A treatise on Rheumatic Fever

by

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Rheumatic Fever.

In this treatise on rheumatic fever or acute rheumatism, I intend to speak first of the definition of this disease, then of its history, its pathology, its causes, its diagnosis, its symptoms, its complications and lastly of its various modes of treatment.

Definition—Fibrile excitement probably produced by a morbid poison in the blood, generally of constitutional origin, arising from some external or manifest cause and assuming various forms and complications, and tending to an inflammation of a peculiar fluid, apparently sealed in the fibrous structures, chiefly of the large joints, the aponeurotic expansions, and the fibro-serous surfaces, accompanied by severe pain or preventing, or remarkably aggravated by motion of the affected joints or parts.
The various local phenomena having a tendency to shift from part to part, the most remote from each other. The febrile state being accompanied by a profuse acid sour-smelling secretion from the skin, a highly fibrinous condition of the blood, with a diminution of the blood corpuscles.

History. It is one of the most prevalent diseases in the British Isles and in the nature and treatment of which there exist the greatest diversity of opinion and the least amount of undisputed knowledge. The word rheumatism is sometimes found in the writings of the ancients, although it does not altogether represent the disorder to which the moderns have applied it, this name ee having been given by the former to affections to which they attached the idea of a humoral defluxion, conformably with its derivation viz.
Rheumatism, a debilication, from superioin to be affected by a debilication, from perioin, a debilication, and that from perioin, a debilication, being applied especially to those characterised by mucous or pithitious discharges. Sydenham was the first to treat fully of rheumatism, and to distinguish it from a gout, with which it had been frequently, if not generally, confounded by former writers under the name of Arthritis. It was not till the end of the last and the commencement of the present century, that the various metastases and pathological relations of rheumatic affections received even a partial notice.

Various forms of rheumatism have been described by authors, by several states of disorder, more or less intimately, allied to each other, have been ranked as varieties of this disease, thus the pains in a limb or limbs caused by organic disease of the nervous centre,
and the sympathetic pain produced by hepatic congestion &c. have been often mistaken for rheumatism, described and treated as such.

Soon after the first notice of rheumatism as a distinct disease, two forms of it were admitted,—the acute and the chronic. The division, now most generally adopted of the forms of rheumatism has been that founded upon the severity and duration of the attack; it is almost the same as the division I have just mentioned only, the term subacute is added, and it is employed to mark intermediate states of severity. This seems the most simple, as it involves no theoretical or pathological doctrine, nor suggests ideas as to the seat and extent of morbid changes, which vary remarkably in their associations and concomitants, in different cases and even in the same case at different ee.
periods, I mean in reference to seat and extent, the designations of capsular, muscular, peri-

tal and neuralgic rheumatism. Dr: Todd remarks that, some practical physi-

icians have endeavoured to make a distinction between what they call synovial or burtal 

rheumatism and fibrous rheumatism. The natural history of this disease, however, does 

not warrant this distinction; for in no instances of rheumatic fever are the synovial mem-

branes free from irritation, as enticed by the existence of effusions, and the synovial mem-

branes can scarcely be affected without in-

volving the fibrous tissues which surround, support and convey the blood vessels to them.
It must be said though, that the disease as-

sumes a more acute form and even more ex-

tensive associations, when predominating in 

non-secreting fibrous tissues, where no portion
of the materials on morbi admitting them to exist, is effused; than, when chiefly affecting a secreting surface, and allowing the effusion of fluid, or which fluid when retained in the circulation probably serves to aggravate, and perpetuate, or even to complicate, the attack, but when effused tends chiefly to aggravate and prolong the local affection.

Pathology. — It is a constitutional disease essentially of an inflammatory and specific kind having what is called a rheumatic diathesis which is either inherited or brought about by some cause or other; and if there exists a peculiar latent condition in the body itself, ready to be developed by the influence of agents without, acting as stimuli or excitants, to the morbid development of a poison which is imbed. Also it is a blood disease, as shown by its tendency to shift from one
part to another, often without leaving any trace of its stay behind. The latest inquiries show
that it acknowledges no general external source and it is not even yet demonstrated that any de-
finite morbid material or poison pervades the system. It is thought by inductive reasoning,
that some morbid material is generated by and within the bodies of those in whom rheu-
matism is developed and that it is not absorbed from without. There is evidence of a vitiated
condition of the blood by the characteristic symp-
toms of rheumatism, in the premonitory fever,
in the large number of local symptoms and
lesions of internal organs independent of the
metastasis, of which I have spoken above, and
it has been put forward that internal inflam-
mations in rheumatism are referable to an
alteration of the animal fluids and more es-
specially of the blood. The constitutional origin
is shown by the sensitiveness to atmospheric inclemency, the proneness to perspiration and the perspiration having a sour, disagreeable odour, the urine though usually clear when passed, not unfrequently deposits a red-brick dust deposit on cooling, of lithates and lactates. The heart is generally irritable and liable to take on an inflammatory action. And the continued and frequent recurrence of the disease points to a constitutional origin. When a person has once suffered from a disease produced by the introduction of a poison from without, he is to a certain degree protected against a future attack, the reverse obtains in rheumatic fever, the patient is liable to frequent attacks which generally recur with greater intensity. Then the question arises whether the poison exists in the system between the attacks of rheumatic fever. It is answered by Mr. John Simon in the follow-
ing manner; he says it is confused by what he calls the explosiveness of the onset. There is probably a sudden decompenent change commencing at a particular moment in respect of the accumulated ingredient of the body, and the results of this pass off by the nearest excretory surface in the vicinity, and that in the period anterior to the attack the accumulation in the blood of a material not as identical with the peculiar excretions of the disease, but naturally capable of conversion into such excretions, is taking place. — In regard to the production, development, mode of action, and nature of the materiae morbii, I cannot do better than cite the opinions of several leading authorities. — Dr. Fuller thinks the poisonous material is identical with some natural excretion of the skin, that when the action of the skin is unchecked especially in old people, pains and stiffness of a rheumatic character are generally the
consequence, and that the means nature adopts to relieve the symptoms is suggestive of a relationship between the skin and rheumatism. He states that no sooner is a person attacked with excessive perspiration is set up, as if with a view of getting rid of some peccant matter, and the secretion is most profuse at the very part where local inflammation is taking place; also that the specific poison is generated in the system, as the result of faulty metaphoric action, that many agencies may conduce to the formation of the poison and to its retention in the system. The features most commonly implicated are all examples of the albuminous and gelatinous tissues, from the decomposition of which in the weak and tear, secondary organic compounds are formed, the lithic and lactic acids. Dr. Prout suggests that the materials moti are referable to the lactic acid (\( \text{C}_4\text{H}_8\text{O}_4 \))
which is in excess in the blood, the theory being this, that before the starch (\(\text{C}_6\text{H}_{10}\text{O}_5\)) of the food can be applied to the maintenance of animal heat, it has to be converted into lactic acid which then combines with oxygen (O) to form carbonic acid (\(\text{CO}_2\)) and water (\(\text{H}_2\text{O}\)) and whatever tends to interfere with this process causes an accumulation of lactic acid in the system.

Dr. Richardson injected 7 drachms of a solution of lactic acid with two ounces of distilled water into the peritoneum of a healthy cat. The operation was performed without accident; two hours after the heart's action was irregular, the animal was left six hours after the operation alive but was found dead in the morning. There was no peritoneal mischief, but there was endo-carditis of the left cavities of the heart; the mitral valve thickened and inflamed, and there was a deposit of fibrine on the free borders of the
value, the internal surface of the left ventricle was intensely vascular. In subsequent experiments the aortic and tricuspid valves were affected; the endocardial surface was generally red from vascularity, the pericardium was dry and injected, the joints were not affected but there was arteriosclerosis in the left eye of one of the dogs he experimented upon. These experiments demonstrate that endocarditis may be physiologically produced by lactic acid. Dr. Richardson also supposed that the highly coloured deposits of the urine, to arise from the formation of purpurates.

Dr. Todd states that the skin is the great excretory of lactic acid and that there is a derangement of the system giving rise to undue development of the lactic acid, it is no wonder that as it is imperfectly excreted through its natural channel, in consequence
of the influence of cold in checking perspiration and is too freely developed in the alimentary canal, it should accumulate in the blood and become eliminated at every point. Moreover, the long continuance of the causes which produce the defective cutaneous secretion and the disordered gastric state will give rise to the undue development of the lactic acid in the secondary destructive assimilating processes, thus infecting the blood from every source and tending to perpetuate the diathesis. He also states that the urine carries off a great deal of acid in the form of lacticates.

Dr. Williams says that the respiratory system contains lactic acid and lactates of ammonia and soda, which probably proceed from the transformation or decay of the tissues particularly the muscular. Hence these products abound during great muscular exertion and
when perspiration is checked by external cold, they may be reabsorbed in the blood, causing rheumatism, urinary disorders or various cutaneous diseases; rheumatism is especially liable to occur as an effect of cold, where the body is fatigued with much muscular exertion, and he says I have frequently observed that rheumatism affects those limbs which have been much exercised.

Dr. Copland says there is no satisfactory proof of the lactic or acetic acids, found in the perspiration during acute rheumatism, or of the uric acid found in the urine, having existed in the blood previously, to their excretion from it, and there forming a matters morbid. It is on the contrary more reasonable to infer, that the elements of these acids accumulate in the blood, owing to the operation of the predisposing and exciting causes upon the organic, nervous, and vascular systems.
and upon regions which these systems actuated, and that the accumulation or condition of these elements gives rise to these acids in the secretions as well as to the other changes in them and in the economy; and that these acids are probably the effect rather than the cause of the disease. These excesses of fibrine and diminution of red-globules in the blood are most probably owing to the same mode of operation of the remote causes.
The pain in motion or the inability of motion, is not dependent on affections of the muscles themselves, but are chiefly owing to the change in the functions and sensibility of the sympathetic or organic nerves supplying these structures. When inflammation supercedes, it is owing to the influence of these nerves on the capillary circulation of these tissues and to the irritation of the morbid fluid exuded from them.
Dr. Barrois found no uric acid in the blood in
acute rheumatism out of forty cases, but the blood was generally cuffed and buffed.

Dr. Headland, in his treatise on the action of medicines, after referring to Dr. Prown's theory, points out how anything which interferes with the oxidation of lactic acid must lead to excessive accumulation of that acid in the system. He thus suggests that simple want of vital energy or nervous force or a failure of some natural principle, which is gifted with the control and direction of the chemical changes in the blood, or in short any disturbing cause of whatever nature, which, may tend to prevent the normal changes from taking place, may lead to the accumulation of lactic acid in the system and so may prove the accidental or exciting cause of rheumatism. Dr. Gally remarks that the perspiration, urine, and saliva will invariably be found acid in this species of fever.
Dr. Parke's researches tend to demonstrate that
some substance rich in sulphur is the poison
that pervades the system, as there is an enormous
excess of sulphur excreted in the urine in the
form of sulphuric acid, greater in fact than in
any other febrile disease.

Dr. Watson holds that rheumatism is an in-
flammation of a peculiar or specific kind —
and that it is a blood disease, that the circu-
lating fluid carries with it a poisonous ma-
terial which, by virtue of some mutual or
elective affinity, falls upon the fibrous tissues
in particular, appearing and disappearing
with a variability that resembles caprice,
but is ruled no doubt by certain definite in-
laws of nature which, we know nothing at
all about.

The blood becomes unusually fibrous,
the fibrine being sometimes increased to double
The normal quantity as shown by the table of Andral and Savarret below, and it is even in-
creased to more than double according to the table of Becquerel and Rodier.

