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A COURSE OF LECTURES ON SURGERY, DELIVERED IN THE MEDICAL SCHOOL OF CAMBRIDGE.

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LECTURE III.

General Symptoms of Inflammation, analogous to Local; Changes in Blood; Cause of Buffed Appearance, and its Value as a Symptom; small Size and Firmness of Clot:—Other Changes in Blood; their Relation to the Fever; Resemblance of Inflammatory Blood to that of Pregnant Females; the preliminary general Depression, resulting probably from corresponding Condition of Part about to be inflamed:—Treatment of Inflammation; Bleeding; quality of Pulse indicating need of Bleeding; consequent Reaction; Period at which Bleeding should be adopted; Local Depletion near the inflamed Part, but not from the inflamed Skin:—Mercury and Opium, Indications for and against their Use.

The presence of local inflammation, especially if it be severe, extensive, or situated in an important organ, is soon followed by a train of constitutional symptoms analogous to those occurring in the inflamed part, and seeming to result from an extension of the inflammatory disturbance to the system, much in the same manner as it spreads from point to point, at the immediate seat of the disorder. The increased activity of the vessels has its analogue in the general excitement of the vascular system,—in the rapid and forcible action of the heart,—in the full, hard, and bounding pulse. The concomitant headache, soreness, or even tenderness of the whole body, the restlessness and irritability, show a disturbance of the nervous system, corresponding with the local pain. The sense of weakness and inability to make any exertion, the hot dry skin, the loaded tongue, the thirst, costive bowels, the scanty urine loaded with lithates, together with the alteration and diminution of the other excretions and secretions, are additional evidences of a disordered state of the constitution, bearing much resemblance to the local disease. The comparison derives still further force from an examination of the changes which are found to have taken place in the blood circulating through the body. These are of sufficient importance to require our careful attention, inasmuch as the question of the existence of inflammation, and the proper treatment to be pursued, are often determined

by the appearance of the blood drawn from the body, when the other indications would have left us doubtful of the real nature of the malady.

In blood drawn from a healthy person, the red globules are observed in two or three minutes to collect into heaps or rolls, with their flat surfaces approximated like coins laid upon one another, at the same time the blood becomes a little stiff, or set, from the commencing coagulation of the fibrin, so that it forms a loose sponge-like structure, entangling the little masses of globules and the serum in its substance. The globules are distributed almost equally throughout this soft jelly-like substance, giving it an uniform red colour; it occupies about the same space as the fluid blood had done before coagulation commenced, and adheres to the sides of the vessel into which it was drawn. During the further coagulation or contraction of the fibrin its particles approach more closely to one another, and squeeze out the serum from between them without displacing the globules, so that in a short time the contracted fibrin and red globules forming the clot are found separated from the sides of the vessel, and floating in the serum expressed from them.

The red globules are comparatively heavier than the fibrin, and would sink to the bottom of the clot if their descent were not arrested by the coagulation of the fibrin. This actually does occur if by any means their relative weight is increased, or the coagulation of the blood is delayed beyond its usual time, both which effects are produced by inflammation; for, in the first place, the red globules of inflamed blood adhere together so quickly, that they are found to have clustered into little masses before the blood can be placed under the microscope, and, as a necessary consequence, they fall through the blood more quickly than in the healthy state; and, secondly, the specific gravity of the fibrin is diminished, and its coagulation takes place more slowly than under ordinary circumstances. Owing to the combined influence of these changes in the qualities of the blood, the red globules subside towards the bottom of the clot, leaving the upper part of a lightish brown or buff colour. The coagulation and contraction of the fibrin continuing takes place most completely where it is least impeded by the presence of red globules, so that the upper part of the clot is reduced to a smaller size than the rest of its substance, and from the same cause becomes cupped on its surface, and puckered at its edge. The blood is now said to be buffed and cupped.

