On Acute Rheumatism, including a discussion of some of its more unusual Complications, with illustrative Cases.

Being a Thesis offered for Graduation as M.D. in the University of Edinburgh,

by

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Acute Rheumatism, in its various forms, causes an amount of
disease and suffering, especially among the Agriculturally,
the Labouring & the Working Classes generally, which can
hardly be computed; & towards the Estimation of which,
the Registrar's Returns help us only a very little way.
For it must be conceded that, while the mortality from Acute
Rheumatism is very small, its actual influence on the
health of the Community is enormous.

When Acute Rheumatism, per se, is directly fatal, the end is
usually preceded & accompanied by an elevation of temperature, more
or less rapid, to a point which is incompatible with the continuance
of life. This elevation may extend over several days, or may take
place in a few hours, and is always marked by the occurrence of signs
indicative of serious interference with the functions of the Cordal-
spinal Centres. These signs were first accurately described by
Dr. Sydney Ringer in the Medical Times & Gazette for Oct. 5th 1867.
But hyperpyrexia is accountable for only a fraction of the fatal
terminations in the Course of Acute Rheumatism. The larger pro-
portion are caused by other Complications, and these there are
good grounds for regarding as part of the Rheumatic process. I
refer especially to the development of Cardiac, Cerebral and Peri-
tonic Complications. But Rheumatic fever is fatal in barely
4 per cent of the cases affected; and it goes without saying
that it would not figure so largely in Medical Literature, if its
importance began and ended there. It is the development of
Complications
(1) Have referred to this on page 6. q. s.
(2) St. Thomas’s Hospital Reports Vol. vii p. 118
(3) British Medical Journal for Aug 13th 1870 p. 228
(4) Ibid.
Complications and sequelae, which raise it to the position which it occupies. Of these Heart Disease is the most important. It is so common that at one time it was looked on as a normal feature of the disease, and even now in certain localities it is almost so regarded. Its relative development has been variously estimated. Dr. Pearson estimates it at 33 per cent; Dr. Sibson found it occur in 46 per cent of the cases affected. Heart Disease then is the most ordinary complication of rheumatic fever; rheumatic fever is the commonest cause of Heart Disease. Not the least important among the other complications sequelae of Acute Rheumatism are the rheumatic inflammations of the Joint Sclerotic.

In addition to these we have many cases resulting in chronic rheumatism; and Dr. Sibson has noted that it has a peculiar influence on the development of Gout.

What then is the nature of this malady, ever present with us, which so seldom kills outright, but which, by its various complications sequelae, cripples so many lives, seriously handicaps so many more in the race of life, and kills gradually. Had almost said by inches.

An answer to this question involves a discussion of
1. the symptomatology, 2. the etiology, 3. the pathology, 4. the course and duration of Acute Rheumatism. So this I shall add a few observations on its treatment.

The symptoms of Acute Rheumatism vary very much in different cases.
cases. It has no strictly typical course. This want of type depends on two main factors:—
(1) the character of the joint affection, and
(2) the presence of complications.

1°. In studying a case of uncomplicated acute rheumatism, one of the most striking things about it is the character of the joint
inflammation. Its most marked feature is the tendency to shift from joint to joint. The invasion of fresh joints may or may not be accompanied by an alteration of the inflammation of those previously affected. There is no regular order of
invasion or remission. The attack appears to be made up, not of one seizure, so much as, of a succession of short attacks,
the duration and severity of which appear to depend more on caprice than any discoverable character of the disease.

It naturally follows that the other symptoms—temperature, pulse, rate, etc.—are equally atypical, in this respect following
the lead of the joints.

2°. But in a large number of cases the symptoms are more
shadowed and masked by the onset of its numerous com-
lications. So that to describe the symptoms fully would
involve a description of the symptoms of acute rheumatism,
perse, and of all its complications. These detailed them
nearly as fully as space will permit in connection with
the appended illustrative cases. The first of these I... S...
may be taken as a "fairly typical" case of ordinary uncom-
licated acute rheumatism. The others are mainly of interest,
Sisson in the B. M. Journal, for Aug 13th 1870, shows that in 27 cases, affected with Endocarditis, 13 persisted after 31 days.

- 33 " not " 5 " 21 "
- of those under 21 yrs, 2 were well in 11 days
- between 21 + 25 yrs, 11 "

And he notes that, with increasing years, there is a tendency to prolonged affections of the joints, and to relapse, and to drift into Chronic Rheumatism & Gout.
as having how the course, duration result of acute rheumatism is modified by the presence of some of its complications. To treat of them all, with equal fulness is beyond the scope of this paper. A discussion of Acute Rheumatism would be obviously incomplete without some reference to its commonest and most important complication, Heart Disease. To this I wish to add a discussion on the temperature range, and the theory of the production of hyperpyrexia promulgated by Dr. Latham; and a description of some of the abnormal forms of acute rheumatism.

