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EPITHELIAL AND NON-EPITHELIAL FIBROUS TISSUES:

ITS SEQUENCE TO SCARLATINA AND OTHER EXANTHEMATA. ON RHEUMATIC GOUT, CHOREA, &c., &c.

BY

H. P. DEWEES, M.D.

FROM THE AMERICAN MEDICAL MONTHLY, VOL. VIII., NOS. 5 & 6.

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The term "Rheumatism" is derived from a Greek word signifying "a fluxion, or catarrh." It is divided into acute and chronic, although a third form may be correctly added, viz: "the flying, or fugitive." The tissues affected are chiefly of the fibrous, or sero-fibrous class. But muscular structure itself may become the seat of the affection, from its component elementary fibrous structure.

The true disorder consists in a certain more or less altered condition of the blood, from its normal composition. This condition may arise from causes *apparently* most opposite, but which resolve themselves into one and the same action, namely: their power to change the constitution of the blood from its healthful state.

The bedside statements confirm this view. By some, the exciting cause of the attack is attributed to cold, or to "check of perspiration." By others, to waste of nervous force by long-continued

* Some of the views announced in this paper are so like those given in the article on Scarlatina, published in our pages, that our readers may suppose they were suggested by it. It is due to the author to state, that the present paper has been ready for publication three years.—[EDS. MONTHLY.

watching, to strains, or over-exertion, to being "out of order" for a long time, though not conscious of having been exposed to damp or cold, to the sudden suppression of a skin eruption, to indigestion after a debauch, and so on, till one would be led to believe that any imprudence might be followed by an attack of rheumatism.

In some families it is, apparently, as hereditary as the gout; whilst in the gouty it is not unfrequently a conjoined affection. But the gouty, from their mode of life, are more apt to superinduce rheumatism, than are the rheumatic to earn gout. Where the parents of the patient have been subject, one to gout and the other to rheumatism, a sort of hybrid attack may sometimes result, rendering diagnosis difficult, whilst relief can only be obtained by conjoining the remedial measures of each. This coalescence, however, is not always the case, as I have seen gout and rheumatism run their distinct course in separate attacks in the same person. Rheumatism may safely be termed a blood disease. This blood condition may arise from causes apparently very different, but which resolve themselves, in their final result, by producing alike morbid changes not only in the circulating fluids, but in the nutritive action of the tissues themselves. Nor does time, or any specific interval, form a necessary element in the anormal production. It may result suddenly, or may be the sequence of the gradual want of integrity in the healthful assimilative functions. The sudden cutaneous suppression (so prolific a cause generally), by which certain excretory elements are forced to remain in the blood, loading it with a specific poison, and resulting in the phenomena of rheumatism, may be represented in a like manner by the errors of any organ or organs, *by which a similar toxic condition of the blood may be induced.* Nor is it necessary, that the superficial excretory actions, or the internal assimilative organs themselves be impaired—both may work in their perfect normal rôle, yet from the supply, by diet, being improper or in excess, a state of blood similar in its impurities may be produced, with the exhibition of rheumatism or gout as its index. It is only thus that the various accounts as to the origin of the attack can be reconciled.

The acute rheumatism of children, in almost all cases, can be readily traced to improper exposure or to damp. The recession of so much highly animalized excretion as is constantly being thrown from their surfaces, loads the blood with excrementitious products, whilst the proper actions of the kidney, liver, &c., are interfered with; or congestions may be superinduced, which cannot but serve to usher in the disorder. The young are more liable to general rheumatism than are

the more advanced ; and heart disorder is more prone to ensue in them than in the latter. This, most probably, is owing to the higher condition of irritability of the cardiac tissues from the altered blood, *and from the fact of the exanthematous diseases*, as *scarlet fever, measles, &c., being of later occurrence;* leaving the great excretory organs in a more or less damaged state. The determination of the disease, both in the young and the more advanced, to become local or general, apart from the considerations just mentioned, is in strict accordance to the blood condition, and the resisting power of the part exposed. For example : two individuals of the same age may be subjected to similar atmospheric causes, yet the result may be, and generally is, different : one being attacked with rheumatism of a single part, whilst the other may be taken down not only with the local selection, as in the first, but with every joint in the body affected. Or he may escape the like local manifestation, and be attacked in the knees or feet, although these parts were not only well protected, but not exposed at the time to the impinging draught ; thereby clearly showing the relation of the blood condition to the disorder. In many cases, the selection for the rheumatic outbreak is in some part previously weakened, as by strain or fracture, or by local nervous loss. These cases, however, require great discernment ; as local phlebitis or purulent deposit in or near a joint may, and has been frequently mistaken for true articular rheumatism, giving rise to the opinion of its terminating in suppuration, more often than it does. To these and other points I shall again refer in their proper order.

Although for the most part the attack of acute rheumatism is sudden, yet in some distinct warnings occasionally take place before a "first instalment" is paid in. These premonitions vary in different persons, according to the attack dating from exposure, or from its being kindled spontaneously by previous disorder of the blood, without any outward exciting cause of a recognizable kind. Disturbance of the digestive organs, attended by flitting pains through the joints or in the muscles—the sudden eruption on the skin of some herpetic or other disorder, attended with burning, itching, or aching, and its rapid evanescence—or, the drying up of any chronic discharge, the appearance of a singular sour-smelling perspiration whilst in bed during sleep—these, with other premonitions, serve as sufficient data of the impending evil, to those who have already suffered, or are remembered with dread at their subsequent appearance, by those who did not translate their bearing correctly. In others,

no such unpleasant "avant-couriers" announce the attack; but a peculiar nervous excitability, attended with moist skin, and a sensation of feeling better than usual, is recorded by the patient—the attack being generally attributed to check of perspiration on going into cold air from a warm room, although others who were in the same atmosphere did not feel over-heated.

Here the disease early manifests itself by the usual sweating, *but in advance of the pain.* This, however, soon invades the insteps, ankles, knees, or wrists, attended with more or less chilliness, hot flashes, and increased perspiration. The arteries throb quickly through the now swollen, mottled, hot, and shining parts, whilst the superficial veins leave their dark-blue traces through the sensitive skin. As the location is variable, so is the duration of the intolerable agony uncertain. One or both corresponding articulations may be attacked, alternately or simultaneously; or, shifting from ankle to knee, a running fire from joint to joint may be kept up, till apparently reinforcements of the disease arrive, and every joint be tensely invested by the relentless enemy. Voluntary motion now becomes impossible, or is effected under the greatest torture. Change of position by any aid is rendered agonizing, whilst the desire to move increases hourly; and the patient is worn out between the increasing sweats, which bring no relief to the severity of the pains, and the sleepless restlessness for change of posture, which adds no comfort. The pulse hammers on, increasing in rapidity and pain-bearing force through the disabled parts. Fever seems firmly established in every essential form, save the dripping skin, whose sour sweatings fail to moderate the heart's over-action; and that the after effects are unlike those which would be dreaded in other fevers, attended by so much apparent inflammation, and with local disorder of nutrition of such threatening aspect.

A respite is generally gained during the sun hours, but the night comes loaded with terror. Sleep is now broken from the startled slumberer, by spasmodic jerkings of the limbs; and the dread of their reöccurrence, robs the pain-snatched hours of their balmy gift. And thus passes night into day, pain into exhaustion, and labored conversation into incoherent wanderings, or delirium, more or less persistent during the weary night hours. The appetite is gone, whilst the thirst is unquenchable. The countenance, for a time flushed with dark purple blood, bearing evidence of the riot of the heart, and its over-loaded condition from the wasting tissues, becomes at length heavy, and pale-sodden, whilst the forehead drips with outstanding

perspiration, and the sclerotic tissues of the eyes become finely pencilled, and the mucus tears drain from the sticky and often shut lids.

