arresting some forms of vomiting and chronic diarrhœa, as well as passive menorrhagia, and (as discovered by Dr. Vernon) in exciting the gravid uterus when inert to vigorous contraction. Its beneficial effect in ague and neuralgia has been observed by Mr. Wilkinson, and is quite in consonance with the view of its acting as a general tonic of nerve-centres, not only of the spinal.

Iron, in some of the various forms in which we administer it, has manifestly a nerve-toning and steadying action. Carbonate of iron is an approved remedy in neuralgia. Tincture of muriate of iron positively controls some asthenic hyperæmias and inflammations, in fact, such states as we may fairly suppose to involve a paralysed condition of the vaso-motor nerves, with languid tissue power. I can confirm, from my own experience, at least to some extent, the favourable reports given by Mr. Bell, of the excellent effects produced by tincture of sesquichloride of iron in erysipelas and desquamative nephritis. The analogous pernitrate salt has a similar effect, according to Graves, in some cases of chronic diarrhœa. The efficacy of tincture of sesquichloride of iron in spasmodic stricture of the urethra is a remarkable fact, illustrating the special affinity of particular remedies for particular systems of organs, and the control of a state of spasmodic contraction by an agent which is neither contra-stimulant nor sedative. Recently, I have observed a remarkable instance of most severe nocturnal spasm of the muscles of the back and loins, which was markedly controlled by the free administration of quinine and stimulants. Such instances show that in many cases it is quite possible for muscular spasm, as well as neuralgic pain, to depend *au fond* on a feeble and consequently over excitable state of the nerve or nerves involved.

The knowledge we possess of the action of *digitalis* seems to justify us in ranking it as a nervine tonic. It slows the action of a weak heart, and at the same time strengthens its contractions, so that the pulse increases in force. It acts in the like manner with the uterine blood-vessels in passive menorrhagia. It stimulates the renal tissue to increased activity. In all these therapeutic actions, it appears as a stimulant or tonic. But it may be used also to diminish the excessive action of the heart in inflammatory fever and hypertrophy. In this case, at the same time that it slows the action of the heart, it renders the pulse feeble, and often irregular, and syncope is imminent. It is probable that in this case the arrest of action depends upon an inhibitory effect, the excessive stimulus producing an opposite effect to that occasioned by a moderate one. The result of Mr. Lister's experience is to the effect "that in a healthy state of the nervous system very gentle irritation of the vagus increases the heart's action, while a slightly stronger application diminishes the frequency and force of its contractions." The following quotation, from the same highly interesting paper, bears precisely upon this point. "When partial exhaustion has occurred, a much stronger galvanic stimulus is required to produce the same effect upon the heart, than at the commencement of an experiment; and thus an action of the battery which, when first applied, causes marked diminution in the number of beats, may after a while come to have the opposite effect, and increase the heart's action as decidedly as it had previously lowered it; while at an intermediate period it may seem to have no influence at all." Just in the same way digitalis tones and strengthens the action of a feeble heart, but lowers that of a vigorous one.

The only narcotic remedy that it seems necessary to consider, with regard to the therapeutics of fever and inflammation, is *opium*. One remarkable circumstance is the extraordinary tolerance evinced by the system under such disease of large doses of this drug. Patients, in rheumatic fever, will take as much as twenty-four grains in the twenty-four hours, without any notable result. In puerperal peritonitis, the same quantity has been administered by Dr. Churchill, with the best effects. Its action on the cerebro-spinal nervous system is evident in the calmer and quieter condition of the sufferers, it renders the sensorium less impressionable, and the system less liable to be exhausted by the disease. Its action on the sympathetic and vaso-motor nerves is probably similar, it will relax contracted arteries, and admit a freer transit of the blood. This is probably the *rationale* of its beneficial effects in the cold stage of ague, and in similar conditions; it does away with the contraction of the superficial vessels and skin. In many choleraic attacks which have much resemblance at first to an attack of ague, a dose of opium and chloric ether is of the greatest efficacy. So, in exposure to severe cold and in gangræna senilis, the beneficial effect of opium probably depends on its preventing the arrest of the circulation in the limbs and superficial parts,