### Analysis of the Blood in Health and Disease

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Rheum</th>
<th>Health</th>
<th>Rheum</th>
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<tbody>
<tr>
<td>Water</td>
<td>990.864</td>
<td>799</td>
<td>798</td>
<td></td>
</tr>
<tr>
<td>Fibrine</td>
<td>3.4</td>
<td>2.5</td>
<td>5.8</td>
<td></td>
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<tr>
<td>Albumen</td>
<td>80.0</td>
<td>69.4</td>
<td>66.0</td>
<td></td>
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<tr>
<td>Corpuscles</td>
<td>127.1</td>
<td>141.5</td>
<td>118.5</td>
<td></td>
</tr>
<tr>
<td>Fat</td>
<td></td>
<td>5.7</td>
<td></td>
<td></td>
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<tr>
<td>Salts + proteinate</td>
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The corpuscles also are diminished; the increase of the fibrine shows the disease to be inflammatory and the diminished corpuscles may depend on the want of increase of the corpuscles in proportion to the increased quantity of fibrine.

The parts most affected in rheumatism are ne
mostly those that are formed of white-fibrous tissue, such as ligaments, fascia, aponurosis, peristeum, perichondrium, tendon, bursa, the veins and the fibro-vascular membranes as those of the heart and brain, muscular tissue, and sometimes the heart and the kidneys suffer, also inflammation of the sclerotic coat of the eye may occur, and a case has been known were a person squinted during an attack of rheumatism, from the muscles of the eye being affected, but the joints and surrounding structures suffer the most frequently. The injection of the vessels and diffuse redness of the joints etc. may terminate by re-solution or serum, may be effused, the pericardium sometimes containing many occurrences of fluid. In the caudal process it tends to thicken places and cause opposing surfaces to adhere. The cellular tissue
around joints is not only thickened but sometimes you find it infiltrated with a loose con-glutinous lymph, tendinous sheaths and capsular ligaments often are affected in the same way, the effused lymph may become organized and in this manner spurs are bound down and the motion of the joints greatly and sometimes permanently impaired; sometimes you find masses of fibrin floating in a thick fluid in the joints containing few globules sometimes extending up the sheaths of the tendons, in some joints you find nothing but pus and in other cases few globules can only be detected under the microscope. The last two or three remarks refer to what is sometimes seen in post mortem examinations. The synovial membrane is often thickened and little villous processes soft and red dip into depressions around the neck of the bone which resist even long treat-
ment and occasionally lead to destruction of
the joint. The inflammatory process very seldom ad-
vances to suppuration, unless in a cachectic or
scrophulous habit of body, even in those not until
erosion or ulceration of the cartilages of the affected
joint takes place, an event most probably produced
by changes in the fluid diffused into the cavity, or
during low grades of vital power or reaction.
Ulceraion occasionally occurs, sometimes perfor-
ting the capsular membrane or destroying the li-
gaments, but more frequently eroding the car-
tilages and the ends of the bones. Dr. Fuller says
generally speaking the liability to this occurrence
is in inverse proportion to the number of ar-
ticulations affected. A remarkable change
sometimes takes place in the bones of rheumatic
joints, when the cartilages have been lost, which
are sometimes enlarged and almost sterilized
from osseous deposit, causing a change in the
form of a joint and an impediment to the motion of the joint. This change takes place in chronic rheumatism, preceded by several severe attacks of acute rheumatism. In many cases numerous small bodies irregular in shape and size and in structure cartilaginous are found in a joint; they occur either loose in the cavity of the joint or attached to the inner surface of the ligaments by pedicles which appear to be formed of synovial membrane.

Some joints are more prone to be attacked in such as the knees, ankles, feet, wrists and hands, the large joints are more frequently affected than the small, and of the small, those of the hands rather than those of the feet. Dr. B. Brodie says, as in proportion, I have acquired a more extended experience in my profession, I have found more and more reason to believe that local diseases in the strict sense of the term are comparatively rare. Local causes may operate to as to
Tender one organ more liable to disease than another, but everything tends to prove that in the majority of cases there is a morbid condition, either of the circulating fluid, or of the nervous system, antecedent to the manifestation of disease in any particular structure. This theory is shown in a case of small pox where the pustules were observed to appear first, and chiefly to be confined to one spot that had been accidentally bruised before the disease appeared, also you may have local affections in rheumatism commencing or appearing to commence before the entire system is affected. The fluid which is effused during an attack of rheumatic fever is probably not merely an increased quantity of synovia, but that this fluid is more or less altered from the healthy state or mixed with the malleus morbi which alteration is increased by the retention of it in the affected joint, to this circumstance and to the irritation produced in
the tissues are to be suspected not merely the obstinacy and aggravation of the complaint, but also the structural changes in the capsule, in the cartilages, and the ends of the bone, with the inflammation which either attends or follows these changes, especially in scrofulous, cachectic, or broken down constitutions. The inflammation sometimes extends to the surrounding structures by contiguity and as I have mentioned, it rarely or ever runs on to suppuration or gangrene, when however it attacks the peri-cardium or other internal parts, it runs the same course as ordinary inflammation. There is also a tendency to the symmetrical simplification of the joints as pointed out by Dr. W. Budd, this in a measure proving it to be a blood disease. Other local affections such as those of the heart &c. will be healed of hereafter, but the disease may run its
course without any external organ being im-
plicated.

Causes. — The remote causes are such as in-
pair the power of the constitution to generate in-
animal heat or rapidly transfer this heat from
the surface, such things as depress, exhaust
and impair the organic nervous or vital energy
of a part or of the whole body, altering the sensi-
bility and other vital conditions and functions
partially or more generally, and such causes as in-
weaken the function of those organs which are
acted upon by the organic nervous system, viz.,
the digestive, the assimilative, the secreting and the
secreting functions, thereby changing the condi-
tion of the blood and giving rise to morbid
states of the secretions and excretions more es-
specially of the cutaneous and urinary excretions,
and even the function of the uterus when imperfect-
ly discharged is more or less concerned in pre-
Disposing to the disease, as was pointed out by Dr. Todd, and the medicine given to cure rheumatism has produced the menstrual flux. Having had an attack it predisposes very greatly to subsequent attacks, also inordinate indulgence of the sexual desires, long continued debauchery, prolonged lactation, albuminuria, during tedious recovery from fever, and in fact anything that causes a great derangement of the system, or which exercises a prolonged depressing influence on the system, especially if there is at the same time a hereditary tendency to the disease, which may induce the development of the rheumatic poison. An inchoerated predisposition occurred in 24 per cent of the cases admitted into the Brompton Hospital, 28 per cent in St. George’s Hospital, Chomele has found it to exist in more half of the cases in the Hotel Dieu. Dr. Fuller has found rheumatism to be hereditary to the amount of nearly 20 per cent.
It may affect any condition of temperament, but the bilious, melancholic and bilio-irritable temperaments, are apparently most liable to it; both sexes are equally liable to rheumatism, but it occurs more in men than women on account of their being more exposed to the accidents of the weather and they generally lead a more irregular life. Dr. Marlow says men are more liable than women to rheumatism in the ratio of 137 men to 89 women. Out of 289 cases of acute rheumatism admitted into St. George's Hospital 151 were males and 138 females. Out of 179 cases occurring chiefly at King's College Hospital and in a Dispensary there were 101 males to 78 females suffering from rheumatic fever.

Dr. Fuller states that the following are admitted facts, that rheumatism may occur under a great variety of circumstances, and at times when the digestive organs are but little or
deranged; that it may arise without any exposure to cold, or arrest of the skin's function; that it continues after the skin's action is reestablished; and that it may be, and often is, occasioned by influences prejudicial to the general health.

Some writers have supposed that the cause of rheumatism lies not so much in the abstract degree of cold as in the range of atmospheric viscosities and Dr. Haggard has estimated that the number of persons attacked with rheumatism in summer is to those attacked in winter in the ratio of 6 to 7.

It is not in the coldest climates that rheumatism is most prevalent as cited A. Dalloch's returns show; for in the mild and equable climate of the Mediterranean or the Mauritius the proportion of rheumatic affections are even greater than the malignant regions of Nova Scotia and Canada. January and December are the two months in which rheumations occur the most in the United
Kingdom. A very small number of children suffer from rheumatism; 94 out of 43 cases given by someone only were attacked under fifteen years, 36 for the first time between fifteen and thirty, 22 from 35 to 40, 7 cases from 45 to 60 and 4 cases after sixty. —

The exciting causes, are exposure to cold conjoined with humidity, insufficient clothing especially if connected with unwholesome bed or insufficient food, sudden changes in the mode of living, shown by the fact, that in a soldier's career, it is more prevalent at the commencement of a campaign, and shortly after his return to garrison than, at any other period; living in rooms unequally heated, creating currents of hot and cold air, sleeping in damp beds, exposure to currents of cold and moist air, especially when producing depressed perspiration; riding in open carriages especially
at night without sufficient protection, occupation in damp localities, living in tents, exposure to cold and humid air containing malaria or exhalations from decayed vegetable matter; lying and sleeping on the ground or in damp or wet places; too much food may give rise to the development of rheumatism, as well as too little, wet clothes, checked perspiration, living in cellars, anxiety of mind, and working in damp situations.

It will be seen from the foregoing observations that rheumatic fever depends on a poison circulating in the blood, supposed to be lactic acid, which produces a poisoned or vitiated state of the system generally, giving rise to certain symptoms hereafter to be described which, are produced in those persons who constitutionally have, by inheritance or brought about by certain causes, a certain tendency towards the production of the poison, admitting it to exist. Also it will be seen that
there is a more than normal quantity of lactic acid generated which is excreted by the skin; the lactic acid may be formed by the excretory process from a deleterious organie matter circulating in the blood in which we do not know, and the rest of the component parts of the deleterious matter may be excreted by some other organ in the form of healthy excrementitious matter. There is also a greater quantity of ureic acid excreted from the kidneys than there ought to be in a state of health. There is an increase in the fibrous to double its normal quantity and its solubility is impaired. There is a decrease in the corpuscles of the blood. The salts of the urine especially the chloride of sodium are diminished, the white fibrous tissues are attacked more especially, it is liable to metastasis, and it involves the nerves of sensation and voluntary motion more decidedly if not more essentially than ordinary phlegmatico. It must
out be lost sight of, that the fever is only one of the effects of a cause acting through the blood and giving rise to a peculiar condition, that condition being accompanied by the chain of events to which collectively is applied the term of fever. It seems therefore that rheumatism is the connecting link between the class of symptomatic and the class of constitutional diseases, but with this difference that the poison of rheumatism is in blood, while the other is produced external to the body and absorbed from without. The poison of rheumatism does not increase by a poison being placed in the system of anyone, but that there is a derangement of the system which keeps on producing the poison, as long as that state of the system continues; but correct that derangement and the production will be stopped. Rheumatic fever is allied to the symptomatic diseases in regard to its febrile phenomena etc. At certain times the system is more prone to generate the rheumatic fever;
and then the system acting through the force of nature endeavours to throw off the accumulated poison through the most favourable excretory organ, just as it does in scarlet fever, erysipelas, small-pox, typhus, &c. The peculiar local phenomena in attaining this fibrous tissue and certain parts of the body more especially in rheumatism is nothing more than the peculiarity of the poison; as you have, local symptoms, in many other diseases which are produced by different poisons. The different poisons have separate modes of action each producing its own train of symptoms, according to the peculiarity of the particular poison, thus in scarlet fever, you have a scarlet efflorescence on the skin and sometimes inflammation and ulceration of the throat &c. Also in leprosy you have the larynx and pharynx attacked, and so on. The peculiarity of rheumatic fever is that the fever is of a sthenic type.
Diagnosis. — This disease attacks principally young persons, prevailing most in youth and early manhood between the ages of eighteen and thirty-five, at the average age of twenty-four for males and twenty-six for females; the complications are said to be more numerous and severe with the youth of the patient; after thirty-five rheumatic fever becomes less common though cases do occur at all ages and even young children are not exempt. Rheumatism may be confounded with gout, and in the form of tumours with nephritic affections or with inflammation of the spinal chord or its membranes, but the latter are more like chronic rheumatism in their symptoms than acute rheumatism. The only difficulty of diagnosis is between rheumatism and gout.