That the slowness of coagulation is an important

element in the formation of the buffy coat is proved by the appearance of the coagula found in the heart and great vessels after death. The setting of the blood, when the circulation has ceased, takes place slowly, in consequence of its being still subject to the vital properties of the tissues which remain for a time after the general death of the body; the red particles subside, and the upper part of the clot, that, for instance, which occupies the right auricle of the heart, is generally found to be composed of buff-coloured fibrin, with a small quantity of serum included in its reticular substance. Other causes also which retard the coagulation of the blood may give rise to the formation of the buffy-coat, and it occurs naturally in the blood of some animals,—as the horse.

But that the buffing and cupping of the blood in inflammation do not depend merely upon the slow coagulation of the fibrin, is also proved by their being occasionally observed in blood which has coagulated quickly, and they are sometimes absent when coagulation has been delayed thirty or forty minutes after its withdrawal from the body. In those particular cases, in which coagulation occurs very imperfectly, or not at all, after death, the subsidence of the red particles does not appear to take place, and the blood presents a uniform red colour. (I merely mention these varieties, without attempting to explain them.) The buffing and cupping of inflammatory blood are dependent, no doubt, on that alteration in the properties of the red particles which accelerates their coalescence, in addition to those other changes in the blood which increase their relative specific gravity, and modify the rapidity and force of the contraction of the fibrin.

There is also another cause, occasionally giving rise to a buffy appearance of the upper part of a clot, which must be taken into consideration in estimating the value of this symptom. I refer to the presence of an unusual quantity of white corpuscles. When the constitutional symptoms of inflammation have arisen, these bodies are found circulating in large quantities through the body, just as a greater number of them were observed in the inflamed part. They are of lower specific gravity than the rest of the blood, so that while the red corpuscles sink to the bottom, they rise to the top, of the clot, and are found in greatest numbers in the buffy stratum. They do not, at this part, exist in such great numbers as do the red corpuscles at the lower part of the clot, or they would in the same manner interfere with the contraction of the fibrin, and prevent the cupping. Under certain circumstances, when the formation of blood is going on quickly, as after a full meal, or in consequence of an unusual call upon the nutritive functions during pregnancy, the healing of a large wound, after loss of blood, and so on, these white corpuscles are present in great abundance, and if blood be drawn at such time, they may rise to the top, and form a buffy coat. It happens that their disposition to do so is, in some of these conditions, favoured by the coagulation of the blood being a little slower than usual. Unless aware of this fact, you might occasionally be led into error by too implicit reliance on the buffy coat as an indication of the

presence of active inflammation. It is well also to bear in mind, that although the buffy coat observed on the first bleeding may result from the presence of inflammation, the same symptom may, on subsequent occasions, depend upon the increased number of white corpuscles taking place to make amends for the former loss of blood.

Happily there is another distinguishing feature of inflammatory blood which is even more characteristic, and certainly is of more practical value, than the buffy coat. I mean the increased contractile force of the fibrin which occasions the clot to be small and tough, not easily penetrated by the finger, and gives rise to the formation of the cupped condition of the surface, for, I should say that the buffy coagula occurring under the circumstances just mentioned are very rarely cupped. This increase of contractile force is generally proportionate to the slowness of the coagulation, and is most marked in vigorous persons, and in acute attacks of inflammation. The small tough clot is a more important sign than any other condition of the blood in the treatment of inflammatory fever; it marks the severity of the disease and the powers of the patient—the necessity for active treatment and ability of the patient to endure it.

The inflammatory blood presents the appearances just described, more or less distinctly, according to the degree in which the blood has undergone the changes which occasion them. In some cases there is a complete subsidence of red particles from the upper part of the clot, which is small, firm, deeply cupped, and puckered on the surface. Such well-marked characteristics in the clot generally accompany severe fever in a vigorous constitution, associated with inflammation of a serous or fibrous membrane. In other cases the coagulum is larger and less firm, the buffy coat is thin and easily broken, the subsidence of the red globules and the contraction of the fibrin are less marked, and the accompanying inflammation is less violent, or may be seated in a mucous membrane.

