribute the water to several persons at the same time, and from the same vessel. This vessel is pierced with a number of holes, into which the ends of a corresponding number of threads are passed, and drawn through sufficiently to be secured to some point of the rim of the vessel. Each perforation not in use is closed with a little plug, which may be removed at pleasure to permit the water to escape. To a like simple apparatus, whenever the wounded are brought together in an ambulance, in a hospital, or in a carriage intended to transport one or more wounded.

“This method seems peculiarly appropriate in the treatment of wounded on shipboard, or in case of accidents from explosion of boilers or collapse of flues on board the steam boats of our large rivers, or the lakes, or even on board the steam ships of the ocean.

“M. Mazon, has also proposed to replace the syphon by a fillet of coarse cloth.

“*Apparatus of M. Guizot, Surgeon to the Hospital of Rennes.*— This apparatus for irrigation is composed of three boards and a large tunnel. The boards are placed as follows :

“Two short upright pieces are secured to either side of the bedstead, upon which the third is laid transversely. This latter is perforated with a hole sufficiently large to receive the end of the tunnel, in which when arranged, the tunnel is to be dropped, its mouth resting directly over the part to be

irrigated. The oil cloth must be placed so as to protect the bed, and drain off the water in the usual manner.

“M. Chaumette, of the hospital of Saint Andrew, at Bordeaux, employs also a large tunnel, which he suspends over the bed of the patient. From the lower orifice of the tunnel a bundle of pack thread reaches the part he wishes to irrigate.

“*Apparatus of Dr. James McCurtney.*—This is a box made of zinc, much like a fracture box, in which the upper or lower extremities of the patient may be placed. The water or the medicated fluids are conducted, by means of a flattened tube, of which one extremity is joined to the reservoir, and the other traverses the upper wall of the box. This tube contains a band of coarse cloth, which is large at one end, and at the other terminates in a point. The first is received in the vessel, which contains the liquid, the other rests upon the dressings, or is suspended above them. The water follows the band of cloth by virtue of capillary attraction, or after the manner of a syphon. For the purpose of draining off the water, the box has a concave bottom, pierced with large holes, through which the liquid may escape into another vessel placed without the bed. The member rests in the box upon a soft cushion, covered with an impermeable cloth.

“*Apparatus of M. Equisier.*—This apparatus is composed, as we know, of the body of a pump in which moves a heavy lead piston. At the lower extremity of the reservoir is an orifice furnished with a spigot to which also is attached an elastic tube designed to conduct the water; the liquid is forced out by the weight of the piston. The apparatus is very

convenient, because it can be placed upon any piece of furniture near the bed of the patient; but in general it is too expensive to be much employed, if it is of a proper and convenient size. Those ordinarily employed are small, and require to be refilled constantly. The same is true of all those different forms of apparatus in which the liquid is put in motion by galvanized caoutchouc tubes or slips.

“*Apparatus of MM. Amussat.*—A sufficiently large vessel of zinc or earthen ware, is placed upon an elevated piece of furniture near the bed; an elastic syphon, furnished with a stop-cock, guides the water from the reservoir upon the tissues. The part undergoing irrigation is quite isolated by means of a gutter, or of impermeable cloth, so arranged as that the water does not moisten the neighboring parts, and escapes freely into a vessel placed near.

“A compress placed upon the member serves to disperse the water uniformly. Ordinarily we adapt to the extremity of the syphon tubes a strip of linen, divided into bandalets, which serve not only to direct the liquid, but principally to obviate its dynamic effects.

Once mounted, this apparatus works of itself, provided care is taken to prevent the vessel from becoming empty so that the flow of water may not be intermittent. We ought also to be particular in relation to the cleanliness, and especially to the temperature of the water, *which should always be uniform, and not cause any disagreeable sensation to the patient.* [The last clause of the above I have italicized on account of its great importance—C.]

When we wish to submit an extensive surface to con-

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tinued and abundant irrigation, we ought to employ an apparatus which discharges its water in several streams, rather than one which is furnished with one single large conductor. In fact, where water flows in a large stream, it becomes warmer as it passes over the tissues, and the whole surface is not submitted to a uniform temperature.

“If continued irrigations are to be made in any case with cold or ice water, it will be best to commence with tepid water, and gradually lower the temperature. Without this precaution, we are in danger, not only of causing to the patient very disagreeable sensations, but even great accidents. In a case of extensive lesion, Sanson saw tetanus supervene in consequence of very cold water.

“In pursuance of the principle which we have sought to establish, we ought to be exceedingly careful that the temperature of the water is not suddenly changed, and especially that its current is not interrupted, for a severe inflammatory reaction might result. When it is thought proper to suspend the water, its temperature should be gradually raised, and we ought ever, as Cloquet advises, apply it for only a few hours each day before withholding it completely.

“The quantity of water, it appears to us, should be regulated by the degree of inflammation; that is to say, if it is feeble, a continued moisture will suffice; if very intense, on the contrary, the fluid should be poured upon it very abundantly, inundating, so to speak, the part, especially if the water used has a temperature of 18° or 20° , C. (64° to 68° F.) This liquid placed in contact with the tissues subtracts morbid caloric, and the more then developed, the more water should

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be poured on, taking care, however, that the temperature is not too much below the standard of health.

“The irrigation ought to be made, not only upon the part wounded, but also upon a considerable extent of surface about; without this precaution, serious accidents may occur in parts we supposed to be at first sound, and where no inflammation is developed at the point of injury which is submitted to the action of the water.

“I possess many cases which prove clearly, that persons wounded have succumbed from accidents developed in the vicinity of the point where the irrigation was made, and this doubtless explains why some authors have said that water masks the phenomena of inflammation, and does not prevent the development of purulent channels. I do not deny that this may happen, even when irrigation is well applied; but I am persuaded that in most cases the cause will be found in the application of the water to a too limited surface.

“The author remarks, that in the absence of the materials of which *their* apparatus is composed, the surgeon will be obliged to modify his apparatus, and gives several modifications to suit different situations and circumstances; but as these will readily occur to the mind of any surgeon of even moderate inventive genius, I have thought not best to occupy space by their insertion. The apparatus used is of but minor importance—while the entire success of the treatment may depend upon the mode, amount, and the temperature of the water applied—and I hasten to the consideration of these subjects of the most vital importance, and shall be the more minute and particular, because of the

grave errors inculcated in this country by those who from their constantly reiterating that *they* alone possess correct knowledge in regard to the use of water, have succeeded in a good degree in gaining the public ear and the public confidence.

Temperature most suitable for Irrigations.—Upon this subject, I will only add to what I have already said when speaking of temperature generally, that cold irrigations have almost always been employed by MM. A. Josse, Berard and Buschet, and that after having experienced some of the inconveniences of cold, they have concluded that we ought to be governed by the sensation of the patient in determining upon the degree of heat or cold.

According to our own experience, tepid water is preferable in a majority of cases; yet it is wrong to prescribe cold water absolutely, as we have before said.

How long ought the Irrigation to be continued.—It is difficult to fix the proper duration of irrigations, for it must depend upon the nature of the affection, the temperament of the patient, the stage, whether acute or chronic, of the malady. Nevertheless, I will state some of the rules which surgeons most accustomed to the use of irrigations have laid down.

Those who employ cold or ice water are in the habit of suspending it when the patient complains of a feeling of cold, in the part submitted to its action; but we must not be too hasty, for M. Josse tells us that under these circumstances he had but too often seen the inflammation reproduced in all its former intensity; and we have ourselves verified the justness of this remark. It will be advisable then, not to suspend the application of the water, but gradually to

raise the temperature until the patient no longer experiences any disagreeable sensation, and not to change the treatment until all chance of inflammation has disappeared. When we use tepid water, we may continue the irrigation a much longer time, since the process of reparation of traumatic lesions goes on very regularly under its influence. My father employs them ordinarily fifteen, twenty, or twenty-five days, and then he substitutes for them water dressings, which he renews as often as may be necessary to preserve their moisture. We ought, however, to resume the irrigations when a return of the inflammation is threatened.

In regard to the particular cases in which irrigations may be employed, it is not thought necessary to specify, further than to say, that in all cases when inflammation follows surgical accidents, from the mildest, and those of but limited extent, to the gravest and most extensive, they may be used to advantage, but it is where the inflammation is very violent, and with difficulty controlled by the means ordinarily in use that their great power is most happily displayed, as well as in those cases where the purulent secretion is copious and profuse.

Advantages.—In violent traumatic inflammations, water constantly renewed, and kept at a uniform temperature—abstracts the morbid caloric, and afterwards, where suppuration is established, the pus is removed as fast as it is produced, and we have less reason to apprehend purulent absorption and its consequences.

Inconveniences.—In truth I know of none which may not be attributed to any other therapeutic agent, if improperly applied.