Dr. Parrot says, gout cannot easily be mistaken for acute rheumatism when each is exhibited in its typical form, the subjects in which the disease
usually occur differ considerably, the first being most common in men after middle age, and in those who have lived freely; the second is at least as frequent in females, usually in the young and those of enfeebled powers. — The characters of the diseases are also dissimilar, gout generally occurs in the mildest forms in the first attacks and in its early attacks ordinarily affects but one or two joints and it is the smaller joints that are most liable to become affected, if generally attacks the ball of the great toe, the inflammation is accompanied with little fever, but much local pain, edema and subsequent desquamation, the attacks are for the most part periodic, and gradually involve a large number of joints, and it often affects the stomach, bladder, and colon which is not the case in phthisis. — Dr. Boopland says that unless at a very early period of life, gout is more dis-
proved to affect internal organs than rheumatism, and is generally preceded by and sometimes associated with, more marked disorder of the stomach, liver and kidneys. — Dr. Parrot states that the blood in gout contains uric acid, and that the blood in rheumatism does not contain any uric acid. He proves the existence of uric acid in the blood of a person attacked with gout by the following experiment: he places some serum in a watch-glass and adds a little ordinary strong acetic acid to it about two or three drops, he then places a fine thread of linen or unwashed muslin in the mixture and sets it by on a mantel-piece or any other piece of furniture about the room and in the course of 24 to 48 hours according to the warmth or dryness of the atmosphere, crystals of uric acid form on the thread. Furthermore he has demonstrated that uric
gouty inflammation is always accompanied with the deposition of urate of soda in the structure primarily inflamed, and from the examination of the joints of several subjects who had suffered from acute rheumatism, no such alteration ensued. The test for uric acid may be made available for clinical purposes by examination of the blood or blister serum. It is more hereditary than rheumatism. Rheumatism is preceded by shivering and other feverish symptoms; it affects many and large joints, the upper equally with the lower extremities; the fever is likewise out of proportion to the local inflammation, and although it is apt to return upon reexposure to its exciting causes, still no periodicity can be traced in its variations; the perforations are acid and have sour odour so peculiar to rheumatism; it has a tendency to attack the heart, the second attacks are generally not so violent as the first; it is not so
hereditary as gout, it is as frequent in females as
males; there are not concretions, the pain is not
so great as it is in gout, there is no desqua-
mination of the cuticle, it often causes acute peri-
arthritis and endocarditis, the attacks generally last
longer, and it is not caused so much by alco-
holic drinks. Marks of imperfect nutrition, as
pallor of the countenance a haggard and dis-
trusted look especially if the patient has been
a hard drinker, are visible in rheumatism.

 Symptoms. — This disease is generally
 ushered in with rigor, shivering or chilliness
followed by increased heat and febrile symptoms
of an apparently inflammatory and atheic
character; before actual fever is established, the
 patient feels out of sorts and unusually sensi-
tive to changes in the weather. He looks pale
with a sallow unhealthy complexion and has a
dull eye with yellowish conjunctiva; generally
also there are symptoms of functional derange-
ment long before the full development of the fe-
ver. The functions of the brain are in a peculiar
manner exempt from rheumatism, there is
no headache or delirium at least it is of rare
occurrence. The fever usually presents the usual
concomitant, which, I shall proceed to Exam-
ine, remarkable severity pain which is always
dispersed to shift its place, this disposition even
being the greatest or occurring most frequently when
the exacerbation is the most severe, all the febrile
symptoms and even the pain itself manifest
more or less of a remittent character. The chil-
dreness or shivering with which in common with
other acute fevers, it is ushered in, speedily
passes away and is followed by great heat and
dryness of the skin, which generally continues
during the day and early part of the night.
but as the nightly exacerbation of pain results
Towards the morning, the skin becomes moist and a profuse perspiration breaks out, but without any remarkable or permanent alleviation of the pain; the perspiration is generally mucous, emitting a peculiar disagreeable acid odour, it reddens blotched paper, and it continues profuse, especially if the patient is placed between blankets or partakes freely of sour diluents; in this case, the perspiration may cause sublimation or a milky eruption to be thrown out on the skin. It is said by some that this increased action of the skin is nature's cure for the disease, and according to what we know, we imagine it to be so, or at least that it takes part in the cure, it may be roasting and enfeebling as excessive perspiration always is, but it is highly damaging and these perspirations are only useless when they are not of that characteristic sour descrip-
tion. If the sweating does not come on the pain are always more excessive and the constitutional symptoms become more severe should the u -
perspirations unexpectedly cease. There is at -
first stiffness and unevenness of tone of the joints large and small, the large ones being mostly af-
- fected first, which is generally accompanied by a sharp inflammatory fever, the joint soon become
very painful and tender, those that have been
injured, such as a strain or a blow etc. are more
apt to suffer than those that have not been injur-
ed, the joint affection as I have mentioned is in
a degree symmetrical. The fever has no tendency
to degenerate into a typhus like form, nor is it
marked by any depressing action. There is no
coma, no dulness or bewilderment of aspect, no
marked trouble of the stomach or bowels, no
vomiting or diarrhea and no petechia. The fever
often precedes by 24 to 48 hours the inflammation
of the joints, but this is not constant, for in some instances the local and general symptoms are contemporaneous, while in others the inflammation of the joint is established before the accession of the fever. Dr. Fuller states that one of the most remarkable and suggestive facts in regard to rheumatism is, that the fever and constitutional distress are not always concomitant with the extent and intensity of the local symptoms. Not only is rheumatic inflammation of the joints very frequently preceded by febrile disturbance, but sometimes the fever runs so high before any local symptoms have been established, as to cause even cautious and intelligent practitioners to mistake the nature of the impending attack. Moreover, when febrile symptoms do thus precede the establishment of local inflammation, they are not only increased by its occurrence, but
as was remarked by the sagacious and observant Chydenium, they are very generally relieved; the pulse becoming calmer, the countenance less anaemic, and the patient altogether easier. The secretions are all impaired or changed at the commencement of the fever. The urine is scanty, high coloured and of a high specific gravity, ranging from 1.030 to 1.032; it deposit urates opaquely, and it is extremely acid; the absolute excretion of solids in the 24 hours is in excess compared with other fevers, but the quantity of water is far below the average. Occasionally, when there is much renal irritation, the urine is slightly albuminose, coagulating by heat and nitric acid, and a few blood corpuscles may then be discovered in it by the aid of the microscope; but usually, a few scales of epithelium, together with an amorphous deposit of lithate, and here and there a few crys-
-tals of lithic acid or of oxalate of lime, are alone observed on microscopic examination. Minute crystals of lithic acid are also found sometimes in the pellicle, which forms on the surface of the urine.

The bowels are constipated, unless focal accumulations have formed from neglect, when they become loose from the irritation thus produced; the evacuations are dark and offensive. The face is flushed. The tongue is red at the tip and edges, moist, and greatly loaded or furred with a white or yellowish white mucous and sometimes with a brownish fur in the centre; the papilla appear red and elongated. The saliva has an acid reaction. The pulse is excited, strong, open, bounding, large, full, and strong, ranging from 90 sometimes up to 130 beats in a minute. It is said that sometimes the pulse of the affected wrist is fuller than that of the opposite wrist, which I should think is very difficult to detect,
as both wrists are usually affected simultaneously.

The pulse generally increases during the night.

The respirations are somewhat increased, they
range from 20 to 40 in a minute. The thirst
though sometimes excessive is not usually
urgent. The appetite varies, it is generally un-
feared, but occasionally it is as good as usual.

The mouth is clammy and dry, but there
are no sores or aphthae, and the patient has
a sour disagreeable taste. In some cases slight
chills rather in the evening exacerbation of pain
and occasionally the symptoms are more
severe on alternate days. The veins are ge-
nerally full. Sleep is prevented by the
exacerbation of the pain at night.

I shall now proceed to speak more fully
of the local symptoms which attack the arti-
culation; they are pain, heat, redness and swell-
ing. The time and character of the pain vary
in different cases and even in the same case
at different periods. Severe pain, impeding or
altogether preventing motion, are felt in the joint, af-
fected chiefly the joints or aponeurotic expansions
of tendinous sheaths, and sometimes extending in
the course of the muscles to generally at first, the pain
is confined to the large joints, as the knees and ankles
which are mostly affected first, then the wrists and
elbows. The affection is more rare in the hips and
shoulders, and in these cases the pain is very severe.
The smaller joints, as those of the fingers and toes are
not often affected, except in chronic rheumatism.
The pain may extend to the aponeurotic expansions
covering the large muscles, or it may extend
to both the joint and these expansions, attaching
them simultaneously or in quick succession.
Sometimes the joints or one or two of the limbs are
so affected that the patient is rendered helpless and
almost motionless and lies fixed in one position.
from which he is afraid to stir, he dreads the touch of the physician, the handling of the nurse and the shaking of the bed by an approaching footstep. He cannot endure the slightest movement of the affected part, even by touching or pressing them, so that the pressure of the bedclothes is hardly borne. The pain according to its situation is most acute, severe, plunging, tearing, gnawing, tense and illuminating, it is more or less constant but exacerbated at intervals during the night. In a few cases it is latent, that is to say the patient has no pain unless the joint be moved. At first the pain is may wander capriciously from joint to joint, leaving no trace of their visitations behind, except sometimes producing more or less temporary stiffness. It is rare for the joints first affected to remain long, other joints become attacked, and the joints first attacked, may again, in their turn have another visit paid them. The pain is not proportioned
to the redness and swelling, or in other words, to the apparent intensity of the local inflammation.

Dr. Fuller believes this to be due to the fact that in one set of cases the superficial parts are chiefly af-
feeted, in the other ligaments and more deeply seat-
ted structures, which are dense and unyielding in
their nature. The pain has many degrees of inten-
sity, being trifling in some cases, but more commonly
severe as I have described above. The pains for the
most part at all times are aggravated by external
heat, and in almost all cases they continue until
after the fever has left the patient, and sometimes
for a long period afterwards. Dr. Fuller states that
heat aggravates the pains, more especially when it
fails to produce free cutaneous action. He says I
have constantly observed, that those who have com-
plained of most of the increase of pain induced by
warmth, are loudest in their praises of the benefit
accruing from profuse and perspiration.
The heat of the inflamed joint is constantly increased, the thermometer indicating a temperature of 100 to 105 degrees or even more.

Redness though not universally present, is nevertheless a most common occurrence, and the affected joint is surrounded by a rose coloured blush, prominent on the slightest pressure yet returning on its removal.

The swelling of the joint is dependent on the effusion of fluid into the cellular tissues around the joint and into its cavity, it is sometimes so considerable than the shape of the knee, the ankle, or any other joint, is completely disguised from the swelling not taking the form of the joint, the effusion being diffused through the cellular tissue. The surrounding skin becomes dry, tense and shining. When the knee is affected, the patella is often more or less displaced by effusion into the cavity of the joint, and this, together with the swelling of...
the external parts, obliterating all the hollows, depressions, and markings, of its healthy state, renders it misshapen and rounded. Such are the general symptoms of rheumatic fever, and the picture of helplessness and suffering to which the patient is reduced at the height of the disorder is difficult to conceive. A strong and powerful man, generally unused to disease, lies on his back motionless, unable to raise his hand to wipe the drops which flow fast from his brow, or the mucus which irritates his nostril; indeed he is so helpless that he is not only obliged to be fed, but to be assisted at every operation of nature. The perspiration in which he lies drenched brings him no relief; his position admits of no change; and if he sleeps, his sleep is short, and he wakes up with an exacerbation of suffering which renders him fretful, impatient, and discontented with all around him.
The symptoms that I have described above when tending towards a favourable termination abundantly, the swelling disappears and the pains subside although the patient feels them, when he moves the affected part and they sometimes return, but in a less severe form, during the night. The parts affected even when the form has disappeared continue very weak, and the patient is indisposed to use them, from a feeling of inability to exert them. The frequency of the pulse and the other symptoms subside, the urine is more abundant, less acid, paler, and less loaded with lithates, the peroration is more normal, being less mucous and profuse, the disagreeable odour and the acidity becoming less prominent, the nightly exacerbations being more slight and nearly disappearing, the evacuations from the bowels are not so fecid and are
less dark-coloured, the biliary secretion becomescopious and natural, the tongue cleans, becomes
less red at the tip and edges, the appetite and thirst
are reduced to their normal standard respectively.
Although the urine has no sediment and becomes
more abundant, it contains a larger quantity of salt,
so that it retains its high specific gravity, withstand-
ing the increase of the amount of water, and
the patient is left in a very weak state. The more fully
the several secretions are restored, the cleaner and the
more natural the tongue, the more completely the pri-
mary and secondary assimilating functions are dis-
charged; the less likelihood is there, of the disease
being followed by the sub-acute or chronic states of
rheumatism, or by a relapse. — If on the contrary,
the amendment stops halfway, the tongue contin-
ues yellowed and furred, the urine acid, scanty or
much loaded; the perspiration offensive, infecting
and unsatisfactory, and the pulse still frequent.
This state of the disease will generally pass into the subacute or chronic or into both in succession and in either these forms continue an indefinite period. The disease generally terminates favourably, unless the heart or its membranes become affected.