The coagulation of the blood, though a vital process constituting the first stage of organization, and resulting from the inherent tendency of its particles to unite together and form a tissue, is, in the living body restrained by some higher counteracting influence, which suffers it to take place only in subservience to the nutrition of the tissues. Except in the case of inflammation, when the independent powers of the blood seem to be greatly increased, and in extravasations of blood, coagulation does not occur till this restraining influence is removed by the death of the body or the abstraction of the blood from it. When coagulation does take place, it will do so in greatest perfection, and most slowly, where its vital energies are best preserved, as in the body after death, or when it flows from the living body in a full stream and is at once received into a deep vessel. By taking such precautions we give the most favourable opportunity for the manifestation of the characteristics of inflammatory blood, we remove it from the controlling influence of the tissues without diminishing in any great degree its own vitality, so that it is freed from restraint and exhibits

the changes which it has a tendency to undergo. If, on the other hand, its vitality be much lowered, by exposure to the air, as when it falls from a considerable height in a small stream, by its reception in a flat or very cold dish, or in other ways, coagulation is rapid and imperfect, and the buffy coat is less likely to be observed. A still further reduction of its vitality will prevent the coagulation altogether. Examples of this are furnished by cases of death from lightning or severe injuries to the nervous centres, when the vitality of the whole body, its fluid as well as its solid components, appears to be instantaneously destroyed.

Further important changes in the general mass of the blood corresponding with those observed at the seat of the inflammation, are the increase in the quantity of the fibrin and the diminution of the red globules.

These are found by M. Andral to be proportionate to one another and to the activity of the local disease rather than to the severity of the febrile disturbance. Indeed the experiments of that physician serve to shew that in common fever the amount of fibrin is diminished, the number of red particles undergoing no material alteration; and that any increase in the fibrin during fever is almost always referable to the development of some local inflammation. He, accordingly, attributes the increase of the fibrin in inflammatory fever to the changes taking place in the inflamed part; and the coincidence observable between the increase and diminution of the febrile symptoms, and the increase and diminution of the fibrin, he refers to the dependance of the fever and the changes in the blood on the same cause, viz., the extent and intensity of the local disease.

The several changes observable in blood drawn from the system during inflammatory fever, the diminished quantity of red, and the increase of white globules, the corresponding increase of fibrin, with its altered qualities, inducing slow coagulation with a firm clot buffed and cupped, together with the disposition of the red globules to adhere quickly into rolls and masses, correspond precisely with the condition of the blood at the inflamed part, and seem to originate there. Probably the altered fluid circulating thence contaminates the remainder of the blood, spreading over the system the flame that had been communicated to it at the seat of the disease.

Whether the inflammatory fever depends upon this morbid condition of the blood circulating through the system it is not easy to decide. The observation of M. Andral, that the changes in the blood correspond with the local disease rather than with the fever, and that they do not accompany the latter unless some local inflammation exists, do not favour such a supposition. It is, perhaps, more probable that the extension of the inflammatory condition from point to point, and from a part to the whole system, depends upon certain properties in the disease of an assimilative nature, aided by that particular relation between the several parts of the system which we call sympathetic, that interweaving of function and universal harmony of its several members, which does not permit one part of the body to suffer without detriment to the whole.

I have already alluded to the fact that the buffy condition of the clot and the increase of the white globules are often observed in the blood of the pregnant female. M. Andral finds that the amount of fibrin is also increased and that the red globules are deficient in the later periods of pregnancy. This correspondence in the condition of the blood at the time when nature is putting forth her best energies to furnish material for the development and growth of another being, with the changes which it undergoes in inflammation, is an interesting feature in the physiology of both processes, and is thought by M. Andral to have some relation to the occurrence of those special accidents, mostly of an inflammatory nature, which so frequently affect females recently delivered.

