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Dissertation
on
Rheumatism

by
Donald Manon
The name given to this disease leaves in it something of its history; it is plainly an offspring of the reign of the humoral pathology period from the Greek, meaning a fluxion, and implying, according to the views which at that time prevailed in medicine, that certain unhealthy humours had flowed to the diseased part.

Rheumatism has, from a remote period, deservedly engaged the attention of British Physicians, owing to its frequency in this variable climate, its protracted course, and the serious evils which have been observed to flow from its attacks. But, in times comparatively recent, a more lively interest has been taken in this important disease, owing to the connexion which is now known to exist between Articular Rheumatism and cardiac disease, often of a complicated and fatal character, which, although not without analogy in medicine, yet presents us with perhaps the
best marked instance of metastatic inflammation, in the whole range of practice of physic.

The first person who pointed out this connection between rheumatism and heart disease, seems to have been Dr. Pitcairn of Bartholomew's Hospital, who taught it to his class in 1788; and a paper was read upon the same subject, by Sir D. Dundas, before the Medico-Chirurgical Society of London, in the year 1808. It was known to him, that in the cardiac affection, both the external and internal membranes of the organ might be the subjects of inflammatory action. Our knowledge of this complication of rheumatism gained an accession from the observations of Dr. Wells and Dr. Oder of Geneva; but it is chiefly to the date of the maturity of Laennec's great discovery that we must refer any decided advance of certain knowledge upon this subject: since that time, the history of the stethoscope, at least in connection with heart disease, carries along with it much of the history of
metastatic Rheumatism. Systematically, Rheumatism is divided into acute and chronic; but it is to the consideration of the former only to which this article will be dedicated.

Acute Rheumatism may attack persons of all ages, from five years upwards, but the greater number of cases occur between the ages of 15 and 35. It commences, in the majority of cases, suddenly, with pain in the knees, ankles, wrists, or elbows, dependent upon the extremity which is first affected, being sometimes preceded or accompanied by a region of some severity. In a well marked case, the joints become red, tumid, and puffy, in a few hours, and so painful that the patient cannot bear the inflamed part to be touched, unless with the utmost tenderness. The cutaneous veins shortly become turgid, and the tense elastic integuments assume a bright rose colored blush. At no long distant period, the tension and elasticity of the parts around the affected joint subside in some degree, giving place to a flaccidity which is however, connected with a considerable amount of puffiness.
some abatement of pain is the concomitant of these changes. Very soon after the first appearance of the local symptoms above detailed, fever sets in and increases in severity along with them. This fever, which is worse at night than during the day, is accompanied by profuse perspirations of an acid smell and reaction, which often drench the patient's linen. The pains are aggravated at night and also by warmth. The pulse may rise as high as 130, strong and full, and is hot, in a very acute case, often lower than 90. Appetite is deficient; the bowels are constipated; the urine is scanty, and deposits a copious, watery, urinous sediment; the tongue is dry and furred; thirst is great; and, in fine, the symptoms are those of pyrexia in general, to which we have already added the perspirations and the local disease! In the great majority of cases, the lower extremities are first affected, the disease beginning at the ankles, then proceeding to the knees, and from thence passing to the wrists or elbow. I have known Rheumatism commence with stiffness of both lower extremities without any definite pain. This stiffness gradually
increased for about eight days, and, at the end of that period, severe pain seized the ankle joints; the fever was developed; and, through the course of 3 weeks, the disease ran its ordinary course, shifting first to the knee joints, then to the hip joints, from thence to the wrists and metacarpal joints of both hands, next to elbows, and terminated at the shoulder. The patient was about 15 years of age, and the traceable cause was his having been engaged in sliding on the ice for several hours. In this case, as in most others, whenever a new joint began to swell, that which was last affected ceased to be so painful, and, after a time, returned to health. In many cases, the joints are twice affected before the patient is finally cured. In a considerable number of cases, the duration of the disease is from a month to six weeks or even longer; but, during that time, there may have been several very decided remissions, leading the patient to hope for a more rapid cure, but it is not uncommon that exacerbations, and those even of a severe character, should happen several times before the convalescence is confi-
med: At the end of ten days, or a fortnight, even in very severe cases, a distinct improvement is often to be noticed: the patient has less pain, sleeps better, perspires less, appetite improves, thirst decreases, and the state of the urine makes an advance towards health being more plentiful and throwing down less sediment. Perhaps however, from a slight accession of cold, or more probably, from the cause of the disease not being sufficiently eradicated, and the remission being due only to the law of periodicity of disease, these signs of amendment soon give place to an exacerbation of greater or lesser severity, and this may occur, as I have already mentioned, several times before the cure of an attack of acute Rheumatism. Regarding the eradication of the cause of the disease, and the length of time for which it may remain in the system, and produce troublesome symptoms, I may be excused here for relating a case which I had some time since, with Robinson, aged 50, stout, ruddy, and of full habit of body, in the habit of living freely, and drinking a considerable quantity of ale, was seized upon the 1st January, with Rheumatism, in left knee and ankle. Some redness is perceptible surrounding...
the joints, and there is slight swelling and tenderness. Pulse 95; tongue purplish, bowels constive; urine very scanty, containing some urine of ammonia and sediment. The following medicines were ordered: a mixture containing Fruct. Dom., Coloehi. 10 m. every 2 hours, together with Pulv. Doni 8 gr. A stimulant liniment to be rubbed upon the painful parts; and a haustus Catharticm. 3 January, pains much relieved; bowels have been freely moved; pulse 85; has had slight delirium during the night; complains of pain of a dull character, in the region of the right kidney. Abdomen a little tympanitic. Has passed rather less urine than for the last several days. Urine examined microscopically, contains great number of moulds of the urinary tubes, consisting of minute oil globules, a few epithelial scales, and a small quantity of urine of ammonia, Specific Gravity 1008. Albuminious.