The duration of rheumatic fever is very various; in some cases the fever and local pains are gone in three or four days, but in the majority of instances they continue till about the tenth to the fourteenth day, when the fever disappears and the pains begin to subside, and towards the end of the third and beginning of the fourth week the patient is recovered and generally without injury to the joints affected, but he requires another week or so to gain his strength. Dr. Fuller believes from his observations that under ordinary methods of treatment the disease endures from four to five weeks, and patients are generally able to leave a hospital about the end of the sixth week, and he ca-
sider the average duration of an uncomplicated att-
tack may be reduced by judicious treatment from
a month or five weeks to ten days or a fortnight.
Dr. Warren reports six weeks as its ordinary dura-
tion. Dr. Loudon more stated that, in a favourable
case, the fever and pain are brought to a close at the
end of the third week. M. Chomel says that four
weeks is about the average period for arising at
convalescence. In King's College Hospital, the patient
get convalescent in a month or six weeks.

Complications. — The symptoms which I have
described belong to the uncomplicated forms of rheu-
matic fever, but in a given number of cases, this
course is interrupted by lesion of the heart or its
branches. The heart may be affected being the only
local symptom for several days before the occurrence
of articular redness and swelling, and sometimes the
cardiac affection declared itself as the inflammation de-
clines in the joint. The proportion of persons to lose heart
is affected probably varies according to the treatment, either with or without the subsidence of the articular inflammation. Dr. Fuller says that although rheumatic inflammation of the heart may possibly be connected in some rare instances with the sudden subsidence of articular inflammation and the transfer of irritation from the external part, it must be regarded in most instances as a mere coincidence and as an extension of the local manifestations of the disease. The forms of disease which affect the heart in rheumatism are:

1. Inflammation of the pericardium and endocardium, sometimes involving the substance of the heart itself.
2. The formation of fibrous vegetations on the valves and on the lining membrane of the heart may occur, independently of endocardial inflammation. Cardiac inflammation runs the ordinary course of inflammation, proceeding to suppuration, etc. It is as well to auscultate every day a patient suffering from rheumatic fever to see if any heart
disease is present. The symptoms which indicate cardiac mischief are sense of oppression in the epigastrium, pain or soreness all over the chest, increased on pressing between the intercostal spaces and also on taking a deep breath, the patient sometimes being unable to accomplish the taking of a deep breath, the pulse is irregular and frequent, and there is an inordinate impulse and palpitation of the heart. The patient is restless, his countenance is palid, anxious, and assumes an aspect of distress; occasionally he coughs and that with difficulty, and he lies on his right side or back. On the stethoscope being applied to the chest, a murmur or bellowing sound is often heard loud and permanent evidently arising from some irregular contraction about the orifices of the heart or from some affection of the valves; sometimes a friction into-and-friction is heard, from inflammation of the pericardium.

It has been stated by many pathologists, that
we can determine the exact pathological state of
the pericardium. Thus if the inflammation be
diffuse, we shall have a crackling sound, like
that of new leather, the parts being dry; or if scum
be effused we shall find the heart moving in a
larger space than usual, and percussion will fur-
nish a dull sound over the enlarged space, and if
the effusion be great the intercostal spaces may bulge
out and the heart be pushed upwards to the fourth,
third, or even second intercostal spaces, consequently the
seat of the heart's impulse &c. is raised; the jugular vein
may sometimes be distended, and the patient is afraid to
to move for fear he may aggravate by exertion the dys-
pepsia and action of the heart. Again if lymph be
poured out we shall have a rushing or to and
for sound; and lastly if pus be poured out, it will
be determined not only by the greater space in which
the heart moves, but by the sudden collapse and
rapid sinking of the patient. The pain is more of
less severe in the precordial region and is increased when pressure is made upwards against the dia-
phragm, and from the front of the heart it radiates over the whole of the sternum sometimes extending to the brawneal pleura and down the left arm, the
pain sho'ring down the arm is more common in chronic affections, the pain is accompanied by a sensation of constriction over the whole chest, here is an incapacity or unwillingness on the part of the
patient to lie on his left side, his pulse varies from 80 to 120 beats in a minute, it is hard, full, and strong, often intermittent or otherwise irregular, and the respirations are increased. The lining membrane of the heart gets inflamed, thickened, and then the valves more especially get deposits from fibrous exudations forming excrescences, vegetations, and granulations, they are often numerous, generally distinct, though sometimes they become confluent they may be partially absorbed and smoothed down.
so as to form a lamina of fibrine. These vegetations are doubtless common in endocarditis, but they are essentially independent of it and may take place without it; they seem to be more immediately connected with an abnormal condition of the blood, they are due to the deposition of fibrine held in solution by the blood. According to Dr. Falder they are almost always entirely confined to cases accompanied by acute and widespread inflammation and by conditions productive of unusual quantities of fibrine in the blood, which tends to impair its solubility; this maybe, he says, probably in consequence of the extreme acidity of the system and the absence of a due quantity of ammonia in the blood. The above sound results from an obstruction to the flow of blood through or from imperfect action of the valves of one or other of the orifices of the heart, if bearing the sound we find it to be most audible on the sternum, over the base of the heart and along the course
of the great vessels, the inference is, that the sound originates in the aortic valves; if on the contrary we hear the sound most distinctly at the part of the chest over the apex of the heart, it is fair to suppose that the left auriculo-ventricular valves are out of order, that the sound heard, occurs whenever ought to hear the first sound, that is, during the time the ventricles are in systole, it is called a systolic bellow sound, and conjecture its seat to be in the aortic or mitral valves according to the spot where it is heard best.

There are also diastolic sounds distinguishable in the same manner. When there is difficulty in distinguishing whether the sound is systolic or diastolic, feel the pulse at the same time that you are auscultating and if it is systolic you will feel the beat of the pulse synchronous with the systolic sound. Dr. J. H. Bennett thinks that aortic murmurs are often mistaken for sounds dependent on endocarditis and he seems to think that it is
...more attention than has been paid to it.

Mr. John Cunnin says that why the warty deposit of the fibrous cavity so decided a preference for the valves of the left side of the heart, is this, that the fibrous is much more readily deposited from arterial than from venous blood, so that this he passed single threads through the artery and vein of a dog and invariably found in that the thread in the artery was coated with lymph much sooner than the thread in the vein. — Dr. Latham and Hope are of opinion that endocarditis is more frequent than pericarditis. — Dr. Stokes and Gibson and others entertain a different opinion. Cardiac inflammation is found more in youth and in women rather than men, and in those people who have been weakened by illness or by large bleedings, and in those cases where there is deficiency of red blood corpuscles and as a rule in those cases where the general symptoms are remarkable for their severity. Dr. Fuller says...
that why the heart is rendered liable to be attacked is, that by the repression or rapid subsidence of the articular inflammation, a quentity of the poison is suddenly thrown into the blood's current. Dr. Latham, says, cardiac affection is incident to all the degree, all the stages, and all the forms of acute rheumatism. Dr. Water says, that one half of the patients admitted into the London Hospitals with rheumatic fever, have the heart or its membranes affected; with only two exceptions he never knew rheumatic fever to occur in an unequivocal form before puberty, without its being attended with inflammation of the lining or investing membrane of the heart; and he says the heart affection may be looked for as much when the disease is mild as when it is severe. The duration of this secondary affection is very various. If the disease be severe or neglect-
ed the patient often dies in three or four days; un-
der proper treatment it seldom continues be-
yond a week or ten days. If this attack be al-
together neglected and the patient survive, the
pericardium either becomes adherent or the cu-
sules of the heart become permanently defea-
ted, and its ulterior effects are hypertrophy
and dilatation of the heart, dropsy, asthma,
or other affects of the lungs, and perhaps
hemiplegia. The to and fro sound is never
of long duration and terminates in two ways:
either the patient dies in a short time, the cu-
sound continuing to the last, and then the
pericardium is found coated with lymph, but
the greater part of its extent or altogether is non-
adherent, or the the sound ceases never to return
while the condition of the patient improves in
the latter case the sound ceases from adhesion
of the pericardium over the whole or greater part
of the heart. But it is probable that the pericardi-
ism is involved much more frequently than
we suppose, the symptoms sometimes being
masked by endocarditis; besides how frequently
in post mortem examinations, evidences of per-
carditis are discovered which had escaped de-
tection during life. Considerable time may e-
collapse between the attack of rheumatic fever com-
plicated with an attack of the heart, and the
developed state of organic disease of the heart,
Dr. Copland mentions a case in which twenty
three years elapsed before organic disease oc-
curred. Sometimes a few years after an attack
of rheumatic fever with heart affection, the car-
diac disease still existing either latent or de-
ected, another attack of acute rheumatism has
occurred, and has either aggravated the cardiac
complication, or even diminished the physical
signs and symptoms of this complication, these
different effects depending much on the treatment or constitution of the patient. Also there may
be a slight attack of rheumatic fever or chronic rheumatism without any very manifest appre-
ciation of the cardiac disease, which has hov-
ever slowly advanced more or less rapidly accord-
ing to the habits, living, constitution and treat-
ment of the patient. Again in several in-
stances rheumatic fever has occurred nearly
life, accompanied or followed by a cardiac c
complication and no second attack has ap-
peared or merely a slight or chronic rheumatic
affection, but the cardiac symptoms, as well as
the physical signs of cardiac disease have grad-
ually subsided, until after several years, they
have almost altogether disappeared or have g
iven rise to very little inconvenience. Where
there has been repeated attacks of rheumatic
fever, there is generally found present some
Organic affection of the heart, and probably the disposition to such repetitions of the disease, may be kept up by the cardiac complication. Patients labouring under rheumatic cedardia, very often become affected with delirium, violent mania, stupor, coma, convulsions, or all of these in succession, and you might fancy they were labouring under an inflammation of the brain, or of the spinal cord or of their membranes, such cases are spoken of as metastases to the brain; it may be the latter, but it does not occur very often. The attention of the practitioners may be drawn away from the chest, where grave and fatal changes are taking place, and he may fix it upon the head, where no inflammation exists, which is disturbed through sympathy with the cardiac disorder. The lightness, wandering, mania, delirium, coma &c., which supervene when the heart is affected is explained by a morbid quantity of the blood itself disturbing the function of the
brain, or it may interfere with the regulated supply of blood to the head, which is necessary for the due performance of the cerebral functions; or it may be that the cerebral or special symptoms are purely reflex phenomena of eccentric origin and excited by the irritation of incident nerves pertaining to the heart. These symptoms are especially seen in relapses of rheumatic fever or where the arthritic symptoms have suddenly disappeared, and it may be that the poison accumulates in the body and thus suddenly overpowers the brain and nervous system. Dr. Latham mentions cases in which the whole force of the treatment was directed to the head from a belief that the brain was inflamed, and upon dissection, the brain and its coverings were found in a perfectly healthy and natural state, and the pericardium, though which during life there was no symptom to direct the slightest suspicion of disease discovered,
the unequivocal marks of recent and acute inflammation. In nearly all cases of post-mortem examination no traces of inflammatory disease have been observable within the skull or in the cerebral caves on slicing the brain more bloody points than usual are found and sometimes the ventricles are seen filled with serum and there may be some fluid under the pia mater at the lower part of the skull, the cerebral veins are also very much congested. These appearances may take place after death; there are none of the usual signs of inflammation as vascularity, effusion of lymph and pus. Rare cases of true inflammation of the brain or its membranes are sometimes found in rheumatic fever; on examination after death pus has been found as well as lymph on the membranes. Head symptoms then may be regarded as symptoms of extreme danger as they seem to occur only in weeks of
debilitated persons, or in those who have lost much blood or by others who have weakened their nervous power and where some internal organ is affected. Dr. Striker has shown the relation existing between sudden hemiplegia and vascular disease of the heart. He states that hemiplegia and disorganization of the brain are frequently the direct consequences of obstruction to the passage of the blood through one of the cerebral arteries, by the impaction of a granule or portion of fibrin in its channel, and that the fibrin so situated has been detached from the diseased valves of the heart, carried into the aorta and thence onwards in the circulation to the place of its lodgment. Spinal symptoms are often severe in rheumatism as well as the cerebral. M. Bouillard has a remarkable case in illustrating this point; it was that of a boy aged six who had been attacked with rheumatic fever.
a fortnight previous to his admission, when admitted he was suffering severely from cramps and tetanic spasm, affecting almost every part of the body. After death no traces were observable of inflammation of the cord or its membranes, but the pericardium was found to contain a large quantity of pus. Chorea, is a disease of debility or so it is believed by some that the blood is primarily diseased, and is almost always found connected with some other disease, such as, rheumatism and diseases of the heart, especially pericarditis. Besides, there are points of resemblance in chorea to rheumatism in the urine: (1) They both have an excess of urate, (2) In both diseases the specific gravity of the urine is high. Chorea occurs in some, and rheumatic fever in other members of the same family showing a period of connection between the two diseases. There is an example of rheumatic fever and chorea...
occurring in the same patient, in the case of Dr. W. H. Fletcher at the end of this paper. There are other complications, that occur in rheumatic fever; these are affections of the lungs, they run the ordinary course of inflammatory action and the affections may be either, bronchitis, pneumonic, pleurisy, or pleuro-pneumonia. Inflammation of the lungs may be excited in three ways. (1) From the congestion in the lungs consequent upon cardiac disease. (2) By contiguity of structure. (3) From the morbid portion in the blood. These diseases are formidable from the fact that they generally coexist with inflammation of the investing membrane of the heart. Dr. Latham’s statistics show that in 136 cases of rheumatic fever the lungs were affected in 24. Dr. Huller found that in 246 cases of rheumatic fever, 41 had lung affections that is to say in the proportion of 1 in 6; of Latham’s 24
cases, 4 were bronchitis, 12 pneumonia, and 2 phlegm.