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“If, for example, the temperature is too low, there may result too violent repercussion of the inflammation, gangrene, &c. If the water does not escape freely, but only irregularly, there will follow mischievous alternations of action, and reaction, the same as if the temperature was irregular.—These points demand, therefore, the greatest attention.

“It has been said, that irrigations act superficially. The numerous cases of grave and deep lesions, in which this means has been employed with wonderful success do not permit me to hold this opinion.

“*En resume*, continued irrigation is a powerful means which has already rendered the greatest service in many cases, and which could render still greater service if it were better appreciated. I shall be happy if I have succeeded in recalling attention to this means, and if I have successfully shown that the inconveniences with which it has been charged, are due, mostly, to the too low temperature of the liquid employed. On account of the difficulty of finding an apparatus suited to all circumstances in which we may be placed, I have sought to indicate simple methods, and such as may be adopted everywhere. If, however, irrigations could not be employed, we might have recourse to *immersions*, or to the water-dressings.

“*Immersion*.—Immersion is the act of plunging the body, or some portion of it into a liquid; in a word, it is a bath, either general or local. In surgery, immersions being usually made during a certain period, and with a uniform temperature, and sometimes even with a constant renewal of the liquid, it is proper I think to speak of immersion as *continued*, as we do of irrigation. Perhaps, also, the word *maceration* might be substituted for immersion.

The surgical employment of immersions, or baths, dates back, as will be perceived by a reference to the *historical* part of this essay, at least to the time of Lamorier. The three cases which he cites are quite remarkable, and had it been considered proper to notice those in which *mineral* waters were employed, many others might have been referred to.

"There are," says Percy, "external affections in which the local heat is so intense as to dry rapidly the thickest compresses drenched with water. We risk nothing then, in applying them *moderately cold*; and if the part can be *plunged in a bath*, nothing will more effectually check the fury of the vital actions, and restore calm and regularity to the orgasm."

Since Percy, immersions had been employed but seldom except by the military surgeons, especially in cases of sprains, when, in 1841, M. Charles Mazor, published a memoir entitled, "*On the Localization of Baths upon the different parts of the human body.*" In this very interesting work the surgeon of Lausanne has endeavored to call the attention of surgeons to the advantages which can be derived from the use of water by immersion, and to make known the various kinds of apparatus which he has invented for the purpose of applying isolated baths to different portions of the body.

The apparatus of Mr. C. Mazor consists of metallic vessels adapted to the form and size of the part which they are destined to receive; they are terminated in *cul de sacs*, if designed to bathe the extremities of the limbs, and open at both

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ends if intended for other parts, and furnished also with ruffles made of caoutchouc or bladder, to prevent the water from escaping.

“Mr. C. Mazor closes his memoir with the following conclusions:

“First. These different kinds of apparatus are easily obtained in any place, and at small cost.

Second. They enable us to localize a bath upon all portions of the extremities, and without the patient being obliged to put his limb out of the bed, or in a declining position, which is often fatiguing, and sometimes mischievous or impossible; we ought always to be able to select and keep that position which is most convenient.

“Third. The liquid, not undergoing any evaporation, will retain its warmth a long time, especially if we take the precaution to surround the vessel with a bad conductor of caloric. The slight subtraction of caloric resulting from the coolness of the walls of the vessel, will be compensated by the heat which the diseased limb supplies to the small quantity of water which surrounds it.

“Fourth. If we wish to bathe the hand, forearm, or the arm, the apparatus furnished with rings and cords might, under certain circumstances, be suspended from the neck of the patient by means of a sling, and he could be permitted to go out and attend to his business, while he is at the same time continuing his bath.

“Fifth. The liquid can be renewed without changing the position of the limb, or cooling the part which is subjected to the bath.

"Sixth. Since it is necessary to use but little liquid, the cost of combustibles is almost nothing, and the trouble of preparing it is trivial; and if medicated baths are employed, they will be attended with but little expense, even when such expensive articles as the iodurets, the sublimates, &c., are employed.

"Seventh. The vessel being hermetically closed, does not permit the volatile principle to escape, which the water may contain.

"Eighth. The apparatus, having two openings, can be used when we wish to submit the limb, or a portion of the limb, to a continued current of water. For this purpose we have only to adapt to the upper orifice an elastic tube communicating with a vessel placed at a height proportionate to the degree of impulsion we wish to give to the water. The inferior orifice remains open, or it may be made smaller by inserting into it a perforated cork, or a stopcock.

"Dr. Lebert, who has employed the local baths with M. Mazor's apparatus, says: I have used these baths in a great number of cases, and found them most useful in diseases of the joints.

"In eight cases of diseases of the bones, I have seen the suppuration promptly diminished, and the condition of the soft parts improved by this treatment. In several cases of white swelling, and of caries of the foot, the patients could not endure the position requisite for the ordinary foot bath, while they have taken the local baths with the apparatus of Dr. Mazor, without changing their position, and while lying in bed.

"Immersion is more particularly applicable to diseases of the extremities and the limbs, and the parts while in the

bath must be placed in the position most favorable for the return of the venous blood, and for the ready escape of the pus as fast as it is secreted. In case of injury to the fingers, toes, or the penis, we may make use of a bladder, a portion of an intestine, or a bag or tube of caoutchouc, in place of the apparatus of M. Mazor.

“In the most severe surgical accidents, we should commence, if possible, with immersions or irrigations, or both, and terminate with water-dressing. Sometimes even, we may unite the three modes for the purpose of avoiding the usual painful dressings, and securing those great benefits which we have a right to expect from water.

“Finally, immersion is a procedure which seems to have great efficacy in cases where water is required to act upon the deep structures; here, therefore, it can be profitably substituted for irrigations, whose effects generally are more superficial.

“In comparing the three principal modes, we observe that the water-dressings, if properly made and often renewed, is generally more simple, and more easily applied, than immersion or irrigation; that it has, moreover, the advantage of taking off at each dressing, the pus and the stratum formed by a mixture of the purulent matter and the substances contained in the water; the granulations are thus kept always red and clean.

“Irrigation is more powerful than water-dressing, but more difficult, and sometimes even impossible to apply.

“Immersion is more powerful than either, more prompt, and in all respects superior whenever it can be properly applied.

“M. Amussat closes his *Thesis* with the following

“*Conclusions.*—The history of this branch of surgical therapeutics proves, that from the origin of the art of surgery, and even before this epoch, water was the agent to which recourse was instinctively had to assuage pain.

“But soon miraculous waters, balsams, and ointments of all kinds were employed, and their use was continued during a long succession of ages under the protection of barbarism and charlatanism.

“At last that great school, the Academy of Surgery, did justice to polypharmacy, and directed all its efforts to simplify dressings; but it was only at rare intervals that a surgeon recognized the superiority of water for the accomplishment of this end.

“Lately, efforts have been made to demonstrate the utility of water; but hitherto the old methods have prevailed, irrigations only being employed, and even their use is very limited, and so to speak, exceptional.

“Water used locally, and at a proper temperature, is, in the treatment of surgical affections, the most powerful antiphlogistic which we possess; it is also the most easily procured, and the most easily applied; it cleanses, cools the wound, assuages the pain; is the best balm, and as Briot says, *le vulnereaire par excellence*.

“The use of water, topically, embraces three principal modes under which all others may be classed; these are water dressings, irrigation, and immersion.

“Water-dressings, such as we have described, that is, properly moistened and renewed, are destined to render important services to surgery.

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“Irrigation is an excellent means, which has already rendered much service; but it is too seldom employed, and, indeed, it has been almost abandoned, on account of the difficulty attending its application, and the accidents resulting from the too low temperature at which it has been generally employed.

“We have sought to diminish its inconveniences by indicating more simple apparatus, and by insisting upon the use of *tepid* water, which it appears to us, ought to be preferred in the great majority of cases; still we think that immersion and water-dressing can often be substituted with advantage.

“Immersion, or the local bath, more or less prolonged, is too much neglected, even where the parts can be most easily immersed; it is a means whose results are very prompt, and infinitely superior to cataplasms, and even to irrigations or water-dressings.

“By these three methods, separate or combined, we can meet every indication, and obtain results truly wonderful. It is sufficient to make a trial of them in lesions of the fingers and penis, to force a conviction of their superiority over all other modes of dressing, and to ensure their application afterwards in the most serious lesions, wherever their seat.

“Finally, I have endeavored in this essay, by historical documents, and by comparative experiments, to establish advantages of water over every other topical application and after the remarkable results which have already been obtained, I am encouraged to hope that soon this therapeutical agent will occupy the first place in surgery as a local anti-phlogistic.

It has been intimated that the learned author of the Thesis, from which we have extracted the foregoing, is engaged on a more elaborate work upon the use of water, and if such be the fact, we can but hope that the translator, who has so happily rendered the present work into English, will also favor the profession in America, with the larger one, in our vernacular."

[It will be seen from the foregoing notes, that they are intended to apply more particularly to surgery, but the applications may be relied upon for the treatment of ulcers also. We hope the reader will see the value of these extracts, as well as the advantage of their introduction into this work. N.]