I have already referred to the discrepancies in the statistics on this subject. On some points, however, there can be no doubt. It is agreed on all hands that the heart is especially apt to suffer in the young. Dr. Peacock says that, while it occurs in 3.3% of cases under 21 years of age, it occurs in only 16.6% of those over 40. Ziemsen says that the liability is greatest before puberty, and remarks that the younger the patient, the greater the risk. This means that it is most likely to happen during the period of the greatest functional activity of the locomotor apparatus. The heart being in precisely the same position as any one of the joints. Its liability is also in proportion to the extent & severity of the attack. Ziemsen says that the risk is greater, the greater the number of joints affected. Sibson points out that inflammation of the joints is much more prolonged & tedious in a large proportion of these cases complicated with heart disease; and further he states that the
Of 20 cases treated in Burnley in the winter of 1878-9, 6 cases were affected with pericarditis. Rarely peg off 50.
12 Endocarditis

18 total number of cases or 45% of cases treated

Of 130 cases treated in Penrice (Greenwich) from 1879-1888
6 cases of pericarditis occurred
21 Endocarditis

27 total number of cases affected or 20%.

These cases were treated on the same lines. In every case a Salicyl compound was given and only stopped where it did not agree.

(2) Wunderlich & Seguin's Medical Thermometry 1871 Ed.
pp. 167 to 171 (assim).
the eye of the patient, apart from its influence on the
production of heart disease, has a great influence on the rap-
quity or completeness of the recovery. I wish to add that my
experience has shown that locality has a great influence not
only on the production of rheumatism, but also on the
liability to heart disease. Of 140 cases treated in Burnley
Lancashire, Pericarditis developed in 6, Endocarditis in
12, making nearly 50% of the cases treated. That this
was not an accidental occurrence I took care to verify.
Mr. Arnington, whom I was assisting at the time, and the
other local men assured me that this was under, rather
than over, the average. And they all agreed in describing
heart disease, as produced, as the local phthisic, or Phthisic.
A comparison of the two tables on the opposite page bears
out my contention fully. I shall have occasion to show
later what the influence of heart disease is on the temper-
ature which I shall now proceed to speak of.

Temperature has been defined, I believe by Dr. Allbutt,
as "the expression of the balance struck between heat
production and heat elimination." It is manifestly under
the control of the nervous system. The temperature range
in acute rheumatism is necessarily atypical, as it depends
in great measure, on the behaviour of the joints, and on
the presence of complications. Some complications
modify it slightly, if at all. Wunderlich shows that the
presence
Pathology & Treatment of Acute Rheumatism, in the Lancet for 8/1/81, 15/1/81, 27/6/85 & 27/6/85.
presence of Endocarditis, or Pericarditis has no effect on the course of the Astigmia. But, if Endocarditis is associated with tubular lesion, the T remains higher than usual during Convalescence, and it takes a considerable time to come down to the normal. With a fresh development of Artic Disease, late in the course of the attack, a considerable elevation occurs. But he says that Mitral Disease does not modify it in the same way. Other Complications, E.g. Pneumonia, raise the T sometimes considerably. But while some cases are abnormally mild, and others are affected by complications, which can be shown to exist, there still remains the important question of the production of the hyperpyrexial state, which occurs independently of any discoverable complication. In this connection Dr. Latham's theory requires consideration. In his original paper he says "when the regulation of the anterior (Chemical inhibitory) is in abeyance, we will have oxidation taking place in the blood...... Therefore it is probable that in acute rheumatism there is increased heat or pyrexia, partly by increased oxidation in the tissues, from the small arteries dilating, owing to the presence of Lactic Acid in the blood, partly also by the oxidation of Lactic Acid in the blood."

