operation: in fact, as in the case of children, the lowered vitality of age removes many of the liabilities to disease.

One special object, however, which I have in narrating these cases to-night is to elicit the experience and opinions of gentlemen present on the propriety or otherwise of opening the hernial sac. The question is by no means settled at present, so far as I know, among London practitioners; and the difference in results is not so great as to decide the question.

Out of 160 operations, this and last year, in London, in which the sac was not opened, there occurred 38 deaths—nearly 1 in 4; whilst in 101 cases in which the sac was opened, there were 26 deaths—barely over the same proportion. Mr. Luke, however (as I have before said), lost only 2 out of 40 cases in which the sac was unopened.

I shall be glad to know, also, whether it has often been found that herniæ which have resisted the taxis have receded after the use of the warm bath.

When a student, I observed that, in many fatal cases in old people, death resulted from bronchitis or pneumonia; and for this reason, Mr. Simon, of St. Thomas' Hospital, as a rule, prohibited the use of the warm bath. He believed that a hernia which resists a fair use of the taxis is seldom, if ever, reduced by the bath. For the same reason bleeding was rarely employed. Dr. Druitt remarks that "a delicate person will not be very likely to bear the shock of an operation if bled or boiled to death's door first of all."

NOTES ON THE PATHOLOGY AND TREATMENT OF ULCERS OF THE LEG.

By JOHN KENT SPENDER, Esq., Surgeon to the Eastern Dispensary, Bath.

[Continued from page 208.]

ULCERS are occasionally found on the leg which are clearly independent of any varicose condition of the limb. Old people are subject to a vital and physical deterioration of their tissues, which is the first step in the process of ulceration. Large ulcers of an obstinate kind are apt to be developed in legs suffering from oedematous swellings; and the same result is the occasional sequel of a severe attack of idiopathic inflammation. The legs are also frequently the seat of specific sores; and the reason why these are more liable to occur in the inferior extremities in preference to other portions of the body, may be owing to the fact, that the position of the limb renders it obnoxious to injury, while the presence of the varicose affection makes it particularly prone to ulcerate.

Classification of Ulcers. Every ulcer is either strictly local in its source and in its consequences, or else it is the local expression of a special blood-disease. Theoretically, any classification is unexceptionable which is based upon this fact. An ulcer dependent upon constitutional causes is curable only by constitutional remedies, acting through the blood. Here we trace a local disease back to a general cause, and our practice is governed by this knowledge. In like manner, all strictly local ulcers should be traced back to their own local causes. If in the one case we prefix to an ulcer a generic term significant of the particular diathesis with which it is associated, why in the other should we not give prominence to the pathological fact upon which the same lesion depends? Every nosological definition should be expressive of a cause, and suggestive of a remedy. But I fulfil only the latter of these conditions, when I speak of a local ulcer being simply acute, or chronic, or healthy, or indolent: I say nothing about its origin. Clearly, therefore, any classification of local ulcers which does not take for its basis the presence or absence of varicose veins, is philosophically defective, and therefore practically wrong. To classify ulcers of the leg according to their appearances only, is merely an attempt to transcribe the manifestations of an evil, and not the evil itself.

Ulcers on the lower extremity may therefore be arranged

under two orders, determinable by the existence or non-existence of phlebeetasis. Each order may embrace the specific distinctions arising from the superficial appearance and character of the ulcer; as irritable, simple, indolent. Here the element of the greatest practical importance is taken first; the principle of the classification being intended as a guide to the principle of the treatment.

Lord Coke says, that to trace an error up to its source is to refute it. With equal truth it may be affirmed, that to trace a disease up to its source is to cure it. But to treat an ulcer according to its look, is not to go back to the origin of that ulcer; and we ought not to expect to be able to cure it in this way. Yet most systematic works on surgery offer minute directions for the topical management of every variety of sore, without adequate recognition of the necessity of modifying the predisposing cause. And the result is, that, under the most favourable circumstances, a palliation of the malady is the only object accomplished, and this perhaps at the expense of much time and suffering.

General Principles of Treatment. From what has been said, it is clear that we have to deal with a departure from the normal condition of things in two obvious points:—firstly, the cause—varicose veins; secondly, the effect—ulceration of the integument. A rational method of treatment consists in the attempt to rectify both these deviations. In many cases, to cure the one is practically to cure the other. But under all circumstances, our remedies should be so directed that both deviations may be simultaneously brought under their control; for in this way we not only save time, but, what is of far more importance, we insure the certainty of the curative process.

