PATHOLOGICAL AND THERAPEUTICAL CONSIDERATIONS RELATIVE TO INFLAMMATION AND FEVER.

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[*Concluded from p.* 1001.]

16. *Remedies for Inflammation and Fever.* Of these, we may first consider *blood-letting*, local and general. Respecting the efficacy of the former in local inflammation, there seems no sort of question. Inflamed joints, and other parts having direct vascular connexion with the skin, are unquestionably greatly relieved by the application of leeches. But not only of parts thus circumstanced is this true; it is equally of deep-seated organs, which are separated by a serous cavity from the containing parietes. An inflamed gastric mucous membrane or pericardium, or a congested brain, are certainly greatly benefited by free leeching of the adjacent cutaneous surface. Now, the question occurs to the mind contemplating these facts—Is the relief obtained the result solely of removal of blood from the part? or is it probably owing to an action of a different kind? When we think of the active circulation going on in an inflamed part, how the blood is pouring in rapidly through the arteries on every side, it seems very difficult to believe that the abstraction of a few drachms of blood slowly should have any marked effect in obviating the hyperæmia. What would it avail to take some cupfuls of water out of a basin that was in danger of overflowing, if a constant stream was pouring into it? It is clear, the only effectual means would be to check or diminish the afflux. Now this, it seems to me, local blood-letting must do, when it acts beneficially. In other words, its action cannot be mainly on the blood-vessels, but rather on the irritated tissue between them, whose morbid attraction produces and maintains the hyperæmia.

In the case of deep-seated parts, with serous cavities intervening between them and the superficial, this tissue-modification must, it seems to me, absolutely be admitted. How, by any possibility, can an hyperæmic excited brain be relieved by leeches to the temples, on the supposition of any direct extraction of blood from the woof of pia-mater vessels? Let any one acquainted with the anatomy of the parts consider if the temporal arteries would not furnish amply blood enough to satisfy a few leeches applied on the skin of the temples, before a particle could be derived from the superior longitudinal sinus, the lateral, or the cavernous. From the superior longitudinal some communication may take place with the cutaneous veins by means of the diploic and parietal, though certainly there is but very little vascular connexion between the periosteal vessels and those on the outer surface of the occipito-frontalis tendon. The lateral sinus communicates externally pretty freely by the mastoid vein, and the cavernous with the ophthalmic vein. But do we use to plant our blood-suckers over the course of the superior longitudinal sinus, over the mastoid vein, or the frontal, where it receives the ophthalmic? Medical instinct teaches us to prefer the temporal region, probably on account of the greater proximity of the brain; and no evidence exists to show that better results would be obtained if we acted more in conformity with anatomical data. It must be remembered that blood, in leeching, can only be taken directly from the cutaneous capillary plexus; and surely it is more reasonable to suppose the adjacent arteries to supply the quantity withdrawn, than distant vessels having a very roundabout communication by veins. Take again the case of the pericardium. Would not the anterior branches of the internal mammary, of the superior and inferior thoracic, supply blood abundantly to the small skin-wounds, without even a drop being withdrawn from the outer layer of the pericardium? But, even could we deplete ever so much the latter, how would that avail to empty the vessels of the visceral pericardium, which certainly seem, in pericarditis, to furnish the main amount of the exudation? The case of the inflamed gastric mucous membrane is the strongest; here it is manifestly impossible that leeches to the epigastrium can withdraw one atom of blood from the hyperæmiated surface; yet the utility of the practice remains unquestioned, though we have not a shadow of a rational explanation, on the view against which I am arguing. Similar observations apply to cupping the back of the chest to relieve pulmonary hyperæmia, or the loins to relieve congested kidneys. In all these cases, it appears that modifying the nutritive actions of the adjacent cutaneous surface avails to modify those of a subjacent part, without any notable primary change in the circulation of the latter.