ON THE TREATMENT OF VARIX.

THE frequent co-existence of a varicose state of the veins of the limb with ulcers on the leg, and the greater difficulty of effecting their permanent cure when thus complicated, have led surgeons to regard varix as a distinct cause of the peculiar intractability manifested by these cases, and to describe them as a distinct class, under the name of "Varicose ulcers."

Although not disposed to go so far as Mr. Skey, who doubts whether a varicose enlargement of the veins offers any impediment to the circulation in the capillaries, and calls in question the influence of this complication upon ulcers of the leg, inasmuch as "ulcers frequently exist without varix, and varix without ulcer, and both these forms of disease occur more frequently alone than do the two conjointly," it seems to me incorrect to look upon it as a distinct source of intractability, and I have spoken of it, accordingly, as simply an aggravation of the ordinary cause of that indolence which characterises ulcers in this locality,—that is to say, an impediment to free circulation in the capillaries, arising from the gravitation of the blood in the veins, during the dependent posture of the limb.

As a malady which certainly contributes to the refractory nature of these cases, and materially affects the permanence of the cure,—and which, independently of its bearing upon ulcers, proves a source of considerable inconvenience, not

unattended with danger, on account of the hæmorrhage occasionally resulting from it,—varix has at all times attracted much of the surgeon's notice, and various operations have been suggested for its removal.

This has been attempted by the ligature of the vena saphena, or any other venous trunk; by incisions in the longitudinal direction of the enlarged vein, and filling the wound with *charpie*, to produce suppuration, and its entire obliteration, practised by Richerand, at the Hopital St. Louis; and by simple division of the trunk, or of several branches, of the varicose vein; all of which proceedings are attended by more or less risk of phlebitis, and inflammation of the cellular tissue.

With the view of diminishing this danger as much as possible, Sir B. Brodie; some years ago, proposed the subcutaneous division of the venous trunk, by means of a narrow bistoury, the blade of which could be passed between the vein and the skin, by a mere puncture of the latter; then, by turning its edge towards the vein, and raising the handle, section is accomplished as the blade is withdrawn.

His subsequent experience, however, does not appear to have strengthened Sir B. Brodie's confidence even in this cautious mode of operating; since, in his Lectures on Pathology and Surgery, published in 1846, when speaking of the ligature and division of veins, he discountenances all dangerous operations for the relief of varix, and expresses great doubt of the permanency of the cure by either of these methods.

Messrs. Velpeau* and Jobert have advocated the treatment of varix by the insertion of pins transversely behind the veins, which are then closed by twisting a thread round the head and point of the pin, as in forming the twisted suture. Dr. Fricke, of Hamburg, simplified this practice by merely transfixing the venous trunk, and leaving the pin in the vein, to excite adhesive inflammation.

M. Davat† plunged the pin into the middle of the vein, carried the point longitudinally behind it, and brought it out lower down, thus transfixing the coats of the vein twice: a thread was then coiled round the head and point of the pin as in the twisted suture.

M. Mayor, of Lausanne, adopted the principle of Fricke's operation; but instead of using a single pin, traversed the vein with a number of threads, passing as many as possible through each varix. He acknowledges that, although he effected some cures by this proceeding, his success was by no means so striking as he had been led to anticipate from the perusal of the monograph of M. Davat on the subject.

In the "Archives Generales," for May and June, 1839,‡ M. Bonnet, first surgeon to the Hotel Dieu of Lyons, has

* In reply to those who contend that varix is not a disease sufficiently serious or dangerous to justify a recourse to operations which entail *any* amount of risk, M. Velpeau affirms that it is not correct to say that danger never occurs from varix; and he proceeds to cite numerous instances on record, and from his own experience, in which death ensued from the rupture of varicose tumors.—*Medecine Operatoire, Des Varices.*

† *Sur le Traitement Curatif des Varices.* 1836.

‡ *Brit. and For. Medical Review*, vol. ix. 1840; where the reader will find a detailed notice of this Memoire.

given a comparative view of the merits of the treatment by pins, by caustic potass, and by the combination of these means.

M. Bonnet found that, in the majority of cases treated by pins, when he had an opportunity of watching the ultimate result, the obliteration was not permanent. Relapses occurred after a longer or shorter period, (from two to six months,) even where the veins had been most acutely inflamed, and when the cure appeared to be complete.

M. Bonnet afterwards tried a combination of the treatment by pins and that by caustic, introducing pins at intervals, and cauterizing between them; but finding this method too complex, and the obliteration by caustic more permanent than that by the pins, he abandoned the latter altogether, and employed the caustic alone.

The rules laid down by M. Bonnet for the treatment of varix by the caustic potass are:—

1. It is necessary to apply several morsels in the course of the vein, and at a distance of three or four inches from each other.
2. The potass should only be applied to the veins at such points as they correspond to the muscle. Other situations are unfavorable to cicatrization, and if cicatrization takes place, the ulcers are readily renewed.
3. It is necessary to apply the caustic at least twice, in order to reach the vein.

The superiority of this treatment consists, first, in the permanence of the cure; perfect obliteration having been produced in fourteen cases. In one of these, no relapse had occurred at the end of fourteen months; in another, after

several years. Also, in the circumstance that it does not expose the patient to the risk of phlebitis; cauterization limiting all inflammations which are disposed to extend; and, thirdly, the revulsion caused by the artificial ulcer hastens the cicatrization of ulcers on the leg which existed previously.

On the other hand, the veins being opened by the caustic potass, its application renders hæmorrhage probable; but this may be easily avoided by rest, or restrained by a bandage, if it should occur. It is necessary to keep the patient in bed for a month, this time being required for the separation of the eschars, and for the cessation of the pain which remains for some time afterwards in the deep ulcerations. And, finally, these ulcerations are very slow in cicatrizing.

The cases in which M. Bonnet thinks the cure should be attempted, are—

1. Whenever varices ulcerate, and give rise to hæmorrhage; and
2. When they exist with ulcers so extensive as to require rest of six weeks, two months, or upwards.

No attempt should be made by caustic, or by any other means, when *both* the saphena veins are dilated. The obliteration of one will produce a greater dilatation of the other; or varices of other veins, scarcely visible before, will become more voluminous.

Advanced age, and thickness of the coats of the veins, sufficient to render their approximation difficult, even with the pressure of the finger, are likewise circumstances which militate against the probability of success by caustic potass.

Mr. Skey* has brought forward evidence in favor of the treatment by caustic, but proposes to accomplish the obliteration of the veins by numerous very small eschars effected over each varix, by means of the Pate de Vienne, a compound of nearly equal parts of caustic potass and quicklime, formed into a paste by alcohol. Mr. Skey has employed this method successfully in between thirty and forty cases; he acknowledges, however, that, small as were the eschars practised by him, very tedious ulcers sometimes resulted, from them, requiring three or four months for their cure.

Since the possibility of coagulating the blood circulating in an aneurismal sac, by the medium of galvanism, has been established, the same principle has been extended, by Italian surgeons, to the cure of this disease of the vascular system.

The earliest recorded instance of this treatment appeared in the "Gazzetta Medica di Milano," for August, 1846.†The success which had attended the treatment of aneurism at Milan and other Italian towns, by galvano-puncture, induced Bertani to make trial of it in varix.

The first operation, upon a very aggravated case of the disease, entirely realised his expectations, and produced firm coagula in those veins to which the needles were applied; but as the patient quitted the hospital without giving M. Bertani an opportunity of completing the cure, I shall pass on to a case reported by M. Milani, of Varese.

*Medical Gazette for Aug. 1846. Communications on the same subject, by Mr. Clay, of Manchester, appeared in the *Lancet* for Aug. 1840, and May, 1842.

†Noticed in Dr. Ranking's Abstract of the Medical Sciences, vol. v.

A miller, in good health, was received into the hospital at Varese with considerable enlargement of the trunk of the vena saphena above the knee, and ten knotty dilatations, varying in bulk from the size of a bean to that of a nut, below the knee. The pain and weakness of the limb were so great that he had been obliged to give up his occupation.

August 3, 1846. M. Milani, having bandaged the leg above and below the spot chosen for the operation, inserted two steel needles into one of the dilated knots, and brought them into communication by means of copper wires, silvered, with the two poles of a voltaic battery of twenty-six pair of plates, two and a-half inches in diameter. At first the patient suffered a slight shock; afterwards, merely a sensation of burning. The needles were left in the vein for twelve minutes, when a hard clot had formed around that in communication with the zinc or negative pole. Cold water and vinegar were applied to the part.

August 4. Needles were introduced into the saphena above the knee, and into the varicose enlargements below. A battery of twenty-six pair of plates was connected with the upper needles, (Dr Milani tried one of thirty-one plates, but the patient could not bear it;) another of twenty-four plates, with the needles inserted below the knee. Hard clots were produced in the veins of the leg and in the saphena, blocking up the latter for two or three inches.