The application of these principles is a matter of not the slightest difficulty in the case before us. Every solution of continuity in the body, nature makes an attempt to repair: the method adopted varying with the exigencies of each case. In healing by adhesion, the liquor sanguinis which is exuded separates into serum and fibrin; the former trickling away from the wound, the latter remaining "in the form of a thin layer to invest and bind together the cut surfaces". In healing by the second intention, a portion of the exuded fibrin becomes metamorphosed into granulations, while the remainder appears under the form of pus, which serves as a "protective covering" to the whole. This is the usual mode by which ulcers cicatrize. Now, can we adopt any plan which will imitate and assist the natural process? The principle is a most simple and obvious one: we have only to follow where nature leads the way, and interpret her teachings, and a successful result is almost infallibly attained.

The indication plainly is to preserve and maintain the purulent secretion, which is furnished as a "protective covering" during the healing of the ulcer. In order to effect this, my father has proposed the use of an application which will form a chemical union with the secretion, and thus provide an incrustated layer over the granulations until they cicatrize. Such an application ought to be a compound of animal and mineral constituents; and when thus prepared, it fulfils the chemical and physical conditions required of it. Experience has shown that an ointment containing a very large quantity of prepared chalk, forms the best artificial incrustation. "The earthy matter must be in a much greater proportion than enters into any ointment in the Pharmacopœia, consisting of about three pounds of chalk to two pounds of lard. If about three ounces of olive oil be added, the ointment will not be too stiff, but will easily admit of being spread upon linen. The best method of preparing this application is not by rubbing the chalk down with the lard; but, having previously reduced the chalk to a very fine powder, heat the lard to a tolerable temperature, and, whilst it continues hot, gradually add the levigated chalk in the same vessel in which the lard was warmed. By this means, it forms more of a solution than a mere addition; and the two ingredients thus become more intimately blended together. This should be stirred until it is nearly cold, and then

placed by for use." A much more homogeneous compound is thus obtained than could possibly be procured by simple admixture or trituration.

Several capital advantages accrue from the use of this ointment.

1. It very rarely produces pain, and generally much ease and comfort. The great predominance of alkali prevents the lard from becoming rancid, and so producing irritation.

2. When the lard becomes melted by the heat of the part, and absorbed by the bandage, the chalk is disengaged, and a portion of it combines with the secretion from the ulcer. This secretion, which is often extremely acrid, and excoriates the neighbouring skin, unites with some of the chalk, and is converted into a neutral innocuous compound.

3. This compound constitutes the incrustation which is formed, first on the surrounding skin, then on the margins, and lastly, upon the surface of the ulcer. This incrustation is necessarily produced in a very gradual manner. It is only when the secretion has considerably diminished in quantity that a layer is deposited on the centre of the ulcer, but the covering which is provided on the edges completely protects them from irritation.

4. Little disturbance of the applications is necessary. At first, the quantity of discharge may demand the frequent removal of the dressings, etc., but in a short time this will be wholly unneeded, and our object should be to maintain the mechanical integrity of the chalky incrustation. All fomentation of the ulcer is obviously highly prejudicial.

Up to this point, I have been dealing only with the effects of an evil, not with the evil itself. Another element of disease is present, requiring another element of treatment to meet it. Even supposing that an ulcer on the leg can be made to heal by topical medication alone, it cannot be said to be cured, as long as the predisposing cause is suffered to exist intact. The adoption of any method which will simultaneously help to rectify both abnormal conditions, must be the nearest possible approximation to a healthy state.

Dilatation of the veins, incapacity of their valves, oedema of the areolar tissue, and passive congestion of the capillaries, constitute an enumeration of lesions which almost declare their own remedy—*powerful and well-adjusted compression of the whole limb*.

The lesion of the veins is principally mechanical, and therefore admits of mechanical treatment. When their walls are brought into closer apposition by means of external pressure, the segments of the valves are also approximated to one another, and, so far as they are not altered by disease, are restored to the performance of their functions. To the lymphatic vessels and blood-capillaries compression appears to act as a mechanical tonic, bringing them back to their normal physiological condition. Each of the morbid states enumerated above is more or less dependent upon the others; and, consequently, if they are all subjected at the same time to the same curative effort, there is the greater probability of perfect recovery being attained.

The good effects of pressure are also noticeable on the ulcer itself. The edges are flattened and brought together; granulations which are too prominent are brought to the level of the surrounding skin. The extent of the ulcer is lessened during healing, and hence the size of the subsequent cicatrix is diminished also. But the results of pressure are not mechanical only; vital changes are produced in the condition of the ulcer, by which the organisation of new material is rendered more satisfactory and sure. Less fibrin passes off in an aplastic shape, and more becomes available for the formation of granulations; while in point of time, no method produces its effects with such certainty and quickness.

