ON THE EMPLOYMENT OF
NITRATE OF POTASH
IN
ACUTE RHEUMATISM,

WITH SUGGESTIONS FOR THE USE OF SALINE SOLUTIONS AS EXTERNAL
APPLICATIONS IN LOCAL RHEUMATIC INFLAMMATION.

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THERE is no novelty in the administration of the nitrate of potash in acute rheumatism : and in bringing the subject forward, I desire most explicitly to state, that I am induced rather by the hope of determining the therapeutic value of this salt, and of examining its agency, than by the wish to claim any originality for its use. It has been largely and successfully employed by Dr. Brocklesby and others, whose observations and cases clearly establish the fact, that the system in acute inflammatory diseases will tolerate a very large amount of salines, with the utmost advantage to the duration and ultimate issue of the disease.

The analysis of the blood in inflammatory disorders (the true phlegmasiæ), has established the fact that there is a most remarkable deviation from the average proportion of the component parts of the blood ; and that in these diseases, this deviation is constant, and uniformly in one direction, and consists of an excess of fibrine, with an absolute deficiency of the saline ingredients.

I have carefully analysed the blood in many cases of acute rheumatism. The three following exhibit the characteristic results observed in almost every case in which the blood was analysed for the purpose of determining the relative proportions of fibrine and saline ingredients :—

I. A man, æt. 30, a drayman, of vigorous habit, strong and muscular		<i>In 1000 parts of blood</i>	
		Fibrine 6·3	Saline matters 7·4
II. A man, æt. 45, coal-porter, tall and muscular		Fibrine 8·	Saline matters 8·93
III. A man, æt. 27, clerk, of spare habit		Fibrine 7·2	Saline matters 9·104
Mean		7·163	8·478

In each of these cases there was severe arthritic inflammation (redness, pain, and swelling in several joints) at the time when the blood was drawn.

I take the absolute deficiency of the saline ingredients of the blood in this disease as the basis of the explanation of the therapeutic action of the nitrate of potash. I assume that so long as the fibrine is in excess, and the salts both relatively and absolutely deficient, there is a liability to fibrinous exudation. That while this condition of hyperinosis continues, the worst consequences of inflammatory action are to be dreaded. That the treatment by nitrate of potash contributes to restore the balance of the saline ingredients, and to control the tendency to fibrinous deposition : and that, the progress of inflammatory action being thus retarded, time is gained for other remedies to effect the diminution of the excess of fibrine present in the blood, as well as the destruction of the rheumatic element.

There are many reasons why the nitrate of potash should be preferred for administration, before such salts as the chloride of sodium, sulphate of soda, phosphate of soda, carbonates of potash and soda, and others, which out of the body exercise a similar effect upon the coagulability of the fibrine.

The nitrate of potash, even in large doses, exerts but little effect on the secreting organs, except the skin and kidneys, and oftentimes is without any very obvious action on them. It does not purge as the sulphate and phosphate of soda : nor does it induce thirst as the chloride of sodium : nor disturb the digestive functions, a result often consequent on frequently repeated doses of the carbonates of potash or

soda, especially if these be administered in proportions large enough to affect the amount of the saline ingredients of the blood.

There is yet one other circumstance suggestive of the employment of the nitrate of potash, mentioned by Dr. Stevens (in a foot-note in 'Healthy and Diseased Properties of the Blood,' ed. 1832), viz. that it suspends the separation of the fibrine when taken internally. He says, "I know a case which occurred in America, where a person swallowed an ounce of nitre by mistake in place of Glauber's salts. The excitement which it produced was so great that the individual was bled. The blood which flowed from the vein was completely florid, and remained as fluid as if the nitre had been added out of the body."

Dr. Brocklesby* is the earliest authority for the use of large doses of nitre in the treatment of acute rheumatism. In a paper published by him, in a volume of 'Economical and Medical Observations,' 1758-63, after detailing the general treatment of the acute stage, he proceeds to state, that he enjoined for a diluting drink, smooth boiled water-gruel, in each quart of which he directed to be dissolved two drachms of nitre, with or without sugar. He states that he often prevailed on the soldiers to take 3x or more of nitre in the twenty-four hours. And he adds, "as I have proposed nitre to be tried hereafter in quantities so much greater than have been usually prescribed, I will, as an apology for my presumption in the matter, appeal to experience. I am assured from numberless instances that in stout young men, by taking six hundred grains daily for four or five days successively, and diluting plentifully, plain nitre proves the most powerful and best sudorific in such complaints; and this quantity, or even more, may be retained in the stomach, and pass through the course of the circulation by only diluting profusely. My own stomach will, almost *at any time*, bear half an ounce of nitre or sometimes

* Economical and Medical Observations. By Dr. Brocklesby. In Two Parts. London, 1764. 8vo, pp. 116-18.

six drachms, dissolved in or diluted with three pints of smooth, well-boiled gruel; and this quantity swallowed in about half an hour or an hour proves to me almost an unfailing antidote in the beginning of any incidental fever from mere cold." (Op. cit. p. 121.)