Subsequent operations upon the remaining varices proved equally successful. In one instance the needles were inserted each in a separate dilatation; in eight minutes a coagulum had formed round the negative needle while the blood continued fluid round that connected with the positive pole; the

needles were reversed, and, in seven minutes, the blood which had remained fluid was converted into a firm clot. The needle in connection with the copper pole of the battery had become oxidised in this experiment; in all the previous insertions, that in communication with the zinc had alone suffered.

In ten days, all the varicose dilatations had disappeared. Although the points of the two needles were never in contact, and they were covered with a varnish of gum lac which left only their points bare, a slight areola of cauterization had taken place round each puncture, the extent of which was greater round the negative pole.

In a second patient, still under treatment, a tumor as large as a goose's egg near the internal malleolus of the left leg filled with coagula under two applications, and diminished two-thirds in volume.

From the "Bulletino delle Scienze Mediche," for December 1846, the following observation by M. Gamberini, is extracted, and published in the "Gazette Medicale," for July 10, 1847. It is interesting, as a proof of the necessity of covering the needles with some isolating varnish, in order to diminish the violence of their action upon the perforated integument, and the inconvenient degree of oxidation to which their points, deprived of protection, are liable.

The case was one of long-existing varices in the left leg, which rendered walking difficult.

November 24. After applying a bandage to arrest the circulation in the veins, in the same manner as for venesection, four steel needles (not coated by varnish) were plunged crosswise into the chief varicose trunk, care being taken to

prevent their points meeting. Communication was established between two of the needles and the poles of a battery of twenty-four pair of plates, two inches in diameter. The pain was so severe that it became necessary to suspend the process. On making a second trial, the pain was less severe, and the operation proceeded. Round the needle in connection with the negative pole a pale yellow areola rapidly appeared, changing soon into a vesication, which burst before the needle was withdrawn. M. Gamberini attempted to attach the two other needles to the poles of a second battery: but so much pain was caused by it, that he was obliged to desist. Coagula having formed, the positive needle was withdrawn without difficulty; but considerable force was required to bring away that in connection with the negative pole, and a few drops of black blood flowed from the orifice left by it; the point of the needle was found to be completely destroyed by oxidation. The operation was followed by slight fever, and the next morning the puncture was converted into a small ulcer. The vein acted upon was entirely obliterated.

M. Gamberini afterwards operated on the remaining varices, employing first five, then thirteen pair of plates; they occasioned no pain, merely a sensation of weight. In twenty-five minutes the cavities were obliterated, and no reaction whatever followed.

Numerous other successful examples of the treatment of varix by galvano-puncture occur in various Italian journals for the last months of 1846, and the beginning of the year 1847, and none of them attended by phlebitis, or any of the evils so often accompanying the ligature or section of vari-

cose trunks. Whether the cure is more permanent than by other modes of obliteration, remains still to be established, since no direct evidence has yet been adduced upon this point. In the "Annali Universali di Medicina," for January, 1847, are a series of conclusions, arrived at by a commission of inquiry into the general effects of galvano-puncture, proposed by Dr. Calderini, from which I select the following, bearing upon this subject.

Galvanism is a mode of producing a solid obstructing clot without cauterization of the arterial (or venous) tunic, and without producing any secondary effects on the system, if we operate by a continued current. Dr. Restelli prefers a pile of many pairs of small plates; the coagulating power is thus increased, whilst the quantity of caloric evolved is diminished. The same gentleman also insists upon the poles not being reversed, (as practised by M. Milani,) since he argues, if the clot be formed by the acid disengaged at the negative pole, the alkali, afterwards set free by the positive needle, may re-dissolve it. M. Restelli further recommends the needle in correspondence with the negative pole to be introduced in direct opposition to the blood's current, as its flow will thus be checked, and coagulation accomplished more speedily. To this I may add, that the greater violence of the effects produced in M. Gamberini's first attempt, by a larger volume of galvanic influence, and the gentle but sure action of the smaller battery in his subsequent operations, appear to indicate that the slower coagulation of the blood, by the exertion of a lower degree of galvanic power, will prove equally efficient, and be attended by much less irritation and inconvenience.

The greater or less degree of danger attending operations upon varicose veins by the knife and by ligature,—of which latter proceeding the employment of needles and the twisted suture can only be regarded as a modification,—and the probability, I might almost say the certainty, of the return of the disease when thus treated, must alone be sufficient grounds for abandoning altogether these modes of attempting the cure of varix.

The smaller amount of risk which appears to be incurred, and the greater durability of the cure, under the treatment by caustic, especially the milder application of this remedy, advocated by Mr. Skey and others, would ensure it the preference, notwithstanding the inconveniences following its use, were it not for the promise of an equal measure of success without the drawbacks attending it, held out by the adaptation of galvano-puncture to the treatment of this malady. The fact of the perfect obliteration of the venous trunks by this influence cannot be questioned: the pain produced by it, when properly regulated, is as slight as that occasioned by the application of the *pate de Vienne*; the risk of inflammation does not appear to be greater, the time required for the completion of the cure very much shorter, than that by caustic; and those sequelæ of the latter mode of treatment—the creation of artificial ulcers, which often prove extremely obstinate—are avoided altogether. In short, the only thing which seems wanting to establish the superiority of galvano-puncture over all other methods of treating varix, is satisfactory proof of the permanence of the effects produced by it.

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THE following selection, from a great number of cases treated by the method detailed in the foregoing essay, will suffice to illustrate the principles on which the treatment is founded, and demonstrate their practical operation.

CASE I.

Indolent ulcer of the Hand.

ANN PARKER, aged 6, brought to the St. George's and St. James's Dispensary, March 4th, 1853, with a livid-colored, painful, raised ulcer, between the knuckles of her right hand, resulting from a burn received in November. Her mother had since continued to dress it with various kinds of ointments recommended to her, but had suffered the hand to hang down; and, as often happens in ulcer of the leg, the sore bled frequently.

March 4th.—Cold water dressing, a compress of lint, and a bandage applied, the hand being supported in a sling.

Perfectly healed, March 23rd.

CASE II.

Ulcers originating in specific disease after its cure remaining stationary from locality.

JOSHUA MOBBS became a patient of the Dispensary, February 14th, 1843, with a large, deep, very sensitive ulcer on the shin, and a smaller sore of an unhealthy aspect at the back of the leg, over the tendo-Achillis. Both ulcers originated in a syphilitic eruption, and he gave me the following history of

the specific malady. Two years previously, he contracted a sore on the glans penis, which did not heal for more than five months; of the treatment he could give me no very satisfactory particulars. Two months after the sore had healed, a tubercular eruption broke out over the arms, body, and legs; many of the tubercles ulcerated, and the attack continued for upwards of twelve months, yielding at length to a long course of medicine, but leaving as vestiges the ulcers on the leg, which had remained for more than six months much in the same state as that described above.

A poultice was ordered to the sores; Plummer's pill every night; and saline aperients as often as required.

Feb. 17th.—Tepid water dressing, calico strips, and the bandage, with occasional tepid affusion.

Feb. 24th.—The sore at the back of the leg skinning over; the large ulcer filling up slowly. Quin. sulphat. gr. ij. ordered to be taken twice a day.

March 17th.—The large ulcer entirely healed; the smaller sore had been well nearly a fortnight.

CASE III.

Obstinate and irritable ulcers on the Leg, in a patient suffering from irritable bladder and stricture.

WILLIAM BARRETT came to me Aug. 3rd, 1842, with an extensive superficial ulcer on the outside of the right leg, and four smaller sores on the inner side, all extremely sensitive, and pouring forth a thin sanies in abundance.

The large sore had existed upwards of five years, and he had repeatedly been under treatment for it, without deriving much benefit. The smaller sores had broken out at intervals

during the last six months. He had suffered besides, severely, from irritability of the bladder, between which and the sores on the leg he told me that he fancied there must be some connexion, as he had noticed that the affection of the bladder was much relieved since they discharged so freely. He has constantly worn a bandage, but very lightly applied, as the leg cannot bear pressure. I ventured to bandage it more firmly than he had ever borne it, relieving the pain thus produced by warm affusion, and directing him to turn back the oiled silk, and bathe it five or six times during the day.

Aug. 5th.—He has been able to bear the bandage, and can stand better, but complained much of the irritability of the bladder. After questioning him further on the subject, I introduced a bougie, and discovered a very contracted stricture in the membranous portion of the urethra.

From this time the dilatation of the stricture, and the tepid water treatment of the ulcer, were continued every second or third day, the irritability of the bladder speedily disappearing, and the ulcers gradually filling up. On the 13th of September the sores were perfectly healed; after which he attended from time to time for the introduction of the bougie.

CASE IV.

Indolent ulcer accompanied by Amenorrhœa.