But just because compression is a therapeutic agent which produces benefit principally by its influence upon the causes of the ulcer, so our chief guide to its use should consist in the presence or absence of varicose veins. Writers

on systematic surgery usually offer directions on the use of pressure, which are derivable solely from the character of the ulcer itself; and warn us against such a treatment especially in cases where irritability and hyperæmia are the morbid characteristics. But the character of the ulcer ought to modify only the topical applications—and not the plan of cure which is designed to palliate or remove the cause of the lesion. Theory is here a safe guide; and it will be found in practice that when *any kind* of varicose ulcer is well shielded by a chalky incrustation, and the limb subjected to complete and well adjusted pressure, improvement in both conditions almost simultaneously manifests itself, the one proceeding *pari passu* with the other.

"Ulcerated legs almost always allow a greater degree of pressure without uneasiness than can be borne by a sound and healthy limb. This fact probably arises from the following circumstances: nearly all ulcerated extremities are more or less swollen and enlarged, either partially or generally, from the presence of varicose veins, or adventitious deposits. Now when tight compression is applied to such a bulky limb, one quick effect which it produces is to reduce the size of the veins, and to excite the removal of some of the deposits; and by this means, the leg becoming less, the tightness is proportionally diminished. But if the bandage is placed with the same force on the healthy limb, it meets with nothing so yielding, or which is so readily taken away to diminish its bulk, and there is, therefore, greater resistance, and corresponding greater uneasiness and reaction are experienced. The same principle explains the fact, that the more swollen and enlarged the leg is, the better it submits to powerful compression; but that, as the cure advances, and the limb becomes reduced to its natural size, it is more sensible to the remedy. Hence pressure does not lose its beneficial effects in our treatment, like other stimulants. There is a gradual increase of susceptibility to its impression, which is equivalent to an increase of power in the pressure. There is a self-adjusting balance between the disease and the remedy; so that just in proportion to the length of time the roller is employed, and would hence be liable to lose its effects, there is an alteration produced in the limb, which changes the relation between the two, by making the leg more sensible to the bandage, which is precisely the same as if the force of the pressure were increased in strength."

A brief recapitulation of the points to be observed in practice may be here desirable. In doing this, I shall mainly follow the plan laid down in my father's work. When we are called to a patient suffering from ulcerated leg, we should first institute a careful examination of the limb, for the purpose of ascertaining whether the veins are varicose or not. In ordinary cases, the condition of the vessels may be easily detected by their enlargements on the foot or on the leg; but sometimes we meet with a diffused swelling of the limb, or sponge-like ulceration of the integuments, and the leg is so swollen as to render it difficult to determine the state of the veins. Here the history of the case will materially assist us. The patient can inform us whether there had ever been soft purple prominences on any part of the limb; and we can ascertain by inspection whether the veins are enlarged above the knee on the same side, or on the foot and leg of the opposite extremity. The sex and age of the patient will also tell their own story—women being far more liable to varix than men, and old persons than young. But the practical indications of treatment are the same, even if the swelling of the leg cannot be demonstrated to proceed from varicose veins.

The next step is to examine the condition of the integuments in general, and the state of the ulcer in particular. The skin, for some distance around the ulcer, is often excoriated and inflamed, and is excessively vascular and painful. In the event of the existence of incomplete sloughing, or of active inflammation in the ulcer itself, the use of a poultice, or of some soothing foment, may be required for a short time, but for a *very short time only*. In all other cases, little attention need be paid to the superficial appearance of the ulcer, for it exercises hardly any influence in

deciding the plan of management to be pursued. Such appearance, even if it be remarkably unhealthy, cannot be modified by poultices and lotions; but pressure is resorted to *at once*, by which the veins are supported, adventitious deposits are absorbed, the capillary circulation is reestablished, and then the local character of the ulcer is changed. In other words, a mechanical correction of the general cause is followed by a vital improvement in the local effect. All the directions for cleansing and purifying the ulcer, which occupy so prominent a place in the writings of the older surgeons, as well as in many of those of more recent date, may be at once superseded by the proper and immediate use of compression.

The first thing, then, is to cover the surface and sides of the ulcer, for some distance beyond the edges, with the chalk ointment, spread about the thickness of a wafer on thin linen. No compresses of any sort are to be placed upon this; they interfere with the regular operation of compression; they heat and overload the ulcerated part; and they prevent the escape of purulent secretion.