The excitement of inflammatory fever is almost always preceded by symptoms of constitutional depression. The feeble pulse, chilly sensation, cold extremities, loss of appetite, pain in the loins, general languor and feebleness, indicating a depressed condition of the circulatory and nervous systems, are the usual precursors of the febrile symptoms which seem to follow as a reaction from them. This general depression, the earliest in the train of symptoms, is a very important one, warning us of the forthcoming mischief, which is, for the most part, proportionate to it in severity. A sudden and violent rigor, with pale ghastly countenance, sunken eyes, feeble rapid pulse, cold clammy skin, and sense of sinking are fearful symptoms to witness, and they portend serious evils. The patient may die outright, the great organs being unable to stand against this depression of their vital powers; or he may linger on for some days, unable to rally, and may sink at last under its influence. Commonly it is the forerunner of a violent inflammatory attack, which quickly follows. The less severe inflammatory affections are preceded by symptoms of a similar kind, but less alarming; the patient feels unwell, chilly and languid, he cannot get warm and is unfit for work for a day or two before the manifestation of the disease, of which this condition is the forerunner. So constant is this preliminary train of symptoms in one form or other, and so nearly proportionate is it to the ensuing illness, that when summoned to a patient at the commencement of an inflammatory attack, we may often form a tolerably correct estimate of the probable severity and duration of the disorder by the preceding chill; and we are often relieved from the apprehension excited by a febrile attack, when we discover that it had not been preceded by sufficient evidence of constitutional depression to have attracted the patient's notice.

In forming an estimate of the value of this symptom, we must not forget the very different degrees in which the nervous systems of different individuals are wont to respond to impressions made upon them. The highly sensitive nervous system will give great warnings of small approaching evils; it quickly sounds the alarm, and a violent rigor, with chattering teeth and sinking pulse, are sometimes the heralds of a mere bilious attack. In the well-poised constitution only is the preliminary depression to be regarded as a fair criterion of the illness which is to follow.

In ordinary cases of spontaneous inflammation, we are not cognizant of any local change corresponding to this general suffering, and during the continuance of this preliminary stage, we often cannot tell what organ is to be the seat of the inflammation. So that we might imagine the constitutional depression to be the prime mover of the disorder, and the local inflammation to be the consequence of it. Such may sometimes be the order of events. More commonly, however, it seems probable that the general prostration is the result of an impression originating in some particular part. Thus, wet feet, or an exposure of some part of the body to a draught, occasion a general feeling of chilliness, which is followed by inflammation in an organ, distant, it may be, from the one where the first impulse to the disorder was given. In case of accident or operation, the constitutional depression or shock, is clearly the result of some particular condition of the injured part communicated to the system. It corresponds in its severity to the extent of the local lesion, and the importance of the injured organ, and gradually gives way to the symptoms of reaction, which, perhaps, pass on into inflammatory fever. Frequently the general depression remains for a short time after the manifestation of the local disease, which then shows itself to be in advance of the constitutional disorder. It is probable that the usual order of sequence of the events of inflammation with fever, are, first, some particular condition of the organ about to be inflamed, corresponding with, and standing in the relation of cause to, the constitutional depression which is the second event in the attack; thirdly, the symptoms of local inflammation are developed, ensuing as a reaction upon the depressed condition of the organ; and, fourthly, the inflammatory fever, which is the reaction from the general depression, increased and modified by the direct effects of the local inflammatory action, and the sympathetic relations of the body in the manner just mentioned. The effects of frost-bite upon a limb, and through it upon the system, are no bad illustration of these remarks, the stage of local depression being here more appreciable than under ordinary circumstances, and the subsequent inflammation, following *in*ore clearly as a reaction from it, is seen to be proportionate to it in the severity of its effects.

In what manner the local and general reaction depend upon the local and general depression I cannot tell, though there is very little doubt that they do so. The well-known fact that the latter may be prevented by cutting short the former is sufficient evidence of this. The treatment of ague is conducted upon this principle, the arrest or prevention of the preliminary shiver by warm drinks, or the application of external warmth, being the sure means of curtailing or warding off the subsequent stages of the fit.

As a general rule, the attendant constitutional symptoms bear a certain relation to the extent and severity of the local disease, but they are not always a measure of its danger. They are strongly marked in acute rheumatism, which, so long as it is confined to the joints, is free from danger. They are in greater force when associated with inflammation of serous and

fibrous, than of mucous membranes, and the parenchyma of organs. They are, besides, often modified by the altered function of the organ affected. Thus, in inflammation of the heart or brain, the general fever does not always correspond with the amount of local disturbance, owing to the direct impairment of the great circulatory organ in the one case, and the nervous centre of the other. Or, they may be modified by peculiarity of the patient's constitution or by some previous indisposition, and want of vigour of one or more of the great organs, rendering them unable to respond to the stimulus of the local ailment in the same manner as the others. Peculiarities of this kind, intermitting pulse, convulsions, &c., showing a want of order and of due proportion between the symptoms of inflammatory fever, furnish cause for alarm in no less degree than a more severe train of symptoms, in which the several parts of the body evince a greater equality of enduring power.