Of those cases complicated with heart disease a greater number occur when there is exacerbitis than when there is endocarditis. Dr. Latham's cases of endocarditis, where the lungs were involved, give a proportion of 1 in 9, and in the pulmonary affection complicated with pericarditis, they were about one half when both endo- and pericarditis were present; the proportion was greater. Dr. Fullers statistics are nearly the same, endocarditis occurred in 1 out of 10, pericarditis in 1 out of 17, and in cases complicated with endo-pericarditis in 1 out of 1.4. They say bronchitis generally occurs from congestion of the lungs, when cardiac disease has existed some time. But Dr. Fuller mentions seven cases of pulmonary affection uncomplicated with cardiac disease, six of which were cases of bronchitis and bronchitis may occur with pneumonia in an early stage without re-
heart affection.—Pleurisy and pleuro-pneumo-
monia generally occur from the irritation of the
morbid portion. Pleurisy generally occurs by con-
tiguity, from inflammation of the pericar-
damine. But all the pulmonary affections I have
mentioned may arise in the three different ways
that I have stated above. They mostly occur in
persons who have been debilitated and weak-
ened by any illness previous to the attack of
rheumatism; they are generally found to hap-
pen in children between the ages of eight and
douzce and they are also more common in cer-
young women than men.

Treatment.—It must vary according to
the state of the patient, whether he is plethoric, robust,
and strong, or whether he is delicate, and of a less
weakly habit of body. When the disease is more
complicated by cardiac affection it usually
terminates sooner or later, in recovery, and some-
inics subsides with marvellous rapidity under every variety of remedy. Therefore it is obvious that no sound inference can be drawn as to the success of any particular method of treatment, unless such treatment has been largely adopted, and has been attended with tolerably uniform results. And it may be said without fear of contradiction, that each and every plan of treatment which has been hitherto proposed is regarded by the profession as unsatisfactory.

In one case where the patient is young, feeble, and robust, resection may suffice, by subduing high vascular action and febrile heat; in another opium may solve the disease, by allaying nervous disquietude, pain, and in promoting free perspiration; purgatives and colostrum in a third case may cleanse the liver and bowels, and the whole system of a collyric of morbid secretions, and to set the sufferer..
free, and finally in most instances these three remedial measures may, together or with the occasional use of colchicine, achieve the desired end more certainly and with less distress and expenditure of vital power than could either of them singly. If in one person's hands, any particular remedial course has proved efficient, it has signally failed in those of another, if at one time a remedy has proved efficacious, it has been found inert and injurious at another, under different circumstances of age, sex, constitution and the like. Dr. Warren states that the disease will run a course of six weeks do what you will in the way of treatment. But as I mentioned above, the duration of the disease, can be shortened under proper treatment to a month or three weeks. - The indications or suggestions of cure, are to subdue the inflammation regarding it simply as such,
then attention should be directed to the re-
moval of the morbid conditions which con-
stitute the disease, as far as these are known,
and as far as experience may have proved the
efficiency of the means recommended for this
purpose. We should endeavour to develop
organic nervous energy, so as to promote the
assimilating, the defecating, and excreting
functions; to diminish morbid sensibility,
to counteract whatever disposition may ex-
ist to form acid in the prana, vice, to remove
from the blood or to neutralize the materials
from which acid is formed, as well as what-
ever acid may be present, to increase the
quantity of red globules in the blood, to cor-
rect the morbid condition of the ksjikol
sanguinis, and to prevent the exuberance of
fibrine and its tendency to concrete and to exude
in the form of a fibrous plasma or lymph, etc.
Veneesection. Sydenham attempted the cure of acute rheumatism by bleeding and he took ten ounces of blood on the first day, as much on the second, and he bled a third time a day or two afterwards, and three or four days after that he bled a fourth time; but some few years later we find he discovered that this practice was injurious, for in a letter to Dr. Brady, he admits that it impoverished the strength and favoured the attacks of other diseases, he therefore trusted at a later period of his practice, to a diet consisting chiefly of whey. Dr. Satham regarded bleeding as not required, although he did not object to local bleeding by leeches &c. as advised by Dr. Fowler, and trusted chiefly indraphoresis, deliques, laxatives, mustard. Ultimately, Dr. Wells and Willan came to nearly the same conclusion as respects the treatment of the disease in London and large towns, namely that.
Blood-letting is either unnecessary or injurious by exsanguining the patient and favouring internal translations of the malady. Dr. Craige,.practising in Edinburgh, declared in favour of blood-letting, aided by diaphoretics, and cathartics, and contended that in order to be beneficial it ought to be performed early in the disease and carried to a considerable extent; he considers the best time is, within the first three or four days or at all events within the first week, it should be carried he says to twenty, twenty-five, or thirty ounces at once, and within 24 hours to as much more. But certainly venesection was less prejudicial from 1816 to 1825 when the epidemic constitutions prevailed, than it has been subsequently; as patients seem now not to be able to lose the quantity of blood as they did, in the interval between the years 1816 and 1825. Mr. Bouillard in cases of no great severity recommends four and a half pounds of blood.
to be taken in the 24 hours, while in graver cases he takes eight, nine and ten pounds of blood within the week; he affirms that the advantages are, that the disease does not become chronic and that its duration is abridged from one to two weeks, the mean duration of his cases, reckoning from the time of their admission into the hospital, being nineteen days and a half. The objections are, that the loss of so large a quantity of blood is worse than the disease, for it would be in felt by most persons all their lives, and the patient might die from the exhaustion produced; that but temporary, if any, abatement of the suffering follows its use, that his treatment appears to have caused in his practice an unusually large number of cases of cardiac, that these bleedings on so large a scale produce delirium and mental disorders, and lastly that no advantage is gained as to time, for your patient may take
from two to three months in becoming convalescent. Dr. Fuller remarked that the bleeding, which in the young, plethoric and robust, may be necessary to allay excessive vascular action and cause free secretion, may, in the weakly, induce irritability of the heart and a consequent attack of cardiac inflammation. Rheumatic fever being manifestly a highly inflammatory disease and of a peculiar constitutional origin, and the blood drawn presenting a more copious layer of buff than most other diseases the proportion of fibrin being greatly increased, we can hardly feel surprised that bleeding has been largely had recourse to. In some instances it may be required and is perhaps highly beneficial; but observation has led Dr. Fuller and others to believe, that it is so only in first attacks occurring in young, robust, and otherwise healthy persons, particularly in those which are marked
by unusual severity of their symptoms or are accompanied by free perspiration. But those persons living in large cities and towns, persons employed in warm, ill-ventilated factories, or those living in crowded rooms, low apartments, cellars, in the very young or the old, especially, where there is any indication of a deficiency of goodness of blood, in the ill-clothed and badly fed, in mild cases, in the delicate and those of weakly constitution; in the well expressed rheumatic debility, and when it is distinctly ascertained to be hereditary; blood-letting in any form is most injurious. It ought at all times to be cautiously employed and carried to a small extent only, from eight to ten times according to the age and strength of the patient, the object being to favour the action of other remedies, and to promote free secretion by its use, rather than to arrest or cut short the disease. The buffy coat of the blood continues notwithstanding
the frequent repetition of the bleedings. Dr. Fuller
writes that venesection is to be made use of with
the view of expediting the operation of other remedies and
must necessarily take the lead of all other measures
if it is to be employed at all. With this view it may
be used in the young, phlegmatic and robust in whom secretion
is insufficient, whose pulse is full and bounding and whose skin
is dry hot and burning. A single bleeding is insufficient to relieve
the excessive congestion on which the want of secretion in great
measure depends and which forms an obstacle to the action
of the remedies on which we rely for effecting a cure. Dr. Volta
advocates bleeding, he says, in the fibrous or genuine form with
the high bounding pulse, the flushed face, the high inflamma-
tory fever, you may bleed your patient from the arm, especially
if they are young and robust, they will bear to lose a large quan-
tity of blood without fainting. He further states that in a
very few instances can you hope to reduce its morbid stresses
principle within harmless limits or exting with the disease by
blood-letting, and he says he rarely prescribes phlebotomy in his
own practice, as the time has generally gone by, when he sees his patients or they have been bled before admission into the hospital or others are suffering from a recurrence of the sickness, and in these the constitution has been broken and battered by a long life, while in others there is no great intensity of fibrous disturbance from the first. In King's College Hospital, they never bleed patients except to take a small quantity locally.

Purgatives. — They are generally required early in the disease especially cholagogues, although they have not been much insisted upon by writers, the object should be to obtain merely a single free evacuation every morning, but they should be prescribed only so as to procure a free bowel evacuation and discharge of bile without occasioning severe catharsis, for as

violent action on the bowels, and more especially if it be accompanied with vomiting, will remarkably raise the suppression of the local affection, and cause some internal complication or metastasis of the disease. The evacuations ought to be examined and if from their appearance, there is any disordered intestinal evacuation or retention or disorder of the biliary secretion, the purge ought to be
made more active for two or three days. The purgatives used are
salmon combined with spirits, compound aloes with pill, the
infusions of scrim and gentian with the sulphate and carbonate of mag-
nesium in the morning. Dr. Boreland says, that in some instances
he has preferred half an ounce of spirits of turpentine and as
much castor oil, to be taken on the surface of milk or of some
aromatic water and when the bowels do not act expeditiously an
enema containing about an ounce of turpentine with the grains
of camphor or half a drachm of assafetida and some common
salt, will always be serviceable. Dr. Fuller states that active
purgation should be avoided as it is injurious for three reasons
(1) Because, it is not necessary for the cure of the patient and
life-blooding tends greatly to reduce the strength and pro-
tract recovery. (2) Because, from the nature of the complaint,
the is quite incapable of moving out his sufferings are aggra-
vated, his irritability increased, and his heart action accelerated,
by the repeated shifting of his position, which is rendered
necessary by the calls of nature. (3) Because it necessarily
gives rise to more or less exposure, which must be prejudicial
to a person bathed in perspiration.