By the evening of the 4th, the rheumatic pains had all gone, but the pain in the region of the kidney was not at all relieved. The tympanitis was increased. Cerebral derangement still slight. Pulse from 80 to 85. Urine more plentiful, coagulable by heat and Nitric Acid, varying in Specific Gravity from 1008 to
1812, and presenting precisely the same microscopic appearances. Until the 9th, little change took place; the tympanitic being sometimes slightly relieved, by the exhibition of a cathartic, but no permanent improvement discernible. The cerebral derangement still continued; in the evening of that day, the pulse was observed to intermit about once in every 10 or 20 beats. No bruit or friction to be detected after the most minute examination in the cardiac region, but an irregular pulsation, synchronous with the intermission of the pulse, and of the same frequency; pupils of eyes were slightly contracted. The patient had started during sleep frequently. These symptoms continued till the 13th., on the morning of which day, a very dense sediment was observed in the urine. The fibrous mounds had, for the first time, disappeared, and given place to a vast quantity of crystals of urine acid. A rapid abatement of all bad symptoms ensued; and this secretion of urine acid continuing for two days, by that time all bad symptoms had vanished and the patient speedily got well.

In this case, no doubt, the head symptoms were attributable chiefly to the retention of urine as
a consequence of the state of the kidney; but the very rapid decline of all bad symptoms, consequent upon the large secretion of uric acid, would tend to point to the retention of this matter in the system as the causative cause during the chief duration of the case, which, in itself, considered as one of Rheumatism merely, was of extreme mildness.

