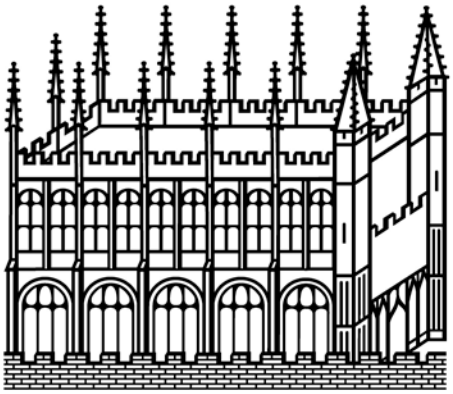

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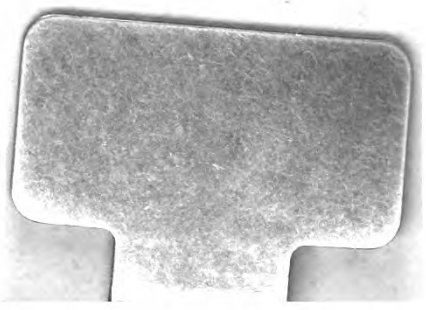

PRACTICAL REMARKS

ON THE

USE OF IODINE,

LOCALLY APPLIED,

IN VARIOUS SURGICAL DISEASES

AND

EXTERNAL INJURIES.

ILLUSTRATED BY CASES.

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GENERAL REMARKS ON LOCAL THERAPEUTICS.

The principle of the division of labour is carried to a considerable extent at the present day in all departments, and we are not aware that harm can arise from it in the Medical profession, provided the members of that profession be originally well grounded in a knowledge of its general principles. In the Surgical department, certain dexterity will be acquired by constant practice, which will give the possessor of it an advantage, in intricate operations, over those who are less often called upon to exercise their manual skill. This manual tact, however, is less required in modern times than formerly, for, happily, the application of a more correct knowledge of the principles of disease, and of the properties of therapeutic agents, to the removal of local affections, have rendered the employment of the knife seldom necessary now, compared with the frequency of its use some half a century ago. It must be considered, also, that the division of labour in the medical profession, however unobjectionable in itself, can only be applied to a small portion of the community—those inhabiting large towns—for the greater part must always rest satisfied with deriving the benefit of both medical skill and manual dexterity from the same individual.

But the grand principle, which should never be lost sight of, is, that Disease is the same in its nature whether situated externally or internally. The first question to be determined is the seat of the malady; and the second is, in what manner is that seat affected? With regard to outward affections, we have the advantage of the direct evidence of our senses, which, combined with our previous experience, will give us at once a tolerably correct knowledge of their visible characters. We are capable of examining the condition of the part affected

by the medium of the strongest evidence we can possess, and, therefore, except in instances of extreme ignorance, the two first difficulties, compared with internal diseases, are got over with satisfaction.

But, however simple this part of the business may appear, still, in order to turn our examination to practical use, it is necessary to know something more than that the leg is the limb affected, and not the arm; that the part is red, not pale; that it is hard, not soft, &c. These, truly, are facts with which it is necessary to be acquainted, but they may be acquired as well by the most ignorant as by the most renowned surgical practitioner. He who is unacquainted with the properties, both natural and pathological, of the blood-vessels, and with the characters of diseases as they affect the different tissues on and near the surface of the body, may exercise his senses as long and as intensely as he please, without being able to form any rational idea of the nature and tendency of the malady.

If the disease be the same in its nature, whether occurring in the interior of the body, or on, or near, its surface, it will appear clear that those remedies which are calculated for subduing internal affections may be usefully employed in external diseases. In outward diseases we possess the further advantage of being able to direct our remedies to the immediate seat of the malady

Now, it may be asked, in what manner do external remedies act in subduing disease? Before the question can be answered, it is necessary to say a few words respecting the nature of different diseases.

In every tissue of which the body is composed, there are certain processes unceasingly going on towards the preservation of its vitality and the maintenance of its structure. The first of these is the essential one by means of which the molecules of matter are deposited, and which is usually called the secerning process. The absorbent process may be considered in some degree as the opponent of the former, although in the healthy state, they rather succeed than oppose each other. Into the nature of that influence which the nerves exercise in these operations it is not our intention to enquire here, but that the three functions are essential to each other, is well known and generally acknowledged. Whether there be distinct vessels from the arteries themselves whose office it is to secrete, and distinct vessels from the veins whose office it is to absorb, is a subject foreign to our present enquiry; for the action of therapeutic agents may be equally accounted for according to either opinion. In health the two functions bear a certain ratio to each other. Those particles which are

deposited by one set of vessels, are removed in their turn by another set, and an equilibrium is kept up. But during the progress of disease, this equilibrium is destroyed, and it is worthy of special consideration that the preponderance is almost always on the side of secretion. It is seldom that the diseased part is removed by absorption, for when destroyed by ulceration the process is generally that of gangrene or sloughing, which is a destruction alike of all its vital properties.

Whether the secerning vessels be a class distinct from the arteries, or whether the secerning and secreting functions be carried on by the capillary extremities of the arteries themselves, it is highly probable, as they are the agents which lay down the materials of all the structure, that they are implicated in every derangement which takes place in any of the tissues. As, also, the elements of all the tissues are derived from the blood, which must pass through the capillary extremities of the arteries, the secreting vessels, if not these capillaries themselves, must be continuous with them, for the particles which constitute the structure must have travelled through both.

We have stated that when a part is undergoing disease, the secreting function generally overcomes the absorbent, which causes a preternatural deposite of matter. This is usually the first step towards the disorganization of the structure. The question to be now considered is, how does this condition of the part happen? It may, and probably generally does, owe itself to two causes: first, in consequence of the vital derangement of the capillary or secreting vessels, the calibres of these vessels enlarge, so as to enable more than the due proportion of fluid to pass through them; and, in the second place, as the absorbent function is the reverse of that of secretion, and must be performed by a *different* class of vessels, a similar derangement and relaxation must diminish their force, and thereby render their function *less* active than natural. For instance, if the vital derangement of the capillary extremity will cause this extremity, in consequence of its preternatural enlargement, to deposite *two* atoms in the time it could only deposite *one* in its natural state, it does not follow that a similar enlargement of an absorbent vessel, to whatever class it may belong, can *take up*, and transmit, twice the number of atoms in the same time. On the contrary, any loss of contractile power in the absorbents, (or the extremities of the veins, or imbibing pores, or whatever the nature of the absorbing apparatus may be) must render their function less active than it is in their natural state.

If the preceding view be correct, it follows that the same morbific cause which is calculated to *accelerate* the secreting

function, has also a tendency to *reduce* the activity of the function of absorption. As in all cases of local inflammation the dimension of the capillaries is considerably increased, they have a morbid necessity of depositing more than the natural and healthy quantity of materials in the seat of disease; and as, on the other hand, the force of the absorbent vessels is diminished by the same cause, the inevitable consequence is, first, a simple swelling, and, ultimately, an organic change of structure.

As this is a subject of considerable importance in its bearing upon the principles here insisted on, we may be permitted to dilate a little on it, even at the expense of repetition.

Whatever the nature of the morbific cause of a local disease may be, one necessary consequence of it is a derangement of the vital functions of the part upon which that cause acts. If the cause be external violence, the texture of the structure may suffer at the same time that its functions are disturbed. In the next link of the chain of causation, a development of morbid phenomena occurs. The part becomes red, hot, swelled, and painful. In a word, it becomes *inflamed.* In some—indeed, in many—instances, when the cause is conveyed through the medium of the blood, or when the disease arises spontaneously, (as the term is,) the derangement is so slight, or the nature of the tissue affected is such, that the symptoms of the malady are not of that degree as to bring them within the common acceptation of the term *inflammation:* still the operation of the cause is the same in kind, that is, the immediate effect is a derangement of the functions of the part affected. The first train of morbid phenomena having become developed, these phenomena may go on increasing; or they may remain nearly in the same degree, although, from their existence alone, the sensible change of structure must continue to increase; or, lastly, they may disappear, so that the part affected returns to its normal state. If the last condition should take place, it is a proof that the morbific cause has ceased to act, either from its having been removed, or from the tissue affected having become so changed in its modification as to be no longer sensible to its impression. If the morbid phenomena continue in the same state or degree, the original cause of derangement may be still acting on the seat of disease, or if removed, the derangement caused by its original relations may be of that kind and extent as to render it difficult for the part to return to its normal state by the mere effort of Nature. Moreover, while in this condition of preponderance of one function over another, although the morbid phenomena may be moderate, still, as a prepon-

derance does exist, great organic changes may take place in the tissues involved in the disease. Should the morbid phenomena continue to increase, there must either be an accumulation of the original cause in action, or the first derangement in the vital functions of the part affected must have been of a nature to act as a cause for further vital derangement, and thus proceed towards disorganisation, by every step or degree of derangement acting as a cause for derangement further on in the scale. It is probable that this is the mode in which disorganization takes place in most cases of gangrene, especially in those following inflammation resulting from external injury; for in such cases there can be no specific cause in operation.

It may be said that the morbid phenomena in all local diseases are analogous to those which characterise inflammation. That term is applied to them in different degrees or modifications, but these degrees or modifications are entirely dependent upon the tissue affected, upon the condition of that tissue at the time in relation to its natural state, and upon the nature of the cause which acts upon it and gives existence to the disturbance. As the properties of the arterial extremities vary almost without end in the different tissues, which tissues, also, are almost innumerable in variety, it is no wonder that their derangement should lead to organic changes so different in their character. According to the modifications of these properties in the different tissues, we have simple inflammation, which, according to its degree, may end in resolution, or in the destruction of the part; we have a purulent abscess; a cellular deposite of coagulable serum or lymph; a mellicerous deposite; a steatomatous tumour; a sarcomatous tumour; a carcinomatous induration, and numberless other preternatural formations; but it is evident that in all these cases the deposition of materials predominates over the absorbent function, and the preternatural deposite is determined according to the peculiar modifications or properties of the vessels in the tissue specially affected.

Such being the condition of a part undergoing the process of disease, it is clear that the grand principle of Therapeutics must consist in the means of restoring its natural functions—in restoring the equilibrium between the functions of secretion and absorption. Whilst the morbific cause continues in operation, this cannot be done; it is therefore a matter of necessity to remove that obstacle before a cure can be accomplished. But what do we know of morbific causes? We know but little, it is true; but experience, and a collection of facts, assure us that certain articles possess the power of subduing diseases, and that the same articles will *generally*

subdue diseases presenting similar phenomena in different individuals. It is true that we know but little of the cause abstractedly, but we distinguish its effects in relation with the visible structure, and from these effects, or morbid phenomena, we form our judgment of remedies which experience has proved to be capable of their removal. We are also able to draw some inferences respecting the manner in which these remedies accomplish the removal of the morbid symtoms.

Abundant facts, within our experience, prove that living parts are endued with an innate tendency to relieve themselves from the operation of disease, provided the exciting or morbific cause be removed. If this were not the case, it is difficult to account for the restoration to its normal state of an internal part which has undergone the process of inflammation; for internal remedies can do no more than neutralize the morbific cause, and the vessels must recover their vital contractility by some inherent properties connected with their own coats. Whether we consider bleeding, which, in addition to relieving the general vascular system, may be the means of abstracting a portion of the morbific poison; or purging, which may expel it by secretion and excretion; or sweating, which may act in a similar way; or specific remedies, which act by neutralising the poison in the system—whether we consider one or all of these, we can only suppose them capable of removing that cause which first gave being to the vital derangement, and the vessels are left to the *vis medicatrix*—to the vital properties of their coats—to recover their lost contractility.

Now, in external diseases, we have all the remedial means within our power which apply to the subduction of internal maladies, with the addition of remedies calculated to restore, by direct application, the vessels to their normal state, and to re-establish the equilibrium naturally subsisting between the two opponent functions of secretion and absorption. There is no doubt that chronic diseases depend, in the great majority of instances, simply upon the non-recovery of their contractile properties by vessels whose vital derangement was first occasioned by an exciting cause. Frequently, the innate vital properties of the vessels are sufficiently powerful to restore them to the state of health when the excitement is over; but such is not always the case; and the disproportion between the secreting and the absorbent functions continues, thereby giving rise to new formations, differing in their characters according to the causes already explained, namely, the nature and condition of the tissue immediately affected, and the morbific agent which first produced the vital disturbance.

Disease manifests itself by a combination of phenomena which vary considerably in their relative degrees in different cases. In acute inflammation, they exist in certain proportions, which, for the purpose of illustration, may be considered as a standard. We have here, pain, heat, redness, and swelling, in given proportions, and these morbid phenomena in combination according to such proportions constitute the sum total of the inflammation. But, as before stated, these proportions vary in different cases. The redness, for instance, may be intense, still the temperature of the part may be even below the natural standard; or the pain may be almost absent in a part which presents both redness and swelling; or the pain may be severe without increased heat, redness, or swelling sufficient to enable us to distinguish any difference between the seat of disease in that state and its natural appearances. All these differences exist even in the incipient stages of the affection, but they generally become more striking as the disease advances.

As the predominance of morbid action is on the part of the secreting function, the effect of the derangement usually is the deposition of new substances, which become organized in their turn, and which permanently alter the character of the original seat of the malady. These formations, as already observed, will have their characters stamped by the immediate tissue in which the disease originated; or, more properly speaking, by the peculiar modification of the arteries supplying that tissue. In one seat the deposite will be steatomatous; in another carcinomatous; or mellicerous; or mere induration from simple lymphatic deposition.

It is evident that, in all cases of this nature, the equilibrium naturally subsisting between secretion on the one hand, and absorption on the other, is destroyed, and that, generally, the disease must go on continually adding to the original quantity of morbid secretion. The vessels of the preternatural growth — which growth was commenced by vessels whose natural vital functions had been disturbed by a morbific agent — are, like those of every tissue, modified in a peculiar way according to the structure which they are destined to supply; and by this modification the identity of the new growth is preserved and nourished, in a manner perfectly analogous to the preservation and nourishment of all the natural tissues of which the animal body is composed. In this stage, the disease has assumed a character perfectly different from that which constituted it at its origin, and which consisted simply in derangement of the vital functions of the capillary extremities: in fact, the effect of the vital derangement — that is, the morbid deposite — has become the actual disease, and this disease has per-

manently established itself as a part of the living structure.

Supposing, then, in the incipient or early stage of local inflammation, the original morbific agent to have ceased to act, or supposing the inflammation, or vital derangement, to have been the result of some external injury, the object is to restore the disturbed and weakened vessels to their original state. But, how is this object to be accomplished? What have we to fight with? The answer is, we have superabundant heat, pain, preternatural redness, and some degree of swelling.

Now, our knowledge of means capable of removing these morbid phenomena depends entirely upon observation and experience. But our knowledge in this respect is precisely the same in *kind* as that which informs us that an acid will change the properties of an alkali; for, in both cases, the result is anticipated from a similar result having been observed to follow the application of the same causes in a number of instances. If an evaporating lotion has been observed to subdue inflammation in a considerable number of cases, the mind becomes satisfied that such an application is endued with the power of changing the morbid properties constituting the disease, in the same way as it satisfies itself that the properties of an alkali will be changed by the addition of an acid. This knowledge, then, satisfies us that the same remedies which are capable of removing *one* of those phenomena by which inflammation is characterised, may, also, remove *more* than one.