Mercurials. The attempts to cure the acute forms of rheumatism by salivation as suggested by some writers, not only renders convalescence prolonged and favours the degeneration of the acute form into the chronic, but they by no means prevent, if not increase, the risk of internal metastases. They have been given with the view of warding off cardiac symptoms, but when they are given as to affect the constitution before the commencement of cardiac inflammation, they not only have no influence in preventing the disease, but by the irritation and general depression which they occasion, appear to modify the course of the disease in a manner by no means conducive to recovery. There is every reason to believe that calomel is of service in restoring the torpid functions of the liver and in removing biliary accumulations and congestions, therefore there would be no objection in giving one full dose at the commencement of the treatment combined with opium, by way of a stimulus to the biliary secretions; but not carried to
the extent of affecting the constitution. Moreover, mercury cannot be relied upon, as an antiphlogistic measure to the extent to which it can in other phlegmasias; besides, it is particularly liable to the objection that it diminishes the quantity of red corpuscles and the disease itself being that tendency it makes the exhibition of it rather a nice and delicate affair.

Opiums. — It may be given with the greatest advantage in the early and most painful stage of the disease, occurring in adults, to the extent of six or eight grains in the 24 hours and to children an half grain doses every three or four hours. During its use, it quells the nervous system, allays pain, and delirium, if there should be any of the latter; it increases the quantity of the urine, the motions become more healthy in appearance, and the coated tongue cleaner and less red. But on the other hand, if it is not cautiously used, it may check the salivation and other secretions and thus prevent the elimination of the phlegmatic poison. It also ensures the increase of free perspiration. In the height of the
disease, it is easily tolerated in large doses, especially when con-
joined with warm spices or aromatics, but generally speaking
what should be the dose and how frequently repeated must
be regulated by its observed effect; enough must be given to kill
or to assuage the pain. Dr. Corrigan of Dublin, trusting to opium
alone for the cure, he begins with 1/40 grain, that quantity at
short intervals about every third hour, and increases the
dose until sensible relief is obtained; and he then continues
the dose thus reached up to the dose when the disease is mani-
festly departing. He found twelve grains in 24 hours to
be the average requisite amount and that, that quantity
does not affect the head; diarrhea he says sometimes occurs
while the patient is taking opium in full doses and pur-
gatives are seldom required. It is used in King's College Hos-
tival in doses of half a grain to two grains combined with a
grain or two of sulphate of quinine given two or three times
a day, as may be seen in the cases at the end of this paper.
The quinine is given to give tone and strength to the system.
Morphia is sometimes used instead of opium.
Golchicine. It has been employed in rheumatic fever since 1815, and has no doubt a great power over rheumatic inflammation, but it may be doubted whether this is not merely dependent upon its power of elimination, though it has a sedative action on the circulation. Administered alone it is rather a dangerous remedy but its virtue as a remedy may be obtained in small doses in combination with other medicines. It is to be given with small doses of colonite, pe-maculana, alkalies and opium. It promotes evacuation by the kidneys and appears to exercise some antirheumatic influence over the process of assimilation whereby the formation of the rheumatic poison is checked. It is only in some cases however that it appears to be of service. It is far less efficacious in the weak and nervous than in the more robust and less easily depressed mind. For value, they say in fibrous rheumatism, than in cases where the synovial inflammation predominated. Dr. Parlow states, that it does not generally arrest the rheumatism unless it acts fully on the bowels or kidneys producing either the loose pea-soup-like
Motions, commonly known as colchicum, stools or diarrhea, or dark urine, or both. He adds, if however itcut short the rheumatism by its simple sedative action or antifebrile,
the poison there is too much reason to apprehend its reappearance in the heart. The operation of this remedy
should be watched most carefully, under all circumstances, a daily evacuation from the bowels must be secured
during its use, if the liches disappear from the urine, if the pulse becomes weak, if faintness, nausea,
complaining, griping and diarrhea supervene, and if the
rheumatism has not given way when these symptoms occur, you may be certain that to push the colchicum furt
ther would be useless, but till some one of these symptoms occur, a grain and a grain and a half of the antifebrile
extract of colchicum, or the undiluted juice or from fifteen
to twenty minutes of the wine may be safely, and often with
advantage administered two or three times a day. Accord-
ing to the practice of Dr. Fuller it has proved less advanta-
gious in proportion as the fever has exceeded the articular
swelling and as the urine has been less highly charged with bile.

Antimony. - Laennec was a strong advocate for the administration of tartar emetic in full and repeated doses. He says there is no inflammation except in inflammation of the lungs, in which tartar emetic is more efficacious than in articular rheumatism.

Valuable as its powers are in moderating local action, it is insufficient of itself to fulfil the conditions essential to a safe and speedy cure of the disease.

Bark, used to be esteemed highly, but it is only beneficial and safe during convalescence and where the system has been reduced or broken by the complaint or when the disease has gone on for sometime. Also from ten to fifteen minims of dilute nitro_uniform acid added to the bark is very efficient at the termination of a lingering attack.

Specranchia, is beneficial in those cases which are unaccompanied by perforation, it is mostly used in the
form of Dover's powder. —

Quinaeum is of not much use, Dr. Fuller, says he has prescribed it with some apparent advantage. But it has effected little good as compared with other remedies, and it is to be used only in cases which are accompanied by insufficient perspiration. —

Dr. Copland recommends iron in the form of oxides or carbonates when there appears a deficiency of red corpuscles in the blood. —

Alkalies. — They are active depurating agents and they appear to be chemical antagonists of the poison, and they have the further good effect of hastening its ejection through an natural excreting only in as much as they are most of them diuretic, they correct the abnormal condition of the blood and the secretions, they increase the solubility of the fibrine and in a measure, they prevent the de-

position of fibrine on the valves of the heart, they re-

store the alkaline condition of the system; they act as sedatives and calm the action of the heart, and they
increase the metamorphosis of the tissues. Dr. Parkes says they aid and increase the elimination of sulphuric acid by augmenting the alkalines of the blood. The patient lost their pains under their influence and proceed rapidly to convalescence. The alkaline treatment seems the best at present and it is universally adopted with but few exceptions. The alkaline treatment, conjured with opium, quinine, and moderate purges, is pursued in Kings College Hospital, as may be seen in the cases at the end of this paper; the physicians generally give five grains of nitrate of potash and fifteen grains of bicarbonate of potash in an ounce and a half of water, to be taken every four hours. Nitrate of potash was recommended by Dr. Blackley in 1764 and he gave large and repeated doses of this salt. It has been largely employed for the cure of acute rheumatism, both in the United Kingdom and on the Continent, in doses varying from a few
grains up to even four drachms three or four times a
day. Dr. Buchan speaks highly of its value when
freely administered, he gives an ounce to two or even
three of this salt freely diluted in the 24 hours, and
in the majority of cases without producing any obvious
effect in the force or frequency of the pulse, the integ-
ity of the digestive function, the state of the abdomi-
nal organs, or even upon the quantity of urine secre-
ted; but it relieves in a marked manner the swell-
ing, heat, and pain of the joints. He says, he has never
seen the mixture of potash viilarge or small doses pro-
duce either nausea or vomiting. In a few cases pricking
or pricking pain of the abdomen, with a few ac-
water evacuations, which have quickly ceased on dis-
continuing the salt, are the only unpleasant or un-
desirable effect which he has witnessed. Dr. Gallis
states, that he has been unsuccessful in the use of
mixture of potash; he gave it to the extent of about
an ounce daily in seventeen cases, and in only one case
out of the seventeen, did it appear to exercise any control over the course or duration of the symptoms.

Dr. J. H. Bennett, states, that minute of potash is very efficacious and he has reported cases in which the effects of this salt seems to have been most beneficial; it diminished the frequency of the pulse, the swelling, and the pain of the joints in about three or four days. He gives, half an ounce of minute of potash, in six ounces of distilled water, half an ounce of this mixture is to be taken every four hours; sometimes he adds half a dram of a dram of the salt to the mixture when he thinks the case required it. And he states in commenting on the case of a Mrs. Anderson which he gives that the great pain in her way yielded to morphia, diaphoresis, and diuresis and that on the exhibition of minute of potash, profuse diaphoresis came on, which was apparently kept up by the medicine, with marked amendment of the rheumatic pains, followed by rapid recovery, and he further states that the improvement
could not be attributed to the occurrence of any critical
time in this case, for the night previous to the adminis-
tration of the mince of potash, there had been a marked
evacuation. —

The bicarbonate of potash in solution had been
largely and fairly tried by Dr. Barrold, who had
administered it in the average quantity of two scruples
repeated every two hours, by night and by day for
several days together. Of fifty one cases so treated the
average duration of the whole disease was between
thirteen and fourteen days. It soon rendered the urine
alkaline, it had no injurious effect on the bowels or on
the bladder, it seemed rapidly to calm the pulse and
alleviate heat, and in no instance did any affection
of the heart arise after the patient had been forty-eight
hours under its influence. — Dr. Fuller treated his
cases either with bicarbonate of potash or of soda, he
first gives a dose of calomel and opium, followed after
the lapse of six or eight hours by a draught containing
Infusion of dews together with half an ounce of the potassium tartarate of soda and twenty minims of the tincture of colchicum, while the intestinal secretions are attended to, he gives alkalies and the neutral salts in combination with a few drops of colchicum wine, in the form of an effervescing citrate of potash or ammonia draught with an excess of from forty to sixty grains of the bicarbonate of potash or soda, to which, if the patient be robust and of average strength, bated in perspiration, with red, swollen, and exquisitely painful joints, a furred tongue, loaded acid urine, and a full and bounding pulse, he usually adds a drachm or more of the acetate of potash, and ten or fifteen minims of the colchicum wine or if the bowels are costive, a drachm or two of the potassium tartarate of soda instead of the acetate of potash; care being being taken to regulate the purgative action of the salt by a few minims of the tincture of opium. This draught is to be repeated for the first or twenty-four hours at intervals of two, three, or four hours.
according to the strength of the patient and the severity of the attack. If the lungs are complicated he adds fifteen to twenty minutes of antimonials urine, and if the pain is excessive, he prescribes a pill containing from half a grain to a grain and a half of opium, or an equivalent of Rovers' powder to be taken once or twice a day, taking care to increase or diminish the quantity of the sedative according to the circumstances of the case, on the one hand avoiding constipation and narcosis, and on the other quarrelling against diarrhea.

Dr. Golding Bird uses acetate of potash, half an ounce of which, largely diluted, is given in divided doses in the course of 24 hours; he says in three days I have repeatedly found the exquisite pain of the joints nearly absent, the patient comparatively comfortable and able to bear with greater ease the helpless state in which she still swollen joints re-

place him. In no case has any ill effects followed this treatment. The pain remarkably and suddenly lessens.
as soon as the urine becomes alkaline, he adds that the
lucency to heart disease is very much lessened, he adminis-
terds it in some aromatic or in plain water, to the latter
he adds a few drops of the oil of lemon.

Dr. Owen says, the lemon juice on the supposition that by
the digestion and decomposition of the citric acid unit, he
believed that oxygen would be supplied that would con-
vert the uric into urea and carbonic acid; and there-
by favour its excretion from the system. But after ample
trial, it has now been discarded as uncertain in its ac-
dion, and by no means so efficient as the other remedies
I have mentioned.

Dr. Parke says, liquor potassa may be given in half-
drachm doses to the extent of three to six drachms in the
24 hours. Dr. Watson states, that he thinks alkaline be-
necial and has prescribed them with success, he gives
the liquor potassa to the amount of a drachm daily
for several days together.