From the seventh to the ninth day such is the course of acute rheumatism, when relief may come permanently, or by shifting the the scene of action to other parts, with moderation in degree and duration of the pain ; whilst the joints previously affected become less unpliant, although aching with an almost paralytic stiffness, as regards progression or action. The patient is a child once more, every motion is uncertain; he totters with his weight, and has as it were, to learn to grasp again. In some, at this period, gloomy inaction, or heart-desponding forebodings harass the tedious convalescence. In others, although the recovery seems certain, the hopes are found delusive, and they again become victims to a reättack. Pain renews its seat, the clothes become drenched in the sour sweats, and the morrows are mortgaged in nights of agony. Nor is this relapse always to be dated from imprudence of motion, or of exposure, or of diet, which from the improving appetite, or greater constitutional demand of the patient, had been more generous. It may and frequently does result from many causes unconnected with motion, atmospheric change, or regimen. Amongst these may be mentioned in this place, renewed blood disorder, encroaching purulent disturbance, the impairment of an organ by a more or less rapid hindrance of action from effusion, or by partial degeneracy of normal structure, &c., &c. It is here that the skilful physician is required ; not only to guard against present impending difficulties, but to restrain, if possible, the disposition to organic damage in the various organs; which, if allowed to proceed in their stealthy progress, may suddenly shorten life before its prime, or leave it as a dreary tenure to the joyless sufferer.

The prognosis, in many cases of rheumatism, depends upon the previous condition of the patient. Whether he has been more given to vegetable or animal diet, or to alcoholic drinks ; also, as regards the state of the primary and secondary digestion,—if he has had syphilis, or been lately subjected to gonorrhœa,—whether the kidneys have been for a short or long time diseased or disordered, the origin dating from the exanthemata or not,—or if the heart has been affected. In females especially it is important to know whether they have been subject to hysteria, with or without convulsion, or if chorea has at any period of life been present, or if the patient has at any time been affected by Marsh malaria or intermittent,—whether extensive suppuration had been present, or chronic eruptions been repelled. These, and many other conditions, in connection with the

habits, occupation, *and the history of the parents*, have to be fully entered into, before a just opinion can be formed as regards the prognosis and rational treatment.

For no disease does there exist in general a more unsatisfactory selection, or a more discrepant account, as regards effective remedial measures, and this amongst medical as well as non-medical observers. The indisposition amongst many to regard rheumatism as a blood disorder, the real difficulty at times in making a satisfactory determination as regards the tissues affected, and the lithic or lactic acid excesses in the circulation, with an *apparent* natural skin excretion, or their non-elimination from the blood, with deficient cutaneous action,—these, and many other causes, together with the inaccuracy that will attend the diagnosis of even the most skilful, render at times, the treatment vague, unsteady, and in most cases purely empirical. For every one you meet has a remedy with a list of cures.

The remedial selection, therefore, often requires much acumen in distinguishing simple acute or true fibrous inflammatory rheumatism, from the affection upon which the various organs have engrafted their assisting vices ; as witnessed in some disguised states of Bright's disease, or after scarlet fever, or spinal derangement, local phlebitis, insidious tumor, long continued and unrecognized constipation, &c., &c.

As acute rheumatism does not necessarily resolve itself into chronic, so may it be said that the latter, as a general thing, starts its onward course of injury and disfigurement in a stealthy and insidious manner, without much painful inconvenience in the early steps. There is, as is well known, what might be termed chronic acute rheumatism ; that is, where the patient, after an acute attack, is never entirely free from aching pain or slowly-increasing disablement of the joints, till seized with another attack. But, as above remarked, chronic rheumatism, in most cases, begins stealthily. Antecedent impairment of health, at first scarcely noticeable ; fitful pains shooting here and there, stiffness of the back or in the joints, on rising suddenly from the sitting or lying posture ; *skin-aching more intolerable whilst warm in bed ;* deep, heavy, and weakening pains in the larger muscles, rendering sleep uncertain and uncomfortable ; frequent desire to urinate, *sometimes attended with more or less scalding*, and even with *muco-purulent urethral or vaginal discharge*, rendering a suspicion of, and at times mistaken for, gonorrhœal disorder,—the slow but increasing enlargements of the joints, unaccompanied with desquamation or *irregular* disfigurement, as in gout ; the general stiff-hinge movements,—these,

and many others, bring the intelligence to the afflicted that the record of their assimilative imperfections, or their imprudence of all hygienic rules, is most ineffaceably written in their persons. The symmetrical disposition to disfigurement is peculiarly noticeable in chronic rheumatism, the distortion of one joint, or of its burse, being apt to be daguerreotyped in the corresponding part of the other side.

But chronic rheumatism may exist unwritten in joint or muscle, and even unsuspected by the practitioner and patient, the brunt of the disorder falling upon organs hidden to view during life, and whose altered organic condition, with the cause, is only revealed by the knife. For what is true in the diffused form of gout, is also true in chronic rheumatism. The patient may be tortured under the belief of an existing and incurable organic disease of an organ important to life ; whilst, in reality, it is only laboring under the insidious functional poisoning of unrecognized rheumatic infection. It has been my frequent opportunity, to see both the young and the old treated for organic cardiac disease, attended with disturbance of action, and all the *bruits* that play their Æolian strains over the strings of the heart, when, by addressing the treatment to the rheumatic condition of the blood, relief has been gained in a satisfactory, and in many instances, in an almost magical manner. And the same may be said of the apparent heart-disease in the gouty,—colchicum and hydriodate of potash being their best friends.

In what may be properly termed chronic acute rheumatism—that is, in persons subject to frequent attacks of the acute form with slow recuperation—the heart is liable to become affected in about thirty in one hundred cases, and this, especially in children, from seven to fifteen years of age. In the plurality of these cases, the *previous exanthemata, as scarlatina or measles, most likely laid the foundation*, or were associated in the rheumatic attack. For the valvular lesions so frequently attending rheumatism, are not uncommonly preceded by kidney derangements, which date their origin from causes as above mentioned. It therefore becomes needful, whilst seeking into the existence and date of an hypertrophied ventricle, (which, of itself, is so frequently conjoined with disease of the aortic valves, or if dilatation exist, with adhesion to the pericardium,) to enquire if the exanthemata had at any time been suffered from. For it is undeniable that kidney disease, from whatever cause, frequently exists with altered muscular structure of the heart, and a high irritability in its serous lining membrane. This state is more frequently found in

females than in males, and thus in part, may account for the greater prevalence of choreic disease in them.

As regards selection, the left side of the heart, from its greater tendinous structure, is more subject to rheumatic inflammation than the right. From the considerations above-mentioned of the liability of the heart to previous damage from kidney derangement, the fact of rheumatic pericarditis being less frequent than valvular inflammation, may be accounted for. In many cases of rheumatic pericarditis, the lining membrane of the heart is found more or less involved, and pleurisy by extension may result. Where extensive kidney disorder has existed previously, suppurative or purulent inflammation may, and frequently does ensue, whilst the uræmic symptoms are prominent; and *this, especially, if the patient has been lately subjected to the scarlatinal poison.*

Indeed, pleurisy unconnected with pericarditis, is rare in rheumatism, and in some cases, apparently, will be proportioned to the amount of urea, remaining uneliminated from the blood. The pleuritic effusions sometimes are so great as to displace the lower organs, and especially the liver; leading, on hasty examination of the abdomen, to the belief of enlargement of that organ, or of tumor, as has been witnessed by me on post-mortem inspection, where the serous or sero-purulent collection in the left side was so extensive, as to cause a large bag to descend low down towards the crista of the ileum; rendering, during life, all diagnosis unsatisfactory and obscure. Where the effusion is on the right side in excessive quantity, and accompanied with ascites, the liver may be floated, as it were, and pushed far over into the left side, giving rise, also, to the supposition of a tumor existing there.