In acute inflammation, as before observed, the four elements of the disease are co-existent. By the removal of one of these, it is evident that the character of the malady is altered. For instance, if we reduce the temperature of the part, though the redness continue, still the disease has had its force considerably broken, and it affects the patient in a much less degree than it did at first. The pain diminishes as the preternatural heat continues to be abstracted, and what remains is only a *part* of the original affection — namely, sub-acute or chronic inflammation, as it is termed. If again, we empty the vessels of their contents by numerous scarifications, thereby relieving them of the preternatural quantity of blood within them, all the four elements constituting inflammation are reduced: the disease, as a whole, becomes much less severe— the *redness* is less, the *swelling* is less, the *heat* is less, and the *pain* is less.

In inflammation of an acute character; indeed, in inflammation of all degrees, the principal indication, after the removal of the morbific agent, is to restore the calibre of the vessels of the inflamed part to its natural standard. This indication is usually fulfilled by one or more of the following means: 1st,

local bleeding; 2nd, evaporating lotions; 3rd, poultices; 4th fomentations; 5th, liniments; 6th, escharotics; 7th, pressure. Specific applications to cutaneous affections are not here included.

Local Bleeding. It is evident that local abstraction of blood, whether by leeches, by scarifications, or by incisions, can only afford relief in a mechanical way, by enabling the weakened vessels to unload themselves. Although each capillary tube is not divided, yet, by the abundant anastomosis which exists between these vessels, every tube in the inflamed part may be relieved by free scarification. Of all local remedies, bleeding is, doubtless, the most efficacious; but it must be considered that by the removal of one disease it creates another injury, which experience proves to be occasionally troublesome, if not dangerous.

In the most severe cases of inflammation, that is, in cases where the vital contractility of the vessels has been materially reduced by the amount of morbid derangement, the motion of the blood becomes so diminished as almost to cease altogether. Indeed, it occasionally does cease, and the consequence is gangrene of the part affected. In cases of this description, it is next to impossible for the vessels to resume their contractile powers without being first relieved of the weight pressing upon their internal surfaces, and local abstraction of blood is, perhaps, the most efficient mode hitherto employed of affording them that relief. Having been eased of the internal pressure, an opportunity is afforded them to recover their tone, by virtue of their innate powers as vital parts, at the same time that the mischief arising from the preponderance of deposition over absorption is in some degree suspended.

Evaporating Lotions. We have already remarked, that agents which are capable of removing one of the phenomena of inflammation may also reduce or remove one or more of the others. Increased heat, or augmentation of temperature, not only forms one of the striking phenomena of the disease in its acute character, but it must also act as a cause in keeping up the derangement. It is unnecessary here to repeat any remarks which may have been already made respecting the physical cause of the increased temperature, but as it is an essential ingredient in the constitution of the malady, its reduction would be an object of much importance did it merely exist as a part of the disease; but, as the natural action of caloric upon bodies is to expand them, or to induce their particles to separate to a greater distance from one another, and as the condition of the capillaries in inflammation is already that of preternatural expansion, it must follow that

any quantity of heat added to them, beyond their natural measure, will tend to increase their dilatation still more. This being the case, it is doubly desirable to reduce the preternatural temperature of the inflamed part, so as to bring it as low, at least, as the natural standard; and experience has taught us that the only way of lessening the temperature of a body is to apply another body to it colder than itself, or a body which, by changing its capacity for heat, creates a degree of cold around that whose temperature we wish to reduce.

Heat and cold are merely relative terms. Whether there exist two agents capable of neutralizing each other by any physical properties, or whether cold be merely the absense of heat, is a question not worth discussing in this place, because it is sufficient to known the effects on the living body of the different degrees of temperature measured according to the common method. Appreciated in this sense, the two terms are merely relative; but observation proves that the effects of the caloric agent are very different on living parts according to its degree. If the temperature of a part be below the natural standard of the heat of the blood, that part can hardly be said to be in a state of inflammation, according to the definition of the term, for preternatural heat is as essential an ingredient of the disease as pain or redness.

As the vital functions of a part become deranged if its temperature be raised preternaturally high, so will they also be impeded if the temperature be reduced below a certain degree. We find morbid affections amounting even to sloughing and gangrene, not only without any elevation of temperature, but even as a consequence of too great a reduction of heat. The toes often become "chilled," and, as a consequence, they slough, from exposure to low temperature. In these instances, we find some of the elements of inflammation without the others: we find redness and swelling, but the increased heat is wanting; and the pain in many cases is so slight as not to be complained of, even when the part is on the verge of gangrene. In cases of this description, the contractility of the capillaries is so reduced, and their calibres, consequently, are so enlarged, that the motion of the blood within them ceases; the fluid coagulates, and gangrene or sloughing is the only remedy which Nature can apply for the preservation of the rest of the limb.

Although the general principle, upon which lotions are employed for the cure of inflammation, is that of reducing the preternatural temperature of the inflamed seat, still, if medicated they may also act specifically on the vessels and nerves of the part by actual contact, or by imbibition or absorption. The animal body is subject to physical laws,

like all other bodies, and its structure is liable to be affected by the external agents which surround it. Heat, light, moisture, and all other physical agents, continually influence its condition, by being admitted by imbibition through the porosity of its structure; and, according to the same laws, substances artificially applied to its surface will exert their properties upon it, whether these properties have a curative or a deleterious relation with it.

Poultices. Being subject to physical laws, like matter in general, the animal body may be affected in different degrees by the same agent under different circumstances. If a piece of iron, whose temperature is a few degrees above that of the blood, be applied to the skin, the effect is very unpleasant, and the functions of the tissues would be deranged if the temperature were still a little higher; whereas water, or especially atmospheric air, whose temperature is considerably greater, will be borne with perfect impunity, and even without much inconvenience. Again, if the air be dry, the body will bear a great degree of cold without inconvenience, whereas in a moist atmosphere a degree of cold not near so great becomes very unpleasant. It is upon this principle, we conceive, that poultices are more advantageous in some cases than evaporating lotions, and less so in others. When the preternatural heat is very great, its reduction is more readily accomplished by lotions, which, by rising into vapour, abstract the caloric more readily and quickly; whereas if the temperature be only a little above the natural standard, the rapid abstraction caused by the lotion reduces it so low as to occasion pain, or at least an unpleasant sensation, in the part affected. A moist poultice, although presenting an evaporating surface, transmits the heat but slowly from the inflamed part, and continually retains a part of it in its substance, thereby contributing to render its temperature more equable. In this respect it is much superior to an evaporating lotion, and considerably more efficacious in many cases of inflammation.

A medicated poultice, like a medicated lotion, may exert a direct influence on the diseased vessels by imbibition or absorption.

Fomentations. Unless medicated, fomentations cannot be supposed to act otherwise than by softening the cuticle and promoting a degree of perspiration from the part to which they are applied. Experience proves that the effect of dry heat upon the skin is very different from that produced by a combination of heat and moisture. The sensation occasioned by the application of a hot fomentation, even to a part already of a higher temperature than natural, is generally agreeable to the patient.

Heat combined with moisture tends to promote perspiration from the surface to which it is applied, thereby in some measure to relieve the over distended vessels of a part of their fluid contents. The cuticle over the inflamed part is generally dry, and its pores are filled up, probably, by a portion of the lymph thrown out by the vessels underneath and which has become coagulated. Whether this be the cause or not, it is certain that the perspiratory exsudation does not go on so fast as in the healthy state of the part, and that warm fomentations possess the property of relieving the density of the cuticle, so as to enable it to allow the exsudable serum to pass more readily through.

Embrocations and Liniments. It is seldom that remedies of a "stimulating" nature are applied to a surface undergoing acute inflammation. Indeed, according to the composition of this species of application, the remedy, if employed, might be more unendurable than the disease itself. But, that spirituous fluids may not only be safely, but beneficially, employed in local inflammation, even of the most acute kind, is proved by the effect of oil of turpentine in cases of burn and scald. It is the addition of ammonia, camphor, essential oils, and other ingredients, to the spirit, that renders embrocations generally unfit applications for inflammation of the acute form. In the employment of remedies of this description—in fact, of all remedies—it should never be forgotten that the same ingredients may be congenial or uncongenial to the feelings, according to the strength or intensity in which they are applied. Pure alcohol, or a concentrated solution of ammonia, would, probably, raise the cuticle and produce a blister, whereas, diluted, they would only gently increase the exsudation from the extremities of the vessels. Embrocations are most commonly used with the view of removing the *effects* of inflammation, namely, the thickening and induration dependent upon the consolidation of serous lymph in the interstices of the structure; and, for this purpose, both they and *liniments* are medicated according to the discretion or the fancy of the practitioner. As a proof that such applications have their effects, not only on the local seat of disease, but also on the system at large, we find that mercury thus introduced will very readily affect the gums, and cause salivation.

Escharotics.—The employment of escharotics, or rather of the nitrate of silver, in inflammation has been in vogue for some years, and was first introduced by Mr. Higginbotham, of Nottingham. The immediate effect of the application of the caustic to the inflamed surface, is the conversion of the cuticle into a dry, black scale or crust, which peels off in a few days, leaving a new, delicate layer of cuticle exposed

underneath. That the remedy exerts a powerful effect on the arterial extremities of the part, is proved by its causing an entire separation between the cuticle and the skin whose vessels secrete it. Various conjectures respecting the mode of action of this application have been offered, but none of them appear very satisfactory. Mr. Higginbotham thought that its efficacy might depend upon the exclusion of the air from the inflamed surface, owing to the conversion of the cuticle into an impenetrable covering. But we find that internal parts, such as the peritoneum, &c. to which the atmospheric air has no access, are still liable to inflammation; and, moreover, it can hardly be supposed that an agent which is necessary to the surface of the skin in its healthy state can be injurious to it in a state of inflammation.

As a ready way of getting out of the difficulty, the lunar caustic, like a hundred other applications, has been said to act as a "stimulus" to the part, and to excite the vessels to a "healthy action." This, in plain terms, is saying nothing more than that it does good—that the inflammation gives way where it has been applied. The term "stimulus" is employed so vaguely that no correct idea can be formed of what is meant by it. We are told that cold stimulates the vessels to contract; that heat stimulates the part to inflame; that ammonia stimulates the capillaries to enlarge and the skin to blister; that lead stimulates them to contract, and the skin to corrugate. Again, with respect to "healthy action:" we only know that the "action" of the vessels is healthy from the part supplied by them being healthy; which amounts to nothing more than saying that the part is in its natural state.

Simple Pressure.—That compression is capable of producing a decided effect on the living structure, is proved by the fact that a bandage long worn round a limb will cause that limb to become materially smaller than natural. It may be asked, how does pressure act? In reply, it must be admitted that it either diminishes secretion or increases absorption, or both; for we know of no other way in which the reduction of size can be accomplished. We have already stated it as probable, that the same agent which causes the capillary tubes to enlarge, so as to exude more concretible matter than they do in their normal state, might also produce an enlargement of the absorbent vessels, thereby rendering their function less active than natural. If such a view be admitted, the reverse may also be true, viz. an agent which causes a diminution of the diameter of the secreting capillaries, or secerning tubes, and reduces their calibre below its normal standard, will also act in a similar manner upon the

absorbent vessels, and occasion their function to become more active than natural. Now, compression will accomplish both these purposes. It acts equally on all the vessels, both secreting and absorbent, and the effect is, that the double object is obtained, namely, a diminution of the function of the one class, and an augmentation of that of the other.

In inflammation possessing no specific character, after the exciting cause has ceased to act, and when only a relaxation of the capillaries, from diminished contractility, remains, a gentle and equable pressure on the inflamed part is one of the most efficacious remedies in common practice. Its effect, evidently, is mechanical. It can in no other way act than by occasioning a diminution of the calibre of the vessels, thereby preventing their depositing a preponderance of molecules over those taken up by virtue of the function of absorption. The consequence is, that by relieving the coats of the blood-vessels of a part of the weight pressing upon them internally, those vessels are more free to resume their contractile power, and the equilibrium between secretion and absorption is re-established.

An effect similar to that of pressure may be produced by obstructing, by ligature or otherwise, a principal artery supplying a part. The structure loses a portion of its sensibility and of its temperature, and the part becomes pale and wasted. These are conditions the very reverse of those by which inflammation is characterised, and such being the case, the inference, *a priori*, would be, that a remedy calculated to bring the inflamed part into such a state must tend to remove the inflammatory process going on in it.

Upon the Therapeutic properties of those remedies which are generally termed "*specifics*," it is not necessary to dilate here, as they apply more particularly to a few diseases which propagate their kind by contact, or by the transfer of a portion of the morbific matter from one person to another. The only idea we can form of a specific disease, is, that the morbific agent: which first gave rise to the malady, continues in operation until subdued or neutralized by some other agent capable, by affinity, of converting it into another form, thereby altering its properties.

ON THE THERAPEUTIC PROPERTIES OF IODINE.

Iodine, as a remedial agent, has been in the hands of the Profession for many years, but the object of the present work is to show that its application may be extended with much benefit to diseases and local injuries in which it has hitherto been very limitedly, if at all, employed. The various local affections in which we have used it during the last eleven

years, both in Hospital and private practice, induce us to set it forth as by far the most efficient topical application in our possession. The mode in which we have *generally* employed it, has been that recommended by Mr. Buchanan, namely, in the form of Tincture; in which form, *certainly*, it possesses remedial properties which it does not exhibit in any other. Why this should be the case we do not profess to know, but long experience proves such to be the fact.

In urging a remedy on the attention of the Profession, it is necessary, at the same time, to caution the members of that Profession against the indiscriminate and indiscreet use of it. Many valuable medicines have fallen into disrepute, and have been altogether discarded from the list, owing to their having been mismanaged or abused. Iodine, though not a *new* remedy, has by no means yet had its effects on the human system fully tested. Properties have been attributed to it of which it is quite devoid, while, on the other hand, it is endued with many therapeutic virtues which it has not been generally known to possess.

It is not the intention here to treat of Iodine as an internal remedy, but we may be permitted, in passing, to observe that we have never witnessed it to produce the effects attributed to it on the testes and mammæ, namely, causing the absorption of these glands. We have administered it internally very extensively, and, in many cases, for several months together, yet *not in one instance* did it reduce the size of the glands already mentioned. We may also be allowed to state that we have been much disappointed in it as an internal remedy, more especially in scrofulous affections, for which it has been cried up as almost a specific. Its curative effects in Bronchocele are so well established as to render it unnecessary to do more than mention the fact; but, with the exception of that affection, its medicinal virtues, according to our experience, are rather limited, when internally administered. It is however proper to mention, that we have found it one of the most useful remedies in cases of long-continued Dyspepsia, and in some other affections of the mucous membrane of the digestive canal. It is probable that it acts in these cases by immediate contact, and not through the medium of the circulation: be that as it may, its curative effects are very striking in chronic affections of the lining membrane of the digestive tube.

But the principal object of this essay is to point out the benefits of Iodine as an external application; and, in doing so, nothing shall be stated which repeated observations have not proved to be correct. We are well aware that when a single remedy is set forward as a cure for a great number

of diseases, it is apt to be looked upon with great distrust by the profession, and that those who happen to recommend it are liable to be charged with something like empiricism. As well might those who prescribed mercury in a variety of diseases, or those who prescribe sulphate of magnesia, or carbonate of soda, or opium, in a variety of affections, be charged with empiricism. In truth, what do our common external applications amount to? Chiefly to lotions and poultices; and practitioners generally do not much vary the characters of their lotions and poultices in different local affections. There are few external diseases, or local injuries, for which both of these are not employed in their turn. If a simple evaporating lotion be applicable to cases of phlegmon, of erysipelas, enlargement of the joints, scrofulous swellings of the glands, lacerated, contused, and punctured wounds, and a variety of other inflammatory affections, both of the skin itself and of the internal parts situated near it, why should not another remedy apply equally to a number of similar maladies? The properties of remedial agents can only be judged of from the effects they produce. No one could tell *a priori* that sulphate of magnesia would purge, and that carbonate of lime would constipate the bowels. In like manner, the medicinal virtues of opium, hyoscyamus, prussic acid, mercury, and all other remedies, have been discovered by observation of their effects respectively on the animal system, for they exhibit no external qualities which could lead to a fore-knowledge of their relations with the living body.