Pathology and Complications
The views of Pathologists, at present, regarding the seat of Rheumatism, point to the fibrous tissue as that which is in all cases primarily affected. There have been wanting many who had thought that the muscular tissue was as frequently the seat of the disease as the fibrous. And indeed, it must be clear, that the entire determination of the question bears with it great difficulties, seeing that, in the substance of a muscle, all the primitive muscular fibres are bound together by a tissue of fibrous structure, so that the determination of the matter would lie with a minute microscopic examination, if, indeed, the truth would be revealed by even that. Whatever debate there may be regarding the structure which is inflamed in a
Fleshy part, there can be no doubt of the seat of the disease in the great majority of instances, as we have above taken notice of the fact, that the joints are the sphere of inflammatory action, in the first instance, and of all the other concomitants of pain, heat, swelling and redness. In many cases the disease never invades any other part except joints, where, of course, the tissues are entirely fibrous. The synovial membrane also, a membrane of the same structure, undergoes, in this disease, a peculiar form of inflammatin, with consequent effusion. I say peculiar inflammation, because we must here draw a broad line of distinction, between this and the ordinary acute or chronic synovitis, which, as far as the effusion goes, is of a much more manageable character, in the great bulk of instances. When the Rheumatid inflammation is subdued, or metastasis occurs, the effusion, within the capsule, causes little trouble or pain, and, at no long distance of time, becomes absorbed. Mindly. After a joint has been the subject of such effusion, it very generally continues weak for some time, and, not infrequently, grows painful to wards night, or during the night. In some cases, whether from the Rheumatic diathesis being more fully de-
closed, or from unfavorable circumstances, in which the patient may have been placed, the effused fluid does not become absorbed for a great length of time, and very serious consequences result to the fibrous tissue surrounding the diseased joints. The ligaments continue in a thickened state; the functions of the joints are thereby much impaired, and disposed to be still further altered by chronic Rheumatism, which is the common sequel. Effusion becomes permanent in the small joints of the hands and feet often than in any others; the synovial sheaths of the tendons of the fingers, are also very liable to the same condition; and their course is then marked out by ridges on the palm and back of the hand. Rheumatism is now considered to belong to what is styled the lithic acid diathesis, and this conclusion is arrived at: 1. From abundant observations on the urine, showing the constancy of uric acid and urine of ammonia deposit; 2. From the characters of the perspiration, it is highly probable that the same acid is thrown off, in large quantities, from the skin; although, from the quantities procurable, a chemical analysis would not be worthy of our confidence; 3. From calcareous deposit having.
in some rare cases, been found in the joints, which, upon analysis, was shown to be of the same nature as that so very common in gout, viz., crystals of soda. The exciting cause of Rheumatism is exposure to cold. How this can act in determining such a large formation of uric acid and its salts is at present a profound mystery. There is no doubt that some cases are to be traced to hereditary tendency, but, nevertheless, exposure seems always necessary to its full development. The most important and common complication of Rheumatism is the transference of the disease from the joints to the heart, or, rather, the concomitant inflammation of that organ; as in many cases, it can scarcely be considered in the light of a metastasis, since that there is either no subsidence of the articular inflammation, or only a slight remission at the time when the heart is affected. It does not appear to be proven, that the muscular substance of the organ is the seat of any inflammatory action, as a consequence of Rheumatism, but the pericardium and endocardium suffer with great frequency. Upon being called to a case of the disease under consideration, the practitioner should, without delay, proceed to the examination of the
heart. This should be repeated at every visit, but the attention is, in numerous cases, drawn to the cardiac complication, by the patient complaining of severe pain in the chest, corresponding with the region of the heart, although this must not be expected as a guide in all cases, as I have seen those in whom the first invasion of cardiac disease, in the progress of Rheumatism, produced symptoms more resembling typhus fever than anything else; a stethoscopic examination settled the matter at once. When the patient is attacked by pericarditis, a sudden pain is felt in the precordial region, accompanied by a sense of oppression, dyspnoea and palpitation. The pain is generally increased by pressure in the precordial region, by inspiration and by lying on the left side. The difficulty of breathing, in some cases, is intense, and the pulse is much increased in frequency, although regular. Upon examining the left chest with the stethoscope, in well marked cases, the “bruit de frotement” will be heard, with greater or less distinctness. In some cases, which are on record, this bruit has been so loud as to be heard by the patient and attendants, but this is very rare. In a large majority of cases of pericarditis.