Hypertrophy of the left ventricle is a most common sequence, or associate, of disease of the kidneys; and in these cases is frequently independent of valvular disorder, whilst apoplexy forms one of the modes of death. Where rheumatism attacks an individual, who previously may have been laboring under hypertrophy of the heart, the prognosis is of course more unfavorable as regards the ultimate result; as the vessels of the brain are apt to become diseased or degenerated in this condition of the heart. If disorganization of the kidney coëxist, the danger to the patient is also increased; as the hypertrophic state of the heart has a double association. What exact proportion in these cases have been affected by scarlatina, I do not know, but it appears to me that the number is in greater ratio.

The peculiar irritable manner and appearance in the patient at first,

but changing to a dull yet anxious expression, in rheumatism with previously disorganized or impaired kidney, is to be accounted for, by the gradual poisoning of the brain and great organic centres, from the retention of urea and other excrementitious matter in the blood. This condition may be partially relieved by the occurrence of effusions; but only for a time, as resorption, fresh accumulation, and functional impediment by dropsical extent, ensue, whilst convulsion, or coma, ends the scene.

The absorption of urea is by no means to be measured by the drowsiness of the patient; in some it acts as an *excitant*, producing sleeplessness or vivid fancies, as is not unfrequently witnessed after opiates. Indeed, I have seen the utmost watchfulness persist; sleep or coma, only ensuing just before death. It is the object of this paper to more than call the attention of the profession, to the fact of the frequency of rheumatism after scarlatina, or other exanthamata, and to the extreme liability of the epthelial serous linings of the various parts of the body, to become the seat of the disorder, after the kidneys have been disturbed, or diseased in their epithelical structure. Hence, the frequency of sero-fibrous rheumatism after scarlatina; and where no kidney disorder exists, the *preference of this rheumatic affection to the pure non-epithelial fibrous structures.* In the former, purulent effusions are apt to take place, whilst in the latter they are very rarely witnessed, though the swelling, &c., is greater.

The student should carefully divest himself of the too prevalent idea of metastasis in rheumatism, gout, and other diseases not strictly confined in certain regional bounds. The endeavor should be to classify anatomically, the tissues endowed with the *same organic elements*, and having alike functions. By so doing, *identity of structure* with their liability to functional error will usurp the vague idea of the so-called metastasis; and the disturbances of other organs, will resolve themselves into their own legitimate actions and reäctions. It is also important to weigh the *mechanical association*, or situation of parts involved, and their disturbing influences. For instance, pericarditis with adhesion, although highly interfering, still will allow the function of the heart to be carried on better than in endo-carditis with valvular narrowing of the orifices, or where the natural elasticity of the inner mechanism is hampered by thickening, or by restraining adhesions; or, by roughening vegetations opposing an obstacle to the uniform current of the blood, &c., &c.

The various compounds remaining in the blood from deranged elective balance, may act as other poisons do when introduced from with-

out. These toxical influences may become directly injurious, by completely paralyzing the functions of a single organ, highly essential to life ; or they may, by inducing a gradual degeneracy of all the nutritive centres, so leaven the whole circulating mass, as to render every structure more or less attainted in their vital uses. Nor are these effects subjected to any regularity, as regards their exhibition. In one, *paralysis of motion* may ensue—whilst in another, disorder of any special sense may result ; and *blindness*, *deafness*, or *insanity*, be the product, leading, too generally, to the belief of structural degeneration, rather than of functional derangement. This subject is full of the highest importance, and must ultimately form the platform of future improvement in the treatment of disease, before medicine can be safely called a science.

These blood poisons act by excess or deficiency of the normal ingredients—or by new combinations, not existing in the healthful state—or from the introduction of a specific poison, such as the syphilitic, cadaveric, &c., which have the power either to arrest the natural blood formations, or to impress upon them a new formative growth and self-life, not consonant with the normal organic constitution. Cancers seem to be an illustration of this. Each of these specific entities, or poisons, have a given type-life—in some, without the power of reproduction in the same individual (as witnessed in small-pox, measles, scarlatina, &c.), running through their periods of incubation, growth, and decline, in a regular manifestation of events. In other blood poisons no such self-limitation of development, nor after-inoculative exemption exists. A disposition to increase without limit, and to perpetuate their destructive changes in every tissue, forms a prominent feature in them ; as seen in syphilis and cancer. But these latter kinds are more amenable to early treatment, or to death by remedy ; or, in other words, to cure, than the former. It is, however, a curious fact, as regards the development of syphilis amongst the Northern Esquimaux, that even this poison, so frightful in its ravages amongst civilized and warmer-climed people, runs in them from the primary stage to complete eradication, in six months, *without treatment of any kind*. For this fact I am indebted to my distinguished friend Dr. Kane.*

A slight outline of some of the disorderly associates of rheumatism, and of those affections attended with pain apparently rheumatic, but dating their origin from other morbid conditions, may be proper here.

* This paper, it will be remembered, was written before the death of this noble man.

Rheumatism is not only frequently conjoined with scarlet fever, but is exceedingly prone to afflict persons who have been subjected to this disease, or to other of the exanthemata. From the views early mentioned, this might be suspected, since the kidney is also liable to suffer greatly in this fever. Where the renal derangement is early manifested, the pain in the joints is apt to make a corresponding appearance, and will frequently mask the attending scarlatinal affection, or cause it to be entirely overlooked if feebly developed ; the delirium, convulsions, or increasing coma that may attend, giving rise to the surmise of translation of the rheumatic action to the brain, or its coverings. In these cases of apparent rheumatic origin, it therefore becomes important to investigate closely into the exact condition of the child, as to its exposure to scarlatinal infection, or to the epidemic influence at the time prevailing.

The subsequent difficulty about restoration to general good health —the desquamations—the sudden chest difficulties, or dropsical effusions, ensuing shortly after, and even without incautious exposure, on the subsidence of arthritic pains—these many times serve to point out what has been overlooked. In none of the exanthemata is untimely exposure more severely witnessed than after scarlatina. Another fact is well worthy of consideration, viz: the albuminal persistence in the urine, together with tubular casts, epithelial deposits, &c. If this condition is found to exist in a case of sudden but ill-defined rheumatism—and more especially in children who have never been known to have had scarlatina, attention should at once be directed to the probability of the incurrence of this affection, and to the fact of the engagement of the kidneys.

The rheumatic symptoms generally do not exhibit themselves in the commencement. The scarlatinal disease may have been declared some time, even to the period of desquamation, before the joints are complained of. But whenever this may happen, and the kidneys are becoming more or less deranged, the danger is great, not only for the present but for the future ; since the effusions into the joints are at times amongst the lesser evils, the heart and brain being the special organs for anxiety. The effusions within the joint, although they may not be great, may eventuate in suppuration (as in purulent synovitis), producing more or less permanent alteration of structure and model, from mere thickening to articular caries.

In all cases of diseased joints in children, the strictest inquiry into the preceding disorders, and especially as to scarlatina, then becomes

of vital importance. As is found in the destruction of the aural bony-chain and surfaces, being confined mostly to one side, so, in the articular, is one joint, especially the knee, more frequently injured. Where the history of the case is imperfect or obscure, still, by the careful examination of the urine, even at a late date, much information can be gained ; as by it, we can often obtain a satisfactory diagnosis between the affection being the result of true fibrous rheumatism, to which it may have been attributed, or of the involvement of the articular fibro-serous membrane, with kidney derangement. This portion of the pathology of joint affections is worthy of serious consideration, and the prognosis must ever be uncertain without it. Most medical and surgical men can recall cases where the history of the affection, or the successful result of treatment, will prove the truth of these views. It is nothing new to attribute the abscessular conditions of the ear, or the ossicular caries, with sloughing of the tympanum, to the after effects of scarlatina. But the injuries to the joints, and other parts, have not met as ready observation, owing probably to the descriptive statements given of the pain, leading to the idea of simple rheumatism of the non-epithelial fibrous tissue.