Now, extensive observation, and the experience of several years, have proved Iodine to be a most efficacious remedy in a great variety of local affections—*much more* efficacious than any of the remedies noticed in the last Section. It is very easy of application, mild in its effects on the nerves of the part with which it comes in contact, and capable of being modified in the degree of its strength, so as to suit it to the intensity of the disease and the natural quality of the skin of the patient.

Both at the infirmary and in private practice we are in the habit of using the Iodine in two forms, but by far more frequently in that of Tincture in Alcohol. The tincture is made by dissolving forty grains of Iodine in an ounce of rectified spirit; and its strength is afterwards reduced, when necessary, by the addition of more spirit. The other form is an ioduretted solution, which is made by dissolving thirty-two grains of Iodide of Potassium (Hydriodate of Potass) in an ounce of distilled water, and by adding to the solution eight grains of Iodine. With this ioduretted solution a lotion is made by the

addition of distilled or of common water, varying in strength according to circumstances, from one eighth to one fourth of the former.

The strength of the remedy must be determined by the quality of the skin, in the first place. When the skin is thin and delicate in texture, the tincture should be reduced to half its strength, otherwise the cuticle may be raised in blisters, which should always be avoided if possible. When, on the other hand, the cuticle is thick, and of a coarser texture, the tincture may be applied undiluted. In the second place, the strength must be regulated by the nature and intensity of the disease. If, for instance, we have an acute inflammation of any part, and if, most particularly, it shows a disposition to slough, the remedy must be used in its full strength. In all cases of sloughing ulcers; in all cases of irritable ulcers; in all cases of lacerated, contused, or punctured wounds, the strength of the Tincture should *not* be reduced—it should be applied undiluted in the first instance; but when the slough has separated, or the irritability has ceased, and when the remaining object is merely to promote the growth of granulations, then the strength ought to be reduced about one-half. In induration of the glands; in chronic affections of the joints; in inflamed breast; in fact, in all affections whose seat is *under* the substance of the skin, the tincture should be employed in its full strength, unless the skin covering the seat of disease be very delicate or irritable—we mean *naturally* irritable, for the remedy itself would soon deprive it of any *morbid* irritability.

Suppose we are called to a case of severe inflammation of the leg, in a stout, robust person: the limb is intensely red, hot, swollen, and glossy, all the way from the toes to above the knee: it is double the size of the corresponding one; and so painful as to disturb the general health—as to cause quickness of the pulse, white tongue, thirst, &c. We immediately *paint* the whole limb with the tincture of its full strength, extending its application from the toes to several inches above the upper margin of the inflammation: the remedy is applied with a camel's hair brush. This is all the local application requisite for the present. The limb is directed to be kept in a horizontal posture, and either to be very lightly covered over with a sheet—which must not come in contact with the skin—or else to be left exposed, according to the temperature of the apartment. In less than twenty-four hours—in less than twelve hours—the swelling will be found to have diminished. At the end of twenty-four hours the skin will be seen much corrugated, showing its contents to have become less in bulk, and the circumference of the

limb will measure some inches less than the day before. The diminution will be found to have taken place more particularly towards the upper part of the swelling. We now repeat the application of the tincture, of the same strength. In another twenty-four hours the reduction of the swelling will have gone on rapidly, and only a remnant of the disease will be found to exist. The strength of the tincture must be now reduced to one-half, and its application continued daily, or less often, according to circumstances, until the limb is well. After the second or third applications of the tincture, we sometimes brush the limb over with spirit of wine alone, so as merely to dissolve the Iodine which remains on the surface of the skin.

The above is the usual effect of the remedy in cases of pure phlegmonous inflammation, but it varies, of course, in different constitutions. The variations, however, will be found in the *degree* only of its *curative* effects in different cases: it may be employed in *every* case, with the full confidence that *benefit*, and not *harm*, will be the result. The only inconvenience we have ever witnessed to arise from its use has been that of causing, now and then, a slight watery eruption on the surface of the skin, and a degree of itching in the part, when employed too strong, or when persevered in too long. These eruptions have invariably given way in a few days to a simple evaporating lotion of spirit and water.

The application of the tincture is almost always followed by a desquamation of the cuticle, leaving the part covered by a new, clean, healthy layer of cuticle. This takes place when it has been applied to a healthy part. On the healthy skin it generally causes a sensation of heat, and some degree of smarting after a few minutes; but frequently no smarting or pain is felt—nothing but a slight and agreeable warmth. When applied to a part undergoing the process of inflammation, the pain, which forms one of the essential characters of the disease, soon becomes deadened, and is succeeded by a sensation of warmth, which, in a few hours, ceases also and leaves the patient free from any sense of pain or heat in the seat of disorder. If applied to the surface of a sloughing ulcer, or to a part on the verge of gangrene, or to a foul, irritable ulcer, it is seldom felt by the patient. On a healthy ulcer it produces, generally, a very sharp, smarting pain for a minute or two, but the pain almost immediately ceases and leaves the part in a comfortable state. The same sensation is produced by it when applied to the surface of a recent lacerated wound, or to any healthy raw surface.

If any itching, or a slight blush of the skin, should follow the repeated applications of the remedy, especially on the lower extremities, it should be discontinued, otherwise the

cuticle will rise into small watery pimples, and will tease the patient for a few days; but this effect is produced by it on the *healthy* skin only—when applied, for instance, to the skin covering a diseased joint, or when any induration or swelling is situated under the skin—for we have never found it to blister the cuticle and to cause exsudation of lymph from the surface of an *inflamed* skin.

Neither the iodurettted solution, nor the tincture of Iodine as directed to be prepared by the London Pharmacopœia, is applicable to cases of inflamed or of ulcerated skin, for they both contain hydriodate of potass. In either of these forms the Iodine is far preferable for *internal* use, to being dissolved alone in alcohol; for in the latter form it nearly all precipitates when water is added to it, whereas the hydriodate in combination with it renders it perfectly soluble in water or watery infusions. As an external application, however, the hydriodate renders it acrid, and gives it a tendency to inflame the skin and to cause a considerable degree of smarting when brought into contact with any ulcer or ulcerated surfaces. The iodurettted hydriodate lotion is only applicable to affections whose seat is under the skin, such as diseases of the joints, scrofulous tumours, glandular indurations, &c.; but even in most of such cases, the tincture is far preferable, when the patient is so situated as to enable the practitioner himself to apply it as often as necessary. We state this proviso, because we never trust the employment of the tincture to the patient.

The iodurettted hydriodate solution, like the tincture, produces a desquamation of the cuticle if used strong, but this only becomes observable sometime after the lotion has been left off, and the skin has become dry. As stated before, we seldom use this form of the remedy except in cases where it is not convenient to see the patients so often as required for the application of the tincture, because the latter, when properly regulated in its employment, proves by far the more efficacious of the two in most instances; but if indiscreetly used, on the other hand, it is more likely to cause an unpleasant sensation in the skin of the part to which it has been applied. The solution forms a very ready mode for an iodine gargle, in cases of ulcerated sore throat. Diluted with from seven to ten parts of water, with the addition of honey, it forms one of the best kinds of applications of that description. But even in affections of the mouth and throat the tincture is preferable—it is less nauseous to the patient, and quicker and more efficacious in its curative effects.

We have already stated, that a knowledge of the effects of different substances on the living body can only be acquired

by observation. There exists nothing in the external qualities of sulphate of magnesia, of jalap, of colocynth, of scammony, of elaterium, of Glauber's salts—which are all so dissimilar in their outward form—to enable us to fore-tell them capable of quickening the peristaltic action of the intestinial tube, and of increasing the secretion on the surface of its mucous lining; nor could any one judge *a priori* that ipecacuanha, sulphate of zinc, or tartarized antimony, would cause the stomach to eject its contents, for these articles, also, possess few outward qualities in common. Their medicinal properties become manifested only in relation with the living parts. When so tested, their effects prove to be pretty much the same on by far the majority of mankind. In ninety-nine cases out of a hundred of the whole community—we might, perhaps, say, in 999 out of every 1000—the effects of the articles enumerated above would be the same.

If substances administered internally are so constant in their effects on certain inward parts, there is no reason why outward applications should not be also constant in their effects on the external parts. It does not follow that either will cure the disease for which it is administered, or applied; but as Epsom salts exert an effect generally alike on the mucous membrane of the intestines, we can discover no reason why the analogy should not apply to the *skin*, which is also a continuous tissue, like the mucous. That the disease is not cured, or modified, in all cases, is not owing to any uncertainty in the action of the remedy, but owing to that not being *the* remedy which bears a relation to the special tissue constituting the immediate seat of the malady. Experience proves the analogy: it proves that nitrate of silver will convert the skin into a black colour, and will destroy its texture if applied sufficiently intense: that pure potass will dissolve all the living tissues: that cantharides will raise the cuticle: that mercury, and other substances, will penetrate the skin and enter the general system, &c. In fact, all substances capable of making any impression on the surface of the skin, act alike on the great majority of mankind: the difference is in degree only.

Now, Iodine, in the form of tincture in rectified spirit of wine, is capable of producing—does produce—certain effects on the skin, and on the living parts generally, when applied to them. The nature of that effect can only be known from observation. Experience proves the effect to be of such a nature as to remove inflammation; as to enable the living parts readily to throw off any sloughs which may be attached to their surface; as to make granulations spring up rapidly, so as to fill up the loss caused by the sloughing; as to promote the

absorption or cause the removal of interstitial deposites situated in the cellular membrane under the skin; and as to accomplish various other changes in the condition of morbid parts, which will be more particularly specified hereafter. That tincture of Iodine is not as *certain* of doing these things as sulphate of magnesia is of relaxing the bowels, is owing to the one exerting its effects on a *healthy* surface, and to the other acting on a *morbid* part. The effect of Iodine on the healthy skin is as determinate as that of Epsom salts on the mucous lining of the intestinal tube; namely, it will cause a certain degree of warmth to the sensation, followed by a slight smarting, and, lastly, by a desquamation of the cuticle. When the structure of parts has become changed, as a *consequence* of morbid action, it is doubtful whether there be in Nature a remedy capable of restoring them to their normal state; but as the first effects of disease often act as a cause for further disease —in other words, as vascular deposites, or structural changes, have a tendency to keep up irritation in the parts where they are situated, thereby tending to promote further morbid changes —it is highly desirable to possess the means of modifying the properties of the vessels of the altered structure, in such a way as to prevent their depositing more morbid matter, and, if possible, to induce them to remove some of that already deposited. Experience proves that we possess such means in the remedy whose recommendation is the object of this Essay.

Admitting the facts above stated, it is perhaps sufficient to know that such effects follow the application of the remedy in the majority of instances, without attempting to account for its *modus operandi*. If we offer an opinion respecting the rationale of its operation, we, at the same time, respectfully insist that the reader do not take the failure to give a satisfactory *reason* for its mode of acting, as a justification for rejecting the practical *facts* respecting its effects.

Disease may be considered in two stages: first, the part still suffering under the influence of the morbific cause which first produced the local derangement; second, the part merely existing in a state of derangement, as a *consequence* of the previous action of a morbific agent. The first condition may be illustrated by the mordid process of a chancre; by the local operation of the variolous or of the vaccine virus; by the progressive march of lupus, &c. In these cases, and various others, the cause or morbific agent appears to be of a specific nature, and to increase in magnitude and energy as the disease advances: in fact, the agent of disease appears to live and feed upon the living parts in which it resides. In other cases, the first action of the morbific cause produces a vital derange-

ment of the part with which it comes in contact; and the agent then either becomes absorbed or swallowed up in the effect, by entering into new affinities, or else is eliminated from the body among the secretions. We will first consider disease in its second state.

When the seat of disease has relieved itself from the operation of the original cause of derangement, it still generally suffers from the effects of that operation. The capillaries are in a relaxed state; they contain more than their due proportion of blood; there is a tendency in the part to preponderate in secretion over absorption; and its nervous functions, dependent upon the integrity of the functions of the capillary extremities, do not resume their normal condition. Moreover, there may have taken place a deposite of lymph in the interstices of the structure, so as to constitute a new cause of vital derangement.

In such a state of things, it appears reasonable that the first step towards restoring the part to its natural state, should be to induce the capillary vessels to resume their contractile power, so as to enable them to free themselves from their disproportionate burthen. That the application of the tincture of Iodine is endued with the virtue of accomplishing that object, is proved by the fact that the swelling of an inflamed limb very rapidly subsides as a consequence of its application. We say as a "consequence" of its application, because when a similar occurrence invariably takes place under similar circumstances, we have a right to assume that there exists a necessary connection between them.

As to the *manner* in which the remedy acts on the morbidly dilated vessels, we are just as ignorant—but not more so—as we are of the nature of the action of muriatic acid on a piece of marble: all we know is, that one agent possesses the innate virtue of modifying the properties of the other in either case; and experience alone can teach us the result, or acquaint us with the nature of the product of the change.

It is a fact, within the knowledge of every practitioner, that arteries exposed to atmospheric air will contract, and diminish —nay, *close*—their canals. When the stump of a recently amputated thigh is exposed, thousands of vessels bleed at first. At the expiration of a minute, not one in a hundred of them will allow any blood to escape. At the expiration of three or four minutes more, perhaps the whole number will have ceased bleeding, if the principal branches shall have been secured. Nothing more will appear than the oozing of colourless lymph from the whole surface. Now, this fact must satisfy every one, first, that vessels of considerable size *are capable* of obliterating their canals, by means of some con-

tractile power inherent in themselves; second, that the action of this power may be encouraged or excited by the application of physical agents. In the instance specified, the agent which influences their contractile property is the atmosphere. If atmospheric air is capable of producing such an effect upon the vessels, there is no reason why other agents should not be able to produce a similar effect. In truth, we find, as already stated, that Iodine, in the form of tincture, possesses the property of doing so; and the effect of its application to an inflamed and swollen part, is a diminution of the redness, as well as of the swelling, in consequence of the previously over-dilated capillaries having recovered a great portion of their contractile power.

It was hinted at in the last section as probable, that the same means which are calculated to cause diminution of secretion, have also a tendency to increase the activity of the absorbent function. The grounds of the inference were there stated. The fact is indisputable that certain agents do occasion the removal of interstitial deposite, at the same time that they subdue the inflammation, which is the cause of that deposite. In doing so, they must accomplish something *more* than restoring the balance between secretion and absorption, because a mere restoration of the balance could only serve to subdue the inflammatory condition of the part, leaving the morbid deposite where the over-dilated capillaries threw it out. Before the extraneous matter can be removed, after once having been deposited, there must be a preponderance of absorption over secretion—the excess must be transferred from the capillaries to the absorbents, or whatever agents there be which take up the matter.

Among the agents capable of producing the effects above mentioned, Iodine is by far the most efficient with which we are acquainted. It not only subdues the inflammatory state of the part much quicker than any other local application, but it also reduces the swelling, and causes the absorption of morbid deposites, much faster than any other remedial agent. It should, however, be borne in mind that it will not prove successful in *every* instance, any more than other remedies.