Dr. Macbride (A Methodical Introduction to the Theory and Practice of Physic, 4to, 1772) speaking of sedatives, under which class he places nitrate of potash, says, "That in common practice nitre is seldom given in large enough quantities to do any remarkable service." In fever of the inflammatory species, and particularly in rheumatic fever, he considers nitre to be very efficacious when taken to the quantity of six, eight, or even ten drachms in the twenty-four hours. He mentions the necessity for free dilution, and further states that the patients who derived advantage from this course of treatment were of robust habit and in military hospitals. Although no reference is made to Dr. Brocklesby, there can be but little doubt but that this opinion was formed from the paper already quoted. Dr. Macbride further says, "Still later observations show that the stomach can bear considerable quantities of nitre without detriment (p. 273); under the head *Febris inflammatoria rheumatica*, he again states that large doses of nitre have been found to procure speedy relief (p. 335).

In more recent times, M. Martin Solon has employed the nitrate of potash in large doses, without its producing any unfavorable symptoms; only in very rare cases either operating on the bowels, or disturbing the stomach, results that are entirely conformable to my own experience. In a lecture published in the 'Bulletin de l'Académie Royale de Médecine,' tome ix, entitled "Considérations générales sur le traitement du rhumatisme articulaire aigu, par le nitrate de potasse à haute dose," he states that he has given the nitrate of potash in quantities varying from half an ounce to two ounces in the twenty-four hours, dissolved either in lemonade or in some pectoral ptisan.

The effects are minutely analysed and detailed in thirty-three cases.

On the circulation the effects were not very remarkable.

Sweating, in a marked degree, occurred in ten patients only. M. Solon does not think that this condition of the skin should be attributed to the salt of potash ; for it is well known that sudoresis is ordinarily abundant in rheumatic fever. (p. 132 et seq.)

The urinary secretion was sensibly augmented only in five cases out of thirty-three. The nitrate was detected in the urine in every case in which it was sought.

On the digestive organs no effect was produced in twenty-four cases. In the nine others it produced nausea, vomiting, or looseness, symptoms which, however, rapidly passed away. In all, after the acute rheumatism had subsided, the appetite quickly returned, the digestive functions easily recovered their activity, and the general powers were not slow to return to their natural and healthy standard.

I commenced the use of the nitrate of potash in acute rheumatism in 1843, before the results of M. Martin Solon's experience had been published or were known to me ; but strengthened by that gentleman's report, I have continued to employ it in large doses upon the principles which I have attempted to explain.

The amount of success which has followed this mode of treatment, whether it be considered in relation to the duration of the paroxysm, or the immunity from the more serious concomitants of this disease, has justified me in laying the results of my observations before the Fellows of this Society, and asking their concurrence to the therapeutic principle on which this plan of treatment is recommended.

The following is a summary of the effects observed in the use of nitrate of potash in acute rheumatism :

One, two, even three ounces of the nitrate, freely diluted, may be taken in the twenty-four hours in cases of acute rheumatism ; and, in the majority of cases, without producing any obvious effect on the force or frequency of the pulse, the integrity of the digestive functions, the state of the abdominal organs, or even upon the quantity of urine excreted.

The amount of urine passed in the twenty-four hours, although seldom increased in quantity, always acquires a high specific gravity, 1·026—1·040, dependent in great measure on the presence of the nitrate of potash, which can always be detected in that fluid.

The internal use of the nitrate relieves, in a most marked manner, the swelling, heat, and pain of the joints in this disease; and this alleviation has, in certain cases, been observed to take place irrespectively of any other measures: in cases, for instance, in which neither opiates, calomel, antimony, purgatives, nor bloodletting were employed. There seems also to be a certain amount of exemption from cardiac complication, among those who have taken nitre largely in the earliest stage of the inflammatory attack; and exocardial and endocardial inflammation, when it is present, appears to become more manageable, and more easily brought under the influence of other remedies, when the nitre has been adjunctively employed. I have never seen the nitrate of potash, in large or small doses, produce either nausea or vomiting. In a few cases pinching or griping pains of the abdomen, with a few watery evacuations which have quickly ceased on discontinuing the salt, are the only unpleasant or undesirable effects that I have witnessed.

Free sudoresis is perhaps the most frequent apparent effect, but strong acid perspirations are so common in acute rheumatisms, independently of the employment of sudorifics, that it is impossible with certainty to refer this increased action of the skin in any case exclusively to the nitrate. I have watched the effect of the nitrate in many cases of acute rheumatism, in which large doses were employed without other remedies, and in which no very great increase in the perspirations was noticed, but in which, nevertheless, the symptoms of acute rheumatic inflammation were mitigated in a remarkably short time.