the friction sound is so delicate as to be appreciated with difficulty, and, in some cases, not to be made out, except by a most practiced ear. The cause of the difficulty, difference in intensity of the breath in pericardial disease depends upon the following circumstances; The inflammatory exudation may be of two kinds, viz., either plastic, or fluid. These however are rarely thrown out individually, but are more or less mixed in all cases. If the plastic exudation predominate to a great extent, the action of the heart produces a louder sound, by the rubbing of the two rough surfaces together, which, from the quantity of foreign matter not being great, come in contact at all points. If, on the other hand, the chief inflammatory product be fluid, it will be evident that these surfaces of the pericardium, which, in a state of health, are in perfect contact, must be kept about to a greater or less extent, and thus, all friction presented, except at certain points, which will be found to correspond with what would represent the edges of the pericardium upon a thoracic examination. Under such circumstances, percussion is the aid to auscultation which clears up our diagnosis. By this, we ascertain that the
carotid dullness is much increased, and a delicate friction murmur may be heard, corresponding to the periphery of the heart. A very grave amount of pericardial disease may exist as a sequel to Rheumatism, without the symptoms being strongly marked. In some cases, a peculiar nervousness of manner and look of listlessness from the principal outward signs observable; but, if the patient be more minutely interrogated regarding his feelings, it will be discovered, in all cases of this complication, that there is more or less difficulty of breathing, and that the respirations are more frequent. Pericarditis with effusion would seem to be quite a curable disease, if we are content to apply the name of cure to the alleviation of all pain on respiration; to the abolition of all friction sound; and to the improved feelings of the patient, who expresses himself as having made a complete recovery. But, if we trace such cases through the course of years, we shall find that the disease has not been cured radically, but that adhesions have taken place between the heart and its investing membrane, thereby impeding the action of that vital organ, and, according to known laws, secondarily giving origin to an hypertrophy of the heart. If adhesion
of the pericardium occur as a result of Rheumatic peri-
carditis, and all the fluid effused undergo absorption, 
it will be evident, that no stethoscopic sound can in-
dicate this state; but, that during life, it can only be 
predicted upon the known principles of pathology, 
and proved by, post mortem examination, should the 
patient die at some distance of time, possibly of an-
other disease. A more frequent sequela of Rheumatism is 
an inflammation of the Endocardium. This lesion may 
invade either alone or together with pericarditis, but 
is liable to lead to results of a much more grave ch-
aracter. The left side of the heart is that which is 
almost exclusively affected, and the inflammatory 
action seems to be so limited to the valves and their 
corae tendineae. The first sign of endocardial inflam-
mation, is a bruit, the souffle becoming audible in the 
pericardial region. The medical attendant will generally 
be directed to make an examination by the complaints 
of the patient, who feels pain and great distress in 
the region of the heart, but this examination, as have 
before mentioned, but to be regularly made at each 
visit, irrespective of any statement upon the part of 
the patient. The bruit is generally of a soft quality, at 
the commencement, and becomes harsher as the disease
gets worse, graduating into the bruit de rêpe, or from that finally into the bruit de rie. Either the aortic valves or the mitral may be affected, or both. If the mitral, the bruit will be heard loudest under the nipple of the breast, and to the left side; this however, must be taken with some qualification, as I have sometimes heard it louder under the sternum than anywhere else. The bruit, from disease of the aortic valves, should be more loudly audible a little higher than that arising from mitral disease. The cause of the bruit is an inflammatory effusion of a plastic nature, which coats the edges of the valves of their surfaces; thus, in the case of the aortic valves, preventing such a rapid action and perfect closure. But besides the mere valves, we are liable to have an exudation of the same nature deposited around the mitral and aortic orifices, causing them to become narrower.