Local treatment — External special applications.
are also efficient aids in treatment. The affected joints rarely sustain any permanent damage, the inflammation is apt to leave them of its own accord, even suddenly and sometimes as suddenly return. Leeches and cupping-glasses therefore would seem needless or superfluous, except where the pain and inflammation are so great as to threaten the integrity of the structures of a joint. In cases in which the inflammation lingers about a particular joint or when the heart is affected they may do good, but not when the sound has been heard. Cold applications by causing a repulsion of the poison which is making its exit through a joint back again into the circulating blood, to settle possibly upon some critical part and especially upon the heart would be positively hazardous. Warm fomentations may be employed advantageously, they have not the danger of cold applications and they often afford exceeding great comfort, and do not check the continuance of perspiration. Dr. Fuller and Basham have fairly
ascertained their safety and their value. Dr. Fuller says, they soothe the parts, promote perspiration and thereby favour the elimination of the poison. Theory suggests that the lathering or emerying of poison might be neutralized and rendered innocuous by making the fomentations alkaline and experience seems to confirm this notion, as the object is to allay pain and to counteract the extreme acidity which always accompanies, if it be not the cause of rheumatic inflammation, it is theoretically manifest at least that an alkaline and opiate solution would prove the most effectual remedy. Dr. Barthum recommends a warm solution of carbonate of potash. Dr. Fuller selected twenty-two instances in which corresponding joints were affected, and applied fomentation of warm water to the one joint and an alkaline and opiate solution to the other and almost uniformly he says, the pain and inflammation con-
t issue in the former and speedily subsided in the latter. Dr. Watson had tried Dr. Batham’s hot water and extract of potash solution and Dr. Fuller’s compost of Phosphate carbonatis or Soda carbonatis 3iv to 3iv, dep. Opium sedative 3ij, Glycerini 3ij, Aqua Rosa 3ix, sometimes, decoction of pop-pies is substituted for the liquor opii and rosewater, and he found the latter to be the most effective out of fourteen cases in which corresponding joints were affected. Dr. Fuller says, that their flannel should be applied to the inflamed parts, and the whole should then be wrapped up in flannel. In all cases, however, to prove effective, the flannel must be kept stapping wet, not merely moist. Dr. Dodd recommends the joints to be wrapped up in cot- ton wool and then to be covered with a thin layer of gutta percha; which treatment is carried on in King’s College Hospital. Dr. Dodd sometimes uses an embrocation to the joints composed of Chlorop.
Ela. Morphi.  Hydrochoi. gr. iv, Ol. Amygdalae. Zk. Blisters, are sometimes useful, applied to the joint, as Dr. Burnet thought, that far preferable to placing them on the joint, also they are useful when the heart is affected; when there is a dull, or friction sound, or pericardium distended with fluid. A bruised meal poultice applied over the heart is often of great service having a soothing action, also a mustard poultice when there is pain in the region of the heart is beneficial. Tody paint may be used, applied to the joint, or a piece of lint may be soaked in the paint and kept applied. —

Regimen. — The diet of the patient should be strictly limited to slops, light puddings, and lemonade for a drink, you may also give strong beef tea, jelly, and strong coffee in moderate quantities with the view of supplying the waste caused by perspiration, and of promoting the dilution and...
more rapid absorption of the alkaline medicines administered internally, diluents, such as whey, thin gruel, or barley water, should be taken from time to time, and especially after each dose of medicine. Baths should be given when there is insufficient perspiration and the skin is hot, dry, and burning; either warm water, hot air, or vapour baths may be used, in King's College Hospital a packet of Vichy salts is sometimes ordered to be placed in the bath, to make it resemble the Vichy baths. Wine and brandy should be given when the patient is weakly and low, more especially when the rheumatic fever follows any other fever of a lowering tendency or in fact any disease of a lowering character. Fresh mutton or veal broth or barley water may be prescribed with advantage and benefit, such as are least likely to occasion acidity should be alone taken. Saccharine substances should be avoided. The patient should be placed in a long u
flannel might gurgle near his skin, or in default of this a cotton one, and he should sleep between flannel or soft woollen blankets or in cotton sheets. And when the fever has left him and he is approaching convalescence the mixture and decoction of cinchona may be prescribed advantageously. As soon as convalescence has proceeded sufficiently far, to admit of removal, change of air should be recommended, more particularly to a mild or warm and sunny, or to a place where salt water, baths may be procured, or thermal springs may be used, especially those of Bath or Tunstall. If the attack has not been complicated with, or followed by any affection of the heart, regular and active exercise in the open air ought to be taken as soon as the patient is able, so as to preserve a free excretion from the skin. If any heart disease is present, he should take gentle exercise in the open air, but should not exert himself in any way.
Case No. 1.

Anne Dorrsett, aged 30. Admitted into King's College Hospital on 10th July 1860 under the care of Dr. Budd. She is a laundress living in Islington, states that she generally had good health, and never had rheumatism, she began to feel ill about 20th June 1860 with pain and swelling in the right elbow joint. This subsided in a day or two and the left shoulder became affected in the same manner; on the 6th July 1860 the knees and ankles began to feel painful and gradually got worse and swollen, she was hot, feverish, perspired profusely. State on admission, knees and ankles painful and swollen, right knee the worst, has no appetite and sleeps little. Bowels rather constive. Tongue furred and red at tip and edges, breaths profusely. Urine scanty, high coloured and contains no albumen. Heart sounds normal. No cough.

Pulse 107. Ordered - Expolast Lytta 2 X 4 above right knee. 

Hastus Semen BD. Ziz. Matine.
Potassa Bicarbonatis gr. XV
— Nitri (gr. V
Aqua Distillata Zij.

His habit sumendae

11th July. Pulse 94. Slight less painful. Bowels moved last night.

12th. Pulse 100. Right knee and ankle less painful but swollen, right wrist swollen and painful, slight pain in the rest of the large joints without swelling or redness. Did not sleep well. Bowels opened this morning. Makes water freely, but it contains an abundant deposit of lithate. Ordered Potassa Bicarbonatis gr. XV
Tubercis Opii gr. f.

Hist pil. bis die sumenda.


14th. Heart's action tumultuous, first sound slightly abnormal, had great pain under the false ribs of
the left side, and slight dyspnoea; four leeches were
applied to the painful place and a biscuit meal
practically after. Ordered.

15.ig. Sej. Morphia, Hydrochlor. 1/4XX
Agua distillata 3j

Fiat menstrus, crooke.

16th. Pulse 105. Slept well. Heart less tumultuous
in its action, sounds almost normal. Dyspnoea dis-
appeared. Knee joints better, elbows and wrists
painful. Perspires a great deal. Bowels open.

16th. Pulse 102. Did not sleep well. Complains of
great pain down the left side, and slightly in the
region of the heart. Ordered. Complastrium litho-
2 x 4 to be placed in the painful place. Bowels
open.

17th. Pulse 104. Better. Slept well. Blister re-
lieved the pain. Heart sounds normal. Joints im-
proved. Bowels open. Perspires less.

19th. Pulse 100. Left knee stiff and occasionally
painful, the other joints are better, the swelling has almost left them. Appetite good. Perspiris less.
29th. Pulse 96. Bowels moved five or six times during the night, and has pain in the abdomen. Pain very slight in the joints.
30th. Bowels still relaxed, ordered.

Dr. Decoct. Aconitum Ly. Fip.
for the enormously.

29th. Pulse 88. Appetite good. The relaxed state of the bowels has ceased. Has only slight pain in the joints of the arms.
31st. Much better. All the pains have gone.
2nd August. Discharge convalescent.

Case No. 2.

William Brown, aged 14. Admitted into King's College Hospital on 11th November 1863 under the care of Dr. Budge. He lives at Ber-
Monday, works at a biscuit factory, but is not exposed to great variations of temperature, is well fed, always had good health till now; family is healthy, states he never had rheumatism before. About a fortnight ago, he went to some baths and caught cold, when he came home he felt dull and heavy, and sat by the fire; after four days he was forced to leave his work, on account of the pain in his knee joints. Had no distinct feverish symptoms as far as can be made out. The pain next appeared in his wrists, also a severe pain at the heart, especially at night accompanied by palpitation and a short cough. There is pain in both knees, which are semi-flexed; also there is pain and swelling in the left wrist. Perspires profusely. Sleeps well. No appetite. Tongue red at the tip and edges, with a little white fur. Breaths open the day before admission. Urine high.
coloured, scanty and loaded with phlegms. Has a distinct systolic bruit heard best at the apex of the heart, the second sound is very clear. Pulse 108. Respiration 25. Bowels confined. Ordered.

Fp. Potassa Bicarb: gr: xv
Potassa Nitric: gr: v
Aqua Distil: Zijn

Fil: colocynthidis Co: gr: v

Emplastum dyttex 2x2 to be applied above the left wrist and one 2x2 to be placed below the left nipple.

13th. Pulse 112. Respiration 24. Perspires profusely. The blister above the wrist did not rise, the pain is just as severe. Bowels open. Tongue cleaning.

15th. Pulse 98. Respiration 24. Has pain in the left shoulder. The pain in the region of the heart is relieved by the blister, the bruit is still heard.
Does not perspire so much.
18th Pulse 84. Respiration 19. Appetite good. All
the pains have gone. He feels much stronger. There is
no sensible perspiration.
19th Pulse 82. Respiration 19. Syphilitic knot still
present. Bowels open. Tongue clean.
20th Complains of nothing except slight pains
in the elbows. Urine slightly acid and abundant.
Bowels open.
21st. There are some slight pains about the left
arm. Urine a little acid and deposits a quantity of
lithates.
December 3rd. Pains gone, gets up and walks about
the ward.
4th. Discharged convalescent. There are no bad
symptoms and none have occurred since the 3rd.
Case No: 3.
Laura Fletcher, aged 14. Admitted into King's
College Hospital on 14th Sept. 1862 under the care
of Dr. Budd. She lives at George St. Victoria Park has been in service but not hard worked, has generally had good health. The catarrh has not returned since June 1862. The present illness began about three weeks ago, at which time some one frightened her. She has twitching of the muscles of the face and does not speak properly, there is a vacant expression about her face. Almost all the voluntary muscles are affected, the thrust out her tongue in a manner peculiar to chorea, the muscles of the upper extremities are more affected than those of the lower extremities, she can walk tolerably well. Ordered,

R. Lucia Didulphi \( \frac{4}{7} \)  
F. and Terri desquichlor \( \frac{\text{w}}{\text{x}} \)  
Aqua Distil \( \frac{3}{7} \)  

F. at t.  

Sept: 19th Field better this morning and has had a shower bath.  

21st False 130. Much more restless last night and
This morning. Ordered,

Lime Sulphur: gr. 1
Syrupi: f1
Aqua: f1

On Friday, 24th. She cannot walk at all now. Her left knee is swollen, stiff and painful.

25th. Pulse 120. Had a splash bath this morning and seems rather more quiet. Her ankles are somewhat painful.

26th. Pulse 120. Knee better.

27th. Pulse 120. Her shoulder joints are now painful but not swollen.

28th. Pulse 120. The left shoulder is the most painful. Still has twitching of the muscles.

October 1st. Pulse 108. The twitching of the muscles is not so great. All the affected joints less painful. Tongue red at tip and edges, and furred. Bowels confined. Ordered,
Sr. Dr. Lichona 36.
Potassa Briarb. gr. XV
Potassa Nitricis gr. V
Secot: Lichona 36

Om. 61 yet Lusis

Federa soloyuthidii bo. gr. X.
First pil. dua statuins.

3rd. She perspires profusely. The joints of the left hand are red, swollen and painful. Bowels open.

4th. The joints of the left hand are still painful and much swollen. Tongue clean.

6th. S. 124. She is much quieter. The left hand is still painful and swollen. Urine high coloured and scanty.

7th. Pulse 128. The swelling of the hands and face is less. The joints affected are still painful.