It cannot be doubted, then, that much larger quantities of saline matters can be tolerated by the system, without detriment or injury to any of the functions or organs of the

body, than has been generally believed; and the uniform beneficial results in numerous closely-watched cases, in which an obvious mitigation of symptoms was apparently obtained through the agency of the nitrate, appears to me to justify the classification of this salt, among the most certain and least hazardous remedial agents in acute rheumatism.

During the progress of these observations, it became a question of importance to determine if the nitrate of potash could be detected in the blood. As the action of the salt was so moderate upon the excreting functions, it was a fair inference that while the patient was taking the salt, there would be no great difficulty in demonstrating its presence in the blood.

The case was selected of a man thirty years of age, suffering from an attack of acute rheumatism (the third within four years), affecting the wrists, knees, and ankles. On admission, he was bled experimentally to four ounces, previous to being placed under the usual treatment. This quantity was received into two vessels, one for examining the physical characters of the blood, the other for analysis.

The first portion was remarkably cupped and buffed, presenting a firm, dense coagulum, with a concave layer of colourless fibrine, with perfect separation of the fibrine and red corpuscles from the serum.

The second portion was analysed, and gave in 1000 parts—fibrine 7·04, residual salts 9·41.

The nitrate of potash drink— zij of nitre in two quarts of cold water, flavoured with lemon-peel—was given in twenty-four hours, and continued for three days. He was again bled to four ounces, and the blood divided into two portions as before. The first portion set aside for coagulation, gave a firm coagulum; but was not cupped, and only presented a faint layer of colourless fibrine on the surface. The second portion gave, in 1000 parts—fibrine 5·53, residual salts 13·56; and amongst the saline residue nitrate of potash was detected.

He was again bled on the ninth day from admission, and

when the symptoms had mitigated ; the nitrate of potash having been resumed for two days in consequence of a threatened remission.

The portion set aside for coagulation presented a perfectly separated clot, but there was no separation of the red corpuscles from the fibrine—no buffy superficial stratum. The portion analysed gave, in 1000 parts—fibrine 4·05, residual salts 14·9. Nitrate of potash was again detected.

From these analyses, it will be seen that the fibrine, in the nine days, fell from 7·04 successively to 5·53 and 4·05 ; while the residual salts gradually increased from 9·41 to 13·56 and at length to 14·9.

It is presumed, then, that while the internal use of the nitrate of potash assisted to restore the proportion of the saline constituents, the general constitutional treatment, calomel, opium, antimony, and colchicum, tended to lessen the excess of fibrine ; and that by the cooperation of these several remedies the rheumatic condition became controlled, and the patient safely guided to convalescence.

I wish, therefore, most emphatically to state, that the employment of the nitrate of potash is not intended to supersede the use of other remedies when they are indicated. This saline plan of treatment is but an auxiliary to them ; for I am quite aware, that although excess of fibrine and deficiency of salts have been proved to be the essential proximate condition of inflammatory disease, and although salines used internally may possess a certain influence and controlling power on the separation of the fibrine, yet in the majority of cases the saline medication cannot be supposed to cover and include all the purposes and objects of treatment. The various morbid conditions must be relieved by those remedies which general experience has proved to be most efficient ; but in cooperation with them, most valuable aid may be derived from the nitrate of potash, and in no disease has its therapeutic influence been more apparent than in every form of acute rheumatism.

Physicians are generally of opinion that *external applications* in acute rheumatism are, for the most part, inefficient and unnecessary.

During the period that I have been engaged in observing the effects of nitrate of potash, more particularly in acute rheumatism, I have been led to an examination of the various modes by which these saline matters might be passed into the circulation. But it was not until the publication of Mr. Gulliver's edition of Hewson's Works, that my attention was fixed upon the probable relief that might be obtained to local acute rheumatic action, by the direct application of the saline matters to the skin. Mr. Gulliver says,* that the efficiency of saline medicines in inflammation probably depends on their correcting the disordered state of the blood, by preventing or destroying the aggregation of the corpuscles, and, consequently, their tendency to separate from the fibrine, and to accumulate in the minute vessels; and that hence the application of a solution of salt to inflamed parts, might prove a very useful and simple remedy.

Although not ignorant of the previous employment of the carbonates of potash and soda, or of the more recent empirical formula of brandy and salt, in the treatment of local rheumatic inflammation, I do not hesitate to admit that this passage, containing the enunciation of a principle so closely in accordance with what I believe to be the proper interpretation of the agency of salines employed internally, gave force to my previous opinions, and encouraged me to watch the effects of saline solutions externally applied to inflamed parts.

I could scarcely doubt, after witnessing the effects of the nitrate of potash taken internally in acute rheumatism, that the impregnation of an inflamed part with saline matters by absorption through the skin, would lessen the intensity, and cut short the inflammatory process; and often, if not always, prevent the formation of those impediments to motion, which constitute the more serious morbid effects of rheumatism affecting the joints.