According to the same principle that it subdues inflammation, by exciting the contractility of the capillaries, Iodine causes the living vessels to cast off the slough from the surface of foul ulcers. The slough is nothing more or less than a portion of the animal structure which has suffered death from the intensity of the disease. In consequencc of the preternatural expansion of the vessels, the blood within them entirely stagnates; and when that condition occurs in all the vessels of a part, however extensive or however limited,

its death is the necessary effect. Now, although the preternatural dilatation often extends a considerable distance from the slough, still there must be a point where the dead and the living parts meet—a point where the blood is all but at a stand still, yet where it continues to move. As the stagnation of the blood, and, consequently, the death of the part, are owing to the total loss of contractility in the capillaries, it seems reasonable that a remedy capable of producing their contraction should enable them to resist the progress of the sphacelus, and to separate themselves from the dead matter. The separation takes place at the point of junction between the living and dead parts of the vessels. The living parts of the tubes having recovered some of their contractile power, they gradually diminish their calibre; the velocity of the blood in them consequently increases, which tends to add more and more to their vitality; they effuse a purulent fluid from their extremities, which serves as a medium of divison between the dead slough and the living structure; and the consequence is a separation of the dead from the living part, leaving a healthy granulating surface exposed.

But, supposing the morbific agent still to exist in the seat of disease, is the remedy capable of neutralizing it, and of rendering it innocuous to the living tissues? In reply, it may be said that we have no means of proving, indisputably, whether or not the original cause of the derangement be still in operation. The inflammation may be of that kind commonly called "spontaneous"—that is, it may arise from a cause which cannot be discovered: in one instance it will cease without any artificial aid: in another it will run on to the destruction of the life of the part affected. In the former case the cause ceases to operate of its own accord: even in the latter we cannot be positive that the morbific agent has continued in operation until gangrene has actually ensued; for its first impression may have been of such nature as to produce so great a derangement in the functions of the part as ultimately to lead to its death, although the original cause no longer continues to act. This point may be illustrated by the effects of mechanical violence: the seat of violence may not be destroyed at once, but its vital functions may be so disturbed as necessarily to lead to its death shortly afterwards.

Under these circumstances it is impracticable, in common inflammation, or its consequences, to determine whether the original morbific agent still continues to exert its influence on the seat of disease, because, although the malady appears to progress in its march, yet that circumstance may be owing to the extent of the original disturbance, which disturbance

acts as a fresh cause in perpetuating the inflammation. The only affections, therefore, in which we can infer the morbific cause to be still in operation, are those termed "specific."

Now, the agent, or virus,—or whatever the cause may be called—of a specific disease, must be different in every species of disease. The syphilitic differs from the variolous, the variolous from the psoral, &c. As this is the case, it is not probable that any *one* remedy exists in Nature capable of neutralizing the cause of *every* disease. It can only be determined by experience *what* affections of a specific kind are able to be subdued by the application of a remedy. Those in which our own experience has proved the tincture of Iodine to be beneficial, will be noticed under their proper heads; but we admit that our experience of its use in specific diseases has not been so extensive as to enable us to speak with positiveness with respect to its curative properties. The facts must be taken as they are: we have no wish to magnify them.

ERYSIPELAS.

In pure erysipelas, the tissue immediately affected appears to be the skin; but in most instances the malady is of a mixed nature, involving both the skin and the cellular membrane underneath. When it presents itself in its simple form, the skin looks of a bright crimson colour. The redness disappears under the pressure of the finger, but very soon returns after the pressure has been removed. There is a burning sensation in the part affected, but no sense of throbbing, as felt in phlegmonous inflammation. The peculiar burning or smarting sensation experienced in this disease, is owing, doubtless, to its being so specially allied with that tissue in which the nerves of touch spread out their extremities; and the absence of throbbing may be easily accounted for, because the vessels engaged in the inflammation are so exceedingly small and minute, that, even at the utmost extent of their expansion, they are not large enough to impart a throbbing sensation either to the finger when applied to the inflamed part, or to the feel of the patient himself. But, owing to the countless number engaged, and to their being situated so near the surface, the skin presents a colour of the brightest crimson.

This variety of the disease generally spreads to a considerable extent over the skin, and, when severe, it gives rise to a separation of the cuticle, in the form of bullæ or blisters, which contain a serous fluid, generally of a yellowish colour, but sometimes almost transparent. When these blisters give way, and the fluid escapes, incrustations are formed on the surface, under which ulcerations not unfrequently take place.

There is generally a considerable degree of constitutional

derangement accompanying cutaneous erysipelas. The tongue is coated; the pulse is small and quick; there are thirst, uneasy sensation about the præcordia, and a universal feeling of languor and debility. The severity of these symptoms is often disproportionate to the apparent extent and severity of the local inflammation; which, probably, is owing to the peculiarity of the tissue affected, namely, its being that upon which nerves of sensation are extensively distributed.

The head and face are the parts most subject to erysipelas when it arises from constitutional causes: indeed, local injuries of these situations are much more apt to be followed by the disease than those of any other parts of the body. The removal of small tumors about the head, or even the application of a few leeches to the temples, is not unfrequently followed by fatal erysipelas; whereas the same kind of injury inflicted on any other part would not give rise to the malady.

In all the instances in which we have had an opportunity of examining the seat of disease after death occasioned by erysipelas about the head, the skin was found very much thickened, and its texture to have become very soft; and the cellular membrane between it and the bone was converted into a substance exactly like yellow jelly. The dura mater, also, in every case, partook of the disease.

But erysipelas seldom confines itself altogether to its simple form, in any locality. The cellular membrane in contact with the skin, and, frequently, that portion of it also which is situated more deeply among the muscle, partakes of the disease. When this occurs, extensive sloughing generally takes place; openings are produced in the integuments, by partial sphacelus, through which the dead cellular membrane protrudes in masses, and is ultimately discharged, if the patient survive, leaving hollow spaces to a great extent between the integuments and the flesh. This variety of the malady is commonly called "phlegmonous erysipelas."

The foregoing description forms a sufficient illustration of the symptoms and morbid appearances of erysipelas to answer the purpose of this work. With respect to its *cause*, it is a mere matter of opinion or of speculation: our notion with regard to that subject may be gathered in the previous Sections.

With reference, also, to the constitutional treatment of erysipelas, and of the other diseases of which we shall speak in this Essay, it is proper to state at once, that little will be said here; because the object of the work is *not to present a full treatise* on these several affections, but to illustrate the *local effects* of a certain remedy in them. It is not pretended that the local remedy will supersede the necessity for general

treatment, when constitutional symptoms demand such treatment. But, as the constitutional disturbance frequently depends upon — at any rate, is aggravated by — the local disease, it will often be found that by reducing the latter the former will also diminish, and, perhaps, altogether disappear, without the aid of any general means. This fact we have witnessed in very many instances. But the safer plan is not to neglect general treatment in affections insidious in their nature, and whose course is generally short, either towards restored health or towards death.

As a general statement, then, respecting the constitutional treatment of inflammation, whether of the erysipelatous or of the phlegmonous kind, *except in very plethoric cases,* experience has taught us to be *cautious* in the abstraction of blood from the general system. By this expression, it is not meant to intimate that *no* blood should be drawn by venæsection in any case; but even where its abstraction is fully authorized, it should be accomplished with moderation, and not in the reckless manner too often practised.

Having *well* cleansed out the alimentary canal, *without loss of time,* with eight or ten grains of calomel, followed by saline purgatives, our practice has been to administer calomel and opium, in doses according to circumstances, and repeated at intervals of from three to six hours, until the system has been brought *fairly,* but *slightly,* under the influence of the mercury; which is proved by a slight redness along the edges of the gums, or by the patient's feeling a slight looseness of the teeth. The remedy should be then immediately stopped.

So much for general treatment, which will apply to every variety of acute inflammation, differing, of course, in modification according to various circumstances connected with each case.

But the object of the present Essay, as stated before, is mainly to bring to the notice of the Profession a *local* remedy whose curative properties, compared with those of other topical applications, are very little known at present.

The topical remedies commonly used in erysipelas are local bleeding, by leeches; simple evaporating lotions, or lotions medicated with lead, zinc, acetate of ammonia, opium camphor, or any other ingredients, according to the views or fancies of the practitioner; fomentations, generally of chamomile and poppy heads; poultices, simple or medicated; incisions through the seat of inflammation, as recommended by Mr. Lawrence: scarifications, as recommended by Dr. Dobson: the application of lunar caustic, as recommended by Mr. Higginbotham. Of the *modus operandi* of all these plans, we have already spoken, and the degree of reliance to

be placed on each or all of them in erysipelas, is so well known as to render it unnecessary to treat of them specially here. But it will be found, upon trial, that the tincture of Iodine is a topical remedy far more efficacious than any of them, or of all of them put together.

An elderly gentleman, who, in former years, had been a very active man, began to decline in general health about 1828, or the beginning of 1829. His bowels became irregular; his complexion appeared "bilious;" his mental faculties, which were naturally very strong, began to show a decline; and, in a word, the general functions of the system became all more or less disordered. He was repeatedly cupped and leeched on the nape of the neck and temples, and the parts generally showed a disposition to inflame, more especially when leeches had been applied. In the summer of 1830, after the application of several leeches to the forehead and temples, a severe attack or erysipelas came on, which rapidly spread over the head and face, accompanied with a good deal of constitutional disturbance, such as quick pulse, furred tongue, and general uneasiness. The head was bald, having only a thin curtain of hair behind. *The tincture of Iodine, reduced to half its strength, was applied by a camel's hair brush all over the head, temples, and face;* which, as may be supposed, gave him an odd appearance, from the brown or bronze colour it imparted to the skin. Next day the disease had all but disappeared. The local inflammation had very nearly ceased, and the symptoms of constitutional derangement had much abated. The Tincture, however, was applied once more, but still reduced in strength. No further trouble was found with the case.

The above was the first case of genuine erysipelas of the scalp in which the tincture of Iodine was employed, and the effect was so striking as to encourage a repetition of the trial. From the unhealthy state of the patient, and from the rapidity with which the inflammation extended over the head, it was impossible not to entertain great apprehension as to the result. Under all the circumstances, the effect of the remedy proved most gratifying, both to the patient's friends and to the medical attendant.

In the autumn of the same year, a young man, aged about 19 or 20, of a sickly, bilious look, and subject to headache, especially after his meals, was seized with "spontaneous" erysipelas of the face. The inflammation commenced in one of his ears, and from thence spread over the temple, and ultimately over the whole scalp. When he applied for assistance, there were a few vesications about the ear and cheek; the head and face were considerably swollen, and very tender

to the touch; and the whole scalp felt doughy and soft, and retained deep pits after being pressed with the finger. The general health was suffering much.—The hair was ordered to be cut off close to the skin, and the tincture of Iodine, in its full strength, was applied all over the inflamed surface, which embraced the whole head, down to the neck. By the next day the swelling was very much abated, and the general symptoms were less severe. The Tincture was again applied in its full strength. After the second application, the Tincture was reduced daily in strength, and used for two or three days longer. It is very probable that one or two applications would have sufficed to subdue the inflammation, but it was deemed prudent to repeat them daily for four or five days. The remedy was followed by a desquamation of the cuticle of the whole head; but the skin became quite clean and fresh in a few days. In this case, as well as in numerous others, the inflammation began to give way before the mercury, administered internally, could have affected the general system. Indeed, it was found unnecessary to press it so far as to affect the mouth, when the disease was fast disappearing without.

The remedy has since been frequently employed in cases of the above description—that is, erysipelas of the head and face—both at the Infirmary and in private practice, *with uniform good effect*. It is unnecessary to recite more cases of this variety. Indeed, the few cases introduced in this work are merely intended to illustrate the mode of application of the remedy, and not to swell out or multiply its pages. If that were the intention, we could recite some scores. In consonance with our object, we shall state the two following cases; the first of which will come under the term "phlegmonous erysipelas," and the second will answer any term applicable to an anomalous swelling of a limb.

In February, 1830, a tradesman's wife, aged about 50 years, rather stout, but of an unhealthy appearance, had one of her legs very much inflamed all the way from the toes up to above the knee: it was swollen to at least double the size of the opposite limb. The inflammation arose from a slight scratch on the shin, and was of some days' standing, during which time cold lotions and fomentations had been applied to the part. The limb now presented a glossy, shining redness, from above the knee down to the toes; its size was as just stated; it pitted slightly on being hard pressed with the finger; there were several vesicles, containing transparent serum, on the back of the foot and lower part of the leg; the pain was excessively burning and acute, and the constitutional disturbance was very great. The tincture of Iodine, of full strength, was applied all over

the inflamed surface—that is, from the toes up to the middle of the thigh—; and the limb was directed to be kept in a horizontal position, and left exposed to the air. Next day the pain was nearly gone; the limb was considerably reduced in size; and the skin, especially about the knee and upper part of the leg, was shrivelled into folds, in consequence of the subsidence of the swelling. The fluid in the smaller vesicles had been absorbed, and the others were much smaller than the day before. No new vesicles had made their appearance. However, there was still considerable swelling of the lower part of the leg and foot, and the inflamed part still pitted on pressure, though not so much as on the previous day. The Tincture was repeated, in its full strength. After the second application it was reduced in strength, and on some days rectified spirit alone was applied, merely with the view of re-dissolving the Iodine which coloured the surface of the skin. The disease began to give way immediately after the first application of the remedy, and the limb rapidly recovered, leaving only a few small ulcers where the larger vesicles had been situated. These were treated in the usual way.

We have since met with several cases like the above, and have treated them in a similar manner, with equal success. Such cases are some of the worst that can present themselves, for, unless soon checked in their career, most extensive sloughing of the cellular membrane takes place; large and numerous openings form in the integuments, and the patients are almost sure to sink, either from the violence of the inflammation and of the constitutional disturbance caused by it, or else from the great discharge which follows so extensive a destruction of parts.

In cases of this description, it is generally beneficial to apply a bandage round the limb as soon as the inflammatory action has entirely subsided; for this will serve to support the weakened vessels until their contractile properties shall have been recovered, and to promote the absorption of the morbid deposite.

A gentleman, aged about 60 years, rather stout, presented the following symptoms:—the right leg and foot were swollen to at least double the size of the left: the swelling extended up above the knee: the skin presented a glossy, shining appearance; but its colour was rather pale; or, at any rate, was hardly redder than natural: the limb pitted very considerably on pressure, and the integuments did not recover their level for some time after the removal of the pressure: there were several bullæ or vesicles about the ankle and the lower part of the leg—one was large and of a darkish colour: the general health did not suffer so much as might have been expected

from the diseased condition of the limb, still the tongue was rather furred, and the pulse slightly quickened. The member was neither very hot nor very painful. Evaporating lotions had been employed for some days when the case presented itself, but the limb continued to swell more and more, and the vesicles went on increasing both in size and number. When it presented itself, the case was of four or five days' standing, but had become much aggravated within the last forty-eight hours.—The whole limb, from the middle of the thigh down to the tip of the toes, was painted with the tincture of Iodine, in its full strength: it was ordered to be kept in a horizontal posture, and to be loosely covered over with a linen rag hose. At the end of twenty-four hours the member was decidedly smaller: the skin about the knee and upper part of the leg was loose, and drawn together in longitudinal folds, proving a diminution of the swelling: the smaller vesicles had dried up; the larger ones had considerably diminished; and the dark looking one had discharged itself. The application of the Tincture was repeated, from the knee downwards to the toes. At the expiration of another day, the swelling was still more reduced: two or three of the larger bullæ had discharged themselves, leaving small superficial ulcers of quite a healthy appearance. After this time the leg was touched three or four times more with the Tincture, reduced to about half its strength, and the two or three ulcerated spots were dressed with Turner's cerate. At the end of a week, there being some degree of œdema of the leg, a bandage was applied, and recommended to be worn until the vessels and the skin should recover their natural tone.