Both old and young have been, and will be time and again, treated for apparent rheumatism, where the affection owed its origin to subfascial abscess, or impinging deposits of pus, either of local origin or from purulent absorptions. Scarlatina, typhus fever, local injuries,&c., may all produce this condition, and the errors of treatment may at times be pardonable, but in general are dependent upon ignorance or carelessness. In children, rheumatism more frequently terminates with suppuration than in adults ; and their more recent exposure to scarlatina readily accounts for this. But in the older, a diseased condition of the kidney, with epithelial-disintegration, frequently takes place. In these, rheumatism of the internal sero-fibrous membranes of the joints is prone to ensue, and pus may be generated. The results, then, are nearly the same, the difference being marked chiefly in the higher nutritive changes which take place in the young. In scarlatinal-rheumatism, the joints are not the only sufferers when the kidney has been damaged. Any parts having the epithelial fibro-serous element, may become the seat of derangement. Hence heart disease, pleurisy, arachnitis, with intra-cranial effusions, may result ; and the time of their demonstration will be variable. It may be shortly after the attack, or proceed so stealthily or slowly, that even adult age may be reached. For disease is not a running horse, to be timed exactly.

The modes of death in the child and in the adult are somewhat

different. In the child, the hypertrophic condition of the heart is less frequently attended with valvular disorder ; and the changes in the vessels of the brain, by which apoplexy, from rupture, is so often accomplished in the adult, rarely proceed to very great disorganization. But a fatal issue may speedily attend with convulsion and coma, from the higher impressibility of their nervous system. The arachnitis of the convexity of the brain is rapidly ushered in with alarming symptoms. The pain is intense, and the sleepless irritability attending from the first, alternates with delirium more or less marked, till convulsion or coma may close the scene. But the symptoms, when the base of the brain is affected, though less prominent. are more on that account, to be dreaded, from their insidious character. Pain is not much complained of, and the delirium, if any, is less profound ; but the coma is more sudden and quickly fatal.

In the adult, the hypertrophy of the left ventricle of the heart, (sometimes independent of any valvular disorder,) accompanied by kidney disease, gives rise to, or at least is often associated with, alteration of the vessels of the brain, extending to more or less profound degeneration of their coats. Hence, apoplexy—sometimes sudden and fatal, as from the stroke of a hammer—is not an unfrequent consequence ; or softening of the brain may come on with rapid strides or stealthy step, rendering life uncertain, or held at expense of motion, or intelligence, according to the extent and its seat.

In the child, the pale, pasty skin, the fretful restlessness, or the listless inactivity, varying according to the greater or less power in the surface and kidney to depurate the blood—the errors of motion, or perception, or of any special sense ; these, and many other indications, should always attract to the threatening condition. That much permanent benefit can be obtained by any treatment, where organic changes have proceeded so far, is not always to be expected ; but it will be satisfactory to know, that the state of the patient had been noticed, and that death did not claim its victim before any rational measures for the prolongation of life, or mitigation of suffering had been entered into.

The choreic disturbances in children (and especially if they have been subjected to scarlatinal infection), dating their origin more or less closely after an attack of rheumatism, are well worthy of notice. In many cases the chorea is the first symptom attracting notice to the condition of the heart. Where rheumatic inflammation has been

seated in the lining membrane, St. Vitus's dance has been so frequently a sequence, that it is, by many, viewed in the relation of cause and effect. And this opinion, in many cases, seems verified. As above observed, the muscular irregularities sometimes cause the detection of the heart's injury for the first time. The interval between the occurrence of the rheumatic disturbance and the chorea is irregular ; whilst the prognosis as to the subsidence of the choreic motions from heart complications, depends on the power of arresting the damage, and the capability of improving the general nutritive system. If the latter can be accomplished, the *remodeling* as it were, of the heart, keeps pace with the progress of growth in the patient. At times, however, the heart is so slightly disturbed as not to indicate any appreciable organic difficulty, although sufficient irritability is established to reflect through the spinal nerves the disturbances of relation. It is in these latter cases that the metallic tonics, such as arsenic, zinc, oxide of silver, act so rapidly in cure. But in the graver cases, where the heart is more seriously affected, time forms one of the chief elements, by allowing the reproductive changes to ensue with the growth. In these cases is witnessed the reason of the insignificance of remedies which had proved so beneficial in others. Independent of any heart or kidney disease, the errors in the composition of the blood after rheumatism, or any other blood disorder, may act as frequent causes of disturbances of innervation. Hence stimulant tonic, or sedative treatment, may be called for : in one the reproductive actions being below par ; whilst in the other, *a want of relation between the blood and the assimilative power of the tissues themselves may be at fault.* A third cause, apparently, may be independent of any blood relation, and exist in the nervous centres, or the nerves themselves. In this way the proneness of chorea to be a one-sided disease may be accounted for.

The tendency to rheumatic complaints in a family where scarlatina has been *irregularly developed*, sometimes affords a clue both as to the nature of the attack and its relief. For is it not uncommon to find one child subject to rheumatism, and another having chorea without any apparent rheumatic affection. In these, fright, which in general is a highly productive agent, acts readily and violently. After twelve or fourteen years of age, private abuse, through the reflex actions of the spermatic branches over the heart and the nervous masses at the base of the brain, may produce alike disturbances. The bellows sound of the heart and in the great arteries in these cases resemble, in a measure, the bruits from more serious organic

difficulty. Fright is more commonly an excitor in the rheumatic or debilitated, than in sound and robust children. The development of the attack is also more immediate after fright, than after rheumatic disorder. Where the urine is of high specific gravity, depositing lithates or oxalates, and overcharged with urea, and the patient does not become correspondingly weak and emaciated, the error lies chiefly in the diet being in excess to the assimilative powers. The blood here represents the conditions favorable to acute rheumatism ; and if previous kidney derangement has been engrafted from exanthematous disease or other cause, an attack is apt to follow. But if the individual be free from any renal difficulty, the rheumatic attack may not be fully generated, but disturbances of nutrition or in the assimilative balances may ensue, with chorea as a result.

Stammering in children, may sometimes be traced to the same causes and yield to proper treatment. As in chorea, fright, or other emotional excitement, has also been a prolific agent in this affection. Indeed, stammering might be called a chorea of the tongue and larynx. Almost every practitioner, and layman, can recall cases of early impediment, which subsided gradually with the increasing growth and strength of the person.

Excepting in those cases of sudden and continued violent chorea, where the nervous exhaustion is so great as to defy timely repair, the prognosis, for the most part, is favorable ; and even in choreic paralysis, a happy termination may be safely anticipated, if the kidneys regain their normal actions.

It is not difficult to understand, when the conditions of the blood or of the heart and kidneys in rhuematism are known, that dropsy may be a sequence—its severity dating from its degree, time, and place. Nor would it be, as it often is, a matter of surprise to the relatives of the patient, who have wondered at the apparent *over*-attention of the skilled practitioner, were his anxieties as to the issue of the case known, as long as the purring sounds of the heart and the cellular puffiness about the eyes, and the epithelial and albuminous deposits continue.

Diffused gout is sometimes mistaken for rheumatism; the liability to cardiac pains, palpitation, &c., adds to the belief. But the history of the patient, his mode of living and appearance, the family diathesis, and the success that may have attended the previous administration of remedies, serves to clear away any difficulty in the diagnosis.