* Sydenham Society's Edition of Hewson's Works, NOTE XXIII, p. 41.

My experiments have been made principally with the nitrate of potash, particularly in acute rheumatic inflammation.

In chronic arthritic affections I have frequently used the iodide of potassium externally, and with apparent advantage; and in a few cases of gout, the bibasic phosphate of soda has been employed with marked relief to the local paroxysm.

In collecting a series of observations on the effects of these agents, externally employed, many precautions became necessary to determine whether the treatment was only accidentally successful, or whether a remedial result could be clearly traced to the influence of absorbed saline matters. For it must not be forgotten that one of the most striking peculiarities of rheumatic inflammation is its erratic character, and that a part which shall be inflamed in the morning, will oftentimes spontaneously recover itself by the evening, the inflammatory action having developed itself elsewhere. In watching, therefore, the curative or remedial power of these saline applications in acute rheumatism, this fact is always kept in view. The result of my observations in numerous cases during the last two years, convinces me that a special remedial agency may justly be claimed for this epidermic saline mode of treatment.

When I first commenced the employment of these saline fomentations, the salt was brought in contact with the skin by means of light flannels, saturated with the saline solution, with which the limb was enveloped, the whole being covered with oiled silk to prevent evaporation. For the hands I have used worsted gloves. On the feet the foot of a worsted stocking, saturated with nitre, and covered with oiled silk.

But since the invention of Mr. Markwick's new epithem, I have found it so admirably adapted for my purpose, that now I never employ anything else. My method of employing it in acute rheumatism is as follows: if the hands, elbows, knees, or feet are the seat of inflammation, gloves or caps are made of the spongio-piline to fit these parts; if a greater extent of surface be involved, a portion of the spongio-piline is cut large enough to envelope the entire surface. The spongy

surface of the epithem is first moistened freely with water, and any superabundant fluid squeezed from it, so that the linen or bed of the patient may not be unnecessarily wetted. Nitrate of potash, or the salt to be employed in powder, is then freely and plentifully sprinkled over the moistened surface, or rubbed in to secure its solution, and the thorough impregnation of the epithem; it is then applied to the inflamed part, and lightly secured by a roller. Nothing further is required than once in about six hours to remoisten the spongy surface; fresh addition of nitre is never required if sufficient quantity has been used in the first instance; the salt in powder is hence better than a saturated solution, which nurses seldom succeed in making.

In numberless instances, by this simple treatment, I have witnessed the most palpable and evident relief to the local inflammation; and many rheumatic patients who have suffered from previous attacks of the disease, and have known relief to their local sufferings only through the instrumentality of the constitutional treatment, have declared that they marvelled at the speedy abatement of the pain, redness, and swelling, for they had never experienced such unexpected relief before.

As I am anxious to avoid the tedium of reports of cases, I propose in this place to state the result of the experiments adopted to test the efficiency of these saline applications in subduing local rheumatic inflammation. The object was to determine how far the relief obtained or apparent, could be attributed to the agency of warmth and moisture, and how much to the effects of the salt employed. Cases were selected in which both hands or two distant parts were in a state of rheumatic inflammation. Each hand was placed in a glove of spongio-piline, one was merely moistened with hot water, the other saturated with nitrate of potash. In every instance the local inflammation yielded to the saline remedy, while the other hand continued as if no local remedy had been employed. Eight different cases afforded exactly similar results. In five of them the local inflammation was in both hands; in two in both knees; and in one in the right elbow and left wrist.

In each case the part to which the salt was applied was relieved within twenty-four hours, the other parts continuing inflamed and painful, till they were subjected to a like treatment, notwithstanding the moist fomentations in which they were invested.

That the relief obtained in these cases could not justly be attributed to the constitutional treatment usually proceeding at the same time, is proved by the fact that during the earliest periods of the treatment, remission of the local symptoms was observed only in those parts to which the salt was applied.

The following case illustrates this point : A man, æt. 45, was placed under treatment, May 11, 1847, suffering from acute rheumatic inflammation of both knee-joints, the elbows and right wrist. These parts were red, swollen, and painful. He was ordered the usual treatment, but the elbows and right wrist were enveloped in the nitre fomentations by means of the spongio-piline. In twenty-four hours all redness had disappeared, and there was perfect mobility without pain, in both hands and elbows ; but the inflamed state of the knees continued unmitigated : these were treated with the saline application, and the next day all swelling had disappeared ; the joints could be moved without pain, though he could not stand from debility ; but his convalescence proceeded uninterruptedly.

These, and many other cases, fully reported in the hospital ward books, illustrate the remedial agency of the nitrate of potash externally applied. In cases also of cardiac complication, very marked relief has been obtained by covering the præcordial region and anterior surface of the chest with the spongio-piline saturated with the salt. In several instances the irregular murmurs, particularly those of exocardial and pericardial disease, have disappeared even before the system had exhibited any indication of being under the influence of mercury.