In the treatment of acute inflammation with inflammatory fever, we have to deal with a local disease and constitutional disturbance, acting and re-acting on each other, and our efforts are first directed to quell the latter as the most effectual means of checking the former. By far the most powerful remedy at our command is blood-letting, which is, perhaps, of more avail in arresting the disease than all our other resources combined. As a general rule, so long as the inflammation is confined to a part, we are content with the local abstraction of blood by leeches or cupping; but when it has extended to the system, and fever is superadded, it is necessary to resort to venesection. Of the need of this treatment, and the extent to which it should be carried, we form our opinion from a knowledge of the constitution of the patient, the severity of the disease, and the importance as well as the nature of the organ affected. In a case of acute pleurisy or inflammation of the lung, with inflammatory fever, in a strong and robust person, the free use of the lancet is strongly called for. The disease is violent, the organ of vital importance, and the patient strong. A large quantity of blood may be drawn; the patient will bear it well, far better than in health, and the relief afforded is often immediate and very decided. The blood coagulates into a small clot, which is tough, buffed, and cupped. When the inflammation is seated in the lining membrane of the lungs, the inflammatory fever is generally less intense; blood-letting must be cautiously employed, for symptoms of prostration are likely to follow, the relief afforded is less decided, and the coagulum of the blood is larger, softer, less buffed and cupped.

It is usually advisable to allow the blood to flow till a decided impression has been produced upon the system, and the indications of approaching faintness, such as acceleration of the pulse, paleness of the face, and the appearance of moisture on the lips and forehead, are the intimations that sufficient impression has been made. Place the patient in a sitting posture, that you may have early warning of the approach of faintness, and close the vein as soon as the symptoms just mentioned show themselves, for the faintness often

increases after the blood has ceased to flow. The quantity of blood which it is desirable to abstract, is such as the patient will bear to lose without fainting, and is often a measure of the severity of the disease, and the necessity of the treatment.

The pulse is the most unerring indication of the existence of that degree of inflammatory fever which requires general bleeding; and the quality of the pulse on which we chiefly rely in deciding this point, is its hardness. You are aware that the pulse is caused by the alternate distension and contraction of the arterial tube, as the wave of blood is driven through it by the force of the left ventricle of the heart. There are, therefore, three elements concerned in its production, each of which impresses its peculiar value upon it as a symptom; these are, the quantity of the blood, the action of the heart, and, thirdly, the tension of the arterial tube. Upon variations in the first of these depend the fulness or emptiness, the plethoric or anæmic condition of the pulse. By the excitement or depression, and other variations, of the second, is caused the rapidity or slowness of the pulse, its regularity and rhythm, or the reverse, while the strength of the heart's action gives it force. Lastly, the soft or hard feel of the pulse varies with the degree of tension of the arterial tube. When this is slight, the dilating artery accommodates itself easily and gently to the advancing wave, and when that has passed, it gradually resumes its former state, whereas a tense rigid condition of the artery gives to the pulse a hard unyielding feel, and renders its vibrations scarcely perceptible to the finger. Under such circumstances, also, a large amount of blood may be drawn before it is missed from the arterial system; in other words, the quantity of blood may be greatly reduced before it will cease to distend the tightly-contracted arterial tubes, or before they will become relaxed, and faintness be perceived.

Faintness is associated with a condition of the pulse directly the opposite of that we have been just considering. It imports an imperfect distension and relaxed condition of vessels, and that the cerebral substance does not receive its proper amount of pressure from the blood contained in them. The faintness produced by venesection in inflammatory fever is an evidence, therefore, that the arterial system is sufficiently relieved, and the earliest indications of its approach should warn us to close the vein, because, as the faintness proceeds, the vessels become more and more relaxed, and the heart's action enfeebled, in consequence of the diminution of the nervous influence by which the excited action of both was maintained. A forcible action of the heart always, and a frequent action generally, accompanies the hard pulse.