PHLEGMON.

The characters of phlegmonous inflammation are so well known to the profession as scarcely to require a description of them here. The disease generally commences with pain and a sensation of throbbing in the part, before any redness is apparent. The reason of this is, that the seat of disease is entirely under the integuments, in the cellular membrane; and the malady makes considerable progress before the inflammatory appearance presents itself on the surface of the skin. The order of attack in phlegmon is the reverse of that in erysipelas; for, in the latter, the skin forms the original seat of disease, and the parts underneath become affected by contiguity, or rather by *continuity of vessels.*

There is another fact worthy of notice which distinguishes the two maladies, namely, that the extent of the destruction of the cellular membrane in erysipelas depends upon the ex-

tent of the inflammation of the skin; whereas in pure phlegmon, the extent of cutaneous redness is determined by that of the inflammation of the cellular tissue underneath. When the skin constitutes the seat of disease the inflammation spreads rapidly and widely, by continuity of tissue; and as it dips down into the cellular membrane by continuity of vessels, thereby giving rise to the variety called "phlegmonous erysipelas," the latter membrane necessarily becomes very extensively affected. In phlegmon, on the contrary, the agency of the morbific cause is exerted on the cellular tissue—a tissue not prone to stretch out its maladies far—and the skin, being only secondarily affected, presents only a limited extent of inflammation, corresponding to the extent of disease underneath.

In pure phlegmon the cellular tissue shows the same disposition to die, or to resolve itself into purulent matter, as in phlegmonous erysipelas; only that in the former variety of inflammation the cellular membrane determines the extent of its own affection, by circumscribing it within the limits of an abscess. The destruction of the tissue is generally limited, and a boundary is soon formed between the healthy and diseased parts. With regard to phlegmon, indeed, we may say that its invariable tendency is to end in an abscess, unless the vessels recover their normal tone by the efforts of Nature, so as to induce the inflammation to terminate in resolution; or unless it be checked by the interposition of Art; for we doubt whether this variety of the disease ever ends in absolute gangrene, properly so called. It is true that it may, and does, cause the death of the part immediately affected, so as to occasion sloughing of the cellular membrane; but such sloughing is always of limited extent, and is not attended by the dark discoloration of the living parts, especially of the skin, and by cutaneous vesication, which characterise gangrene.

The redness in phlegmon is not so florid as that which the skin presents in erysipelas, and does not so entirely disappear on pressure. This is accounted for by the fact, that in simple erysipelas the vessels which are enlarged are those of the skin only, so that the pressure of the finger puts a stop to the circulation through them for a moment, and leaves the point pressed upon free from blood; whereas in phlegmon the vessels chiefly enlarged are more deep-seated, so that, although pressure on the surface may obstruct the circulation through the capillaries of the skin, still the redness will show itself from the vessels situated beneath the integuments.

It has been already stated that a throbbing pain usually precedes the redness and swelling in phlegmon, because the

tissue originally affected is beyond the reach of sight. Increased heat, also, generally precedes the visible phenomena of the disease. Sometimes, indeed, when the part affected is situated very deeply—that is, when the inflammation is in a part of the cellular membrane situated low between the muscles—a portion of the tissue is destroyed, and an abcess is formed, before any external signs of inflammation show themselves. The integuments do not begin to inflame until the matter has worked its way some distance towards the surface, so as to discharge itself through the skin.

The topical remedies usually employed in phlegmonous inflammation, are leeches, and evaporating lotions: and, occasionally, poultices and fomentations. These are medicated with anodynes when the pain is very severe. Scarification of the inflamed part is sometimes resorted to; also the formation of an eschar over the part with nitrate of silver. These means are all good in their way, and are the most efficient — indeed the only ones — which have been used hitherto. But the inflammation will be subdued by the tincture of Iodine much more quickly, and with greater certainty, than with any or all of these means.

In what manner the influence of the Tincture reaches the vessels, in deep-seated inflammation of the cellular membranes, we do not profess to be able to explain, but that the remedy *does* exert an influence upon them is perfectly certain. In cases where pain and throbbing only exist, and where the inflammation has not yet made its appearance on the skin, it will generally be found that a single application of the Tincture, in its full strength, and thickly painted over the seat where the pain is felt, will at once check or cut short the disease. A sensation of warmth, and probably some degree of smarting, will be felt in a few minutes in the part to which the remedy has been applied: this may continue for an hour or two; and when it ceases, the original pain also will generally be found to have ceased. However, it is safer to repeat the application, though no more pain or throbbing be felt; for no harm can arise from so doing. We feel satisfied that in many instances where suppuration had commenced, repeated applications of the Tincture has not only checked the progress of the inflammation, but has also caused the matter already formed to be absorbed.

Nevertheless, when the seat of disease is *very* deep among the muscles, especially in the thigh, or about the loins, it is doubtful whether any impression would be made upon the inflammation by the local application of the remedy: we say it is doubtful, because we possess no facts either affirmative or negative of the proposition. Affections of that description

are often very obscure in the first part of their course, and they frequently form abscesses before their real character is discovered. However, from our experience of the properties of the tincture of Iodine in promoting absorption of morbid deposite, we would trust to its employment in cases of this nature in preference to any other topical application.

When the inflammation takes place nearer the surface—that is, in the cellular membrane which intervenes between the integuments and the muscles—the redness very soon appears externally, and the disease presents from the beginning those characters which are distinctive of genuine phlegmon. Such cases are to be treated in the same manner as phlegmonous erysipelas. The Tincture is to be applied the first time in its full strength. After the first application, the inflammation will be generally found, at the expiration of twenty-four hours, nearly subdued. The skin, which was before tense, will appear loose and wrinkled, and the cuticle beginning to peel off. If there should be no matter formed underneath, the remedy may be diluted to half its strength for the second application; but if pus exists under the integuments, it is desirable to let the Tincture remain of its full strength, and its application be repeated daily, until the matter shall have been all absorbed, or else until it shall have worked its way to the surface, and discharged itself, or been let out, through the skin.

A robust, healthy looking young woman, about 20 years old, applied in March, 1834, with phlegmonous inflammation of the right leg. The disease commenced about the middle of the leg, on the outside, over the fibula. The skin was now inflamed over a great part of the leg: it was of a deep red colour, very tense, and very hot to the feel. The limb was a good deal swollen, but no matter appeared to be formed. The pain was very severe, accompanied by a throbbing sensation. The pulse was quick; the tongue whitish; thirst, and other febrile symptoms. The inflammation was "spontaneous," and of four days standing. It had been treated with Goulard lotions, which rapidly dried when applied to the part, but which neither alleviated the pain nor appeared to reduce the temperature beyond a minute or two after each fresh application. The Tincture, in full strength, was applied all over the leg, from the knee down to the instep, and the limb was ordered to be kept in a horizontal posture. No general treatment was had recourse to. A few hours after the application, the sensation of pain and throbbing almost altogether ceased. Next day the swelling had considerably abated; and scarcely any more signs of the disease remained than a feeling of stiffness in the leg, and a slight soreness on pressure. The

Tincture, diluted to about half its strength, was again applied, and the limb was allowed to rest for two or three days; which completed the treatment of the case.

We could recite at least a score of cases analogous to the above; but one is as good as a hundred in illustration of a principle. It is possible that the remedy may fail in some instances, but, if properly and prudently applied, cases of failure will be very rare: by failure, we mean where the inflammation runs on and forms an abscess in spite of the remedy. We have not yet met with such a case—that is, a case of superficial phlegmon where the Tincture was applied before matter had begun to form: such a case of failure has not occurred to us.

In May, 1838, a strong, healthy man, about 35 years old, had a thorn run into the outside of his thigh, about midway between the hip and knee, in passing through a thick hedge. He took no particular notice of the accident at the time. The part, however, continued painful; and three days after, it began to swell a little, and to inflame. He kept poulticing it for three or four days longer, but the inflammation went on, rapidly increasing in violence, and extending over a great part of the outside of the thigh. The limb was now very red, hot, and painful; much swelled; hard to the feel, and leaving no pit, but a momentary paleness, upon pressure with the finger. The heat and pain were excessive: the latter was of a throbbing nature, corresponding with the contractions of the ventricles of the heart. There was a considerable degree of general fever. It was doubtful in this case whether suppuration had not commenced, for something like an obscure fluctuation could be distinguished at the point where the thorn had entered.—The whole thigh was painted over with the strong Tincture, all the way from the hip and groin down to the knee. After getting dry—which it did in two or three minutes—the application was repeated three or four times to the outside of the limb, especially over the part which had suffered the accident. Ten grains of Calomel, followed by a saline cathartic, were ordered to be taken immediately. About a quarter of an hour after the application, the limb began to feel very warm—a warmth congenial to the feeling compared with the heat and pain experienced before. This warmth was soon succeeded by rather a severe smarting, which continued for three or four hours. When the smarting ceased, the original pain, also, for the most part, was gone. The next day after the application of the Tincture, the outskirts of the inflammation had all disappeared, leaving the skin wrinkled, and the cuticle beginning to desquamate. There still remained a hardness, and soreness on pressure,

with a certain degree of swelling, extending a few inches round the point where the injury had been received; but the throbbing pain had entirely left. The undiluted Tincture was again applied to the hard part, and carried some distance beyond the hardness. The application was repeated daily for four days, which served to complete the cure.

In cases similar to the last, but where suppuration has gone on to some extent, the Iodine may not succeed in producing an absorption of all the purulent matter deposited; but it will exert an extraordinary power of confining the suppuration within narrow bounds. It almost immediately stops the inflammatory process, so that no more destruction of the cellular membrane takes place, and the line of boundary between the dead and living parts of the tissue affected is soon determined. In such cases, when an abscess does form, instead of having a cavity containing several ounces of pus—as we generally find to be the case where the treatment has been by poultices, &c.—perhaps not an ounce will escape when the abscess breaks, or is opened.

EXTENSIVE SLOUGHING OF THE CELLULAR MEMBRANE.

Severe cases of phlegmonous erysipelas, especially of the lower extremities, are frequently followed by very extensive sloughing of the cellular membrane, which protrudes through ulcerated openings in the skin, leaving large vacancies between the integuments and the muscles. While this mischief is going on in one part, the inflammation often continues to spread progressively, so as, now and then, to involve a whole limb. If the patient does not die under the violence of the disease, in these cases, he generally soon sinks under the enormous purulent discharge which takes place as its consequence.

In cases of this description, almost the only topical remedies in use are large poultices and fomentations. It is a question whether these be not more injurious than beneficial, for by increasing the discharge, without being capable of checking the inflammatory process, they must tend to diminish the little strength which remains with the patient.

Under these circumstances, the tincture of Iodine is a most valuable acquisition as a remedy in these grievous affections. It not only has the advantage of being easily applied, without disturbing the posture of the patient, but it also has the property of at once arresting the progress of the inflammation, so as to give the living parts a chance of casting off the dead slough.

In the summer of 1837, a man, aged 75 years, received a kick on the shin. The part became inflamed, and the inflam-

mation proceeded from bad to worse, in spite of surgical treatment under the management of a skilful practitioner, until the whole leg and thigh became involved in one mass of disease. When we saw him in consultation, the limb, all the way from the toes to the groin and hip, was enormously enlarged. The skin was intensely red and glossy, with the exception of several dark coloured vesicles about the lower part of the leg. In different parts of the limb there were several ulcerated openings in the integuments, through which strings of dead cellular membrane protruded. The discharge through these openings was very great. Indeed, it appeared as if the integuments of the whole member had separated from the muscles, leaving an empty space between. The constitutional disturbance was as great as it could well be consistent with life. In a word, the patient, considering his great age, and the extensive destruction of parts, appeared quite in a hopeless state. The tincture of Iodine, of full strength, was thickly painted over the whole limb—thigh, leg and foot; and the application was repeated daily. At the expiration of twenty-four hours there was some slight amendment: on the third day the amendment was very decided. The march of the inflammation had been checked: no more bullæ had formed, and most of those which existed before, had discharged themselves, leaving small, healthy looking ulcers on their site. The only doubt now was as to the strength of the patient to bear the enormous discharge that must take place from the excavations which ran in all directions between the integuments and the muscles of the leg and thigh. After the first four or five days, the Tincture was applied every second or third day, until all the dead membrane was thrown off; and as soon as that object had been accomplished, it was still applied occasionally to any spot which showed a disposition to inflame. As soon as the sloughing had ceased, the openings in the integuments were dressed with simple dressing, and gentle pressure was applied to the limb, with the view of promoting adhesion between the parietes of the excavations. By proceeding upon this plan, the recovery of the patient was ultimately secured.

July 15th, 1833, a thin, but healthy man, aged about 58 years, was felling a tree. The tree bounded over, and the stem fell upon his foot, lacerated the soft parts over the ankle and all along the back of the foot, exposing very extensively the extensor tendons of the digits. Independently of the extensive laceration, the foot and ankle suffered very severe contusion from the weight of the tree. There was also a fracture of both bones of the leg, about three inches above the ankle. The fractured bones having been set, and

the lacerated parts having been brought together as well as could be done under the circumstances, and retained so with adhesive plaster, an evaporating lotion was ordered to be kept constantly applied to the foot and ankle. The lotion was continued for three days. The limb did not swell much, nor did there appear to be any considerable increase of its temperature, although the weather was hot; but on removing the dressing, on the 18th, the integuments and wound presented a dark, livid, sloughing appearance, and the whole foot looked as if gangrene must necessarily take place. There was also present that peculiar constitutional disturbance which usually attends gangrenous affection of any part. The tincture of Iodine was immediately applied over the foot and ankle—the parts were coated over three or four times with it. The internal treatment consisted simply of common saline solution, with a small quantity of sulphate of magnesia. By the next day the foot presented a much more favorable appearance. It was quite evident that the gangrenous tendency had ceased. The greater portion of the integuments, whose life was supposed to have been entirely gone, showed indications of vitality. Those parts which had actually lost their vitality began already to exhibit a disposition to separate from the living part. The Tincture was repeated daily for three or four days, until the vital part cleared itself of all the slough; which it did most rapidly: the remedy, a good deal diluted, was then applied every two or three days to the surface and round the edges of the ulcer, in order to quicken the growth of granulations. Suffice it to say that the ulcer healed very rapidly, and that the patient was restored to his occupation, free from lameness, quite as soon as if there had been only a simple fracture of the leg.

We must be pardoned for again repeating the observation, that these are not casual, solitary instances of this description of disease where the tincture of Iodine has proved beneficial: it is almost uniformly successful, so far as our experience tends to prove: the exceptions are cases where some extraordinary gangrenous disposition exists in the system—as we now and then find when amputation of a limb is performed before the dead parts have separated, and where gangrene immediately commences in the stump; or where the sloughing has already extended so far that the system does not retain sufficient strength to restore the lost parts.

ACUTE INFLAMMATION OF THE JOINTS.

Inflammation of the synovial membrane of the joints—especially of the larger joints—requires very prompt treatment, otherwise permanent organic changes take place, so

that the free motion cannot be restored. The pain is generally severe in acute inflammation of this tissue; and the tenderness is often so great that the patient cannot bear the part to be touched. The soft parts covering the joint become swollen, and the inflammation presents itself externally on the skin. The joints by far the most liable to this kind of affection are the knee and hip; and as the tissue originally affected is endowed with but a small degree of sensibility, the disease frequently makes considerable progress before any particular notice is taken of it. This is proved by the fact, that a slight uneasiness, or a small degree of tenderness, often exists in the joint for several days, or perhaps a week or more, before the patient is laid up; and that, when the disease has once arrived at a certain stage in its progress, it runs on very rapidly, so as to produce suppuration within the capsule of the joint, unless promptly met by remedies.