ABSTRACT of Seventy-nine Cases of Acute Rheumatism, stating the Age, Employment, if complicated with Cardiac Disease or not, Treatment, and number of days before discharge.

Of 58 males—

10 suffered from cardiac symptoms before or after admission.

2 of whom died.

Of 21 females—

8 suffered from cardiac disease before or after admission.

1 of whom died.

Thus, amongst the 79 cases of acute rheumatism, there were
18 cases of cardiac disease and
3 deaths.

Of the 56 males who recovered—

The average duration of symptoms from admission to convalescence, was 31·10 days.

Of the 20 females who recovered—

The average duration of symptoms from admission to convalescence, 34·15 days.

Date.	Initials and Age.	Employment.	Form of Rheumatism. P. indicates accompanying fever.	Heart affected. Days after admission.	Treatment.	Duration of Symptoms. No. of days from admission to being placed on full diet.	No. of days from admis- sion to dis- charge.
1844. March	F. L., 28	Bargeman	Acute arthritic, P.		Purgatives; mercurials; Dover's powd. and ni- tre; guaiacum and bark	25	36
	J. T., 37	Farrier	Acute arthritic, P. Hands and knees		Purgatives; mercurials; Dover's powder and nitre; blisters; opiates		63
April	H. P., 26	Paperhanger	Acute arthritic, P. Feet, ankles, knees, and wrists		Purgatives; mercurials; Dover's powder and nitre; bark		35
	J. M., 26	Stonemason	Acute muscular, P.		Mercurials; purgatives; diaphoretics; Dover's powder and nitre	10	22
	J. C., 33	Excavator	Acute muscular, P.		Mercurials; purgatives; Dover's powder and nitre; bark	9	18
	D. W., 59	Stone-sawyer	Acute arthritic, P.		Purgatives; colchicum; Dover's powder and nitre		18
	J. S., 20	Brickmaker	Acute muscular, P.		Purgatives; colchicum; Dover's powder and nitre		12
	O. W., 30	Stoker	Acute muscular, P.		Mercurials; purgatives; Dover's powder and nitre		21
June	J. G., 24	Painter	Acute arthritic, P. Local inflammation yielded 4th day from admission. Co- pious sudoresis	Fourth day. Systolic murmur.	Nitrate of potash, $\frac{3j}{xxiv}$ hours; sudoresis; cupping in regione cordis	11	20

July	J. T., 39	Agricultural labourer	Acute' arthritic, P. Local inflammation yielded 5th day; relapse 11th	Nitrate of potash, 3j xxiv hours; sudoresis; Dover's powd. and nitre; purg. and bark	14	22
	J. S., 49	Labourer in lead works	Acute arthritic, P. Local inflammation yielded 3d day	Nitrate of potash produced griping and laxness of bowels		23
	H. F., 34	Artisan—goldsmith	Acute arthritic, A. P. Supervening on chronic	Dover's powd. and nitre		33
Aug.	J. G., 33	Farrier	Acute arthritic, P. 3 days ill. Local inflammation yielded 2d day; relapse 6th day; cured 9th	Nitrate of potash, 3j xxiv hours; copious sudoresis and diuresis		52
Oct.	G. T., 25	Carpenter	Acute arthritic, P. Local inflammation yielded 4th day; relapse 9th; yielded 2d day	Mercurial purgatives; colchicum; nitrate of potash; sudoresis; Dover's powder		35
Oct.	T. C., 25	Waterman	Acute arthritic, P. Yielded 5th day	Mercurial purgatives; nitrate of potash; Dover's powd. and nitre; bark		41
	J. M., 30	Painter	Chronic muscular, A. P.	Purgatives; colchicum; Dover's powder and nitre; guaiacum		30
Oct.	W. H., 47	Coal-porter	Acute muscular, P.	Mercurial purgatives; Dover's powder and nitre; warm-baths	11	33
Nov.	W. B., 28	Excavator	Acute arthritic, P.	Nitrate of potash; no obvious effect except mitigation. Dover's powder and nitre		25

Date.	Initials and Age.	Employment.	Form of Rheumatism. P. indicates accompanying Fever.	Heart affected. Days after admission.	Treatment.	Duration of Symptoms.	
						No. of days from admission to being placed on full diet.	No. of days from admis- sion to dis- charge.
1845. Jan. 7	J. P., 20	Draper's assist- ant	Acute arthritic, P. Yielded 5th day	Carditis on admission. 14th day, aggrava- tion of cardiac sym- ptoms. Precordial dullness, but no murmurs or dis- charge	Mercurials and colchi- cum; cupping; purges. Calomel and opium; slight salivation. Cup- ping in regione cordis. Dover's powder and nitre; bark and nitric acid	28	40
—	S. J., 35	Artisan — cabi- net-maker	Acute arthritic, P. Yielded 6th day		Calomel and opium; Dover's powder and nitre; bark	17	30
— 15	J. W., 22	Fishmonger	Acute arthritic, P.		Calomel and antimony; colchicum; Dover's powder and nitre; bark		34
— 16	H. B., 37	Bricklayer	Acute muscular, P.		Mercurial purgatives; hot baths; colchicum; Dover's powder and nitre		40
— 20	T. W., 36	Porter	Acute muscular, P.		Purgatives; warm baths; colchicum; Dover's powder and nitre		15
— 21	D. R., 25	Labourer	Acute arthritic, P. Yielded 6th day; re- lapse 14th day		Calomel, antimony, and opium; Dover's pow- der and nitre; col- chicum; baths; bark Dover's powder and nitre; colchicum; baths	20	28
— 27	J. H., 22	Cooper	Acute arthritic, P. Yielded 3d day				22