MARY ANN DALE, aged 24, applied July 9th; 1842, with a large, dusky, indolent ulcer in front of the leg, two inches above the ankle, of four years' standing. She did not look out of health, but reported that the menses had always been scanty and attended with pain, and had not made their appearance at all for some months. Her pulse was languid, and bowels confined.

Pil. aloes gum myrrha prescribed as an aperient, and Mistur. ferri comp. directed twice a day. The leg dressed with warm water, strips of wet calico, and a bandage lightly applied.

July 12th.—The little pain, occasioned by the bandage at first, no longer felt. Cold water dressing.

July 18th.—Surface of the sore florid and healthy; diminished one-third in size; scarcely any pain, although obliged to stand much.

Aug. 18th.—Discharged well.

COLD WATER DRESSING.

CASE V.

JANE SHEPHERD came to the Dispensary, Jan. 12th, 1841, with an irritable ulcer, just above and behind the inner ankle of the left leg, of more than three months' standing. I directed her to poultice it, and rest the limb as much as possible for two days, when soap plaster, strapping and a calico roller were applied.

Jan. 14th.—The thin profuse discharge from the ulcer had spread itself beneath the strapping over the skin surrounding the sore, and produced excoriation, which obliged me again to have recourse to the poultice. After a few days' rest, I again attempted to give support by a calico roller, without strapping, dressing the sore with lint dipped in cold water. Under this treatment she was able to go to work; but though tolerably free from pain, the ulcer remained nearly stationary.

Feb. 4th.—As the surface of the sore looked pale and languid, and her pulse wanted vigor, I ordered her gr. ij.

of sulphate of quinine, twice daily, and used as a dressing a solution of quinine in camphor mixture, gr. v. to the ounce, with drops *ij.* of diluted nitric acid. Under this treatment he improved in strength, the sore became florid, and healthy granulations rapidly sprung up.

Feb. 20th.—The granulations were exuberant, and bled freely; the support afforded by the calico roller alone did not appear to me sufficient, and I carried two wet strips of calico smoothly and firmly round the leg, from behind forwards, precisely in the same manner as strapping is applied, confining them with the roller.

Feb. 23rd.—The additional support had proved much more effective: cicatrization was advancing rapidly. The wet strips adhered almost as firmly as plaster.

March 5th.—Discharged cured.

CASE VI.

JOHN ROSSITER, admitted a patient, Jan. 28th, 1841, with a highly inflamed ulcer on the shin, and the foot considerably swollen, the consequence of a graze received six weeks previously.

Fomentation, poultice, rest, and a saline aperient, prescribed.

Feb. 2nd.—Cold water dressing, and a calico bandage applied.

Feb. 25th.—When nearly healed, a week ago, Rossiter discontinued his attendance, and returned to-day with the ulcer in almost as bad a state as at his first application. Dressed with lint dipped in camphor mixture, confined, as in Shepherd's case, by wet strips of calico beneath the bandage, and urged to attend regularly.

March 9th.—Discharged well.

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CASE VII.

HUGH PENNY, attended Feb. 20th, 1841, with an old deep sore, behind the outer angle, which had remained in an indolent state for more than twelve months, and a superficial ulceration above it, the consequence of a scratch with his nail five weeks before. The skin immediately surrounding the ulcer was covered with a closely adherent crust, formed by the union of some powder, with which it had been dressed, the discharge from the sore and ointments; no attempt had been made to remove it for weeks, and I found the skin beneath it extremely red and tender. After carefully cleansing it, and touching the surface and margin of the old sore with nitrate of silver, lint wetted with a lotion of drops *ij.* of diluted nitric acid to ʒj. of camphor mixture was applied; to the recent superficial ulcer, cold water dressing, and over both of them a roller carried.

Feb. 23.—In addition to the same dressing, two strips of calico, applied as in Shepherd's case.

March 7th.—The superficial sore skinned over, the old ulcer nearly filled up, and slowly cicatrizing. Exchanged the strips of calico for lead plaster strapping, under which the sore was perfectly healed by March 23rd.

CASE VIII.

G. SMITH applied May 4th, 1841, with a deep cut across the lower part of the shin, received a fortnight previously. As much inflammation existed, rest and a poultice enjoined.

May 7th.—Cold water dressing, with strips of wet calico, and a bandage.

May 29th.—Sore almost cicatrized. Did not return after this date.

CASE IX.

ANNE FERGUSON attended June 1st, 1841, in consequence of an attack of erythematous inflammation having come on, about a month before, round an old, callous ulcer, between the inner angle and the heel. Three or four small ulcerations had formed above the old sore, and had become so painful, during the week preceding, that she had kept her bed for several days.

Rest, fomentation with warm water, a poultice, and a saline purgative.

June 3rd.—Cold water dressing, and support by means of strips of calico and a roller.

June 10th.—The small recent ulcers quite cicatrized; and, as she declined attending for the cure of the old sore, she was discharged.

CASE X.

J. PAUK, a porter, applied Aug. 14th, 1841, with several inflamed, dusky, painful ulcers on the lower part of the calf, originating in a pimple which he had scratched about five weeks previously. After two days' rest and poulticing, cold water dressing, support by wet strips of calico, and a roller. Resumed his employment, August 18th, which he continued throughout the treatment.

Sept. 21st.—Discharged cured.

CASE XI.

GEORGE KNIGHT admitted a patient at the Dispensary, June 22nd, 1842, with four ulcers on the front of the leg, two of which had existed for nearly four months. As they were

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inflamed, and very sensitive, rest, a poultice, and a mild aperient, prescribed.

June 25th.—Cold water dressing, strips of calico, and the bandage applied.

July 7th.—All the sores healed; the bandage and cold affusion to be continued for some days longer.

CASE XII.

ELIZABETH DUNN, admitted a patient, July 30th, 1842, with an indolent ulcer on the outer angle of the left leg, which had existed for more than five years. The surface cold, smooth, and shining, surrounded by a white elevated margin, and scarcely manifesting any sensibility; discharge thin and copious. Touched the surface of the sore freely with nitrate of silver, and applied a compress, large enough to cover the surrounding induration, formed by enclosing a piece of sheet lead in wet lint.

Aug. 3rd.—A fresh application of the nitrate of silver; compress continued.

Aug. 5th.—The surface of the sore beginning to exhibit a more florid tint, and small granulations shooting up here and there; the pressure of the lead has brought the annular induration to a level with the skin, but has caused ulceration at one point, extending the sore in that direction. A compress of wet lint, substituted for the lead, confined by wet strips of calico and the roller. Directed her to bathe the whole freely with cold water, and to fold oiled silk round it.

Aug. 10th.—Healthy granulations over the entire area of the sore; size slightly diminished; scarcely any remains of the indurated ring can now be discovered.

Aug. 17th.—The ulcer slowly contracting; a third recourse to the nitrate of silver; the cold affusion to be continued.

Aug. 24th.—The surface of the sore presenting healthy granulations on a level with the surrounding skin, but no advance towards cicatrization since the 17th. Applied strapping of empl. resinæ.

Sept. 16th.—Under the use of adhesive strapping, the ulcer had nearly cicatrized; but after this date the patient did not return.

CASE XIII.

ELIZABETH HOLLAND came to the Dispensary, May 23rd, 1843, with an ulcer on the shin, arising from a deep cut, received May 16th. The leg was swollen, and highly inflamed, with a profuse discharge of thin pus.

Fomentations, a bread poultice, rest, and saline aperients prescribed for two days.

May 25th—Cold water dressing, with strips of calico, and the bandage, under which the sore was soundly cicatrized before the middle of June.

CASE XIV.

MRS. SEYMOUR consulted me, June 24th, 1843, with a small ulcer on the lower part of the shin, from which she had suffered considerably for more than three months. It was in a very painful state, and the skin around it excoriated to some distance. I dressed the leg with ung. plumbi comp., dusting the excoriated surface with chalk; and applied a bandage, directing her to wet the roller frequently with a spirit lotion.

July 13th.—So little improvement had taken place under the above-mentioned treatment, that I changed it for cold

water dressing and strips of calico, four applications of which healed the sore by the 27th.

CASE XV.

GEO. FLETCHER, a spare, sallow-complexioned, elderly man, came to the Dispensary, July 2nd, 1842, with a sloughy ulcer on the shin, arising from an extensive graze received about a fortnight previously. A poultice, rest, and a saline aperient ordered.

July 5th.—The surface of the sore was sufficiently cleansed, and the inflammation subdued, to admit of the bandage and strips of calico being tried, to which cold affusion was super-added, the weather being hot.

July 7th.—Considerable pain had followed the application of cold water, which he endeavored to relieve by bathing it almost incessantly, discontinuing the oiled silk; the consequence was that a fresh slough had formed, extending beyond the margin of the sore. This accident rendered it necessary to return to the poultice and absolute rest.

July 16th—The slough had separated, leaving a deep ulcer; warm water dressing, the bandage, and oiled silk were now applied; and under this treatment the cure was accomplished in less than a month.