General blood-letting, after having held sway for ages as the chief of antiphlogistic remedies, is now rudely assailed, and its beneficial effect questioned or denied. Dr. H. Bennett considers that the principles on which blood-letting and antiphlogistic remedies have hitherto been practised are opposed to a sound pathology, and refers to the results of his hospital experience to show that treatment shaped to favour the natural processes of exudation and suppuration produces results far more favourable than that which attempts to cut short the disease; the mortality by the latter being 1 in 3, by the former 1 in 21⅔. He thinks that an inflammation, once established, can never be cut short; and that the only rational object of practice is to conduct it to a favourable termination. Dr. Alison, on the other hand, is strongly of opinion that blood-letting is a remedy of great power, capable, when employed timely, of preventing the extension of inflammation, and of modifying beneficially the diseased action. Dr. Christison's statements are to the same effect, and coincide fully with Dr. Alison's as to the change that has taken place in fevers and inflammations during the last twenty or thirty years, from a sthenic to an asthenic type. Dr. Watson's testimony is entirely corroborant of that of these authorities. Dr. H. Kennedy powerfully combats Dr. Bennett's propositions, showing, by reference to admitted facts, that inflammation is not a constant unvarying process; that it can be terminated by treatment when without it would go on indefinitely; and that statistics are quite incapable of guiding us in the treatment of disease. Dr. Markham believes blood-letting only to be of service indirectly, as relieving congestion and oppression of the heart, and enabling the circulation to go on more freely. Dr. Barclay does not think that blood-letting can influence the course of inflammation as a local disorder, but only the excess of the reparatory process in the accompanying fever.

Without attempting to argue the question at length, I will only state the points relating to it which seem to me established. 1. Dr. Markham's view—that blood-letting is of use in various diseases, by relieving the overloaded right side of the heart—may be admitted as certainly true, but not the whole truth. For this purpose, a *small* bleeding only is requisite. 2. Dr. Barclay's view is doubtless also true—that blood-letting acts favourably in cases of unduly violent reaction. If we of this country and day doubt of this, let us refer to Indian experience (Ranald Martin's work, pp. 158, 188, 234, 236; Robert Jackson, quoted by Martin, pp. 181, 182, 158; and Copland, article "Fever", p. 980). 3. The character of the inflammation, whether sthenic or asthenic, is of the utmost importance; if asthenic, blood-letting will only increase prostration; if sthenic, it will be beneficial, and may be essential. Can any one believe that such cases of pneumonia as Drs. Corrigan and Gordon describe (Braithwaite's *Retrospect*, pp. 24-32), where quinine was of the utmost benefit, are to be ranked as similar to the case that Dr. Alison cites from Dr. Gregory's practice, p. 979 (*Edin. Med. Journal*, May 1857)? Are they not as unlike as any two morbid states can possibly be in their essential characters? It would be as reasonable to consider inflammatory croup and diphtheritis as the same disease, because in both false membrane was formed in the air-passages, as to rank together all morbid states in which the occurrence of fibrinous exudation takes place. The state of the invisible vital powers, which determine the reaction of the system towards remedies, is in every morbid state the most essential circumstance, very far more important than any external and visible similarity of symptoms or pathological products. It seems certain that these differences in the type of inflammatory disease do not depend merely on the original strength or debility of the patient's constitution. A healthy man may contract asthenic disease, and a weakly may have sthenic. 4. The nature of the influence of blood-letting over the local inflammatory process, supposing it sthenic, is a matter more open to question. It is admitted by Dr. Alison and others that pneumonia may extend after bleeding; by Tyrrell, that purulent ophthalmia cannot be arrested by the freest depletion; and by Watson, that pericarditis (after friction-sound has been heard) is not to be jugulated by the lancet. Indeed, very few if any practitioners of any authority have ever recommended blood-letting as the sole means of cure in inflammatory diseases. The general opinion and practice of the profession has been to use blood-letting, according to the deliberate opinion expressed by the scientific Virchow (*Handbuch der Speciellen Pathol. und Therap.* Band I, p. 91.) "It must never be forgotten that general blood-letting *possesses only a temporary influence of this kind* (viz., revulsive); *that thus it can only be admitted as part of a varied antiphlogistic treatment; and that it must*