Feb. 20	J. H.	Cooper	Readmitted: relapse 3 days after dis- charge	Treatment repeated; bark	33
— 25	J. M., 27	Currier	Acute arthritic, P.	Mercurial purgatives; Dover's powder and nitre; colchicum; sa- lines; bark	50
	S. W., 36	Butcher	Acute arthritic, P. Yielded 8th day.	Mercurial purgatives; Dover's powder and nitre; colchicum; sa- lines; bark	25
March 9	J. R., 18	Stonemason	Acute arthritic, P.	Purgatives; baths; Do- ver's powd. and nitre; bark	42
June 17	F. J., 26	Smith	Acute arthritic, P.	Calomel, antimony, and opium; Dover's powd. and nitre; nitrate of potash drink; bark	24
—	W. B., 46	Sawyer	Acute arthritic, P.	Calomel; purgatives; Dover's powder and nitre; colchicum; sa- line draughts	42
Nov. 19	J. J., 23		Acute arthritic, P.	Mercurial purgatives; colchicum; salines; Dover's powder and nitre	34
Dec. 2	J. W., 32	Labourer	Acute muscular, P.	Baths; purgatives; col- chicum; salines; Do- ver's powder and nitre	23
— 23	F. G., 48	Plasterer	Acute muscular, P.	Baths; mercurial pur- gatives; colchicum; salines; Dover's pow- der and nitre	28

Date.	Initials and Age.	Employment.	Form of Rheumatism. P. indicates accompanying Fever.	Heart affected. Days after admission.	Treatment.	Duration of Symptoms. No. of days from admission to being placed on full diet.	No. of days from admis- sion to dis- charge.
1846. Jan. 16	G. P., 24	Carman to a dis- tiller—of free habits	Acute arthritic, P. Arthritic symptoms yielded 6th day; cardiac very obsti- nate and persistent	Carditis on admission. Præcordial effusion; systolic murmur	Calomel, antimony, and opium; nitrate of po- tash drink; colchicum; salines; cupping— many times. Pyæmia, without obvious dimi- nution of cardiac sym- ptoms. Discharged with heart disease; systolic murmur; in- creased impulse	34	
— 15	J. H., 18	Cabman	Acute arthritic, P. Pericarditis 6th day Arthritic inflamma- tion obstinate to 8th day	from admission; free from cardiac symptoms on dis- charge	Calomel, antimony, and opium; nitrate of po- tash $\frac{3j}$, in 24 hours; colchicum; salines; cupping	18	
— 20	W. C., 42	Labourer	Acute arthritic, P. Pericarditis 6th day Remarkable low type of fever. Gas- tro-enteric fever epidemic at this time	from admis.; rough fibrinous deposit over the exocardial surface; Peyerian glands inflamed and ulcerated	Calomel and opium; col- chicum; salines; tere- binthinate enemata; nitrate of potash; Do- ver's powder; bark and quinine; cupping	Died 13th day	
Feb. 12	C. W., 24		Acute arthritic, P.	Cardiac symptoms on admission; pericar- dial effusion; no murmur; muffled sounds	Calomel and opium; cupping; colchicum; salines; nitrate of po- tash $\frac{3j}$, in 24 hours; Dover's powder and nitre	14	

Feb. 23	G. M., 24	Porter	Acute arthritic, slight P.	Baths; mercurials; Dover's powd. and nitre; colchicum; salines; bark	41
April 8	J. H., 47	Baker	Acute arthritic. Arthritic symptoms very obstinate.	Carditis 4th day; exocardial murmur and palpitation; no morbid sound on discharge	52
—	G. R., 20	Footman (mother rheumatic)	Acute arthritic, P.	Calomel; purgatives; baths; colchicum; salines; Dover's powd. and nitre; cupping; pyralism; bark and quinine	36
— 28	T. C., 57	Stableman (4th attack)	Acute arthritic, P.; complicated with chronic bronchitis. Pneumonia supervened 5th day	Carditis on admission; exocardial murmur and palpitation	30
May 19	J. S., 18	French-polisher	Acute arthritic, P.	Calomel and opium; colchicum; salines; Dover's powder; quinine and iron	15
June 26	H. S., 45	Labourer	Acute arthritic, P. Two weeks' duration	Dover's powd. and nitre; expectorants; blisters to chest; calomel and opium; cupping inter scapulas	Died 7th day
July 8	H. S., 25	Fish-salesman	Acute arthritic, P.	Calomel and antimony; opium; Dover's powd. and nitre; bark	16
— 30	D. B., 60		Acute arthritic, P.	Calomel and Dover's powder; baths; colchicum; salines; Dover's powd. and nitre; bark	30
				Calomel and opium; baths; colchicum; salines; Dover's powd. and nitre; bark	20
				Calomel and opium; colchicum; salines; Dover's powd. and nitre	12