TEPID WATER DRESSING.

CASE XVI.

MARY WATSON, aged 56, a laundress, became a patient at the St. George's and St. James Dispensary, for the cure of a foul, painful ulcer, of ten month's standing, situated between the outer ankle and the heel, Dec. 10th, 1840.

She had been for more than a month entirely confined to her bed, a warm bread poultice being the only application, even in the horizontal posture, which afforded her any relief. Her health being much disordered, alteratives and sedatives were prescribed, and, after the lapse of a few days, they were changed for tonics.

At the end of a fortnight I attempted to substitute for the poultice, gentle support by soap plaster strapping, but the acute pain she suffered from the slightest pressure compelled me to abandon it. Being desirous of enabling her to follow her occupation, I tried a great variety of dressings in conjunction with calico and flannel rollers, but was ultimately obliged to give them up, and to return to the use of the poultice. The pressure of strips of calico, soaked in cold water, or even in a watery solution of opium, occasioned almost as much suffering as the plaster strapping. Opium, as recommended by Mr. Skey, was administered with temporary relief from pain, but no improvement of the sore.

These experiments occupied many months, at the end of which the ulcer was not a whit advanced towards healing, and the sensibility so great, that she was frequently confined to her bed altogether. In this state it continued, with occasional fluctuations, until January, 1842, when an attack of inflammation followed several days' fatigue, and she requested me to visit her.

Jan. 17th.—I found the surface of the ulcer covered with a slough, which extended upwards and forwards beyond its original margin. Absolute rest in bed, fomentations with strong decoction of poppies, poultices, and salines with opium, subdued the inflammation, and in about a fortnight

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the slough separated, leaving a larger and deeper surface than before for cicatrization. As she had no means of subsistence, but by the labor of herself and daughter, and refused absolutely to enter a hospital, I resolved to make another trial of support. The alleviation of pain which the poppy fomentation invariably afforded her, suggested to me a combination of warm water dressing, with fomentation and the bandage, which I proceeded to carry into effect February 5th, as follows:—After bathing the part for some time with warm decoction of poppies, I dressed the sore with a piece of lint soaked in the same, confining it with a moistened strip, long enough to pass from the heel over the instep; two strips of calico, soaked in the warm decoction, were next brought from the back of the heel forwards over the instep, and a roller, lightly applied, carried from the foot to the knee; the whole was then fomented with the decoction for twenty minutes, with the effect of entirely relieving the severe pain at first caused by the pressure of the bandage. The dressing was completed by folding round the ankle a piece of oiled silk, directing her daughter to remove this covering, and soak the bandage afresh whenever pain returned, replacing it as before.

Feb. 6th.—She had passed a good night, and expressed herself as more free from pain than she had been for months previously. The leg was dressed daily in the same manner, the pressure being very gradually increased.

Feb. 17th.—The sore had improved so much that its cavity was filled up at several points with granulations, almost to the level of the skin. As the discharge was rather profuse, I substituted cold water for the warm decoction, and, with

the exception of an occasional application of nitrate of silver, under this simple treatment cicatrization was completed within five weeks from its commencement.

March 27th.—Discharged quite well, with an injunction to wear the bandage for some time.

CASE XVII.

ELIZABETH CRUWYS, a charwoman and laundress, about 50, applied Nov. 2nd, 1841, with a large, deep, ulcer, extending across the back of the leg, just below the calf. The history she gave me was, that the sore had broken out three years before; that she had attended for some time as an out-patient at an hospital, where, among other dressings, it had been strapped and bandaged, but this treatment was discontinued, as the pain caused by it was insupportable; and that, at length, she was discharged with an intimation that nothing could be done for her as an out-patient.

As the pain she now suffered was so acute as to deprive her almost entirely of rest, the surface of the sore sloughy, its secretion thin and profuse, and the surrounding skin inflamed, I directed her to foment it with strong poppy decoction, apply a bread poultice, and lay it up for a few days, at the end of which time it was my intention to try whether she could bear support. She did not return, however, till the end of April, 1842, stating that circumstances had obliged her to continue her employment as a laundress, and neglect her leg. It was now in a terrible state; the ulcer had become larger, deeper, and more painful than ever, and three smaller sores had broken out on the upper and front part of the leg, which was very much inflamed and swollen. Her sufferings were at this time so severe, that she promised to

submit to any treatment, short of actual confinement to the bed, which, nevertheless, I was obliged to insist upon for a few days.

On the 1st of May I visited her at home, and dressed the leg in the same manner as in Watson's case, directing her to unfold the oiled silk, and soak the bandage with warm poppy decoction, ten or twelve times during the day and night, and come to the Dispensary in two days, to have it dressed. She did not make her appearance till the 5th, four days after the bandage had been applied, excusing her non-attendance on the ground that the leg had been almost entirely free from pain, until the night previous, during which she had been compelled to bathe it very frequently, to obtain ease. The depth of the ulcer at the back of the calf was so great, that, at the first dressing, I had found it necessary to place a large card over the cavity, to prevent the bandage from sinking into it. Under this card a large quantity of matter had accumulated; and, instead of employing it again, I now filled up the hollow with small shreds of fine sponge, dipped in the decoction, and dropped lightly into it, applying the strips of calico, the bandage, and the oiled silk, as before.

May 7th.—I was much surprised to find the large, deep ulcer filled with healthy granulations, nearly to the level of the skin, and two of the three smaller sores were likewise healing rapidly. The discharge being copious, I dressed the leg with lint dipped in cold water, omitting the sponge, but enjoined her to bathe the bandage occasionally with cold water, and still continue to wear the oiled silk. Under this treatment, repeated every third or fourth day, the ulcers were perfectly cicatrized by June 12th. During the whole of this period, about six weeks, the patient had followed her occupa-

tion, and had been constantly on her feet till a late hour. Notwithstanding this, she had suffered very little pain since the first application of the bandage, and was considerably improved in health when discharged.

I have witnessed this production of granulations in deep ulcers, as an effect of the use of sponge in the manner described, in other cases besides ulcers on the leg. In a deep cavity in the ham, left by a furuncular abscess, all treatment failed in exciting granulation, until it was filled with shreds of sponge, with the same result, although not accomplished so rapidly, as in the case just related.

CASE XVIII.

MARY BEW, aged 71, became a patient of the Dispensary Dec. 14, 1841, with an ulcer, which had existed nearly three years, between the outer angle and heel of right foot. Its sensibility was extreme, surface smooth and glassy, and, barely moistened with a scanty, thin discharge. After the usual preparation, I applied soap plaster strapping, and a bandage, to which she submitted with much reluctance, objecting that the same treatment had already caused her great suffering, and had failed in curing it. When I next saw her, I found that the pain occasioned by the straps had obliged her to remove them, and put on a poultice. The sore was afterwards dressed with digestive ointment, touched occasionally with nitrate of silver, and the bandage alone worn, applied generally by herself, as she merely attended from time to time to procure fresh dressing.

May 14th, 1842.—She came to the Dispensary, after an absence of more than three weeks, with the foot inflamed and swollen, the ulcer considerably enlarged, and two others

just above it, all in an exceedingly sensitive state. Warm fomentation with poppy decoction and a poultice ordered until the next day, when I called upon her, and dressed the foot, as in Watson's case, leaving her directions to pour warm water over the bandage frequently.

May 17th.—The secretion being abundant, a trial was made of cold water dressing, but as it caused great pain the warm bathing was resumed.

May 19th.—The sores dressed with a solution of sulphate of zinc, and the bandage applied as before. This dressing was renewed every third or fourth day, and the ulcers were perfectly healed June 9th.

CASE XIX.

W. LANO, aged 56, attended March 29th, 1842, having a couple of sores on the front part of the leg, originating in a cut received about ten days before. The veins of the leg were varicose, the whole limb much swollen, and the ulcers foul and painful; above the ankle was the cicatrix of a former sore. The man's health was bad; his habits, he acknowledged, were intemperate, and his employment obliged him to walk every evening a distance of ten miles.

Cold water dressing and a roller were applied, and occasional cold affusion directed. It occasioned so much pain, however, that I found it necessary to change it on the 31st for warm bathing, under which treatment the sores healed by the 19th of April, when he discontinued his attendance. He returned in about three weeks, complaining of great morbid sensibility of the old cicatrix, above the inner ankle; warm bathing and the use of the oiled silk gave this likewise speedy and effectual relief.

CASE XX.

MR. HOOPER, Pall-mall East, on the 5th of July, 1842, requested me to look at a painful ulcer on the leg. His health had been for several years in a very disordered state, but has improved materially within the last few months.

About two months back, extensive superficial inflammation was excited by a slight scratch on the knee, which was subdued with some difficulty, leaving an ulcer on the shin about the size of a shilling. The surface of the sore was dark and foul, and, together with the surrounding skin, nearly cold, but so exquisitely tender that the slightest touch gave acute pain. A number of livid spots, resembling petechiæ, dotted the calf, and the whole limb was much swollen. He was, at the time, applying a warm bread poultice, and resting the leg on a chair as much as possible, although business compelled him to use it frequently.