As instances of rheumatic origin, may be mentioned the sudden

attack of lumbago, pleurodynia, crick, stitch in the intercostals, the muscular achings whilst at rest or after getting warm in bed, or the dull heavy pains, attended with a sense of coldness in the part, &c. Yet it may be well to mention that all these may be the result of long-continued constipation, and will frequently take their flight after a brisk purge.

There is a painful affection of the skin, termed dermalgia, that I will refer to. This affection, so afflicting to the patient at times, is by no means unfrequent. It is a somewhat common companion of hysteria; and from this fact, I have been led to regard some of the forms of this protean malady, as offshoots of rheumatism, or at least as indicating a rheumatic tendency in the blood. In many cases I have detected epithelial deposits, tubular casts, &c. From much opportunity in witnessing uterine disease, the frequent connection of hysteria with painful menstruation, has satisfied me that rheumatism plays an important part in it, as it also does in many cases of dysmenorrhœa unattended with hysteric phenomena. In apparent spinal disorder, this painful tenderness in the skin is a common attendant, and sometimes exists to such an extent over the processes, as to lead the unwary examiner into the belief of severe local injury. By pinching up the skin, and then making the same amount of downward pressure, this suspicion can be frequently dispelled, as the pain will be found much lessened, or at least not increased. The same condition exists also in certain gouty individuals, the increasing tenderness in the skin being many times a forerunner of an acute attack.

In the female, a rheumatic pain is sometimes complained of in the region of the knee-joint, differing from the hysteric joint of Brodie, as in conjunction they have rheumatism of the pelvic organs. It is at first a mere translation of pain to a distal part, by irritation at the roots of the nerves. But after a time, the functional disturbance causes an organic change in the tissues about the condyle, swelling, heat, and redness ensuing, whilst abscess forms, difficult to heal, or to alleviate in suffering, until the general tone becomes improved, and the local pelvic rheumatic affection be overcome. Applications to the knee are only of temporary benefit, and of no value as regards cure.

I cannot refrain from attracting attention, in this place, to a painful condition of the surface in children, the slightest touch being complained of. It is frequently the forerunner of severe if not fatal convulsions, and evidences great functional or organic derangement of the nervous centres. When noticed, no time should

be lost in making such applications to the spine, and base of the brain as may be demanded. If fortunate enough to be attracted early to this symptom of superficial pain, the convulsions may be rendered lighter, and of less duration. But unfortunately this condition sometimes remains unnoticed, or has made such progress when noticed, that the exhaustion from the convulsions is so profound, that organic repair and nervous recuperation do not ensue ; and the child dies, either after a succession of rapid convulsive efforts, or becomes comatose, and sinks without a sign into its last sleep. These cases I have seen, especially after scarlatinal kidney disorder—in some an interval of comparative health had supervened, but after a time an icterode hue assumed the place of the natural complexion, with a certain puffy appearance leading the parents or a common observer to think indicative of increasing flesh. If the kidney has been damaged, the violence of the convulsions by their continued succession, acts in a doubly dangerous manner—in the first, by the exhaustion, and in the second by the *extra amount of animalized matter* that is thrown into the circulation, and which cannot be voided by the natural emulgent channel of the kidneys. As in chorea, where the muscular movements are excessive, the sulphates as well as urea will be found in excess in the urine, evidencing the rapid waste of muscular structure, by the inordinate movements during convulsions.

The secondary abscesses following rheumatism, result in most cases, from local phlebitis, or from the detention of minute fibrinous plugs arresting the circulation in the small vessels. Sometimes, the breaking down of larger plugs with interior pus, causes irritation to be established, with more or less serous infiltration into the adjacent cellular tissue, the abscess varying according to the local arrest. The limits of this paper, however, will not allow more than mention of these conditions. I will merely refer to the pathological facts of the vessels becoming inflamed, and subsequently thickened or plugged up, so that more or less perfect closure ensues, with resolution into abscess, or into mortification, either local, or at a distal point, if the large vessels are arrested in their circulation. The nature of the gangrene, whether moist or dry, will in great measure depend on the perfection of the closure. Sometimes, however, the surrounding parts become so agglutinated by the adhesive action of repair, as to render the neighboring tissues anatomically unrecognizable, and totally unfit for their purposes of secretion or of motion. If such deposits take place in the lungs, the damage is the same, and in this

way vomicæ may arise, perfectly independent of tubercular origin, a plug of fibrin not as large as the head of a pin arresting the local circulation, with consecutive destructive changes; so that rheumatism, by its results, may become the parent of evils, equal, in their destructive tendencies over life, to tubercle in its highest state of development and disintegration. If the vessels of the brain become the seat of arrest, its nutrition will be more or less interfered with, and local atrophy or softening may ensue, with lesions of motion, or of intelligence, as resultants. And thus paralysis and imbecility may follow in the train of that so-called "simple rheumatism."

The cases of paralysis after rheumatism of the spinal investments are not unfrequent. On dissection, this apparently high inflammatory action, so complete in its functional arrest as even to eventuate in death, cannot at times be recognized by the eye, as regards structural change. And the same can be said of it when seated in the serous membranes of the brain; the so-called inflammation being a specific poisoning of the very centres of life, leaving neither trace nor residue.

In the gouty the blood poison is not always exhibited by the "big toe" attack, with increasing demand for flannel. The skin may become the beacon of its approach. Lichenous, herpetic, or other eruptions, painful to bear and obstinate to treat, may not only mark the attack, but for a long time keep it in "masterly inactivity." And the same, at times, may be said of the poison of rheumatism.

It would appear, from reasoning on the facts adduced in the study of rheumatism and gout, that if the lactic acid formations are in excess, either by over-generation or by non-elimination, that an attack of acute rheumatism is apt to follow, and especially after the sudden drying up of these eruptions. If this does not take place, but the skin disorder recedes slowly, and there is apparently but a small excess of lactic acid retained, the rheumatic pains are irregular, flying from spot to spot, or the joints become more or less stiff, not from any difficulty in their opposing surfaces, but from muscular inability to apply the necessary force towards movement. If, on the other hand, the uric acid is not expelled, or is generated in excess, gout is the frequent successor. At this moment I have two cases that would apparently verify these views.

The white fibrous tissue is the chief texture affected in simple acute or true fibrous rheumatism, either as it occurs in the formation of the ligaments connected with joints, or in the membranous form

covering tendons, or in the aponeurotic expansions of the large muscles, as the fascia lata of the thigh, with its deep prolongations, or in the cranial dura mater, sclerotica, &c.

It will be necessary to bear in mind that the sheaths of tendons—the bursæ (sometimes called the bursal synovial membranes) between the tendons of muscles, between tendons and bones, and between the projecting parts of bones and skin, as the olecranon, &c., *have no epithelium*,—although in function they resemble the true synovial membranes, yet they differ from them anatomically and in exact analysis. But this is not the case in the *bursæ communicating with the synovial capsules; these, as well as the articular cartilages, have an epithelial layer*. These anatomical peculiarities are to be remembered, as they form the distinctive features in the pathology, diagnosis, and treatment.

Although the synovial membranes are not so prone to the effusion of plastic lymph, as are the serous, yet the bursæ are at times found not only traversed by adhesive bands, but even completely obliterated. The movements in such conditions are greatly impeded, but not so completely, as when the sheaths of the tendons are in a like manner affected, the free play of the attached muscles being rendered more or less impossible.