Date.	Initials and Age.	Employment.	Form of Rheumatism. P. indicates accompanying Fever.	Heart affected. Days after admission.	Treatment.	Duration of Symptoms.	
						No. of days from admission to being placed on full diet.	No. of days from admis- sion to dis- charge.
1846. Aug. 11	H. S.		Acute arthritic, P.		Calomel; purgatives; calomel and opium; colchicum; salines; Dover's powder and nitre		13
Oct. 14	W. B., 39		Acute arthritic, P.		Nitrate of potash; col- chicum; salines; Do- ver's powd. and nitre; bark and quinine		60
Nov. 3	M. T., 45	Labourer	Acute arthritic, P.	Cardiac symptoms from admission; præcordial dullness and muffled sounds; no cardiac sym- ptoms on discharge	Calomel and opium; col- chicum; salines; blis- ters to præcordia; nitrate of potash drink; Dover's pow- der; quinine	24	35
— 10	J. T.		Acute muscular, P.		Calomel and Dover's powder; colchicum; salines; warm baths; Dover's powder and nitre		16
1847. Jan. 27	D. M., 46	House-painter	Acute arthritic, P.		Calomel; purgatives; antimony and opium; colchicum; salines; Dover's powder and nitre		28
Feb. 17	J. R., 28	Coalheaver	Acute arthritic, P. Frequent relapses.		Nitrate of potash; Do- ver's powd. and nitre; colchicum; salines; bark	14	70

Mar. 19	J. S., 20	Sailor	Acute arthritic, P.	Calomel and opium; colchicum; salines; nitrate of potash drink; Dover's powder and nitre; bark	52
May 11	S. S., 45	Butcher	Acute arthritic, P. External saline application. Yielded 2d day	Mercurial purgatives; colchicum; salines; Dover's powd. and nitre; nitre externally	352
July 6	H. L., 38	Labourer	Acute arthritic, P.	Calomel and Dover's powder; colchicum; salines; Dover's powder and nitre	48
Aug. 3	E. L., 28	Coachman	Acute arthritic, P.	Calomel; purgatives; Dover's powder and nitre; colchicum; salines	16
Oct. 19	W. H., 23	French-polisher	Acute arthritic, P. Saline application to right hand relieved paroxysms in 12 hours. No relapse	Mercurial purgatives; colchicum; salines; Dover's powder and nitre; external saline application	31
— 21	E. C., 30	Tailor	Acute arthritic, P. Frequent relapses. Saline application. Paroxysm yielded each time in 12-20 hours to saline	Calomel and opium; nitrate of potash drink for 7 days; Dover's powder and nitre; saline fomentations; bled 3 times experimentally for analyses	22 Had ulcerated at elbow, which retarded his convalescence.
1844. April	Lucy F., 23		Acute arthritic, P. Chronic thickening of two fingers remained	Calomel and opium; purgative salines; Dover's powder and nitre; leeches to hands; quinine	34

Date.	Name and Age.	Employment.	Form of Rheumatism. P. indicates accompanying Fever.	Heart affected. Days after admission.	Treatment.	Duration of Symptoms.	
						No. of days from admission to being placed on full diet.	No. of days from admis- sion to dis- charge.
1844. April 23	Ellen W.	Servant	Acute arthritic, P.		Calomel and opium; colchicum; salines; Dover's powder and nitre; blister to knee		16
Oct.	Susan A., 23	Unmarried—in service	Acute arthritic, P. Three relapses of local inflammation; rheumatic sclero- titis 61st day	Symptoms of peri- carditis 30th day	Baths; colchicum; sa- lines; Dover's powd. and nitre; calomel and opium; quinine; cupping to temple; salivation slight		79
Dec. 10	Frances D., 28	Unmarried—in service	Acute arthritic, P. Ankles and knees		Calomel and Dover's powder; baths; col- chicum; salines; Do- ver's powd. and nitre; quinine		38
1845. Feb.	Anne J., 30	In service	Acute arthritic, P. Hands and feet		Colchicum; salines; mercurials; Dover's powder and nitre		24
June 27	Cath. F., 30	Married	Acute arthritic, P.		Purgatives; colchicum; salines; nitrate of po- tash; Dover's powd.; bark		40
Aug. 19	Anne S., 22	In service (fa- ther very gouty)	Acute muscular, P. Obstinate diarrhoea supervened 24th day, which pro- tracted her conva- lescence		Purgatives; colchicum; salines; nitrate of po- tash; Dover's powd.; bark		53