The second stage of the proceeding consists in the application of the bandage. A bandage frequently possesses advantages over strapping, by being less irritable to the skin; by being more quickly put on, and more quickly taken off; by being more easily removed without disturbing the surface or injuring the margins of the ulcer; and by more completely allowing the formation of the chalky incrustation. Equally superior is a bandage to a laced stocking, as the latter does not properly embrace the whole foot, nor can it be well fitted under the ankles. Placing a card, a piece of vellum, or beaten lead, between the limb and laced stocking, as advised by Wiseman, is also objectionable, from its being calculated to afford partial and unequal pressure. Then, with regard to the material of which the bandage is made, this may be either flannel or calico. The first possesses the advantage of being more yielding and elastic, and is, therefore, preferable in those cases where the greatest pressure is not required. In cedematous enlargements especially, the flannel appears the more suitable, as it is softer to the skin, and accommodates itself to the greater or less distension of the limb, arising from the augmentation and diminution of the fluid. The calorific properties of flannel are sometimes very useful, as in all structures and parts in which the capillary circulation is obstructed, the vital heat is reduced below the standard. Strong calico is the better material when very powerful and continued compression is demanded, as in most instances of indolent sores. The breadth of the bandage is an important point in practice. If the bandage be of flannel, the breadth should rarely exceed two inches; and if of calico, it should be still narrower. A roller of this width can be placed over the foot, around the ankle, and up the leg, without making the slightest wrinkle or irregularity, which cannot be done if it is broader. The length varies from four to eight yards, according to the age of the patient and bulk of the limb.

The bandage should be put on the limb in the ordinary way recommended in works on mechanical surgery; commencing at the metatarsal end of the toes, and carrying it completely up to the knee. With regard to the tightness with which the roller is applied, much more force may be used than is generally employed. Each turn may be pulled as strongly as the arm allows; for the firmness with which the bandage is put on is not only for the purpose of gaining the good effects of compression on the structures underneath, but it also contributes very much to make it remain in its place when once applied. Patients usually bear the bandage exceedingly well, provided it be smoothly and evenly rolled around the whole limb.

The length of time which elapses before the bandage and ointment are removed and reapplied must, of course, be regulated by the circumstances of the case. When the ulcer is very extensive, and the discharge proportionally great, it will be necessary to dress the leg every day, perhaps, at the commencement of the treatment. But, generally speaking, ulcerated legs are disturbed much too often; and, as a

general rule, all interference should be postponed as long as possible. One of the benefits belonging to the simple chalk ointment is, that by its unirritating properties, by its neutralising the acrid secretion, and by its protecting the neighbouring delicate skin, it permits the linen and bandage to remain on much longer than when nearly all other applications are resorted to. This is one of the capital advantages resulting from its employment, as it is obvious that the more seldom the dressings are disturbed, the less is the probability of the healing process being interrupted. Some local uneasiness is the best indication of the propriety of removing the dressings, in order to permit the escape of the discharge, which is always more frequently required in the early stages of the treatment.

The bandage being undone, the thin linen dressing is raised very gently, in order to allow as much of the chalk ointment to be left behind as may be attached to the surrounding parts and surface of the ulcer. In a very short time after the treatment of the case has been commenced, a thin film is formed about the margin of the ulcer; and if the ulcer be small, some of the incrustation may probably be observed on the surface. This must never be disturbed or taken off, for injury would thereby be done to the tender and sensitive granulations which are busy in filling up the cavity, or forming the cicatrix, and the protective covering of purulent fluid would be stripped away. At each succeeding dressing we shall commonly observe a gradual increase of the chalky incrustation; but it never forms an impervious coating, so as to prevent the escape of fluid, as might possibly be the case if a layer of powdered chalk in substance, or a thick watery solution of it, were employed.

The progress of healing in an extensive ulcer is frequently not confined to its edges, but sometimes small central spots pass onwards to recovery faster than the other portions of its surface. These, as they increase in size, tend to convert a large ulcer into a number of smaller ones: each central spot serves as a foundation for the commencement and attachment of the incrustation; and the chalky formations radiate from these as from so many points, until the circumference of one meets with the circumference of another.

When an ulcer is very extensive, and the healing slow and tedious, the successive deposition of chalky layers on the bordering skin occasionally forms so thick an incrustation as to require its removal; for otherwise it might prevent the ulcer itself from experiencing all the good effects of the use of the pressure. When the whole of the ulcerated surface is at length included by the incrustation, it should not be disturbed until a sufficient time has been allowed for the entire part to heal underneath. As soon as this is accomplished, the chalky crust becomes hardened, from the absence of moisture from the discharge; it then cracks, and separating into pieces, comes off by degrees itself. Its removal may be hastened by gentle manipulation, if we are quite sure that the ulcer is entirely obliterated.

In this account of the application of the method of cure, it will be seen that we are literally obeying and fulfilling nature's principles, and assisting her in carrying them into practice. In my next and concluding paper, I shall speak of the modifications of this treatment which are occasionally required, and take a brief survey of the more recent literature of the subject.

[To be continued.]

CASE OF PURPURA HÆMORRHAGICA.

By JOHN SNOW, M.D., London.

THE following case presented an appearance which is not clearly described in the works with which I am acquainted.

CASE. I was called on Aug. 13th, 1855, to see a patient, aged about 45 years. He is a mechanic, in business on his own account. He had formerly a good constitution, and enjoyed good health; but within the last few years he had