The fact is not to be lost sight of, that a large proportion of the urea is derived from the disintegration of the body tissues, especially of the gelatinous and albuminous orders, independently of the introduction of nitrogenized food into the system. It is chiefly, or at least frequently, in rheumatic disorders which are the offspring of deranged secondary assimilation, that urea forms so fatal an agency, although nervous depressions and coma arise in non-rheumatic diseases; as those of the kidney, or from puerperal causes, &c. Indeed, in many diseases involving the serous membranes with kidney difficulty, urea forms a dread element, whilst, by its non-elimination, or selective error, it lies at the secret cause of disturbance, not only in the sclerotic membranes, but also in many of the diseases of the aqueous and vitreous humors of the eye. This is now only alluded to, and may form the subject of another paper, or will serve to call notice from other medical observers. Not less important would be a series of observations as regards the action of oxygenated remedies in a high lithic condition of the system, as the uric acid might thus be converted into urea. In the gouty this change of uric acid into urea might take place by the action of oxygenated remedies, and suppuration of the synovial capsules and serous membranes ensue, as

in rheumatism, whilst arachnitis and coma form the modes of death, especially if kidney disorder exist at the same time. In other cases—those in which death is sudden, and the organic lesions are inappreciable or insufficient to account for the fatal termination—the urea, by a reärrangement of its elements, may be converted into cyanate of ammonia, thus poisoning the centres essential to life.

It is not always that in rheumatism there is a *deficiency* of surface excretion, nor in gout that the kidneys are chiefly in fault. The *materies morbi* may be generated by the imperfect composition and quantity of the blood itself, so that the *tissues of selection* cannot be properly nourished,—their structural assimilation being more or less destroyed.

The excretion of soda in tophaceous deposits or articular incrustations, does not take place in rheumatism as in gout ; it is, however, partially witnessed in the hybrid affection, viz : rheumatic gout. This in part, may be accounted for ; as in the gouty the primary digestion is disturbed, whilst in the rheumatic the secondary assimilations are more at fault. Hence, the first are apt to use soda as a corrective of acidity, or "to bring the wind off the stomach ;" whilst, probably, from the inactivity of the liver, the alkali from the salt used at table is not called on in the formation of bile, and thus collects in the blood. In rheumatism, however, we have at times such fusion of the immediate tissues about the joints, rendering anatomical division almost impossible, that it would seem by the excessive attraction of lactic acid to the parts, it possessed the power to act as a solvent of the elementary fibres, as I have found it for many years useful for that purpose in dyspepsia of animal substances.

It is well known that rheumatism more frequently attacks the weakly, the intemperate, the irregular in diet (and especially if of unwholesome nature), those who may be exposed to vicissitudes of temperature, or who long labor mentally or physically with insufficient food, or under anxiety and mental depression. But the strong, well-fed and ablebodied, young or old, are liable to its sufferings ; in these, if the exanthemata, or accident, have not engrafted a kidney vice, and the blood is not overloaded with nitrogenized products, the attack will be of the simple inflammatory type, affecting the non-epithelial fibrous structures or surfaces ; whilst heart disease, and especially of the mitral valve, will be infrequent. On the other hand, if kidney disease, accidental or exanthematous, be present, then structures more important in their uses and anatomical arrangements, viz : the interior capsular parts, the heart and the arachnoid serous

membrane, &c., are liable to become affected, whilst the prognosis is against the patient, either immediately or remotely. Delirium or coma, more or less profound, is the distinguishing feature in these cases. In the others, where the exterior cranial fibrous dura mater is attacked, although the sufferings are intense and the venous suffusion alarming, yet the chances to the patient are more favorable, and delirium and coma do not follow in so fatal a train if present, unless the effusion be great ; and even here, the disturbances are more of position than of nutritive function.

The rich or the pampered are not, however, the sole proprietors of the gout ; the poor, the half-starved have also their gout ; it is the offspring of their very poverty. Dives, introduces into his blood from without the great sources of his evil ; whilst Lazarus produces a condition almost similar, by the rapid disintegration of his own tissues, loading his ill-fed blood with uric acid and other compounds, from the wear and tear of his system. There is no compensation by proper supply of food ; and the kidneys and other emunctory organs are too enfeebled, though, perhaps, not diseased, to extract the uric acid or urea from the blood. These cases, though rare, yet take place—it is the gout of the impoverished. They are, in general, inebriate from necessity and from physiological instinct ; their systems cry aloud for carbon,—for liquor,—that the oxygen of the air they breathe shall not burn up their pittance-saved bodies, but attack the free carbon and hydrogen of the alcohol, and leave in respite their meagre frames. It is the gout of demand and not of supply. And here we find a vivid example of the fact above stated, that the tissues suffer disintegration, or death, not only from deficiency of nutritive supply, but from defective quality of the blood. In the gout of the impoverished, nitrogenized food—the bane of the rich man—and those remedies having the power to retard the decomposition of of tissue, as tea, coffee, hop, &c., must be trusted in ; and thus the waste of the system being restrained, the blood will not be surcharged from the structures themselves, and the local disintegration will be arrested, and the organs return to their uses ; but mostly with deformity as an index of their past trials.

The urinary deposits, both in gout and rheumatism, sometimes mask the condition of urine as secreted by the kidney—the uric acid formations being disguised by the alkaline, or earthy phosphates. This is chiefly owing to chronic vesical irritation or inflammation, the muco-pus acting on the urea, and converting it into carbonate of ammonia, which precipitates the alkaline salts. It is thus that the

condition of the urine may be masked by the presence of pus, or of a mucoid body, in its route from the kidneys. Indeed, the highly acid state of the secretion may be the very cause by which the bladder may be irritated. The prognosis in these cases depends on the nature of the bladder or kidney irritation, the possibility of calculus formation, the recent or long previous existence of the affection, &c.

The space allotted me is nearly exhausted, and will necessarily oblige me to condense the chief features of treatment, with a running statement on some other points. From the preceding views the treatment almost explains itself. In the acute rheumatism of the robust, at whatever age, the seat of attack is in the white fibrous tissues, the fever high, attended generally with great sweating, the pain and swelling intense, but *greater than when the epithelial fibro-serous tissues are affected.* Venesection is rarely called for, though by some regarded as not only a mitigator of pain, but as instituting a better condition for subsequent remedial action. As a lessener of fibrin it is useless—its chief value, if used, being the relief to the vascular tension, and the rather more rapid absorption of neutralizing remedies. In my own practice I have not used it for many years. The local applications of leeches is warrantable, but more troublesome in general than the affection. A light antimonial emetic, however, answers more fully the desired end, followed, on the subsidence of its action, by an active purgative of Hyd. chlor. mit., with Ext. Colocynth Comp. The advantage of early emptying the bowels is realized, when the increasing disablement of the joints renders the efforts to rise not only agonizing but injurious. The affected parts should be bathed with a warm mixture of Potassa-bi-Carb. and laudanum, and afterwards wrapped up in cloths saturated with the solution, and covered with oil-silk or rubber, which can be gradually removed if the heat is complained of. Potato water, as left after boiling the vegetable or its parings, has proved a most soothing application, when freely sponged quite warm over the swollen and painful joints, which can afterwards be wrapped up in it, as directed for the alkaline wash. The Tinct. Actea Racemosa, in 6 to 12 drop doses, can be given in or followed by a solution of Nitrate, Bi-Carbonate, or Acetate of Potash; or the Tart. of Potash and Soda, if preferred, can be substituted. Frequently, in children, the Actea alone serves to cut short the attack after a few doses, in conjunction with alkaline fomentations. The necessity for purging generally ceases after the bowels have been well moved in the beginning. At all events, *intestinal irritation is to be avoided.* It is well

to remember that the expectant treatment of acute rheumatism is nearly as favorable in its results as the active. Colchicum, in the acute attack of the strong, who have deranged hepatic action, combined with opium, after due operation from the bowels, also forms a valuable remedy. Its purging and emetic effect is unnecessary and to be avoided. It is more as a cholagogue and an excretor of lithic acid, than as a specific in rheumatism. Where the liver is already acting freely, it does not form an agent of trust, and when frequently employed serves to injure the system. Hence the discrepancy as to its value. In alkaline combination it is frequently useful. The Nitrate of Potash, so much lauded of late, will be found beneficial where a high condition of fibrin exists in the blood, its solvent action over that element being called for. Otherwise it is no more, and many times not so valuable a remedy as the other alkaline salts. It is, therefore, not from any specific eliminating power of the rheumatic poison that is called for, but from its defibrinating action, and its value as a diuretic, and its probably converting the lithic acid into a more soluble compound, urea. After proper evacuation, the Pulv. Doveri, in full doses, will generally, though not always, produce refreshing sleep and quiet the pain. If found stimulant to the brain, watchfulness or flightiness taking place, it either must be increased or left off. Opium acts, in many cases, as an expeller of the lithic acid—in chronic cases, conjoined with turpentine, it sometimes causes immense quantities to be evacuated.