9th. Pulse 114. She is now tolerably quiet; the left wrist is now the only painful joint. Bowels open still perspires a great deal.
11th - Pulse 100. Bowels open. The swelling is slight. None of the joints are painful except the left wrist. Ordered: Liniment 2x2 to be placed above the left wrist.

12th - Pulse 111. The chorea has almost gone. The pulse did good, there is now no pain in the wrist. Still perspires a great deal. Bowels opened regularly.

16th - Pulse 125. Does not perspire so much. Ordered:

Sr. Aurie Sulph: gr. ij
Acidi Sulph: fp. v
Aqua Distil: flij

t. d. s.

19th - The right hand is painful this morning. Appetite good. Urine more abundant.

23rd - Pulse 100. The hand is better this morning. Bowels not open since 16th. Urine slightly acid in its reaction and deposit albumin.

23rd - Pulse 98. Feels better. Has diarrhoea.

24th - Still has diarrhoea. Ordered:

Sr. Tinct. Amandragli 3ij bis die
26th. Pulse 125. The diarrhoea has almost disappeared. Tongue red.
28th. Pulse 104. Complains of pain in the left hand this morning.
30th. The pain in the hand is much less. There are more twitchings of the muscles this morning.
November 1st. The pain in the hand continues. Great twitchings of the muscles has come on.
4th. There is no pain in any of the joints. She is able to get up this morning. The twitchings have greatly diminished.
6th. Appetite good.Feels faint when she gets up.
8th. Sat up yesterday without becoming faint.
11th. Feels stronger. The twitching has increased.
December. She has much improved and increased in strength, and has had twitching of the muscles more or less, since the 11th November. To-day she has some pain and swelling in the thumb of the left hand. Ordered,
Y. Louis Asulph: gr. j.
F. de Purgibero: fr. t.
Aqua Distil: ft.

13th. She is much stronger and better in health.
The pain and swelling in the thumb has gone.
14th. The twitchings have almost disappeared.
The is some redness and inflammation of the right eye.
20th. Eye quite well. Twitchings all gone.
21st. Discharged cured.

Case No. 4.

William Aldis, aged 18. Admitted into King's College Hospital on the 24th. Septem-
ber 1862 under the care of Dr. Budd. He lives at 91 Dury Lane in the Parish of St. Clement's
is a messenger at the War Office, has generally had good health, has had attacks of rheumatic
pain twice, but states he never had symptoms
of fever with them. He caught cold about four-
ten days ago and felt a day or two after much
pain in his hip joints, they were stiff and a little
swollen, then the knee and ankle joints be-
came affected, and a short time after the
elbow joints became similarly affected. On
admission, the knee, ankle and elbow joints
of both sides are swollen and painful, the el-
bows being the most painful. He perspires pro-
fusely. The Urine is scanty and light colored,
specific gravity 1028. Complaints of thirst and
an appetite. He had diarrhoea for several days
before admission but it has ceased now.

116. Respiration 35. Ordered,

F. Potassæ Bicarb.: gr. xx

F. Potassæ Nitriti: gr. v

Agua Distil.: 3 vols.

Mr. S. L. Horist.
26th - Pulse 104. Respiration 32. Bowels opened.
His knee joints are now the most painful. He takes a great deal at night. Dr. Coortinin visiting for Dr. Budd, noticed a syphilitic bellows sound and ordered three leeches to be placed over the heart.
27th - Pulse 116. Respiration 32. There is bronchitis, breathing audible at the base of the left lung and dullness on percussion over the same part, on the healthy side the respiration is freer.
There is no cough. The bellows sound has gone. The joints are better. Ordered, Esplast. Lysets 6 x 4 over left lung at the base of the bronchial breasting.


4th. Pulse 116. The pain in the joint has gone. He feels much better.

11th. Pulse 105. Respiration 24. Bowels open. There is no sensible perspiration. The dullness in percussion has quite gone, the respiration is normal on both sides.

18th. Pulse 92. Feels quite well with but few symptoms.


24th. The pain has gone from the knee.

25th. Discharged convalescent.

Case No. 5:

Ellen Williams, aged 18. Admitted 10th December 1862 into St. John's College Hospital under the care of Dr. Bredt. Has been a laundress, but for the
last three months, has been in service as a housemaid in London. She always had good health previous to this attack. On 5th Dec. she felt great pain in her knees and feet which were considerably swollen, on 9th Dec. the hands became painful and swollen. When first taken ill she localized a great deal and felt very thirsty also suffered from pain in the joints. State on admission. A fat puffy faced girl, complains of pain in her hands and knees, which are swollen particularly the hands. Tongue coated with a yellowish white fur. Bowels constipated. Dyspepsia a great deal. No appetite, and is very thirsty. Pulse 100. Respiration 24. Urine high coloured very acid. Deposits a large quantity of lithates, and the specific gravity is 1.025, and it contains no albumen. Saliva acid. There is a slight systolic bruit heard over the heart. The catalepsia have been irregular for the last three
Months, during which time the discharge was very little when it did occur. Ordered.

R. Phæna Brevi: gr. XV.
Phæna Nuxtadi: gr. V.
Aqua Distil: Ziph. 

- E: 6 a.m. 1.
Tarrea Asulph: gr. 1/.
Tab. Opii: gr. 1.
Nut pil. bis dii s.
Tab. Purg: gr. X.

Emplast: Let the 2 X 2 above the left wrist and the 4 X 4 to be placed over the heart.

December 12th. Tab. 16. Respiration 38.

Hands better, knees quite well. Perspires profusely. Heart is better, abnormal sounds almost gone. Has a troublesome cough, but expectorates nothing. No appetite. Bowels con-

Ordered.
16th. Pulse 88. Respiration 28. Hands nearly well, the right elbow has become affected. Perspirates less. Appetite a little better. Heart sounds normal.


23rd. Pulse 64. Legs and arms feel stiff. The pain in the chest has gone. There is hardly any cough now.

26th. Feels a great deal better. Has got up the last day or two. The stiffness in the legs and arms has gone.
24th. The cough has quite gone. Appetite very good. Bronch open.

28th. Discharged convalescent.

Case No. 6.

Mary Euphene, aged 28. A nurse in the

Twining Ward of King's College Hospital

under the care of Dr. Beale. She has generally
enjoyed good health, has been laid up once
before with pneumonia but never with fever
or rheumatism. She has lately been exposed

to the contagion of scarlet fever from nursing

one or two patients who had it in the ward.

Last Friday 10th. October 1862, she first noticed

a burning and itching sensation of her skin

and then observed that her body and arms

were covered with a red eruption. She had

suffered from sore throat since 8th. October.

On 11th. October her throat was swollen and

very painful, the submaxillary glands were
October 10th—Throat painful especially on the left side and covered with a false membrane. Ordered, two ounces of wine daily.

14th—Fulse 136. Sleeps well, throat still very sore and ulcerated. Bowels confined. Tongue...
red. Ordered,

Glycerini t a 30.
Aqua Asti. 30.

Fast gargarizemos.

F. Morphina Hydrochlor. M. XX.
Aqua Asti. 30.

16th. Rash disappearing from limbs and face, and slightly from the body. Complaints of pains in the joints of the wrists. Pulse 144.
Tongue red. Sleeps very little. Breaths confused.

Ordered. F.

Potass. Sulfur. 30.

The Opium M. XV.
Spiritus Atheni Chlor. M.X.
Aqua Asti. 30.

3 th. enque hac sine.

16th. Pulse 144. Respiration 28. Pain increased in wrists and they are slightly swollen, they are wrapped in cotton wool. The heart has a trembling action, a mieux-meal poultice is ordered to be placed over the heart. Breeds open.

17th. Pulse 144. Bowels confined. Complaints of pain in both knees and ankle joints, the right knee being the worst, they are red and swollen, the pain in the wrists is better. Fever is a great deal. Tongue red. Sleeps well. The throat is quite well. Ordered. Rp.

Tab: Rhiz. co. gr.x.

Stabici.


Ordered. Rp: M: Riciimi Zij

Stabici.

Tab: Arctoglaucicas co. gr.x
October

Bourby six ounces daily.


21st Pulse 108. Respiration 22. Joint joints are slightly stiff and painful. Sleeps well. Bowels open. Does not perspire so much. There is less pain and little or no swelling in the Joint joints.

22nd Pulse 104. Feels much better but very weak. Sleeps well. Bowels open. The pain has nearly left all the joints.

23rd Pulse 100. Urine contains no albumen, and the specific gravity is 1020. The pain has entirely left her. Ordered,

Sp: Otheis Chlor. mg x

Dis: Chinone mg x

Aqua Distil. mg x
31st. Pulse 88. Goes about the ward doing light work, feels quite well except a little weak.

Case No. 4.

Robert Mason, aged 17. Admitted 1st October 1862 into Kings College Hospital under the care of Dr. Geale. A labourer, resides in London. He was laid up about two years ago with an attack of rheumatism, lately he has been exposed to wet and cold, and for the last three weeks has had a cough. The present illness commenced last Monday.
the 29th Sept. after getting wet through on the
Sunday, he had great pain in the right knee
and ankle joints, lost his appetite and per-
spired a great deal, he kept his bed until
his admission. State on admission, he com-
plains of pain in both ankles, which are
slightly swollen and not very red, but tender.
Bowels confined. Tongue furrowed. Perspira-
tion profusely. No appetite. Pulse 116. Respiration
36. He does not sleep well. He has a slight cough
and spits a little. No pain in the chest except on cough-
ing, the breathing is short and labored. On listening
to the chest a hoarse and fro sound of a very faint
nature can be perceived just below the nipple
and rather to the left side, the ordinary sounds
are in a degree muffled. At the back of the chest
the breathing is very feeble on both sides, harsh
and attended with minute crepitations at the
end of inspiration, dull on percussion below the
angle of left scapula, vocal resonance is slightly increased on the left side. Urine acid, scanty, high coloured, contains no albumen, and is of the specific gravity of 1024. Ordered,

Rp. Natria Biocarbonatis Zs.  
Potassa Nitriti  gr. v.  
Agua Distil.  fr. b.  

4-8 horis s.  
Arsie Adulph:  gr. s.  
Sulvis Usis Opi  gr. f.  
Frat pil:  6-8 horis s.

October 3rd. Pulse 112. Bowels confined. A little dulness is perceptible on percussion under the left clavicle. The second sound is more distinct and heard over a greater range of surface. Behind bronchial breathing and crepitation are heard, at the lower part of the lungs. Perspires a great deal, though better. Tongue furred. Throat painful and swollen.
4th. Pulse 100. Respiration 28. Sleeps well. Bowels confined. Pain in the ankles is almost gone, the knees are better. Urine acid. Expression of the face not so anxious. Has had bleeding from the nose. There is bronchial breathing and slight eructation. Man low down in the left side behind. Ordered

Lig. Ammonia acetate 3 fl. oz. to be added to the potash mixture.

5th. Pulse 96. Respiration 24. The pain in the ankles has gone, and the knees are less painful. Sleeps well. The rubbing sound is feeble.

6th. Pulse 96. Respiration 32. He does not feel so well to day. He did not sleep well last night. Perspires a great deal. Urine acid, specific gravity 1.025. The rubbing sound is replaced by a systolic sound. Breasts open.

11th. Pulse 118. Respiration 44. Does not feel so well. Complaints of pain in the front of the right side of the chest, a slight crepitation or rubbing sound is heard on the right side at the base of the lung. Did not sleep well. Coma and unconsciousness. There is no sensible perspiration. Bronchial breathing still distinct on the left side, at the back. Ordered a blister to be placed on the right side where the pain is.
12th. Pulse 100. Respiration 34. Feels better. Ticks in the right side gone. Slept well. Tongue
15th Pulse 84. Respiration 24. Bronchial breathing almost disappeared. The breath has gone.
17th Got up to day for a short time.
R. Syr. Eucalyptus M12
Aqua Distil. Fig.
A. A. S.
21st Pulse 84. Is quite well, but a little weak.
24th Discharged convalescent.

John Brooke January 1863.
Rheumatic Fever

John Brook 1863