After venesection to approaching syncope, the more urgent symptoms of inflammatory fever are generally relieved; the patient, hitherto restless and in pain, falls asleep, the secretions are restored, the skin becomes soft and moist, the urine is more copious, the action of the bowels is easily induced, and the disease, perhaps, is effectually arrested. It is necessary, however, to be aware of the reaction which is likely to follow the depression caused by loss of blood; this reaction is more or less

proportionate to the preceding depression, and is an additional reason for not carrying the depletion beyond the amount required to control the excited condition of the circulatory system. It may often be lessened or prevented by the adoption of antiphlogistic treatment after the bleeding, and the timely abstraction of a small quantity of blood from the inflamed part when it is commencing. It is well to bear in mind that the reaction, dependent in part upon the preceding depression, is not to be regarded and treated as a relapse of the inflammatory fever. General bleeding should not be again resorted to, unless decided hardness be added to the quickened state of the pulse. The reactionary exacerbation of symptoms usually subsides again in a few hours, or yields to milder measures, and the benefit of the first bleeding is then more completely apparent.

Much has been written about the period of an inflammatory attack at which bleeding is most beneficial, and the comparative advantages of early bleeding. I think the common sense view, that so decided a measure, attended, as it unquestionably is, with some danger to the patient, should not be resorted to till symptoms have arisen which require its employment, will generally prove to be correct. The practice of bleeding to prevent inflammation,—that is to say of bleeding persons who have been exposed to the exciting causes of inflammation, such as severe injuries, operations, &c., must, on the whole, be injurious, though there may be exceptional cases rendering such treatment advisable. Bleeding before operations, except where inflammation already exists, as in some cases of strangulated hernia, and other treatment which lowers the vital powers of the patient, only renders him more amenable to the shock of the operation, and the inflammatory reaction which is likely to follow. Patients who are in the weakest state, or who have lost the most blood during operations, are the least likely to recover; in them we have most reason to apprehend the occurrence of those dangerous inflammations in different parts of the body, followed by suppuration or "purulent deposits," as they are sometimes called.

During the preliminary stage of depression, depletion is, of course, out of the question; but when the symptoms of inflammatory fever have fairly commenced, and the pulse has become hard, it is absurd to wait for their further development. By the timely abstraction of blood when the symptoms of inflammation are setting in, we may often cut short the disease, and at once relieve the patient. The advantage of decided measures at this particular period of the attack, you have lately seen exemplified in two cases of commencing inflammation of the brain, consequent on injury of the head, in both of which the symptoms were at once arrested in an early stage by moderate bleeding, followed by antiphlogistic regimen, and did not again return.

A few years ago, no doubt, a vast amount of evil was done by the extravagant use of the lancet; but lately, as a natural consequence of excess in its employment, the tide of opinion has set so strongly against this weapon, that I think disease gains some advantage from the timidity of modern practitioners in

resorting to it. The right time for bleeding is often allowed to pass, and the inflammation, unchecked by milder measures, runs on to a stage when its destructive effects are rather aggravated by depletion, which, employed at an earlier period, might have prevented their occurrence.

In addition to the diminution and dilution of the general mass of the blood caused by bleeding, the red particles are disproportionately decreased, and the quantity of fibrin is also diminished, secondarily, and in less degree. It is probable that the good effects resulting from depletion in inflammation are due, not so much to a change in the relative proportions of the constituents of the blood, as to a direct effect in reducing the force of the disease by withdrawing the pabulum of the process, the fuel with which the flame is fed, and to the lowering of those vital energies of the blood and of the patient, in the exaltation and aberration of which the morbid phenomena consist.