In his still feeble state of health, being almost entirely deprived of sleep and appetite, I was very apprehensive that sloughing to some considerable extent might ensue, and ordered him a tonic, and enjoined perfect rest; at the same time, as local support appeared to be strongly indicated, I proposed a trial of the plan of treatment employed in Watson's and other of the preceding cases. He had, however, suffered so severely from the pressure of a bandage applied a few days before, that he shrank from the suggestion, and at length yielded a very reluctant consent. The pain was at first very severe, but warm fomentation over the bandage soon allayed it, and enabled him to bear its pressure; and I left him with injunctions to repeat the fomentation frequently.

July 6th.—Under the gentle support commenced yesterday,

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he had been more free from pain than since the accident, and I ventured to increase the pressure a little, recommending perseverance in the warm affusion.

July 12th.—One of the dark spots on the calf suppurated soon after I last saw him, and became so painful that he could not come to town till the 10th. The limb had been laid up in the meantime, a poultice applied to the pustule, and warm water dressing continued to the sore. The pustule was converted into a small ulcer on the 9th, and the bandage was resumed on the 10th. From this date Mr. Hooper suffered scarcely any pain, although constantly on foot, and both ulcers advanced steadily towards cicatrization, which was complete by August 6th.

CASE XXI.

MARY WELCH, aged 61, attended July 5th, 1842, having a sloughy, painful ulcer over the inner malleolus of the left foot, and several unhealthy sores on the dorsum pedis: the foot was much swollen, and a thin, bloody sanies abundantly poured forth by all the sores. Ordered a poultice, an aperient, and absolute rest.

July 7th.—The foot more inflamed, and the ulcers fouler, than at first; the patient admitted that she had been upon her feet for nearly the whole of the two previous days. Confinement to the bed insisted on.

July 14th.—The inflammation having subsided, and the sores become clean, the bandage, as before described, was applied, and warm affusion employed.

July 18th.—She has been walking about for the last two days, without pain; all the sores skinning from their edges, the granulations exuberant, and pus healthy. Cold water

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dressings were now substituted for the warm, the granulations were occasionally brushed with nitrate of silver, and all the ulcers were well by the 7th of August.

CASE XXII.

THOMAS PRICE consulted me Dec. 20th, 1842, on account of two painful ulcers on the shin of the left leg, which had broken out fifteen months ago. Preparation by poppy fomentation and a poultice.

Dec. 22nd.—Warm water dressings, and the usual bandage.

Both ulcers healed Jan. 10th, 1843.

CASE XXIII.

MARY LYONS became a patient at the Dispensary Jan. 10th, 1843, with two irritable ulcers over the inner angle of the right leg, the consequence of a severe bruise received nearly four months before.

Warm water dressings and the bandage. One sore was cured in ten days, the second and larger was well by the 15th Feb.

CASE XXIV.

WILLIAM ABERCROMBIE attended Jan. 17th, 1843, for the cure of an irritable and indolent ulcer behind and below the inner angle of the right leg, of eleven months' standing. It has been treated by rest and emollients, by stimulants, various ointments, strapping, and bandaging, ineffectually. Strapping and the bandage he was unable to bear, he stated, for an hour.

Treated by warm water dressing and the bandage.

Feb. 14th.—The sore reduced to less than half its original

size, and had lost all morbid sensibility. As it had been nearly stationary for the last six days, I made trial to-day of soap-plaster strapping, which caused no pain, as formerly, but did not hasten its progress. On the 18th, therefore, I dressed it with lint dipped in camphor mixture, and dilute nitric acid, (drops ij. to 3j. applied cold, and the bandage, and thus treated, it was perfectly cicatrized, Feb. 28th.

CASE XXV.

JAMES OSWALD came to the Dispensary, Jan. 26th, 1843, with an ulcer on the ridge of the shin—indolent, irritable, and elevated considerably above the surrounding skin. It had existed for more than four months, and during that time he had been an out-patient at three hospitals.

After a free application of nitrate of silver, warm water dressings and the bandage employed.

Feb. 25th.—Perfectly healed.

CASE XXVI.

Mrs. DIMMOCK, aged 40, consulted me Feb. 9th, 1843, for the cure of two unhealthy-looking, extremely sensitive ulcers on the inner ancle. Four years ago, a sore had broken out in this locality, during pregnancy, and at the same time an aphthous excoriation of the tongue and mouth appeared. I could not learn that any venereal taint had ever existed.—After her confinement the sore healed, but the ulceration of the mouth has since recurred several times at intervals.

In September, 1841, ulceration occurred again on the inner ancle, and the two sores have resisted all treatment up to the date of her application.

Feb. 9th. Ordered Plummer's pill, five grains, every night for six nights; warm water dressing and the bandage to the

ulcers; the dressing was renewed every second or third day until March 16, when both ulcers were healed. She returned towards the latter end of April, with fresh aphthous excoriation of the tongue, which soon disappeared under the use of nitrate of silver and Plummer's pill.

CASE XXVII.

ELIZABETH MARRABLE, aged 59, came under my care at the Dispensary, Feb. 14th, 1843, with a large, foul, painful ulcer on the inside of her leg and ankle, which had first broken out twenty-four years ago, and had only been healed twice, for less than a year each time, during that period; the leg and foot were habitually swollen, and her object in applying now was for something to relieve the recently inflamed and excoriated skin round it, having lost all hope that the ulcer could be cured. Being much engaged as a charwoman, she would not consent to give up her work, although she confessed that she was frequently on her legs till a late hour in the night, suffering severely.

After touching over the surface of the ulcer with nitrate of silver, warm water dressing and the bandage were applied, and she promised, since she could not lay it up, to soak the whole for some time night and morning with poppy decoction. She returned with tolerable regularity every other day until March 20th, when the sore was scarcely more than one-third its original size, the swelling of the foot reduced, and the skin sound, all pain having been relieved from the time she commenced wearing the bandage. She now discontinued her attendance, but returned in a few weeks with the sore nearly as large as at first. After this period she came to the Dispensary at irregular intervals, for ointment to dress it herself, and I soon lost sight of her altogether.

CASE XXVIII.

MARGARET LOGAN became a patient of the Dispensary, April 29th, 1843, with an ulcer on the shin arising from a wound inflicted six weeks previously. The inflammation had reached so high a degree that she had been confined some days to her bed. I visited her at her residence, and directed the leg to be fomented and poulticed for some days, the horizontal position being still maintained.

May 5th.—Warm water dressing and the bandage. Exercise allowed.

May 27th.—Sore perfectly healed.

CASE XXIX.

Mrs. ADAMS, aged 44, called upon me, June 10th, 1843, with a painful sore on the inner ankle, of five years' standing. It had been treated by poultices with rest, various kinds of dressings, and by strapping, hitherto with success. The strapping she had never been able to bear the pressure of for the day.

June 10th.—Warm water dressing and the bandage, with directions to foment the part over the bandage frequently.

June 15th.—Cold water substituted for warm; under which the ulcer was perfectly healed on the 30th of July.

CASE XXX.

MARY FILLING, aged 74, applied July 1st, 1843, with a large, deep, exquisitely painful ulcer on the inside of the right leg, which broke out after an illness, more than twelve months ago, and had hitherto resisted various modes of treatment. The surface of the sore sloughy, and smells foully; the skin surrounding it white and coddled by the continual use of poultices. She came up from Chelsea in an omnibus, and

was scarcely able to walk the very short distance from the street to the Dispensary.

The sore was dressed with charcoal powder and cerat. resinæ, and the poultice continued until July 7th, when a bandage was lightly applied, and tepid fomentation over it was directed.

July 13th.—With the exception of a small shred of sloughy aponeurosis, the surface was now cleansed, and I dressed the ulcer with sponge and tepid water, as in Case xvii., giving as much support with the bandage as she could bear.

July 25th.—The cavity of the ulcer filled up nearly to a level with the skin. The sloughy aponeurosis still adherent. Cold water dressing and strips of wet calico.

Aug. 5th.—A trial of soap plaster strapping, to see if it would hasten cicatrization, and the detachment of the shred of aponeurosis.

Aug. 10.—The plaster strapping had given more pain than the wet calico; the discharge was much more profuse; and the healing of the sore did not proceed more rapidly than before. Cold water dressing resumed.

Aug. 31st.—The ulcer perfectly skinned over. The slough came away on the 15th, since which she had walked from Chelsea to the Dispensary every fourth or fifth day.

CASE XXXI.

Extensive Sloughing of the Leg.