Before we go further, it may be profitable to consider the physiological action of the left ventricle. When the blood flows into this cavity from the left auricle and fills it, it becomes necessary, that the ventricle shall contract and send into the aorta, by which the vital fluid is carried to all parts of the
system. The contraction of the ventricle is synchronous with the production of what is called the first, or dull sound of the heart; this dull sound is thought to depend upon the following causes. 1. The "bruit musculaire." 2. The rush of blood through the orifice of the aorta into that vessel. 3. The closing of the mitral valve to prevent any regurgitation of blood into the left auricle. 4. The tilting upwards of the apex of the heart, against the pleuritic of the thorax. It is worthy of remembrance, in a diagnostic point of view, that the stroke of the apex of the heart again at the chest, takes place at the extreme termination of the ventricular contraction. The second sound of the heart is caused by the smart closure of the semilunar valves at the aortic orifice. Now, when we come to apply those principles to practice, it will be evident that any disease of the mitral valve or orifice, causing a bruit, must be of a regurgitative character and tending, either to a dilatation of the left auricle, or congestion of the lungs. The mitral orifice in a state of health is accurately closed by the valve, but if any of the cords tendinææ should become shortened, or the leaves of the valve itself should undergo thickening or roughening, an imperfect
closure must follow. Such a state of disease of the mitral valve may give rise to a host of evils in the following manner: I have stated above that congestion of the lungs must result. This, if there be any weak part in those organs, not infrequently gives rise to haemoptysis, but is sure, ultimately, through the capillary pulmonic circulation, to tell upon the right ventricle. This cavity, getting more work than it naturally ought, becomes eccentrically hypertrophied, and, as a result of this, if the cordae tendineae attached to the tricuspid valve are not lengthened (which frequently they are not,) a regurgitation of blood, upon the system in general takes place, by the last mentioned valves being rendered incapable of stopping off the communication with the right auricle. Following in the wake of the regurgitative condition of the latter valve, we may have Droegy, congestion of the liver, kidney, brain, and perhaps ultimately some form of degeneration. If the endocardial disease should principally affect the aortic orifices, this may develop itself either by a narrowing of the opening, or by a deposit upon the edges, surface, or leaves, of the semilunar valves. As long as these valves remain competent to
the closure of the orifice, of which they are situated, then the second sound will retain its integrity, and the bruit which is audible will correspond with the first sound; in fact, it will differ from that produced by mitral disease only in position, so that should both valves be diseased the bruit de soufflet will occur, at the same moment of time. They will differ in intensity, in different positions of the praecordial region, however, and the mitral bruit will be regurgitative, whilst that produced at the aortic orifice must be obstructive. No sooner, however, do the aortic valves refuse to close, disease, to effect the perfect closure of the orifice, than a bruit makes its appearance synchronous with the second sound. This is of a regurgitative character. The results of such a regurgitation upon the system must be such as flow from a deficient supply of the arterial fluid. Whilst these valvular diseases are progressing, an effort of nature is being made to compensate for the increasing difficulty of the blood having to pass through a narrower opening. The pressure of the blood backwards upon the heart, in the first place, causes it to dilate a little, but, in a short time, the muscular substance begins to
be strengthened remarkably, and this process of growth, proceeds bearing a relation to the amount of valvular disease. The wall of the ventricle, which, in a state of health, upon an average, attains the thickness of 3 lines, may grow to an inch and a half. These changes, in order to be completed in the manner detailed, will take years, and in many cases, may never progress by any means to such a degree of intensity; but all the changes mentioned have been seen to occur in an individual case, so that the patient had become in the end just a mass of disease. When a heart has once made its appearance, namely, when valvular disease has invaded the heart, it scarcely gives way even to any treatment, but may be heard all the life afterwards. To apply, in some cases, the amount of effusion is so little, and the state of constitution such, that, for many years, no perceptible increase in the strength of the heart is detected. In fact, the amount of disease is so slight, that the patient feels no inconvenience, and it would seem that, if the valvular disease does not incline to become more extensive, a certain amount of hypertrophy must perfectly compensate for the degree of obstruction; and although the disease is neither cure, nor curable, yet the patient never gets worse, and may, at a good old
age, die of some other disease. If, after death, the heart be examined, we find the effects of the endocardial inflammation developed in the following manner: The surfaces of the valves, at an early stage, seem to be covered with a false membrane, or with numerous granulations; in a more advanced stage, the valves are thickened, opaque, and sometimes puckered, thereby losing their pliancy. On the edges of the valve’s cusps tendineus, the exudation assumes the appearance of granulations. These are frequently of large size, at the base of the semilunar valves. After the malleable deposit has remained in its position for a considerable period, it undergoes a change, becoming harder and more cartilaginous in consistence, and, ultimately, from calcareous particles being developed in it, great hardness is attained. With regard to the Pathology of the Rheumatic affection of the joints, it would appear, from several cases which are now on record, that little attention is to be observed after death. If the patient should chance to die at the stage of articular swelling, possibly of some other disease, we may find that the synovia is increased in quantity; and small threads of false membrane have been found coating the internal wall of the synovial capsule. This abnormal state
of the joint, however, soon passes away, as the patient advances towards convalescence; and all the structures concerned return to perfect health. A certain weakness of the parts is induced, however, which is shown by the liability to Rheumatic attacks for years afterwards every winter.