All things considered, time, forms as valuable an element in the treatment as the remedies selected. A certain amount of *materies morbi*, and the disposition to its reproduction, has to be broken up, and time, sweating, and sometimes urination are at work in the process of elimination. Remedies may assist, but if injudiciously employed they will retard, the patient suffering from both disease and doctor. The diet should be unstimulating, meat, soups, and jellies avoided, toast and water, with light gruels, being the best regulators. As the attack subsides, vegetable diet should be adhered to,—the local applications and internal remedies can be moderated. Clam soup, and raw salt oysters may, after a time, be allowed ; and now, if the blood shows decrease of its red corpuscles, the mild preparations of iron may be cautiously commenced on. If loss of flesh be increasing, coffee and tea will prove beneficial as preventers of tissue waste. In the anasarca of the debilitated, squill with quinine will be found most serviceable.

By these means the immediate reättack may be warded off, but

mental quiet and bodily rest are imperative. The supply being small, the demand should be lessened. But the low diet system is not to be carried too far; it is well to remember that the fibrin is increased in the blood by starvation, as well as by high feeding. Rest, however, is absolutely necessary. No blood is to be thrown into the parts in and about the joints, by the invitation of exercise. Even in the very robust, acute rheumatism sometimes attacks the joints after long-continued and violent exercise. But where the parts have been affected, with the system lowered by diet, remedies, and wear and tear from pain and loss of rest, great caution as to exercise is requisite; as other structures, and of higher importance, may become involved, and simple acute fibrous rheumatism, be merged into an attack of the epithelial bursal and synovial membranes of the interior of the joint, besides endangering the heart, pleura, and other organs, when their liability to become engaged was not at first probable.

It is this small point which makes the utmost watchfulness necessary, as regards keeping the system in good general working order, and which has made the pathological statements so variable, as respects the engagement of the heart in acute rheumatism. Every practitioner has observed that, when in the first attack in sound persons, the swelling, heat, redness, and pain have been very great, the heart is not so liable to become affected, as when all the symptoms are more moderate. In some cases, however, both the tissues in and without the joint are attacked, and then the diagnosis is to be carefully viewed, as the renal disturbance is mostly present, though perhaps latent to observation, at the time.

The friction with liniments, whilst the thickening, &c., remains, after the subsidence of the acute pain, will be found beneficial. The following recipe I am in the habit of using :—

R.	Ol. Origan, - - -	℥i
	Ol. Lavend. Spicat., - -	℥ss
	Tinct. Aconite Sat., - -	℥i
	Ol. Amyg. dulc., - - -	℥iii
	Ag. Ammon. fort., - -	℥ii
	Vel., - - - -	℥ss
M.		

A light covering, with cotton batting and oil-silk, should be applied, unless the heat is complained of. The gradual reduction of the envelopes should take place after a time, so that chilliness be avoided, which would attend its speedy withdrawal.

The treatment in chronic fibrous rheumatism has the same features, differing more in degree than method, excepting in the employment of hydriod potass in small doses. The system is to be carefully watched, exercise is to be judiciously and regularly taken, the surface made to excrete properly, the bowels to be kept soluble but unirritated, sleep should be rather longer than in health, as a promoter of insensible transpiration and nervous recuperation, whilst stimulant embrocations, oil-silk sweatings, and light galvanic applications should be employed to the part. The color, quantity, and specific gravity of the urine should be watched, as giving evidence of approaching danger, or of increasing constitutional vigor.

In the heart complications in rheumatism, the treatment requires great circumspection. The difficulty of breathing, the præcordial pain, the out-of-breath manner of speech, the desire to be propped up, the increasing effusions into the legs, scrotum, chest, or abdomen, with diminished urine and rapid pulse—these point out the imminent peril of the sufferer, from which nothing but a strong constitution, and skilful treatment can save him. The drain on the pent-up fluids is to be made through the bowels, as the kidneys are generally too occluded, or broken down in functional power, to be of any use. The Pulv. Jalapæ Comp. with Elaterium, or other hydragogues, with digitalis over the heart, or internally 3 to 6 drops of the Tinct. Veratrum Viride must be administered, and watched during their operation. Support by brandy or champagne must be proportioned to the exhaustion or nervous necessity, but no more. The stimulus, and not the carbon, is wanted now—neither lung nor liver can dispose of it. If alcoholic drinks disagree, coffee and camphor can be substituted, sometimes with most excellent results. During purging, the *position of the patient is to be kept unchanged*, or *even with the head lower if possible*—at all events, he is not to be raised suddenly—whilst stimulants should be snuffed through the nostrils, &c. If these means are successful in reducing the effusions, the kidneys can now be gently invited into action. The palpitation sometimes yields, most gratefully to the patient, after the administration of champagne, the carbonic acid serving to allay the irritability of the heart's action. By conjoining the infusion of the wild-cherry bark—or, where its bitter tonic property seems to disagree with the stomach, a few drops of the dilute Hydrocyanic Acid,—a most happy effect may sometimes be obtained, when the irritability is excessive. But great caution is requisite in the administration of organic sedatives, as will be mentioned further on.

In the convalescence, if *the liver still should continue at fault*, the preparations of iron are to be avoided, as they will serve to induce congestion, and lock up the proper secretions of the organ. At this period, however, the kidneys will sometimes resume their functions, and labor not only for themselves, but, by taking off the purpurates and other highly carbonaceous compounds, so relieve the liver, that the system daily rises refreshed from their effects. The urine becomes more and more abundant, and loaded with the urates of ammonia and soda. It is here I would particularly caution the young practitioner, in his testing the urine with nitric, or nitro-muriatic acid, lest he should mistake the very copious deposits of the white crystals of lithic acid, for albumen. This I have seen done more than once. The deposit of the phosphates by heat, is corrected from wrong interpretation on the addition of the acid, which re-dissolves them. This dense condition of the urine by the urates of ammonia and soda, is the very salvation of the patient. Beware then of administering any acid, either alone or in combination with a vegetable or mineral tonic, as it will serve to neutralize just so much ammonia and soda, and thus prevent the elimination by the kidneys of the very lithic acid so poisonous in its action to the general system, but especially to the serous membrane of the chest, and of the heart, which will be again tortured by the acrid blood into renewal of its exhausting efforts, whilst convulsion and coma stand threateningly near.

In the early part of this tumult of the system, when the organic force is consuming by the overtask of the functions, I would strenuously caution against the abuse of Opium, or of any narcotic, to produce sleep or relieve from pain. And I will only reiterate a maxim which I have before published, and often repeated, viz: that in all organic diseases attended with pain and excretory impediment, Opium and other organic sedatives are to be avoided, as, by paralyzing the organic centres, dropsies may collect in the cavities.