Oct. 1	Sarah M., In service 22	Acute arthritic, P. Second attack with- in seven months	Cardiac symptoms on admis.; palpitation and obscure sounds; no heart symptoms on discharge	Cupping and leeching; cardia; nitrate of po- tash; mercurials; Do- ver's powder; colchi- cum; salines; bark	36
—	Eliza Ship- ton, 13	Acute arthritic, P. Hands, elbows, and ankles	Cardiac symptoms on admission; rubbing murmur; systolic murmur; præcor- dial dullness; on discharge systolic murmur persistent	Calomel, antimony, and opium; nitrate of po- tash; Dover's powd.; cupping and leeching; quinine and iron	42
— 30	Louisa M., In service 22	Acute muscular, P.		Baths; colchicum; sa- lines; Dover's powd. and nitre; bark	25
1846. March	Eliza D., 21	Acute arthritic, P. Hands and feet	Cardiac symptoms on adm.; rubbing mur- mur; systolic mur- mur; palpitation; cardiac symptoms all relieved on dis.	Nitrate of potash 3i; calomel and opium; Dover's powd.; pty- alism; cupping reg- cordis; colchicum; salines; bark	29
1847. Jan. 14	Jane G., 25	Acute arthritic, P. Knees, ankles, and wrist		Calomel and Dover's powder; colchicum; salines; Dover's powd. and nitre; quinine	26
Feb. 17	Eliza Ship- ton, 14 (vide su- pra)	Acute arthritic, P. Hands, knees, ankles, great tendons of præ- cordia	Cardiac symptoms on admis.; tumultuous action; systolic mur- mur; exocardial murmur; copious deposit of lymph on exocardial surface; vegetation on aortic valves	Calomel, antimony, and opium; cupping; blis- ters; nitrate of potash and Dover's powder; salivation could not be established	Died 14th day

Date.	Name and Age.	Employment.	Form of Rheumatism. P. indicates accompanying Fever.	Heart affected. Days after admission.	Treatment.	Duration of Symptoms.	
						No. of days from admission to being placed on full diet.	No. of days from admission to being placed on full diet.
1847. April 26	Maria M., 20	In service	Acute arthritic, P. Frequent relapses. Spongio-pilne with nitre relieved each paroxysm in 12 hours	Cardiac symptoms on admission; systolic murmur; palpita- tion; no adventi- tious murmur on discharge	Calomel and opium; cup- ping several times; nitrate of potash; Do- ver's powder; nitrate of potash externally to joint and pericar- dium; quinine		53
May 19	E. R., 50	Married	Acute arthritic, P. Supervening on chronic arthritis		Mercurials; Dover's powd. & nitre; nitrate of potash externally; mobility of hands and feet free, although chronic; thickening not much diminished		23
Sept. 7	Mary Anne Cheesebo- rough, 19	In service	Acute arthritic, P. Knuckles and wrists	Carditis on admission; first attack nine months since, with heart's action tur- bulent; præcordial dull- ness; systolic and diasto- lic sounds confounded; sharp hammer-like ring, with diastole; much pul- monary distress, rhonchi, and moist crepitation; on discharge resp. condition natural; no palpitation; slight systolic murmur	Calomel, antimony, and opium; cupping; chest enveloped in spongio- pil. and nitre; slight ptyalism; bark, &c.		33

Sept. 14	Jane Thomas, 16	Acute arthritic, P. Knuckles. Has had chorea; symptoms of it during convalescence	14	28	Warm baths; Dover's powder and calomel; nitre drink; spongiopil. and nitre
Nov. 5	Martha Wright, 34	Acute arthritic, P. Hands and knees.	8	20	Warm baths; Dover's powder and nitre; nitre drink; nitre fomentations
— 11	Emma Hughes, 18	Acute arthritic, P. Ankles, hands, and wrists	8	28	Warm baths; colchicum; salines; Dover's powder and nitre; nitre drink; nitre fomentations
— 16	Eliza Raggett, 34	Acute arthritic, P. Right knee, ankle, and hand	12	21	Calomel; Dover's powder and nitre; nitre drink; nitre fomentations; bark
Dec. 7	Emma Pe-goe, 21	Acute arthritic, P. Faint exocardial murmur 3d day; disappeared 5th day	23	35	Calomel, antimony, and opium; colchicum; salines; nitre drink; nitre fomentations; Dover's powder and nitre

56 males—average duration of symptoms 31.10 days
 20 females " 34.15 days

76

3 cases died—2 males and 1 female
 Making together 79 cases.