When the accompanying fever is slight or has been checked by general depletion, the abstraction of blood by leeches and cupping from the neighbourhood of the inflamed part, is a very effectual means of combating the local disease. Leeches are suited to the greater number of the cases which fall under the care of the surgeon, because they are attended with less violence than cupping. The pain and inconvenience connected with the employment of cupping-glasses and the scarificator, often do more harm to an inflamed and tender part, (the knee-joint for instance,) than the loss of blood does good. In the case of inflamed hip, the joint being more deeply seated, this objection does not apply; and the sudden abstraction of a few ounces of blood from behind the great trochanter is, on the whole, more serviceable in an acute inflammation of this joint, than the gradual loss of the same quantity by leeches.

No doubt one of the advantages of leeches, rendering them especially suited to relieve chronic inflammatory affections, is the slow manner in which the blood is withdrawn, producing a gradual effect upon the inflamed part, and followed, therefore, by less reaction. For the same reason the bleeding from the leech-bites should be encouraged by the application of warm moist flannels, which is, perhaps, the method of fomentation least fatiguing to the patient, and it is sometimes desirable to maintain a continuous oozing by a relay of leeches, when the bleeding caused by the first batch begins to cease.

Whether leeches or cupping be employed, there is no doubt that the benefit is most apparent when the blood is drawn from the integuments covering the inflamed part. Some sympathetic connection probably exists between the skin and the organ situated beneath it, whereby the impression made upon the one is communicated to the other. But it is not generally advisable either to cup or apply leeches to the inflamed part itself; the irritation occasioned by leech-bites in inflamed skin generally increases the disorder, and may give rise to troublesome sores, or even to mortification. Inflammation of subcutaneous absorbent glands, in which the skin is implicated, is commonly aggravated

by the application of leeches, unless they be placed in the circumference of the inflamed part; and in epididymitis, accompanied as it often is by considerable inflammation of the integuments of the scrotum, the good effects of leeches are most fully obtained by placing them over the cord where it is rising to enter the abdominal ring. I believe also that in inflammation of the os uteri more benefit is derived from the leeches applied to the integuments about the anus than to the organ itself. In chronic inflammation of the absorbent glands and epididymis, where the integuments are but little or not at all involved, the leeches should be applied immediately over the part affected. In inflammation of the eye they should be placed upon the temple, and not, under any ordinary circumstances, upon the tender skin of the eyelids.

The number of leeches should be proportionate to the severity of the disease. In acute inflammation of the knee, one or two dozen are required to arrest the attack, if possible, by a sudden and decided impression. In a chronic inflammation of the lobules of the breast, or of the epididymis, with induration, the purpose will be best attained by a less decided but more continuous or repeated impression, and the application of two or three leeches every three or four days, is, in such cases, most beneficial.

The good effects of mercury are most apparent in the inflammations of vigorous persons, and in those more particularly which are attended with the formation of new products, causing induration of textures, and adhesions of parts which ought to be free, such as inflammations of serous membranes and the iris; whereas, in inflammations of a low type, in those which are combined with symptoms of typhoid character, in old people, and in persons of delicate, irritable, nervous constitution, in inflammations of mucous membranes, and in other cases where the effects of the inflammation are displayed in destroying the tissues, and in promoting ulceration and mortification, rather than by effusions of lymph, the administration of mercury to such an extent as to produce its peculiar influence on the constitution is likely to be injurious. You will seldom err in following the rule of giving mercury to persons of strong constitution, when the inflammation is seated in a texture where we know it is likely to be followed by effusions of lymph, and of withholding or exhibiting it very cautiously in weak and old people, or whenever ulceration and mortification are likely to ensue.

The effects of mercury are influenced to a certain degree by the character of the inflammation, thus certain of the syphilitic affections, though attended with ulceration, are benefited by mercury; but whatever may be the character of the inflammation, provided it be seated in a texture where effusions of lymph are likely to take place, the use of the mineral is almost always indicated. This is peculiarly true of iritis, which, whether owing to syphilis, gout, or any other cause, yields to the influence of mercury more surely than to any other plan of treatment.