The topical remedies usually employed in this affection, are local abstraction of blood, either by cupping or leeching, or both; evaporating lotions; poultices, warm or cold, according to the views of the practitioner; and, occasionally, fomentations.

Now, the tincture of Iodine has been employed very extensively, both at the General Infirmary and in private practice, in this disease, and has been found a much more efficacious remedy than any of those in common use. It is necessary, however, to state, that no disease for which the Iodine has been employed requires so much discretion on the part of the Surgeon as the one under consideration. If used too strong at first, or applied too frequently, it may give rise to inflammation of the integuments, and cause, or add to the, puffiness of the soft parts external to the joint; but we have not known it in any one instance to aggravate the internal inflammation. We speak now more particularly of the knee joint. The texture of the patient's skin must serve to guide the practitioner, in a great measure, respecting the strength of the Tincture and the frequency of its application. It should be at first diluted to about half its strength, or more, if the skin be of a very delicate texture; and, if required, its strength may be gradually increased according to its effects. It is seldom that the remedy produces any irritation of the skin in other parts of the body; and with regard to the knee, our remarks are intended more to put the practitioner upon his guard against what *may* happen, than to inform him of what *will* happen. Should any irritation or inflammation of the integuments occur, it will be very readily subdued by a simple evaporating lotion, composed of one part of spirit of wine to eight or ten of water.

The Tincture, diluted, may be applied at once all over the in-

flamed joint, with perfect confidence that not only no *mischief*, but that *good*, will be the result. But when the disease has been pretty far advanced, and where the swelling has been considerable, we have generally preferred leeching the joint first, and then, a few hours after the bleeding has ceased, to apply the Tincture. Whether by getting into the leech bites the remedy exerts a greater influence on the internal vessels of the joint, we do not profess to know, but the fact is that the application of leeches, in this species of inflammation, previous to the employment of the Tincture, tends greatly to assist the good effects of the latter. The remedy will generally require to be applied every day, for two or three times; then every other, or every third day, according to circumstances; the practitioner exercising his discretion according to the condition of the part, and the effect of each application. If, in the intermediate time of the applications, the part should acquire an increase of temperature—as it sometimes does very suddenly, without any evident cause—it will be useful to lay over it a layer of rag soaked in spirit of wine, or in a simple spirit and water lotion. This application will not interfere with the repetition of the Iodine. But no lead or zinc lotion, or one medicated in any way, should be employed.

When the hip is the joint affected, leeches should be applied to the groin and behind the great trochanter; and after the bleeding has ceased, the whole of the upper part of the thigh, the hip, and the groin should be well painted over with the Tincture, of its full strength. The application, as in all other cases, should be repeated according to circumstances.

Having illustrated the principle and mode of application of the remedy, it is unnecessary to occupy the time of the reader by a detail of cases of this species of inflammation, for the doing so would be only a repetition of the same mode and principle already just stated. It is also assumed, as a matter of course, that, in this disease, as well as in all other local affections, no general treatment calculated to assist in the subduction of the local malady has been neglected.

INFLAMMATION OF THE BREAST.

The inflammation of the breast which so frequently takes place soon after delivery is of the pure phlegmonous kind, having its origin and seat in the cellular membrane pervading the mammary glands. Its commencement and progress are attended with heat and throbbing pain, and it terminates, if not in resolution, in a purulent abcess, like that proceeding from common phlegmon. The collection of matter is generally very great, attended with a good deal of constitutional disturbance, and the abscess usually opens by a large hole,

denoting much sloughing of the integuments and of the cellular membrane within.

In three cases out of four, or even in a larger proportion, acute inflammation of the mammæ runs on to suppuration under the usual plans of treatment, and the abscess is generally upon so large a scale that the gland never afterwards recovers its natural function. The topical remedies in common use are leeches, lotions and poultices. The popular remedies are of a more stimulating kind, and are applied in the form of embrocations, which, it cannot be denied, are oftener followed by success than the professional ones.

Although generally very deeply situated among the glands, inflammation of the breast is not beyond the reach of the influence of the Iodine. If applied before matter has actually commenced to form, the Tincture will prove successful in the great majority of cases. When suppuration has already commenced, the application will materially confine the mischief, probably by subduing the inflammation surrounding the abscess; and instead of having an enormous discharge of matter, from a cavity occupying nearly the whole of the breast, perhaps not more than an ounce or an ounce and half will come away on the breaking of the abscess.

As soon as it is discovered that inflammation has commenced, the Tincture, in full strength, should be applied extensively over the part affected. When the disease originates very deeply among the mammary glands, the remedy should be made to cover the whole breast. The application should be repeated next day, equally strong, unless the smarting from the first should have been severe: if so, then the Tincture ought to be diluted. At any rate, the breast should be painted over with it daily, until the pain and redness shall have ceased, the strength being regulated according to its effect on the skin. Even if suppuration is known to be going on, it is still expedient to pursue the same course, because the remedy will tend greatly to limit the extent of the abscess, and will accelerate its bursting. When the abscess has burst, or has been opened, a poultice should be applied to the part, and continued as long as any discharge exists; but an occasional application of the Tincture, even after the bursting, will be found to aid the cure very materially.

Three cases of this description have been under treatment within the last six months; and, during the last five years, several cases have occurred, in some of which suppuration took place, but always small in quantity. In the great majority the inflammation was checked before any purulent matter was formed, or when it was so small in quantity as to be again absorbed under the use of the remedy.

GOUT.

The inflammation of Gout is universally considered as dependent upon constitutional causes. No doubt, the morbific cause of the disease is conveyed to the local seat of affection through the medium of the system, and the functions of other parts suffer from it besides those which present themselves externally. But the most unbearable symptom of the disease is the *pain* in the local seat of inflammation; and the violence of this is generally such as greatly to aggravate any constitutional symptoms that may exist. Previous to the appearance of the local inflammation, there is generally an uneasiness about the pit of the stomach; nausea; general languor, attended with a disposition to irritability, both of mind and body; darting or shooting pains in different parts of the body, &c. When the local pain comes on, the foregoing symptoms become drowned in a general fever, which continues, more or less, as long as the local affection exists.

The local remedies usually employed for the removal of the pain and inflammation of Gout, may be divided into two classes: first, professional; second, popular. The former are the same as those used in other local inflammations, namely, leeches, evaporating lotions, fomentations, poultices, &c. The latter consist in the application of hot flannels, and other hot things; stimulating embrocations; stimulating plasters, &c. The object of the first class is to *prevent* inflammation from taking place, by means of antiphlogistic remedies: the object of the second class is to *promote* inflammation and swelling, because experience has proved that as the integuments swell and inflame, the pain diminishes. The virtues, and want of virtues, of both classes of remedies are so well known to the Profession, and to those who are subject to the disease, as to render any remarks upon them here unnecessary.

The curative effects of the tincture of Iodine in the pain and inflammation of Gout can be appreciated by those only who have witnessed them, or those who have received the benefit of the remedy. We have generally found one or two applications remove the pain almost entirely. We usually dilute the Tincture to about two-thirds its full strength; and if the part affected be the foot, we paint it and the toes well over, all the way from the ankle; or from higher up the leg if the ankle itself suffers from the disease. The application is repeated next day if any pain, redness, or swelling remains. In fact the disease is treated like common phlegmonous inflammation. When the malady has fixed itself in the fingers and hand, the treatment is the same: the whole hand, fingers,

and wrist are brushed over, and the application is repeated as long as any trace of the disease remains.

A gentleman of our acquaintance (who has never had a regular attack of gout, but has had many threatenings of it,) whenever he experiences pain in the ball of his great toe, with tenderness on moving the joint, immediately applies the Tincture very liberally to the seat of threatened mischief. By so doing he has hitherto warded off the attacks; and the constitutional derangements accompanying these threats have been rectified by simple saline aperients.

A gentleman, aged about 50, who had, usually, for many years been obliged to lay up for several weeks each year with the gout under the old established mode of treatment, has had, of late years, the paroxysms reduced to a few days only. The local affection has been always preceded by a good deal of gastric derangement, and the pain in the feet, at the commencement of each attack, has been excessive. The pain, however, has been relieved in a few hours by the application of the Tincture; and even the redness and swelling (when the disease has been allowed to proceed so far) have been soon reduced; and, aided by general treatment, every paroxysm has been of late years subdued in a few days.

A man, aged about 45, of stout make, but of rather unhealthy constitution, has been much subject to gout of late years. The pain in the feet, as the paroxysms come on, is excessive. Before we began to attend him, the feet used to inflame, and swell considerably, so as to confine him for weeks. Within the last few years, the application of the Tincture to the feet, and a few doses of Colchicum internally, have set him up in a few days. The pain has been usually subdued in a few hours.

In very many cases of anomalous pains of the joints, supposed to be gouty or rheumatic, unattended by inflammation, the effect of the tincture of Iodine has been very noted. In such cases it ought generally to be used in full strength, unless the texture of the skin be delicate. It first causes a sensation of warmth, amounting in most instances to smarting; and it commonly follows that when that sensation has ceased, the original pain is no longer felt; or, if felt, it is in a much lower degree than before the application of the Tincture.

CHRONIC INFLAMMATION AND ENLARGEMENT OF THE JOINTS.

This affection constitutes generally a large proportion of the surgical cases admitted into Hospitals. The disease varies in degree from that state commonly called "white swelling," down to a slight thickening of the soft part, and tenderness

on moving the joint. Its cause may also vary: sometimes it is connected with a scrofulous state of the system: at other times it is produced by some slight accident to the joint; whereas it often comes on without any accountable cause.

When the large joints, such as the hip and knee, have formed the seats of affection, the treatment has usually been local bleeding, followed by blisters or setons. In fact, all the remedies commonly employed in acute inflammation, with the addition of stimulating embrocations, plasters, and mercurial inunctions have been at different times put in practice in this obstinate malady.

Iodine, also, has been employed in enlargement of the joints, especially in cases accompanied by a scrofulous condition of the system, from the supposition that the remedy possesses some specific influence over that disease. We have never had reason to believe that it does possess any such influence, any further than that, as a topical remedy, it will subdue scrofulous inflammation in the same way as it subdues any other local inflammation. The Iodine has been generally employed in these cases in the form of ointment. It is not only objectionable in that form on account of the friction tending to increase the pain and irritation of the joint, but also because its effects are nothing like so beneficial as when applied in the form of Tincture, or of iodurettted hydriodate lotion.

To the large joints, such as the hip and knee, we generally apply several leeches before the employment of the Iodine. Having done so, the Tincture, usually diluted, is applied very extensively over the affected joint, and repeated every two or three days, according to its effect on the skin. Should any preternatural heat occur in the part, a layer of rag, soaked in spirit of wine, or in a simple spirit lotion, should be laid on it, the same as directed to be done in the acute form of the disease.

This plan is to be persevered in for a period limited only by the duration of the disease. An amendment will generally be found in a few days to have taken place; and it will go on progressively, but in many instances slowly, until the motion of the joint is restored, as far as Art can restore it.

When the enlargement has been in the ankles, or wrists, and of long standing, we have generally prefered the Iodine lotion, even to the Tincture. This is the most ready form of the remedy in cases like those of out-patients at Hospitals, where the practitioner has not an opportunity of frequently witnessing the progress of the cure. The strength of the lotion must be determined by the discretion of the Surgeon. A piece of rag should be soaked in it, and laid round the

affected joint, and the application should be repeated two, three, or four times a day, according to its effect on the skin.

This plan of treatment has received a long and extensive trial, and it has succeeded very far beyond the methods usually adopted in affections of this nature

INFLAMMATION OF THE ABSORBENTS.

The first, and worst, case of inflamed absorbents in which the tincture of Iodine was used, was that of a gipsey-man, aged about 30, in 1829, who had been bitten on one of his fingers by a horse. Some purulent matter from an abscess in another horse got into the wound. The part soon inflamed, and the inflammation rapidly extended along the course of the absorbents up to the axilla. When we saw him the disease was of a fortnight' standing. There was an abscess discharging at the bend of the arm; another about the middle of the upper arm, and a third in the axilla; and there was a wide path of inflammation traceable all the way from the wound to the axilla, along the course of the absorbents. The man was reduced to a mere skeleton.

The tincture of Iodine, of full strength, was freely applied along the inflammatory path, and over the abscesses; and the application was repeated daily. Common dressing was then applied to the abscesses. The inflammation, by this plan, was subdued in two or three days, and the patient was well in a fortnight.

We might detail a dozen or more cases of inflamed absorbents, from slight injuries to the toes or fingers; from the pressure of the shoes upon corns; from the too close cutting of corns, and from other causes, where the Tincture has been applied, and uniformly with success. Indeed, one or two applications generally suffice to subdue the inflammation of the absorbents; but we have usually continued daily to touch the original source of the mischief—that is, the wound, or corn, or bunion, or whatever the cause may have been—for some days after the inflammation has dis-appeared

CARBUNCLE.

In November, 1836, a man whose constitution has been already noticed, as being subject to Gout, had a regular and well formed Carbuncle on the back of the neck. He allowed the disease to go on—applying poultices, &c. in the mean time—for ten days, before he applied for surgical aid. When we saw him there was a large Carbuncle in the middle of the nape, having a great number of small openings on the surface, and being surrounded by a hard, dense, red swelling.

The skin was quite tough and leathery. The general health was suffering very much.

The usual practice in these cases is to make a crucial incision in the Carbuncle, and then continue the application of poultices until the part is restored to its normal state, or until the patient dies; doing all necessary things towards improving the general health.

The tincture of Iodine, of full strength, was applied very thickly over the inflamed surface, as well as over the Carbuncle. On the next day the inflammation was found considerably diminished. The application was repeated as before. On the third day the inflammation was nearly gone. The skin corrugated, and the cuticle was desquamating all round the Carbuncle: but the Carbuncle itself remained much in the same state, having a great number of small openings on its surface, through which the matter within could find no free exit. As there evidently was a considerable quantity of dead cellular membrane which must be discharged before the abscess could get well, a single transverse incision was made through the Carbuncle. The Tincture was then repeated daily, and having allowed an hour to elapse after its application, a small poultice was put on, for the purpose of keeping the abscess moist. The dead cellular membrane was cast off in three or four days, and the cavity left by it filled up rapidly by granulations.

Last winter, a labourer, aged about 40 years, of a thin, irritable, unhealthy look, applied for relief for a boil (as he called it) on his back. He represented it as having been coming on for a fortnight, during the whole of which time he had poulticed it. He found that his health was fast giving way, and that the boil was daily getting larger and more painful, he therefore presented himself for surgical aid.

On examining the back, there was found on the left loin a large Carbuncle, having a number of very small openings on its surface, and being surrounded to a considerable extent by an areola of inflammation. The part was swelled, and felt as hard as a board. The skin was of a dark red colour, and communicated a tough, leathery feel to the fingers. The health had suffered considerably within the last week.

There was also an incipient boil on the left shoulder, just over the blade bone, having precisely the same characters as the one on the loin at its commencement. Two applications of the Tincture served entirely to dispel this young Carbuncle.