by keeping the arteries, especially the smaller vessels, relaxed and patent. At the same time it protects the heart from the depressing inhibitory influence of the cold, and so enables the circulation to be well sustained. The latter remark will also apply to the case of peritonitis, and of the shock from burns. The sudorific effect of opium probably depends also on its relaxing the cutaneous arteries. In sthenic inflammation, we have no evidence to show that opium, *per se*, is of any avail. But in asthenic, it certainly seems to exert power in controlling exudation. What else can be said of the action of this drug in diarrhœa, but that it arrests the outflow of watery fluid through the mucous membrane? In common nasal catarrh, it has in some persons the same effect. Its "locking up" the secretions of the liver and other glands is an action of the same kind. In all such cases we may presume that the drug affects the tissue of the part in a sedative manner, analogous, if not identical, with its action on the nervous tissue or the arterial contractile. It is therefore a tissue sedative. If the action of the heart be in danger of failing from asthenia, the administration of opium in my opinion is unsafe from this very sedative effect. Yet where the depression is the result of violent irritation in another part, as for instance, in peritonitis, the action of the heart may greatly improve under the use of opium. The narcotic, by rendering the cardiac ganglia less impressionable, takes off the inhibitory effect of the peritoneal irritation.

With respect to the *astringents*, alum, tannin in its various forms, and iron alum, their special action seems to be on the capillaries, rendering their membrane more firm and resistant, and therefore less distensible by the blood, and permeable by exudation. They find their opportunity in the asthenic forms of inflammation, reducing hyperæmia by contracting the vessels, and so also warding off its recurrence. I have at present under my care an inveterate case of corneitis, which has repeatedly relapsed from vicissitudes of the weather, but which is now improving decidedly, under the use of large doses of tannin, twenty-five grains three times a day. The abnormal vessels shrinking, the opaque exudation disappearing, and the tissue becoming clear. Like the tonics, the astringents may prove irritants if the tissue approximate to the excitable condition of sthenic inflammation. It seems not unlikely that the astringents may also contract the smaller arteries by acting on their organic muscular fibre; but in this respect they are inferior to the nerve-toners above mentioned.

The *mineral acids* are a great enigma as regards their *modus operandi*. They certainly do not act merely as local applications; and yet they must lose their acid quality the moment they enter the blood. They act therapeutically, as is well known, in the way of mild tonics, or astringent, diminishing exudation from bronchial, intestinal, or cutaneous surfaces. That one at least of them, nitric acid, has an especial action on the nerves, seems probable from its remarkable efficacy in the spasmodic period of whooping-cough.

ON STRUMOUS DISEASE OF THE RECTUM.

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[Read before the St. George's Hospital Medical Society.]

TUBERCULOSIS (or scrofulous disease) of the rectum, is a malady which the surgeon is constantly called upon to treat; yet, strange to say, it is not spoken of by any of the authors on diseases of the rectum. It is hoped that this slight account of a complaint so common, and at the same time so little understood, may prove acceptable to the members of this society.

In order more clearly to understand the progress and symptoms of the disease, we will consider, first, the morbid changes which usually take place; secondly, the symptoms which accompany such changes; thirdly, the treatment both general and local to be adopted.

1. *Morbid Changes.* We find the follicles of the mucous membrane and submucous areolar tissue to be the seat of the tubercular deposit. This deposit may remain passive for weeks or months, but at length one of two things happens, viz., ulceration of the neighbouring tissues, or the tuberculous matter softens, breaks down, and is cast out, as it were, leaving behind it (if the disease commenced in the follicle) an ulcer, small in size, deeply excavated, and having raised indurated edges. This ulcer may, and frequently does heal, without causing any further mischief than leaving a permanent hard patch corresponding to the size of the ulcer.

If, on the other hand, the disease progresses, the ulcer very often rapidly spreads, generally in a circular direction. Occasionally several ulcers coalesce, and may even encircle the whole intestine; slight ridges of hard, thickened, mucous membrane projecting here and there into the ulcerated surface. These ulcers may lead to perforation of the gut, in this wise; new tuberculous matter may be deposited in the base of the ulcer, which softens, and is thrown off in the same way as the original formation, until the thickness of the bowel is destroyed. If this takes place in the upper portion of the rectum, peritonitis is set up; if below, abscesses are formed from escape of faecal matter into the neighbouring areolar tissue, which may either point at the anus, or discharge themselves into the bowel. This termination of the disease is by no means a common one, as the whole of the tunics of the bowel become greatly thickened, often to the extent of half an inch.