be employed either as a symptomatic means under specially threatening danger, or as a revulsive means which prepares the system for other modes of restoring its equilibrium. It is in the latter way that it has most value in sthenic and hypersthenic inflammations; and this view of its utility especially deserves the attention of the careful practitioner. He has in blood-letting a valuable means at his disposal *to place the patient in a favourable condition for the regulation of inflammatory disturbances*, especially so to manage the circulation that both the crises of the nervous system, as well as of the blood and nutrition, may take place duly and regularly." He then adds a warning to be sparing in shedding of blood, that cannot easily be replaced. It is always against the early period of inflammation, before hyperæmia has fully issued in exudation, that blood-letting has been considered to possess most power; and in this stage it is by no means impossible that, properly executed, it may be adequate to arresting the morbid process. To do this, the blood must be let rapidly from a large orifice *pleno rivo*, until syncope is imminent. A shock is thus given to the system, which of and by itself may very materially modify, if not arrest, the inflammation. Such blood-letting often produces nausea and vomiting; and it is known that some well marked inflammations, such as tonsillitis and orchitis, in their early stage, may be arrested by the administration of a full vomit. The principle seems to be that of giving a shock to the system, which modifies, through the nerves, the deranged nutrition of the part. It is, however, clear that it is much better to operate locally, if we can, on the diseased part, either by local bleeding, or such drugs as are found to exert a special influence on the region affected. Thus chlorate of potash is especially appropriate to buccal inflammation; antimony to pulmonary and renal; mercury to those of serous membranes, and to ocular. These and the like remedies may be termed *tissue-sedatives*, as calming and reducing the excessive reactional movement of the several parts on which they peculiarly act.

It is very certain that the state of the nervous system is of the most material influence on the capability of the individual for supporting blood-letting. If the nerve-power be weak and low, blood-letting even to a small extent will be ill borne, although there may be no anæmia, or other apparent contra-indication. In one case of my own, blood-letting to six ounces prostrated a female for some weeks, though she was robust, and seemed to have rather an excess of blood. Her only disease, besides exceeding hyperæsthesia, was slight frequently recurring eczema, for which she was unable to take arsenic. With this may be contrasted another case under my care, of recurring eczematous eruption, in which also arsenic was not well borne, where blood-letting to five ounces, together with a calomel purge, gave great relief to the general and local disorder. How great the difference between the first case and many who have borne large blood-letting well! The highly important fact, that certain maladies render the system less susceptible of the effects of loss of blood, while others have an opposite influence, has been ably insisted on by Dr. M. Hall. This seems to me to furnish a weighty argument in favour of the propriety of blood-letting in appropriate cases; for if the disease manifestly alters the condition of the system, as respects its supply of circulating fluid, it seems highly probable that the reduction of that supply may modify the abnormal state of the system, or at least be less injurious to it than the continuance of the original quantity.

There are a few drugs (would that they were more numerous) which a large experience justifies us in regarding as endued with the power of arresting *sthenic* inflammation, when set up in certain tissues. Thus *antimony* arrests pulmonic and renal inflammation; *mercury*, iritis and peritonitis; *chlorate of potass*, buccal inflammation; *iodide of potassium*, periosteal; *colchicum*, synovial. Such remedies I have proposed to term tissue-sedatives, believing that, whatever physiological action they may have, their peculiar efficacy in disease is quite independent and apart from it. Our best knowledge respecting colchicum (Garrod), respecting antimony (Ackerman, *Brit. and For. Med. Review*, April 1859), and respecting iodide of potassium or chlorate of potass, does not explain to us in any measure the cause of their acting on certain parts and not on others, or how they produce a cessation of the inflammatory process.