A crucial incision was made in the Carbuncle on the loin, and then the Tincture, of full strength, was thickly laid on it, as well as on the extensive areola of inflammation surrounding it. A small poultice was applied to the abscess, with the view

of keeping it moist. The only general treatment was a teaspoonful of Epsom salts every morning, in half a pint of water. Next day the inflammation had considerably subsided, and the leathery hardness of the skin surrounding the carbuncle was very nearly gone. The man felt already much improved in health: he had had a good night's sleep, which he had not before enjoyed since the local disease had made its appearance. The Tincture was again applied, both to the carbuncle and to the surrounding skin. After the second day it was not found necessary to paint the skin, for no inflammatory action any longer existed. The carbuncle, however, was touched daily for some time, in order to enable it the sooner to cast off the dead cellular membrane, and to form granulations. In a few days the slough was discharged, leaving a very large, deep cavity, which, however, filled up very rapidly under the occasional application of the Tincture, diluted to about a third of its full strength. The man was fit for work in less than a fortnight from his first applying for surgical aid.

It may be stated here, that the remedy is equally applicable to common boils. It has also been used in several cases of bubo—some dependent upon chancre: others upon gonnorrhœal irritation—and its good effects have been uniform. If applied to them in their incipient state, before suppuration has actually commenced, it will *generally* cut short their march. If applied after the commencement of suppuration, and previous to their bursting, it will subdue the surrounding inflammation, and confine the abscess within a very narrow space. If applied after the bursting, it will materially accelerate the removal of the hardness and inflammation surrounding the cavity of the abscess. These are real facts—facts easily tested by trial.

LUPUS, OR NOLI ME TANGERE.

This is a disease kept up apparently by some specific cause, which induces it to go on progressively, destroying in its march the integuments and parts situated underneath. It usually commences on one of the alæ of the nose, or side of the cheek close to the nose; or else on the lips, especially the lower one. It generally begins in a pimple or small tubercle, which ulcerates, and the ulceration spreads in a continuous manner, eating up in its course the skin, alæ of the nose, or other parts beneath, to a considerable depth.

The principal remedy employed for this destructive malady is arsenic, both administered internally, and applied externally so as to cause sloughing of the diseased part. Nitrate of silver has been also used with the same view. Ointments

made with different preparations of mercury, as well as pitch and sulphur ointment, have all been applied in their turn.

September 10th, 1829, a respectable mechanic, aged about 36, had an eating ulcer on the left ala of the nose, extending some distance on the side of the cheek. The disease had crept up the nose as high as the nasal bone, and had eaten right through the cartilage, so as to produce a slit into the nostril. It was creeping on fast along the side of the cheek. The part was excessively painful. The disease was of some weeks' standing. Various applications had been tried before we saw him, and he had consulted some noted London surgeon; but the malady was steadily progressing in its march.—The tincture of Iodine, of full strength, was applied over the surface of the ulcer, and to some distance round; and the ulcer was then dressed with ointment containing hydriodate of potass. The disease made no further progress. In a few days an amendment was quite perceptible. The ulcer was treated in the same manner daily until the 30th: after that period the Tincture was only applied every two or three days. On the 20th of October the patient was discharged, cured.

In the same year, a labourer, aged about 40, had an eating ulcer on the side of the left cheek, near the nose. It had consumed the integuments to the extent of a crown piece; but in the middle of the part destroyed there was a kind of rough skin forming, which was situated below the level of the old integuments. Between this and the outward edge of the disease there was an ulcerated space exceedingly painful. The tincture of Iodine was applied daily over the ulcer and surrounding skin: no further dressing was employed; the part being left exposed. No internal remedies were used. The malady ceased to spread after the first application. In three weeks the case was discharged, cured.

The remedy has proved equally successful in two or three cases of the same disease affecting the lips, in its incipient stage.

It is proper, however, to state that the remedy failed in one instance at the Infirmary, although assisted by the internal use of the arsenical solution. This was the case of a little girl, about twelve years' old, whose nose, and the side of whose face, were affected by the disease. In this case, whenever the Iodine was employed, the march of destruction soon stopped, and the parts invariably put on a more healthy appearance; but whenever any other application was used the affection increased.

MALIGNANT ULCERS OF THE TONGUE AND TONSILS.

Ulcers of a very troublesome kind often form within the

cavity of the mouth. These are occasionally tainted with syphilis, especially when they attack the tonsils, and velum of the palate. Frequently, however, even these parts become the seats of destructive ulcerations, in the production of which syphilis has had no share. We were greatly puzzled respecting the treatment of affections of these seats before we began to employ the Iodine; but since then the treatment has been easy enough, and almost uniform in its success—indeed, we may say quite uniform as far as our experience goes.

September 7th. 1829, a youth, aged 16 years, had the left tonsil very nearly all destroyed by ulceration, which was still proceeding. There was also ulceration going on in the uvula and back edge of the velum. The right tonsil was considerably swollen, and the whole of the soft palate was much inflamed. The tonsil began to ulcerate three weeks previous, and the disease was going progressively on, destroying the soft parts in its course. His general health was suffering a good deal. He had been under medical treatment since the throat first became bad. He denied having given occasion for any syphilitic affection. The tincture of Iodine was applied with the brush all over the palate, tonsils, and uvula; and the application was repeated daily. The only internal remedy was the ioduretted hydriodate solution, in doses of ten drops twice a day, in water. We find, by our notes, that the patient was dismissed, cured, on the 20th of the same month.

A butcher, aged about 35, healthy looking, though not very stout, applied, November 30th, 1829, for relief to an affection of the tongue. The disease had been coming on for some months, and he had been under treatment for it without finding any benefit. The tongue was altogether a good deal enlarged, and several parts of it were indurated deeply into the substance of the organ. The surface of the indurated points was ulcerated. The ulcers were, each, small in extent; but they were very numerous, and extremely painful at times, and very tender when they came in contact with the teeth, or the roof of the mouth.—The tincture of Iodine, of full strength, was applied all over the tongue, and the organ was directed to be allowed to hang out of the mouth for two or three minutes after every application. The only internal remedy was the ioduretted hydriodate solution. After the 5th of December, thinking that the tongue was well, the patient ceased to attend. Finding, however, that the disease threatened to return, he applied again on the 21st of January following (1830). The same treatment was resumed, and continued for a week only, when he found himself well, and left off coming. He has had no return of the disease since.

These cases are selected because they are among the first of the kind that were treated with the tincture of Iodine. Many similar ones, and various other affections of the mouth, have been since treated in the same way, with equal success.

SCROFULOUS SWELLING OF THE GLANDS.

In scrofulous constitutions, the hereditary malady generally shows itself externally in the lymphatic glands under the jaw and about the neck. Why it should bear a more intimate relation with the glands of these parts than with those of other seats, is one of those mysteries connected with the living structure which have not yet been fathomed. The commencement of the glandular enlargement in this affection is usually unattended with pain. The pain and soreness seldom come on until the integuments begin to inflame, from the internal pressure of the enlarged gland. When the abscess bursts, its contents are found to be a mixture of pus and cheesy or curdy substance. These affections very commonly run on to suppuration under the common plans of treatment, and when the matter has discharged itself by the bursting of the abscess, the part is usually slow in healing. It frequently happens that no sooner one place heals up than another breaks out, and there is often a succession of swellings and sores in various stages of suppuration and healing.

The topical remedies commonly employed in these affections are leeches; lotions, generally medicated with acetate of lead or sulphate of zinc; salt and water, or sea water; and poultices after suppuration has been discovered to have commenced.

The tincture of Iodine, applied over the enlarged gland, will much more frequently cause a dispersion of the swelling than any other remedy. If resorted to before suppuration has actually commenced, and used with discretion, it will, in a great majority of cases, check the swelling, and will ultimately promote the absorption of the morbid deposite. The same remarks will apply to these swellings as to common boils: even when suppuration has begun before recourse is had to the Tincture, or when it has taken place in spite of the Tincture, still the application of the Iodine is highly beneficial, in limiting the extent of the abscess, thereby limiting the size of the scar which is to follow. Moreover, when the swelling has burst, an occasional touch of the remedy will be found materially to accelerate the cicatrisation of the sore.

We have never had reason to think that the Iodine exerts any *specific* influence over these swellings, as it undoubtedly does over that of the thyroid gland. It subdues inflammation of the lymphatic glands in the same way as it does inflamma-

tion of any other part, namely, by imparting a contractile tone to the capillary vessels, so as to restore the balance between the two functions of secretion and absorption.

WHITLOW.

A deep-seated whitlow, though originally occupying a small part of a very small member, is yet one of the most serious local affections, dependent upon acute inflammation, to which the attention of the Surgeon is liable to be called.

This affection consists of inflammation of some part of the last phalanx of the fingers and thumb. It is sometimes superficial, being situated immediately under the skin. When this is the case, it soon forms a vesicle containing a serous fluid, or serum mixed with pus. After this has burst, or has been let out, it often leaves a little ulcer about the root of the nail, which proves very troublesome and difficult to heal.

When the disease originates in the deep-seated parts, such as the sheaths of the tendons, or the periosteum of the last phalanx, the pain is excessive, attended with the sensation of strong throbbing, together with increased heat; but the swelling in the finger is frequently very trifling for some days. The parts which first and most swell, are the hand, wrist, and arm; and the pain, which is very severe, extends along the member, up to the axilla. After a few days, the finger swells more, and some indistinct fluctuation may, perhaps, be felt towards the end of it, generally on the palmar side. Suppuration has now commenced, and unless the part be immediately—or even before this stage—laid freely open, the bone, especially the last phalanx, will be almost sure to die. The soft parts about the finger, hand, and wrist will swell enormously; matter will burrow in all directions under the fascia, and amongst the sheaths of the tendons; the integuments will ultimately ulcerate in various parts, and the dead fascia and cellular membrane will protrude in ropes through the openings. While this process is going on in the soft parts, the bones of the finger are losing their vitality and becoming carious.

The local applications commonly used for this disease, are, a leech or two to the end of the inflamed finger, followed by a Goulard lotion, or a poultice, to the finger and hand: laying the part freely open, down to the bone, and then poulticing it. This should be done without fail as soon as it is found that the inflammation does not end in resolution.

As soon as the pain and throbbing of whitlow are felt to be coming on, the whole finger or thumb (whichever it may be), ought immediately to be painted over with the tincture of Iodine, of its full strength. In about twelve hours, the ap-

plication should be repeated, unless the morbid sensation has ceased, which is often the case, even after the first application. In every case, however, it will be prudent to repeat the remedy two or three times, at intervals of twenty-four hours. Except where it was certain that suppuration had actually commenced, we do not remember an instance in which the Tincture has failed to subdue the disease. Whenever it is suspected that matter exits, or even when that is doubtful, if the inflammation does not give way in a few hours, a *free* incision should be made into the part: the Tincture should then be applied over the finger, as well as over the hand if at all swelled; and it should be made to insinuate itself freely into the incision. After an hour or two have been allowed to elapse, a small poultice should be applied to the end of the finger—confining it to as small an extent beyond the incision as possible, its object being merely to keep the wound from healing. The same treatment should be repeated daily as long as any vestige of the disease remains.

Within the last eight months we have had two fair specimens of the destructive nature of this disease under treatment at the Infirmary. The two cases were so similar that one description will do for both—indeed, for almost every neglected case of deep-seated whitlow.

In both these cases, the part originally affected was the little finger. The only difference in the two, when they presented themselves, was, that in one the palmar surface of the finger was dry and black; whereas in the other the whole finger was swelled to three or four times its natural size, and it looked a complete mass of sloughing cellular membrane and pus. The hand was enormously swollen and inflamed, with ulcerated openings here and there, through which sloughs of dead membrane and fascia were protruding. The redness and swelling extended to the other fingers, and up the wrist, as high as the middle of the arm. The pain was so great that the patients had had no sleep for many days. The whole hand and fingers presented such a mass of disease that it was impossible to determine the amount of mischief done to the bones, any further than that the three phalanges of the little finger were destroyed. Poultices and fomentations, or soaking in warm water, had been diligently used from the commencement of the disease, but incision of the part had been neglected in both cases. The hand was first washed clean of the poultice, in warm water, and left exposed to the air for a short time, in order that its surface might dry. The tincture of Iodine, of full strength, was then applied thickly all over it, including the space from the middle of the fore-arm to the tip of the fingers. After that, a thin piece of rag was thrown

loosely round the part, and the hand put in a sling. The patient, in both instances, slept soundly the very first night after the application of the remedy. Next day the swelling was found much reduced, and there was only a remnant of the *pain* existing. The same treatment was repeated every day for about a week or ten days, when the inflammation was all gone, and the swelling was so reduced as to enable us readily to determine the extent of mischief done to the bones, and to render an operation easy. The finger was removed, in each case, at the knuckle joint, and dressed in the usual way, only that at each dressing the wound and the whole hand were brushed over with the Tincture. About three weeks after the operation each patient was discharged, cured.

CHILBLAINS.

The parts most subject to chilblains are the toes, especially the little toe. Those next most liable are the fingers, especially the little finger. The ears, nose, and cheeks, also, not unfrequently become chilled.

In this troublesome affection we find a species of inflammation without any heat or pain, for the most part. It is true that the part affected acquires a temperature somewhat above the standard when it has been in a warm room, or kept near the fire, for some time; but that is very trifling, and even then the heat does not convey the same sensation as that of common inflammation of the same seat. It is also true that, under the circumstances just stated, a certain degree of pain is felt, but the sensation is more that of itching, and is quite different from that attending either phlegmonous or erysipelatous inflammation. Strictly speaking, the only elements of inflammation observable are redness and swelling. These are often present in a considerable degree of intensity—so much so, that the death of the part is by no means an uncommon result. Sometimes, however, an erysipelatous inflammation of the foot and leg proceed from the chilled part, and the case then assumes a new character.

We have already noticed that those parts are most liable to become chilled in which the velocity of the circulation is least. The vital contractility of the capillaries is reduced by the long continued application of cold, so that they become enlarged in capacity, and retain considerably more than their due proportion of blood. As the vessels continue to enlarge, the motion of the fluid becomes slower, until, at last, it ceases altogether, and the part ulcerates or sloughs.

Experience has taught people in general, that applications of a stimulating nature are the most efficacious in this com-

plaint, some of the *professional* remedies, however, are still applied upon the antiphlogistic principle. But the most common applications are embrocations containing camphor, ammonia, oil of turpentine, and other stimulating fluids; and, when the skin has ulcerated, ointments containing some of the gum resins form the usual dressings.

The best preventative of chilblains, with which we are acquainted, consists in immersing the parts affected every night in warm water, into which some common salt has been thrown. When the fingers are liable to chill, the hands should never, if possible, be washed in cold water during the winter months.

Scarcely a week passes in the winter that children with chilled feet are not brought for assistance—some with deep and extensive ulcerations about the heels and outside of the feet; and others with some of the toes sloughing off. The disease is usually checked in its progress by two or three applications of the tincture of Iodine. The remedy should be applied, in its full strength, to the distance of some inches beyond the boundary of the inflammation, and should be repeated daily for some time. The affected parts should also be immersed every night in water as hot as the patient can bear. When the ulcers have assumed a healthy aspect, and the surrounding skin has lost its dark, livid, unhealthy colour, the strength of the Tincture may be reduced, and its application repeated every two or three days only, until the ulcers have quite healed. The ulcers should be painted over with the Tincture each time of its application, and then dressed with any simple ointment, or, in preference, ointment containing some resinous gum.

We stated that the chilled parts sometimes assume an erysipelatous character; and when this is the case they have a great tendency to run into gangrene.