The ulceration having encircled the intestine, begins to heal; a cicatrix forms on the inferior margin of the ulcer, which, as it increases, forms a circular stricture, considerably diminishing the calibre of the bowel. This stricture may vary from a mere thin band, to a hard thickened mass, more than an inch in depth. If the disease be neglected in this stage, the cicatrix goes on contracting, the faeces are retained in the bowel above the stricture, which gives rise to a new complication; the bowel ulcerates above the stricture, faecal matter escapes into the submucous areolar tissue, inflammation is set up, which rapidly passes on to suppuration. The abscesses generally point external to the sphincter ani; these are opened, or allowed to burst; fistulous openings are formed, which communicate with the bowel above the stricture. In some cases, and more especially in those in which the patients have a languid circulation, condylomata are not unfrequently found to exist at the lower margin of the ulcer; these often acquire considerable size, and give rise to an obstruction of the bowel, even more serious than the contracted cicatrix before described. If these condylomatous growths be neglected, they generally spread in a downward direction, involving the lining of the sphincter, and even encircling the anus. When the disease has progressed thus far, the sphincter partially loses its power, from some of these growths projecting into the anal orifice, and incontinence of the liquid portion of the faeces takes place; after a time these condylomata ulcerate, and give rise to constant and severe pain. Sometimes, however, instead of new condylomatous growths below the original formation, simple infiltration of lymph into the areolar tissue takes place, reaching from the growths to the margin of the anus. When this is the case, the anus becomes less easily dilated for the passage of the faeces, and ulceration of the mucous membrane lining the sphincter occurs. The following case is a good example of this form of the disease:—

CASE I. Ellen O., aged 23, was admitted into St. George's Hospital on Aug. 5th, with the following history:—Two years ago, after long constipation, she began to suffer much pain in the rectum, and passed a good deal of blood. She thought the bleeding proceeded from piles, and so did not apply to any surgeon for advice. From that time until her admission, she had been in the habit of constantly passing blood and mucus with her motions, and had had constant pain and gradually increasing difficulty in going to stool. On her admission, there were numerous soft condylomatous growths about the anus. On introducing the finger into the bowel, at about two inches above the external sphincter, ulceration encircling the bowel could be felt; the margins were raised and everted, but not hard. At the inferior margin of the ulceration, several soft condylomatous masses could be felt, one of the size of a small walnut. They were ulcerated on their surface; the bowel between these growths and the anus was much thickened; and the mucous membrane lining the sphincter was much ulcerated and thickened.

When the tubercular matter is deposited in the submucous areolar tissue, it is usually found in large masses; these masses, like all others of the same character, suppurate, forming numerous small abscesses, their walls being formed in front by thickened mucous membrane, and behind by the muscular coat of the bowel and thickened areolar tissue. They usually project into the bowel, the most prominent point of the mucous membrane ulcerates, and the matter escapes into the rectum, forming what are sometimes called blind internal fistulae. It often happens that several of these abscesses communicate with each other as well as with the bowel, so that when a section of the diseased structure is made, it presents the appearance of a gigantic honeycomb. There is a preparation in the museum of St. George's Hospital which

illustrates this morbid change: it is the lower portion of the rectum removed from a patient who died of phthisis, and presents for examination several large ulcerated openings, communicating with an abscess as large as a walnut. This cavity communicates with several smaller ones, situated in the surrounding areolar tissue. This form of disease rarely leads to the formation of external fistulae. It must not, however, be supposed that tubercular deposit in the submucous areolar tissue never leads to the formation of external fistulae. The following case shews that external fistulae of a strumous character may exist without any internal opening:—

CASE II. Mary S., aged 30, was admitted into St. George's Hospital, on April 27th, 1859, with two fistulous openings, situated on the left side of and about an inch from the anus. She stated that three weeks before her admission, she had been seized with violent pain about the anus, which was speedily followed by swelling; and that five days before her admission, a surgeon had lanced her in two places, and let out a large amount of foul pus. She had suffered from cough, sweating, and other symptoms of phthisis, for some months. On her admission, her urine was so intensely acid, that she dreaded passing it on account of the scalding. On examining the rectum, a small strumous ulcer of the mucous membrane was felt, but neither of the fistulae communicated with the bowel. On passing a probe through the fistulae, they were both found to communicate with a large irregular cavity, running up by the side of the rectum to the extent of two inches.