Mr. GREEN, 54, Gloucester-place. aged 76, was attended by me in May, 1836, for a slight graze on the shin. Being very active and healthy for his age, he made light of the injury, persisted in taking his usual exercise, and left London for a,

week. On his return, a considerable slough had formed which rapidly extended in a belt, three inches in width, round the leg, destroying skin and cellular tissue, and leaving the fascia and muscles bare; another deep slough formed at the heel. At the same time, he suffered to an extreme degree from prurigo senilis, and it was absolutely necessary to control the irritation arising from this cause, in order to prevent his being rapidly exhausted by want of sleep. At first, twenty drops of laudanum at night enabled him to sleep for some hours; but it soon became requisite to repeat the dose during the night, and sometimes give a third in the course of the day. It not only relieved the prurigo and procured sleep, but acted as a cordial; and as the bowels were generally relaxed, no inconvenience whatever attended its use. The leg was enveloped, on the outside of the dressings, in carded wool, at the recommendation of Sir B. Brodie; and the health being carefully supported, the sloughs were at length thrown off, leaving a granulating surface at the bottom of the wound, which slowly rose to the level of the skin; and at the end of October—five months after its outbreak—the whole was soundly cicatrized. The laudanum was continued, occasionally in larger doses, throughout the treatment, and afterwards gradually discontinued.

APPENDIX OF REMARKS AND CASES BY THE
AMERICAN EDITOR.

This work is now presented to the profession, with several notes, additions, and selections, thus rendering it a full manual on the subject of which it treats. The several divisions and subdivisions of ulcers made by the author, as well as by most writers of the present day, are, in my humble opinion, better calculated to confuse the mind of the young physician than to give him clear ideas of the correct principles of curative treatment. According to my observation and experience, ulcers may be divided into two classes:

1st. Malignant.

2nd. Non-malignant.

These may again be subdivided into

1st. Acute.

2nd. Chronic.

Of these there are various modifications, sufficient to embrace every feature presented by ulcers, without bestowing upon them the extensive classification generally made by authors.

An ulcer whether malignant or non-malignant, is an abnormal condition of a part of the human organism, which may be preceded by general or local causes, or by both. And, in all instances, these causes, under similar circumstances, effect similar pathological conditions and results. Generally speaking, each variety of ulcer requires nearly the same plan of treatment. I believe, from the invariable success attending my experience in these matters, that the majority of ulcers may be effectually cured by the application of caustic, as mentioned in my note, page 105.

True, it is more painful than the treatment proposed by the author, yet it has the advantage of being more prompt

and certain in its results, entirely changing the pathological condition of the ulcerated localities to one of healthy action. In conjunction with this local treatment, constitutional measures are in nearly every instance indicated, and according to the existing circumstances, should be either, tonic, stimulating, or depletive.

The following cases will illustrate my views :

CASE I.

Mrs. A. aged 35, applied June 24, 1849, with an ulcer of the right leg, of eight months standing. Leg much inflamed and swollen, much pain and irritability, could not walk without increasing all the above symptoms.

TREATMENT.—Filled the cavity with the following:

R. Pulv. Sulph. Zinc. ʒij,

Pulv. Hydrastis, ʒi.

Pulv. Podophyllum Peltatum, ʒss. Mix.

Gave much pain.

June 25th.—Found the surface of the ulcer white, discharging but little, the surrounding parts very sore and much inflamed; applied the zinc mixture.

June 26th.—The ulcer was dark, no discharge, surrounding parts still more inflamed with increased pain and swelling. Ordered the Pulv. Ulmus, mixed in cold water and applied, to be renewed as often as the application became dry.

June 27th.—Inflammatory symptoms all subsiding. Same continued.

June 28th.—Still improving with slight discharge from the edges. Continued the same.

June 29th.—The diseased portion sloughed off. Continue the same dressing.

June 30th.—The edges smooth and even, but little discharge,

appearance of granulations; applied the Comp. Plumbi Unguentum or Meyer's Ointment of the U. S. Eclectic Dispensatory, to be applied three times a day.

June 30th.—All the inflammatory appearance subsided, healthy granulations in the whole ulcer. Same continued.

July 8th.—All healed. During the whole period of treatment I used the Comp. Syr. Stillingia of the U. S. Eclectic Dispensatory, according to the following :

R. Comp. Syr. Stillingia, ℥viiij.
Iodide Potassa, ℥iv. Mix.

CASE II.

Mr. F. D. aged about 40, applied Jan. 15th, 1850. Intemperate habits. Ulcer on the tibia, presenting all the appearance of case 1.

TREATMENT.—The same as the foregoing case. Discharged cured the 15th day.

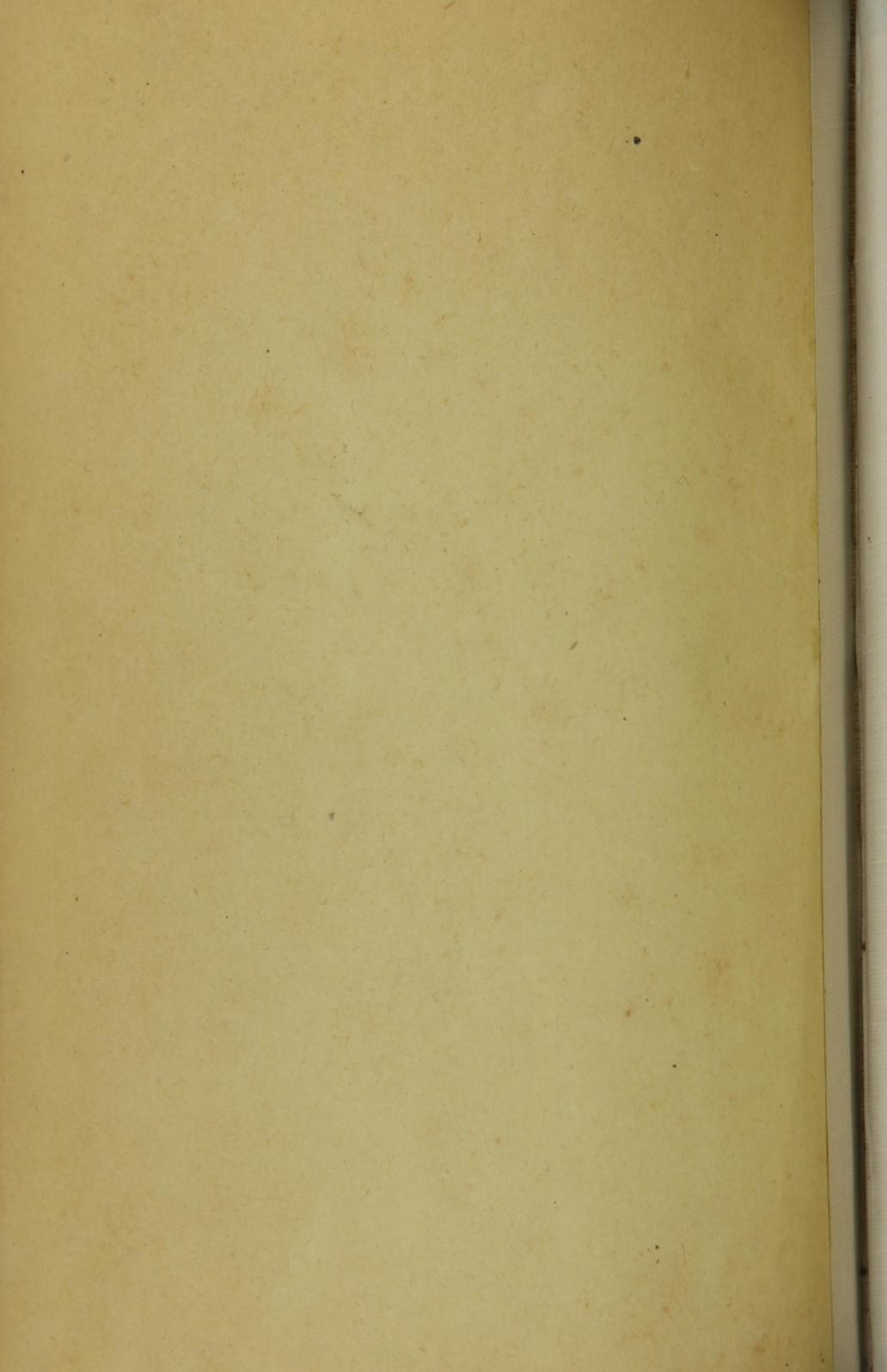
Many cases of similar character, and results might be referred to, but as the above illustrates the principles I recommend for treatment, a relation of them is unnecessary.

The same course of treatment may be pursued in either acute or chronic ulcers; but in the acute it is better to apply the elm or cold water dressings for a few days before the zinc comp. is used, in order to allay the active inflammatory symptoms.

It will be necessary in some cases to use the most active tonics to invigorate and strengthen the system.

Again, it may require cathartics and low diet, to reduce a plethoric condition, this, however, is not very often the case.

While I speak confidently of the above plan of treatment, I would not wish to be understood as repudiating the various plans of water treatment referred to in this work, but only speak of the saving of time, for while it is more painful, the cure is performed more speedily.



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