A woman, aged above 70 years, had one of her feet much chilled throughout the winter and spring. She did not apply for surgical aid, but kept poultices and other popular remedies applied to the part affected. The weather having become suddenly hot, and she being obliged to stand a good deal upon her legs during two or three days, the foot began to inflame around the ulcer, which was situated on the outside of the little toe, and the inflammation extended rapidly up the leg. When we saw it a couple of days after, the foot and leg, nearly as high as the knee, were very much swollen and inflamed, and the skin about the instep appeared of a dark colour, and was beginning to form blisters. The tongue was of a brown colour, the pulse very quick and weak, thirst intense: in fact, the constitutional disturbance was very great. The Tincture,

of full strength, was immediately applied all over the foot and leg. Next day the skin of the leg was shrivelled, and the limb, down to the ankle, was scarcely larger than natural. The foot, however, was still inflamed and swollen, although the pain in it—which had been before excessive—was nearly gone. The Tincture was repeated, over the foot and toes. After the second application no further trouble was had with the case; the outside of the foot and sore were touched occasionally, and the latter dressed with common cerate, until it healed. The bullæ dried up, and the cuticle desquamated, leaving the surface clean and fresh.

It is remarkable in cases of this kind to find the constitutional symptoms so readily give way as the local disease abates. Although in this case, as well as in very many analogous ones treated in a similar way, calomel and opium were administered, yet the fever and constitutional irritation abated before the mercury could have any great effect upon the system, judging from cases where the same internal remedies have been applied, and trusted to chiefly, for subduing inflammation.

LACERATED, CONTUSED, AND PUNCTURED WOUNDS.

Wounds vary considerably in their nature, as well as in the degree of danger attending them. The danger depends generally much more upon the part to which the violence has been done, than upon the extent or size of the wound produced by it. It not unfrequently happens that slight wounds about the head, though mere incisions, are followed by fatal erysipelas. Such effects occasionally follow the removal of tumours from the scalp: still more frequently does erysipelatous inflammation take place consequent on lacerations of that part.

Again, wounds, whether lacerated or punctured, of tendinous parts often lead to great and fatal constitutional disturbance, though very slight with regard to both depth and extent. Locked-jaw and tetanus frequently follow very trifling punctures, even when the wound itself has healed, or is apparently healing favourably. The belief has generally been that wounds followed by these effects are accompanied by a partial division of a nerve or tendon: this, however, is mere surmise, for the constitutional derangement sometimes follows where no reason exists for suspecting any such injury.

But the most common constitutional effect arising from external violence, is *fever*—that is, an acceleration of the action of the heart, accompanied with heat of skin, thirst, coated tongue, and general restlessness. These symptoms are almost always preceded by a good deal of local inflam-

mation in the seat of injury, and the general fever is considered as "*symptomatic*" of the local disease, or as "*sympathetic*" with it, and is called so accordingly.

We have already noticed the readiness with which the general symptoms often abate as the local disease is subdued by topical remedies, and have intimated that the former are, in most instances, entirely dependent upon the local affection. We are well aware that, in broaching such an opinion, we lay ourselves open to severe criticism, as well as to misconstruction, but one must not shut his eyes against facts; nor, for fear of being misunderstood or misconstrued, ought he to remain silent respecting those facts, when they relate so intimately to the treatment of disease.

Now, that local disease is frequently associated with, and occasionally dependent on, general derangement of health, no one will dispute. The history of hereditary diseases, such as scrofula, gout, &c. proves that fact. It often occurs that, previous to the appearance of erysipelatous inflammation of the head, legs, or other part, the patient has for some days suffered restlessness and uneasiness, indicating the general health to be wrong; but the appearance of the erysipelas does not mitigate the constitutional symptoms: on the contrary, the fever generally runs much higher on the breaking out of the local disease, and as the latter becomes abated, the former also will abate with it. The instances, on the other hand, of local disturbance giving rise to constitutional disturbance, are much more striking. A person, in perfect health, receiving such local injury as to cause inflammation of a certain degree and extent, is almost sure to suffer general derangement; and if the local affection be removed by topical remedies, the general fever will also give way without any aid from internal remedies.

A part of the body becomes "spontaneously" inflamed in a person who does not complain of any general disorder—who, in fact, has been long feeling in good health: as the inflammation extends, the general health becomes deranged, and a high degree of symptomatic fever is set up. Had there been any previous general derangement, there must have been some symptoms to indicate it. The fact appears to be, that, in such cases, there exists in the system some morbific agent, which has no pernicious relation with the vital structure in general, but which will deleteriously associate itself with some special seat, in its passage through it in the course of circulation. The functions of that seat are then disturbed, in consequence of the local derangement, and the system becomes secondarily affected, as it does in cases where external violence has been inflicted upon any local part. In such

instances, which, in our opinion, are the most common, the symptomatic fever will give way as the inflammation abates under local treatment, though no general remedial measures be used.

The degree of pain in a wound of the lacerated, contused, or punctured kind, is often no criterion of the amount of danger attending it; for sometimes a whole limb is torn from the body, and yet the pain, as felt and described by the patient, is not severe. In cases of this kind the impression upon the system is so great that the sensibility of the nerves appears to be annihilated, and death occasionally takes place before they recover their powers: at any rate, the death is not owing either to hemorrhage or to inflammation consequent on the injury, but to the general shock impressed upon the system by the magnitude of the violence.

The usual method of treating lacerated wounds, is to bring the edges gently together, or to approximate them as near as can be done without using violence, and then to retain them in that position by means of sticking plaster. Sutures are occasionally used, when the laceration is very extensive; but sutures should be avoided as much as possible, because they serve to add to the disturbance already caused by the solution of continuity of the living tissues, and may produce gangrene of the edges of the wound. Having adapted the torn parts, and secured them in their position, most practitioners employ an evaporating lotion, especially that of Goulard. This remedy applies equally to lacerations and contusions. Others prefer poultices to lotions. In fact, the principle has been that of preventing inflammation as much as possible, by those remedies which come under the general term "antiphlogistics;" and the object has been commonly aimed at by means of lotions in lacerations and contusions, and of poultices in punctures.

In infirmary practice, wounds of this nature, of various extent and severity, are constantly presenting themselves, and since the treatment by Iodine has been adopted, little trouble, comparatively, has been had with them at the institution in this town. When the accident is one of simple laceration, as soon as the wound is well cleansed of any dirt or blood that may be adhering to it, and the bleeding guarded against, every point of its surface is touched with the Tincture, generally of its full strength, and the application is extended some inches beyond its edges. Having allowed it a few minutes to dry, the edges are brought together, and there retained with sticking plaster; which completes the dressing. On the third or fourth day, according to circumstances, the plaster is removed, when, generally, the parts that had been

brought into contact will be found united, and the rest of the wound will be beginning to granulate and presenting a healthy appearance. The remaining surface of the wound, and the surrounding skin, are again brushed over with the Tincture, and the former dressed with common wax ointment. The same practice is repeated every day, or every other day, according to circumstances, until the wound has healed. The cure is generally—nay, almost in every instance—most rapid.

When the accident is contusion simply, the Tincture is applied over the contused surface every day or two, and the part is then left without any further dressing. The extravasated blood will be absorbed in a fourth of the time that it will take to disappear under the use of a lead lotion; and we have never witnessed an instance where an unfavourable issue resulted.

When there exists a combination of laceration and contusion, the treatment is also a compound, although simple enough. The surface of the wound is brushed over with the Tincture, and the same application is made to the contused skin, however extensive. The wound is then brought into approximation, and there retained by means of either a roller or sticking plaster. The remedy is re-applied according to the necessity of the case.

With regard to punctured wounds, those which have come of late years under our notice have been upon a small scale; but we conceive that all wounds of this description require the same principle of treatment. Whether a piece of iron be in the shape of a bayonet or in that of a nail, will not matter much: if driven into the flesh, or into any other tissue of the body, either will inflict a punctured wound, attended by similar symptoms, and followed by similar consequences.

In several instances of the minor kinds of punctured wounds, the tincture of Iodine has been used with that kind of almost undeviating success which it exerts over local diseases and injuries attended by inflammation. If applied liberally, immediately after the receipt of the injury, generally no inflammatory symptoms take place. If the application be commenced after inflammation has been set up by the violence of the injury, the effect will be the same as that attending its use in common phlegmon. Unless suppuration has already begun, the malady will end in resolution after one or two applications; and if suppuration has actually commenced, or if there be a disposition to sloughing, the mischief will be confined, under the influence of the remedy, to a small compass.

In these cases, our practice has been to let the Tincture insinuate itself freely into the wound, and to apply it thickly

to the skin surrounding the wound: then to allow the part to remain exposed. In trivial cases, such as the prick of a pin or needle, it is seldom that any further notice is taken of the accident after the first application. The injuries from nails, or other pointed pieces of iron, from the pricks of thorns, &c., sometimes cause very severe inflammation and constitutional disturbance; but we have found them invariably give way to the treatment just described.

BURNS AND SCALDS.

In cases of extensive burns, life often ceases to exist before the immediate effect of the shock on the system is thrown off. The injury is inflicted upon a wide-spread and important tissue, upon which an equally important class of nerves is distributed; and the danger is generally dependent more upon the extent of the violence than upon its intensity.

Three classes of remedies are used as topical applications in burns and scalds: first, cold lotions, medicated with acetate of lead or other materials; ice; the scrapings of potatoes, and, in fact, everything calculated to cool the injured part: the second consists in the application of oil of turpentine, or of spirit of wine, as soon as possible after the receipt of the injury; and then to dress the part with cerates containing some of the same stimulants: the third class comes between the other two in point of medicinal quality; for it consists neither in the abstraction of heat from the part nor in stimulating it to a reaction, but in soothing it with linseed oil, or some other oily matter. These different remedies have been descanted upon so frequently by surgical writers, that it would be a waste of time for the reader to be drawn over the same ground again. We may state, however, in passing, that the treatment with oil of turpentine, or spirit of wine, or any other spirituous liquor in the absence of these, is, according to the experience we have had in such cases, very superior to either of the other two plans.

Fortunately, since the tincture of Iodine has been tried in burns and scalds, we have not met with a *very severe* accident of that description, but in four or five cases where the injury was upon a moderate scale, the remedy proved so successful as to leave scarcely a comparison between it and those commonly employed. It seems to act on burns and scalds as it does on erysipelas. When the integuments are not destroyed, although the cuticle may be in blisters, one or two applications of the Tincture, of moderate strength, will subdue the pain and redness, and the case will require no further attention than to prevent the injured part from rubbing against the clothes or other things; or if on the legs or feet, to use

rest until the skin has had time to recover its tone and cuticle. The remedy has been used in instances where the injury has been occasioned by fire, by boiling water, and by boiling lard, with equal success in all of them; but further trial must determine its effects in cases where the violence has been very extensively applied.

ULCERS.

Ulcers present such a variety of character as almost to defy classification; and if such an attempt were made, it would occupy a volume much larger than the present to treat of that subject alone. However, it is probable that all the varieties might be brought under two principal heads: first, ulcers dependent upon the *sloughing* of parts: second, ulcers dependent upon the *absorption* of parts. These are divisible into specific and non-specific; and each may be again subdivided according to its external characters, or its effects on the living tissues.

Most of the specific ulcers depend on the absorption of parts: thus, we have chancre, lupus, cancer, &c. Among the non-specific, some are caused by sloughing, some by absorption, and some partly by both processes. Again, specific ulcers are almost uniform, according to their kind, in their external characters; whereas the non-specific present an endless variety in that respect. Hence, we have the clean granulating or healthy ulcer; the irritable without sloughing, with the jagged edges; the sloughing; the hospital or phagedenic; the varicose; ulcers connected with exfoliation of the bones; those caused by pressure, such as lying long in one posture, and many others, differing too minutely in their nature to come within the limit of general description.

The treatment of ulcers has been as various as ulcers themselves. Among the usual remedies, we have lotions; poultices, of bread, linseed, carrots; poultices containing beer grounds, charcoal, &c.; ointments of ever so many descriptions; fomentations; tinctures of myrrh, benzoin, &c.; nitrate of silver; sulphate of copper; diluted acids; powdered charcoal; opium; hemlock; chalk; plaster of Paris; strapping with sticking plaster; bandages; filling the ulcers with wax, and a hundred other means.

With regard to specific ulcers, they generally require (as stated in a former part of this work,) specific remedies. We have already spoken of lupus as giving way to the application of the tincture of Iodine. We have also used it in several cases of chancre, and have found the ulcer to heal much quicker than under the usual mercurial application, or the nitrate of silver. The Tincture has been likewise used in

ulcers of a carcinomatous character; and although we should not be justified in speaking of it in positive terms as being capable of curing cancer—certainly not cancer of the mamma—yet so many cases distinguished by scirrhous indurations, accompanied by malignant ulcerations, especially of the lips, tongue, and tonsils, have given way under its use, that, certainly, no topical remedy at present in the possession of Surgery seems to equal it in efficacy in affections of that description.

It is quite evident that the first step towards the cure of a non-specific ulcer, is to render its surface clean, granulating, and healthy. The rest consists in promoting the growth of the healthy granulations. Towards accomplishing these two objects, the long list of local remedies already specified, and of a great many more, has been frequently searched, and its contents applied, in vain.

Now, when an ulcer is unhealthy; when it has a slough on its surface; or when the parts beyond its edges show a tendency to die; or when the discharge from its surface is sanious and acrid; or when its edges are jagged; or when its surface looks bloody, and the granulations, if there be any, are soft and spongy; or when it rapidly spreads, from progressive absorption—in all such cases, it is pretty clear that the vessels of the part are not in their natural and healthy condition.

The question then is, what agent is there within our knowledge, whose medicinal virtues are capable of restoring the vessels to their normal state? The question has already been answered more than once: the tincture of Iodine possesses that virtue in a much higher degree than any topical remedy within our means. As we said before, we do not know *why* it should be endued with such a property—*why* it should be capable of curing so many local affections, differing so materially in their outward characters; but the *fact* is that it *is* capable of doing so, as any one may prove by putting the remedy to the trial. But, if we refer to the view taken of the nature of local disease, there seems to be nothing very *wonderful* in such a fact: the wonder would be if it were otherwise.

In all cases of sloughing, or irritable, or spreading ulcers, the Tincture, of full strength, is applied freely over their surface, and to the skin, to the extent of two or three inches round them. Having been allowed to remain for some time, the ulcer is covered over with simple ointment on lint, or with a poultice, the former being generally preferred. The same application is repeated daily until the ulcer becomes clean and healthy. The Tincture is then weakened, and the granulations are touched with it every two or three days. Under

this plan the cavity of the ulcer fills up rapidly with healthy granulations. Where the ulcer is in a situation to have pressure applied, either a bandage or strapping with sticking plaster is had recourse to as soon as the surface has become clean and has put on a healthy appearance.

Among several other local affections in which the tincture of Iodine has been used with good effect, but whose treatment it is not necessary to follow out in detail, are gouty and rheumatic swellings of the small joints, from thickening of their ligaments; fistulous openings; malignant warts or adventitious excrescences; ganglions; the stinging of wasps; diseases of the spine; ununited fractures; hernia humoralis; inflamed urethra, and chordee; inflammation of the bursæ; chronic ophthalmia, and opacities of the cornea, much diluted; dissection wounds, or scratches exposed to the dead body in dissection, &c. The strength of the remedy in the several cases must depend upon the judgment of the practitioner.

It may not be amiss, in conclusion, to repeat the caution given at the commencement of this treatise, against the indiscreet employment of the Tincture. If applied to a part too frequently, or too strong, it may cause the skin to inflame, and the cuticle to blister, but that is the only inconvenience which has ever occurred from its use.

FINIS.

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