**Treatment**

In the majority of Rheumatic cases, the duration of the disease is from a month to six weeks, and there is little reason, from all we know, to suppose that it is possible by any treatment, to shorten the continuance of acute Rheumatism. The antiphlogistic mode of treatment is that which we esteem to be most fitting for this affection. Upon being called to a case of acute Rheumatism and the inflammatory symptoms run high, we ought to premise by letting blood from the system, not however, to such an extent as might, to any degree, weaken the patient, seeing that it is believed by many high authorities, and among the rest, by Professor Alison, that whatever tends to weaken the constitution may also give a greater liability to the individual being secondarily affected by heart disease. If the pain and swelling remain in a joint for a length of time, it, not unfrequently, proves of signal advantage to apply a few leeches.
around the diseased articulation. By this practice, the inflammation is more rapidly subdued, and the effusion sooner absorbed. The exhibition of laxatives is of the greatest importance, throughout the entire duration of the disease. The action upon the bowels ought not to go the length of severe purging, as that would weaken the patient, and might, thereby, tend seriously to the continuance of the febrile action; but the bowels should be kept in a state as near as possible to the natural condition. The means which we use to mitigate the violence of the disease, and which apparently tend to prevent its passing into an obstinate chronic form, are the following: 1st. The colchicum, which may be exhibited in the form of powder, tincture, or wine. This medicine has been used in Rheumatism upon the same principle, as that upon which we employ it in Gout, in the cure of which it has deservedly obtained a high reputation. It has been found, that colchicum increases the secretion of urine by the kidneys. In this manner, we can understand, that its exhibition should benefit the patient vastly, clearing the urine and uric acid out of the system. The most proper doses are those which will cause slight nausea, and the medicine should be repeated at intervals of four hours. Many good authorities consider that the
best effects are never developed from cholchicum, until the bowels become affected. This, perhaps, may arise from the uric or uric acid, passing off by the bowels; 2. Along with the cholchicum, Dover's Powder ought to be combined, in such doses that it may act upon the skin. It should be given at the same time, and at about the same intervals, as the cholchicum mixture. Combined with the Dover's Powder, we very generally exhibit saline diaphoretics, which assist the action of the remedies materially. The vapour bath is another most excellent remedy, or the warm bath. Both of these determine strongly to the skin; and, in the most efficient manner, assist the other remedies in the reaction upon the skin. A very convenient manner of using the former is to put a red hot brick into a pail, containing about 3 inches of water, and let the patient stand over it, covered with a blanket or sit with the same covering upon a wicker chair.

The good effects of copious diaphoresis have been known and acknowledged in Rheumatism from very remote times; but it is only in the present age, that the mode of action of the remedy has been fully understood. In the present state of our knowledge, it is considered that large quantities of
vic acid, or some of its salts, are thrown off by the skin, thus purifying the blood from a matter which cannot but be detrimental to the constitution. If a piece of test paper be applied to the skin, when the patient is perspiring profusely, it will show the red tint of acid reaction immediately. It is most probable, that the acid matter passes off in one of three forms by the skin; viz., vic acid alone, or nitrate of ammonia, or carbonate of soda. Lactic acid has been thought, by some, to be thrown off by the perspirations, in considerable quantities; but this idea rests upon no good foundation. There is a treatment of more recent introduction than any of these detailed, viz., what is styled, the alkaline treatment. This consists in the exhibition of salts of soda or Potash, and, more frequently, the Jodide of the latter. The effect of the alkaline seems to be to neutralize the vic acid contained in the blood; it is possible also that the Jodine may exercise some specific action upon the disease; but whatever may be the precise effect upon the morbid state of the system, and the blood, certain it is that many cases are greatly benefitted by the exhibition of Jodide of Potassium. It may be given in doses of three grains, every four or five hours, in solution; some
if the other means may, at the same time, be employed, and, above all, diaphoretics, and the warm or vapour bath. If the disease assumes a periodic character, sulphate of Feumine will be found the most heroic remedy. Should metastasis occur to the pericardium or endocardium, leeches should be applied over the paracordial region; and if the relief be not considerable, then a blister must be put in the same situation, and kept discharging by means of ointment of cantharidin or sabine.

Bloodletting from the arm is very important as a remedial means in Pericarditis, and should be carried to such an extent as to affect the system. The exhibition of Colonel and Opium is, by many, considered to be of the utmost importance, for causing absorption of the inflammation effusion, and, certainly, we have very good analogies for the action of this remedy, as in the effusion upon the iris in iritis. There can be little doubt, that, in numerous cases, signal benefit has been derived from the use of Colonel and Opium in Pericarditis. This remedy seems not to exert much influence upon Rheumatism of the joints, or upon the effusion contained in the synovial capsules. One of the most comfortable parts of the treatment, as far as the patients feelings are concerned, is the exhibition of a dose of
Muricate of Morphia, at bedtime, which soothes and obtains sleep, and, thus, keeps the sufferer free, at least from some of the pain which he would otherwise suffer in the joints, during the night.

[Signature]

Donald Munro