2. *Symptoms* do not shew themselves in this disease until great progress has taken place. The mere deposit of tubercle does not appear to give rise to any constitutional symptoms, and usually, the attention of the patient is first aroused by noticing blood in his stools. During the early stages of the disease, when only a few scattered ulcers exist, a very small amount of blood is passed: but, as the ulceration increases, thick tenacious mucus and blood are voided, and the patient begins to complain of pain, which is usually referred to the sacrum. After a time, tenesmus and diarrhoea are more or less constant, and a sensation of burning in the bowel, and weight in the perineum are complained of; frequently the bladder becomes very irritable, probably from the very acid state of the urine, which always exists in tubercular diseases. If at this time the rectum be examined by the finger, the mucous membrane feels rough from deposit of tubercle, and ulcers are found deep, excavated, with hard and everted edges, varying in size from a pea to a shilling. If the disease be not arrested, and the ulcers spread, hæmorrhage to a large amount commonly occurs, often to the extent of many ounces at each relief of the bowels. If phthisis or mesenteric diseases exist, death ensues. On the other hand, if the health of the patient improve, and the ulcers heal, the symptoms are changed; the patient thinks that he is well; at first he complains of costiveness, but, notwithstanding the use of purgatives, the bowels act with increasing difficulty; the motions passed are flattened and worm-like in appearance. If the case be neglected, the stricture may become so contracted as to cause total obstruction of the bowel, and death by peritonitis is the consequence. This does not usually happen; the retained faeces causing fresh ulceration, pus and blood are again passed with the motions. As this ulceration increases, the patient is constantly going to stool, passing each time only a small amount of faecal matter mixed with much pus and blood. If no relief be obtained when the disease has progressed thus far, rigors occur, caused by the formation of abscesses, the pain becomes constant, hectic sets in, and death from exhaustion ensues.

3. *Treatment.* It must be remembered that the exudation of tubercular matter is essentially a blood disease, and that we have to treat the exudation locally whilst we improve the general health. Now, as the blood is nourished and enriched as it were by a proper assimilation of the food taken into the stomach, we must, in the first place, attend to the state of the digestion. It will be found almost invariably in strumous diseases that dyspepsia is more or less constant, and that this constant malassimilation of food causes a morbid state of blood, which gives rise to local exudations of tubercular matter. In any attempt, therefore, to cure or relieve this disease, we must endeavour to restore, in the first place, the powers of the digestive organs; secondly, to allay the local mischief. We know, pathologically and chemically, that in this disease we always have an excess of acid in the alimentary canal; this excess of acid renders the albuminous part of the food very soluble, while the alkaline secretions being more than neutralised, are rendered incapable of converting the carbonaceous constituents of food into oil. The result is, that an

increased amount of albumen enters the blood, and the amount of fat required for the purposes of vital action is derived from the store already laid up, and rapid emaciation takes place.

In order to restore the digestion, and at the same time prevent the rapid emaciation which occurs in these cases, the diet must be nutritious, and consist of a judicious mixture of animal food and bread. Now, as acidity of the alimentary canal is the great cause of malassimilation, great care must be taken to avoid such articles of food as we know to produce acidity, and in the vast majority of cases, sugar, vegetables and pastry, and such like food, must be strictly prohibited.

In form of medicine, cod liver oil is the best remedy, and if the stomach should not reject it, marked benefit is observed from its use; for the oil is digested and assimilated even when the stomach is too weak to digest ordinary articles of food. Acids both mineral and vegetable are to be avoided, and the best tonic to give when the appetite fails is infusion of gentian, calumba, or hops, combined with ammonia.

In a paper like the present, it would be out of place to dwell longer on the subject of general treatment, or to insist on the importance of light and ventilation; attention to these points is quite as important in local tuberculosis as in phthisis pulmonalis.

The local treatment varies according to the progress the disease has made. In the early stages when diarrhoea is the one symptom which causes discomfort, small starch injections, with from five to ten drops of tincture of opium, afford much relief, and if there be no great amount of exudation, a few grains of bicarbonate of potash combined with aromatic confection, will control the purging. When the ulcers have once commenced to heal, and the cicatrix begins to contract, a bougie sufficiently large to slightly dilate it should be passed through the stricture every day, and allowed to remain for half an hour, gradually increasing the time as the patient can bear it.

If the ulcers remain indolent, and the healing process stops, great benefit is often derived from the use of balsam of copaiba, twenty drops to be injected once or twice a day in an ounce or two of starch. When the cicatrix is very thin, it may be divided in two or three places by means of a bistourie, and kept dilated by means of bougies.

CASE III. W. B., a strumous looking man, aged 58, was admitted into St. George's Hospital, under the care of Mr. Tatum, in the latter part of 1857. He had suffered for years from difficulty in passing his motions. The disease commenced ten years before his admission, with diarrhoea and pain over the sacrum; from time to time he had passed blood in his stools. On his admission his bowels had not been relieved for many days, and on an examination being made of the rectum, a large hard mass, feeling almost like scirrhus, was felt about two inches above the anus. Injections were administered which brought away small scybala. A second examination was made, and it was then discovered that there existed a circular stricture, the result of a cicatrix following ulceration. The opening in the cicatrix was not larger in diameter than a goose-quill, and it was evident that the hardness was caused by the bowel above the stricture being loaded with hardened faeces pushing down the cicatrix, which was only a few lines in depth. Mr. Tatum made three incisions into the stricture by means of a bistourie. Bougies were ultimately passed to keep the stricture dilated, and in a few weeks the man was discharged, the bowels acting naturally and with his health considerably improved.