But in his subsequent papers he has modified that view. In them he is disposed to attribute the symptoms of
of Acute Rheumatism to the excessive formation of Uric Acid, which at first stimulates and then depresses or paralyzes the vasomotor nerves, regulating the vessels of the muscular areas. Then he goes on to say: "These become dilated, by irritation and excitation would go on causing fresh de- velopment of heat; there would be the continual formation of uric & lactic acid in the system. With increased stimuli- ration of the paralysed Centre, complete dilatation of the vessels of the muscular areas will take place, the albuminous molecules being entirely hydrated into into Glycolic Acid & lactic Acid, with the rapid production of heat, and the heat is further developed by the ready oxidation of these products. In this way the so-called hyperpyrexia of Rheumatic fever is produced." Dr. Rathoim's theory which does fully explain the mode of production of Acute Rheumatism, and which does demonstrate the rationale of the action of the Salicylates on the rheum: matic poison, appears to me to utterly fail to explain this situation. It is directly negated by the Clinical features of the disease, and by the total failure of the Salicylates, which he has shown are direct antidotes to the formation of the rheumatic poison, either to prevent the occurrence of this alarming complication, or to control it in the least when it has occurred. If, as he alleges, Salicylic Acid is a
direct antidote to the formation of the rheumatic poison, which, in his opinion, is responsible for the development of this condition, two things follow: (1) this condition ought to arise, when the development of the poison, as shown by its manifestations in the joints elsewhere, is at its height; and (2) it is equally clear that it ought not to occur when the system is thoroughly saturated with salicylic acid. Now, then, can it be explained that it does occur when the system is thoroughly saturated with the antidote? And how can we explain that it occurs frequently, when the rheumatic process has undergone its normal resolution? Moreover, it occurs in other diseases, in which it has never been alleged that uric or lactic acids are formed in excess, notably in typhus, yellow fever, varicella, pyaemia, and especially in septic apoplexy. It will appear from this argument that hyperpyrexia is not a simple expression of the pyrexial condition of acute rheumatism, and it appears to me to be an exceptional condition; and what there is nothing in the ordinary cause of acute rheumatism, which points any light on its production. Now the special condition is likely to have a special cause, and a consideration of the symptoms suggests that it is owing to some peculiar susceptibility to disease, existing or induced in the apparatus for aiding over the production & elimination of heat. We
We may reasonably assume that a predisposition to such disturbance exists in certain individuals, and the fact that this condition of hyperpyrexia occurs most frequently in hot attacks tends to strengthen this assumption. Next we may assume that this tendency would naturally be increased in proportion to the amount of disturbance, or consequent weakening, to which the centre had been subjected in the course of the disease. The may vary according to the nature of the disease; for it is an undoubted fact that the pyrexial symptoms develop in Acute Rheumatism, at a temperature which is frequently reached in other diseases, without inducing any such result. At least we are entitled to infer from this that the pyrexial poison influences the heart centre injuriously. In all the cases, cerebral symptoms, of greater or less severity, have been observed, and these usually precede the acute hyperpyrexial symptoms, sometimes by several days. There has however argued elsewhere that a careful watching of the temperature and pulse will frequently indicate the probable onset of this condition. I now wish to observe that it is frequently associated with shock, worry, or anxiety. Now presuming a centre, already weakened by the action of a specific poison — be it Lactic acid or Uric acid — and rendered more sensitive to the action
of such a poison, by the natural peculiarity, existing in the individual, the theory of Shock will readily explain, will readily explain not only the occurrence of the preceding Nervous Symptoms, but also the other phenomena observed. These symptoms were a specially marked feature in the cases I... F... & L.B.... In the case of J... F... apprehensive anxiety were especially marked. He had been depressed & anxious for some time, and the additional commercial misfortunes, which befell him, during his illness, could not fail to affect him injuriously. In the case of J... 13... the symptoms certainly looked threatening; for the occurrence of the mischief, which befell his wife, but this certainly appeared to affect him severely, and, in fact, the acute symptoms may be said to have commenced then. This view is further strengthened by the fact that it appears to occur more readily in those who are weak & irritable, and in those whose nervous system has been weakened by drink, or by encrating habits of disease. The pathology of this condition throws no direct light on the subject. The invariable occurrence of nervous symptoms would lead us to expect to find some change in the Brain or Spinal Cord, but there has been an invariable record of "Brain or Spinal Cord healthy." But this is in keeping with what is observed in the joints or elsewhere. One of the most marked features of the results of P.T.S. Examination
(Ref: Practice of Surgery 1879 pp. 61-617)
Examination in cases dying from acute rheumatism is the exceeding rarity of the presence of structural alterations in the joints, or elsewhere. To this statement the heart forms a notable exception.

I must now refer to several forms of acute rheumatism, occurring in connection with certain morbid states, which appear to be in their symptoms, duration, effects greatly modified by the existence of the conditions under which they occur. I refer to those of rheumatism occurring in the course of gonorrhoea, in a minor degree, scarlet fever, and the purpuric state. (1) Gonorrhoeal rheumatism closely resembles acute rheumatism in some of its characters, and differs from it so obviously in others as to suggest that it is probably different from it in its essential nature. Dr. Bryant has suggested that it is probably a species of leptoceremia, due to the absorption of the pathologic matter from the inflamed surface of the urethra. It affects the larger joints, especially the ankle and knees. It is accompanied by great or rapid effusion into and around the joints. The external surface is rarely reddened. Pain is much worse at night, and is usually out of proportion to the extent of the joint affection, which does not show the same tendency to shift about as is observed in acute rheumatism.