Lemon-juice, in some cases of acute and chronic rheumatism, is at times beneficial, though rarely to be trusted to alone. Yet I have seen cases where it seemed to act as a perfect specific. It will prove chiefly beneficial in uncomplicated cases, where the urea fails in its urinary quantity, and where *an excess of ammonia* exists in the blood. Benzoic acid, in these conditions of chronic rheumatism, acts at times most favorably.

The children of gouty, rheumatic, and dyspeptic parents, are prone to a lithic condition of the blood, or at least to its elimination by the kidney. It is early marked in them by incontinence of urine, or

"wetting the bed." Although the heart does not evidence organic disease in them, yet its motions are violent and frequent whilst crystalline lithic acid is formed in the urine; or they are variable in their diet and irritable in their dispositions, the urine being pale, abundant, but free from lithic acid deposit or in solution. The acid condition of the blood is irritating to the internal membrane of the heart, and the contractions are sharp and frequent. There is a loss of true tone in the system, and rheumatism is apt to set in spontaneously, or after violent anger or any undue exhaustion, exercise, or exposure. Here, opium forms a most valuable remedy from its sedative influence and its power to disengage the lithic acid from the blood.

Children given to masturbation, but whose urine alternates from lithic to the phosphatic, the intermediate depositions of the urates of soda and ammonia taking place, with increase of urea, are also subject to rheumatic attack or pains. Substantial diet, with opium at night, is the chief remedy. The furtive look, the desire for solitude, the uncalled-for sighing, the vesical irritability, the irregular languor, and the blowing sound in the heart and large vessels, with more or less palpitation, will serve to direct suspicion to the solitary acts of the patient, which careful watching may verify. Organic changes may, and frequently do, establish themselves from these long-continued functional disturbances. But it is always well to remember, in the disorders of nutrition of the heart, that the young are reproducers—their organic desire to remodel is ever at work; that the hypertrophy, if it exist, is mostly from *interstitial* deposit, and not a true fibrillar increase of the heart itself. Restraint from the abuse, chemical changes afforded to the blood, and the supply of fresh material by proper food, with attention to moderation of exercise, and sometimes to complete bodily rest, will form not only the treatment, but, in many, a *new organ*. Of this I have seen several most excellent examples. In later life, an individual ceases to be an active remodeler; he is on the waste account; his capital has no interest accruing, and he is forced to use it up for the common necessities of his system. These are distinctions as well as differences. Had these views been more common, so many heart-disturbed children would not have filled an early grave, or been moored to the stake of life, to waste away an aimless existence in later years.

In scarlatinal rheumatism, all treatment at times is rendered impossible by the condition of the patient; as in scarlatina, the do-nothing system is frequently the best. Good nursing, attention to

the skin by sponging or moist wrappings, are better than the "nimia diligentia medici." During the fever, the pain is mostly in the wrists, or in one or two joints. The scarlatina and the rheumatic complication are offspring of the same poison. There is pain, as in true fibrous rheumatism, but it is seated in different structures, and attended with different implications as regards the head, the heart, and the chest. In the robust, the diet, or rather the absence of it, forms the treatment. All animal food is to be avoided—the blood is yet too overloaded with nitrogenized products. If too early indulged in, the articular pains recommence or increase, chest or heart difficulties are renewed, and convulsions endanger the life of the patient. Farinaceous and vegetable diet must be continued a while longer. The debility is deceptive ; it is more the result of the oppressive action of urea over the great nervous centres, than loss of power from nutritive want. The return, then, to animal food, must be cautiously watched.

But in the weakly, these fears have to be in a measure given up. At the first ingress of the rheumatism, a little abstinence may be enjoined ; but after that, the position is different. Death by debility would ensue more rapidly than by the disease. It is the rheumatism of demand. Food and stimulus must be given. Ulcerations —pus makings, about and in the joints, are to be checked ; food and drink must do it ; for specific medicines are useless, unless quinine, iron and other tonics can be so called. Under a lowering plan, the coffin is sure to close over the wretched victims ; and life, to most of us, is better with a stiff leg or disabled joint, than the kind attentions of an undertaker.

In the convulsions attending both cases as above stated, the directions should be :—for the robust, feet and legs in hot water, with head up, or at an easy reclining angle ; for the debilitated, the *horizontal posture*, and no *warm bath*, but cold water sprinkled on the face and chest, in the *order of natural respiration*. Here, the brain must have blood, though diseased blood it be. From the neglect of this simple precaution, I have seen a child killed as though struck on the head,—the feet, and not the brain, being supplied with blood !

In syphilitic, and also in chronic rheumatism, hydriod of potash acts more than well ; in the former it is almost specific. Its combination with colchicum and with opium, may at times be required. It is not only diuretic, but possesses the property to reëstablish assimilative vigor. Small doses, in repetition, act more favorably than large doses at longer intervals.

In rheumatic gout, especially where the fibrous sheaths of nerves are attacked, the combination of Hyd. Pot. with Colchicum acts most favorably, the Tinct. Aconite Sat., with Acid Hydrocyan. being painted freely over the roûte of the affected nerves, and kept from evaporating by strips of oil-silk or rubber. In the cranial effusions, the Hyd. Potass is the most reliable remedy.

Calomel is chiefly useful as a defibrinator, as a promoter of interstitial absorption, and as a specific stimulant to the liver, by which the decarbonation of the blood shall be promoted through the secretion of bile. In the debilitated it is positively harmful, if continued; although the balance at times, even in them, may be in favor of its use, where the brain is oppressed by black blood.

Guaiacum has long enjoyed a reputation in chronic rheumatism, and with apparent good right. It seems to possess the power of increasing the excretion of both lithic and lactic acid, by the kidney and skin. In rheumatic dysmenorrhœa, in leucorrhœal discharges attending this disorder—in the dermalgia, so painful on pressure or warmth—in hysteria and hysteric knee-joint complaints, mostly of a rheumatic nature, &c., this remedy, in conjunction with others, or in the form of the Vol. Tincture, will be found serviceable. The cases, however, are to be selected properly, whilst *time* forms an element in its action. I have known it not only cure, but eradicate some of these disorders.

Rheumatic chorea has already been adverted to, with partial mention of remedies. The irritability of the heart, or the nervous propagation is, in many cases, to be quelled before any permanent success can be attained. Arsenic, as in Fowler's solution, in six drop doses, with the endermic application of morphine, and quinine (if after malarial influence) over the cervical spine, is at times very valuable. In the rheumatic form, colchicum and actea racemosa, in small doses, have been found useful. The same rheumatic condition of the system have been attended, in both male and female, with globus hystericus. Stammering, as before remarked, is sometimes the result of rheumatism, in children whose systems have been weakened, and who are thus more liable to mental emotions, as fright, &c. The heart palpitates readily, and the muscular nervous branches to the larynx, and more rarely the hypo-glossal, or motor of the tongue, become the channels of the disordered reflex action. I have many times noticed the sudden hesitancy of speech, from sudden emotion, in the rheumatic, differing from the arrest of power in the organs from emotional acts in the unaffected.

In conclusion, I shall only refer to acupuncture in sciatica, with effusion into the sheath, and in muscular pains, having been at times serviceable. Chloroform, blisters, the hot button, the endermic applications of veratrine, morphine, delphine, aconitine, strychnine, and other alkaloids, have had reputation for a time, but chiefly in neuralgic affections. In the gouty and rheumatic, local applications may relieve temporarily, but it is only by the patient study of the blood changes, with the appropriate antagonistic remedies, and food, that any permanent benefit can be realized, or security against attack be obtained.

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