Cases like the one just related are exceedingly rare; generally speaking, the cicatrix is much too thick and deep for any operation to be attempted.

We must next consider the treatment to be adopted in cases of strumous fistulae, with or without the complication of stricture.

In cases of simple strumous fistulae, considerable difference of opinion exists as to the propriety of operating. Is the surgeon to divide the fistula, or to be satisfied with merely improving the general health? With regard to the state of the chest, if there be any sign of softened tubercle in the lungs, no operation is justifiable. If there be no evidence of active disease of the lungs, the surgeon is placed in a difficult position; the patient presses for the operation, and, if it be performed, one of three things usually happens, viz.:—

1. The disease of the lungs, before passive, becomes active.
2. The wound never heals; or,
3. A second fistula forms.

An important fact to bear in mind is, that these strumous fistulae (especially in children) often close up under constitutional treatment, and remain for months or years passive; in rare cases, they even permanently close.

There is in the museum of St. George's Hospital, a preparation of the lower portion of a rectum, removed from a patient who died of phthisis, in which two sinuses, opening externally, are seen close to the anus. Neither of these sinuses communicates with the bowel; one of them never appears to have had any internal opening, but the second leads to a small hard patch, which is evidently the cicatrix of the internal opening.

In cases of fistulae complicated with stricture, no operation is admissible; the only treatment is that of gradual dilatation, which, by preventing the accumulation of faeces above the stricture, enables the process of cicatrisation to proceed, which in rare instances closes the internal opening of the fistula. The bowels should, in these cases, be kept open by means of injections, or castor oil. If these sinuses be laid open into the bowel, the patient loses power over the sphincter, and even total incontinence of faeces ensues. The following case well illustrates the danger of using the knife in these cases:—

CASE IV. C. F., aged 30, a thin, strumous looking woman, was admitted into St. George's Hospital, on July 21st, 1858, with the following history:—Ten years before her admission she was attacked with pain in the rectum and over the sacrum. These symptoms were shortly followed by blood and pus in the motions, and, about a year and a half subsequently, a large abscess formed, which burst on the left side of the anus. In 1851 she became a patient at St. George's Hospital; she then had several fistulous openings situated on the left side of and anterior to the anus, and on an examination being made, a hard thick circular stricture was felt about two inches above the sphincter, and above this there was extensive ulceration: the fistula communicated with the bowel above the stricture. She remained in the Hospital for some weeks, and was discharged much relieved from the use of bougies.

In 1857, she went to another hospital, where the sinuses were laid open into the bowel above the stricture; the wounds healed, but the stricture and pain remained, and unless the bowels were very costive, there was incontinence of faeces.

On her readmission into St. George's in 1858, she complained of pain at the lower part of the back, over the sacrum, about the hips, and down the thighs. The chief pain was, however, in the rectum, and when she passed her motions, the passage of the faeces gave extreme pain. On an examination being made, there was found, about an inch and a half up the rectum, a circular fold of mucous membrane, through which the finger could be passed with difficulty, and immediately above this was a hard circular stricture, through the opening of which catheter No. 9 could only be passed; there was almost constant incontinence of faeces. She remained in a short time, and was discharged incurable.

When condylomatous growths exist below the ulceration, mere passing of bougies does not effect much. Very great benefit is often derived from the use of mercurial ointment, which may be applied by merely smearing the bougie and allowing it to be retained in the bowel for a few minutes. If the condylomata are ulcerated, a solution of nitrate of silver, five grains to an ounce of water, is useful; but if, in spite of these remedies, the growths increase, the best remedy to apply is strong nitric acid, or the acid nitrate of mercury. Great care must be taken in using these powerful escharotics. The anus must be well dilated by means of a speculum and a glass rod, made use of to apply the remedy; and chalk must be at hand to neutralise the acid, should any of it run over healthy mucous membrane.

In these cases the internal use of iodine often affords marked relief, and the best form of the remedy is the syrup of the iodide of iron, which may be combined with cod liver oil; thus forming a combination which is beneficial to the general health, as well as to the local disease.

When sinuses exist which do not communicate with the bowel, they may often be cured by the use of stimulating injections, such as a solution of sulphate of zinc, copper, or nitrate of silver. When the sinus is of recent formation, gentle and continued pressure by means of a sponge will often cause it to heal.