An irritable and excited condition of the nerves of the part affected, and of the nervous system, constitutes

one of the features of inflammation, so that we naturally look for benefit from medicines which are known to exert a sedative influence. Opium has long been much used in the treatment of inflammation, and confidence in it as an auxiliary to other measures, is felt by surgeons of the present day, perhaps, to a greater extent than by their predecessors. It is well combined with mercury, assisting that medicine, and at the same time producing its own effect. It is a most serviceable adjunct to venesection, quieting the nervous system when the circulatory forces have been reduced by bleeding, and controlling the reaction which is likely to follow after the loss of blood. It is especially indicated when the symptoms of irritability and restlessness predominate, and in delicate asthenic persons, where blood-letting and other active treatment are forbidden. It is further indicated when the part affected, from its particular position or function, is kept in continual action by the irritation caused by inflammation. Thus a dose of opium allays the frequent and urgent desire to void the urine which accompanies inflammation of the bladder, and which necessarily aggravates the disorder.

The administration of opium is often attended with much relief when inflammation is passing on to ulceration and mortification, in cases of phagedenic ulceration of the throat in debilitated persons, and in senile gangrene, and in a great number of painful inflammatory affections, attended with restlessness and want of sleep.

I will here make three remarks by way of caution to you in the administration of opium. 1st. Beware of giving it when the sensibilities of the nervous centres are beginning to fail, in consequence of imperfect aeration of the blood, congestion of the brain, or other cause; under such circumstances, it will be most likely to hasten the patient's death. 2ndly. You should not forget that it is a most alluring medicine to the patient, who, having learnt its agreeable, sedative, and comforting influence under your direction, will have great difficulty in resisting the temptation to continue it. A great number of confirmed opium-eaters have contracted the habit in consequence of the drug having been prescribed to them as a remedy for the cure of some disease. And, 3rdly, the sensibilities of the patient seem to be increased, and his ability to endure pain lessened, by its employment. I have been struck by this effect of opium in several cases which have fallen under my notice, and it has made me unwilling to commence its use unless there be some clear prospect of curative influence on the disease. The sufferings of a patient with stone are, I believe, in the long run, aggravated by it, and in malignant diseases we resort to it as the least of two evils, conscious that we can continue to procure relief from pain only by progressively increasing the dose.

THE

CONTAGION OF ASIATIC CHOLERA.*

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I have already alluded to the variola ovina, as offering an example of the progress of a disease notoriously contagious, and presenting analogies which it will be desirable to examine, in elucidation of the cholera importation. Flocks of sheep do not migrate and commingle to the same extent as human beings; contagions, therefore, do not spread among neighbouring flocks with the same rapidity as cholera marches from town to town. An Act of Parliament was passed last session, 11 and 12 Vict., cap. 105 and 107, for prohibiting the further importation of cattle affected with this disease. Inspectors of foreign cattle have been appointed at our chief ports, and these animals are now subject to quarantine. The diseased sheep are required to be "seized and destroyed," with any pens, hurdles, litter, hay, straw, or other articles likely to have been infected." In 1837, Mr. Youatt, an able writer on the diseases of cattle, declared that no such disease was known in England, and he described it on the authority of the French veterinary professors, by whom it was called "Clavelée." It had been noticed by them as early as 1747. The free importation of sheep under the new tariff brought it into this island; *a restricted commerce kept it out of this country for a hundred years*, during which time it had manifested itself pretty generally on the continent of Europe, and had often thinned the flocks of France. For a long time in the Hamburgh market a separate place had been appointed for the contaminated sheep. Inoculation of the sheep has been employed in France very successfully, with an average mortality of one in four hundred. *No foreign sheep are now to be introduced without a warrant from a veterinary surgeon.* Had such precautions been observed on the first adoption of free importations, many of our agriculturists would have been preserved from immense losses which they have already sustained from this contagious epizootic. The disease, however, is now introduced into *many of the counties of England*, and it spreads into places where communication cannot be fully traced, the atmosphere appearing to be the vehicle of infection. It has been well observed, that if the quarantine laws are to be abolished, let the experiment be tried *in corpore vili*: we have it seems reversed the experiment. Crews sick with the cholera have been allowed free pratique, while the most stringent measures have passed the legislature to enforce quarantine on diseased cattle! We do not find our non-contagionist doctors have tried their hands upon this epizootic, or, perhaps, we should bear that contagion was an exploded doctrine, only fit for the dark ages,—that the pestilence came on the