Alkalies, including their vegetable salts, it seems probable to me, belong also to this class. They are efficacious in some cutaneous inflammations, as psoriasis; in some inflammations of the urinary passages, some bronchial and laryngeal inflammations, and in acute rheumatism. In the latter disease, it has been presumed that their beneficial effect depends on their neutralising the excessive acidity of the system. This, however, seems very questionable—(1) because it is not at all proved that there is any excessive acidity or diminished alkalinity of the blood; (2) because the alkalies fail to benefit in cases of rheumatism of asthenic and apyretic character; (3) because other remedies, of a totally different kind, as colchicum and aconite, occasionally cure acute rheumatism; (4) because alkalies are of no avail in the visceral inflammations of rheumatism; (5) because neutral salts, as the nitrate and acetate of potash, are curative of rheumatism, the former of which can exert no alkaline effect, while the decomposition which ensues of the acid of the latter proves that the system in acute rheumatism still retains its power of assimilating or digesting acid, and, therefore, that it is reasonable to suppose that it would also digest lactic acid, the presumed *materies morbi*.

Lead, in the form of a strong Goulard lotion, has so marked a sedative effect on an inflamed cutaneous surface, that it seems to me to belong to the class of tissue-sedatives as much as to that of astringents. It is certainly a more sedative application than tannin, but, like it, it exerts also an astringent action on the capillaries, which renders it efficacious in hæmorrhages not depending on actual ulceration, and in serous profluvia.

Another class of medicines may be distinguished of an opposite kind to the preceding. These are the nerve-tonics. Among them I include quinine, arsenic, strychnine, digitalis, and to some extent, iron. Their action, so far as we trace it, is not eliminant in any degree, nor depressing, but invigorating. We conclude, that the nervous system is mainly influenced by these remedies, because they seem to operate much in the same way as exciting and invigorating mental influences, which can only act through the nervous system; because, while there is an evident resemblance of therapeutic effect in all, two of them (quinine and strychnine) do operate most undeniably on the nervous system, and because they are all found beneficial in disorders whose chief character is depression of nervous power. If we consider the above mentioned drugs separately, we shall, however, see that they do not all act alike.

Quinine seems to exert its influence both on the cerebro-spinal, and visceral sympathetic nerves, it slows the heart's movement, and prevents the hyperæmic affluxes that take place in malarious disease from vaso-motor nerve paralysis. In this latter case, as well as in the case of neuralgia, the beneficial effect probably depends on the nervous tissue being rendered more vigorous and strong, more able to resist injurious influences. On the same principle we must explain the protection conferred upon the system by the use of quinine in respect of malarious miasms. The protected system resists a poison it would otherwise succumb to. Such facts as these show positively that quinine is not an antiperiodic merely, as some are in the habit of calling it.

Arsenic, in many respects, has a similar action to quinine. Its efficacy in malarious disease has long been known, and has lately been especially tested by M. Boudin, in Algeria. In various neuralgiæ, it renders good service, particularly in obstinate sciatica, I have much reason to be satisfied with it. It exercises a very marked influence over the vaso-motor nerves of the skin in the cure of eczema and other vesicular eruptions, over the intestinal in some cases of chronic diarrhœa, and over the uterine in menorrhagia. It acts as a tonic to the musculo-motor nerves in chorea, and to the bronchial in some cases of asthma, rendering them less liable to be thrown into spasmodic action. It is a remedy of much slower operation than quinine, and much more liable to cause tissue irritation. It is therefore especially important if we employ it in inflammations, to be sure that the morbid action has lost its sthenic character.

Strychnine is notorious for its especial action upon the musculo-motor apparatus, affecting particularly the spinal cord. Professor Kölliker asserts it has no action upon the brain, but I am strongly disposed to question this statement from observation of its therapeutical effects. Trousseau and Bardsley both speak positively of its curative influence in cases of hemiplegia, and I have recently had myself a well-marked instance of recovery from facial paralysis under its use. In some cases of amaurosis, there seems no reason to doubt that strychnia has proved curative. In many cases where it has failed, it is very probable that the condition was incorrectly diagnosed, and that there existed grave structural lesions. From some personal experience of it, I should say that it acted certainly as a cerebral tonic, invigorating the hemispherical ganglia. In chorea, it has often a very beneficial effect, steadying and invigorating the motor nerve apparatus. Its action on the sympathetic is demonstrated by its effect in

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 controled 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 vasor-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 controling 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 hooping-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.