There is usually severe constitutional disturbance: the perspiration is copious, sometimes offensive, but is never markedly acid or foul smelling. It always affects fewer joints than ordinary acute rheumatism; but it does not affect
affect the heart. It also shows a marked tendency to recur with every fresh attack of gonorrhea. It usually commences about 10 days after the appearance of the urethral discharge, which often either diminishes or disappears. Sometimes the two affections exhibit periods of alternate activity. This tendency to disappearance or alternation, often misleading, as the patient may overlook the fact of his having had a discharge, especially if it has ceased for several days, when he consults you. Attention to the behaviors of the joints will often clear this up; and the importance of arriving at a correct diagnosis is emphasized by the admitted fact that it resists all ordinary treatment, directed to the cure of the joint symptoms. Its course is extremely uncertain, and it may last for months, lapsing into a chronic state leading to great stiffness of the joints. This latter feature, the chronic course, and the alteration in the joints is peculiarly liable to happen, in those cases occurring in connection with the puerperal state. The joint affection here noted frequently proceeds in the acute stage to abscess for mation or even to erosion of the cartilages. I have noticed that this affection, like gonococcal rheumatism, has a marked preference for the knee. In the course of Scarlet fever, but especially during the period of desquamative rheumatism, is apt to develop. Here I have noted a marked tendency to affect the abdominal muscles most severely.
quited by Garrod in article in Reynolds' med Vol I, p. 985.
The Etiology of Acute Rheumatism may conveniently be considered under Causes 1° Predispousing & 2° Exciting.

1° The main predisposing causes are a. Heredity, which undoubtedly exercises a most potent influence, albeit not so manifest as in Gout. Fuller estimates it at about 29%. b. Age since have been reëstimated. From 5 till 14 it is not uncommon; from 16 to 20, it is however the period during which first attacks are most prevalent. After 35 the tendency diminishes; but this statement comes to be modified by the consideration that previous attacks exert a peculiarly powerful influence in causing this disease. It is very rare indeed to have a first attack after age 45, while it is not at all uncommon to have a third, or fourth attack at that age, or even later.

2° Sex per se is not a cause.

2° The most frequent exciting cause, and, in fact, the only one that is thoroughly established, is exposure to damp, or cold, or both combined, and the operation of this cause appears to be peculiarly intensified, if the body, at the time of its exposure to the chill, is actually perspiring. The statements of our patients, and my own personal experience, are most circumstantial and precise. The stronger the predisposition, whether inherited, or established by previous attacks, the less powerful need the exciting be, to develop the disease. Throat has been alleged as a cause, but it is not established.
Ibid p 941.
2 quoted in Ziemsen Vol XVI p 27.
3 quoted by Shadecum in his Pathology of the Urine p 466.
Now what is the connection between the group of symptoms, in the aggregate known as rheumatic fever, to its usual cause, viz. the sudden cooling of the body, when heated and actively perspiring? Most suggested that lactic acid is present in the system in great excess in Rheumatic fever, and that the symptoms are due to its presence. It is now well known that the muscles normally contain a small quantity of this acid, free or combined; and it is equally well known that the muscles become increasingly acid, during strong activity, & that this disappears or becomes diminished while they are in a state of rest. It was suggested that this increased acidity is due to the presence of some free lactic acid, or lactic acid, and this theory is confirmed by the discovery that an abnormal amount of acids & acid salts, notably lactic acid & acid potassium phosphate, is produced in the muscles or during active exercise. These are assumed to be oxidized & got rid of by the skin and kidney, or, if in great excess, are got rid of unaltered in the sweat, or by the kidney. In the sweat it has been discovered by Sager; & in the urine it may be detected. Lehman says that in all cases where the supply of lactic acid to the blood is very great—whether this depends or an excess of acid being formed in the muscles &c. or on an imperfect process of oxidation in the blood—lactic acid may be detected in the urine. All efforts to isolate it in the blood have failed, but that does not
(1) Article in Med. Times & Gaz. 18th July 1857.
invalidate the argument. If then we assume that the joints & muscles, during exercise, are the seat of active nutritive changes, and we have already shown the fact of the presence of certain products in the tissues during exercise or, it remains to seek a connection between this accumulation of lactic acid & the train of symptoms under consideration. This has been attempted synthetically by several observers; notably by Dr. Richardson & Dr. Foster. Richardson has shown that some of the main features of acute rheumatism may be artificially induced by the injection into the peritoneal cavity of diluted lactic acid. His results showed that, while the peritoneum escaped uninjured, the endocardium, & the pericardium in a minor degree, were affected similarly to the manner in which they are affected in acute rheumatism. The joints escaped, because the animals experimented on are not subject to the causes ordinarily instrumental in the production of this disease. Dogs & cats, being destitute of sweat glands, true perspiration with them is an impossibility. Dr. Foster has shown that a disease closely resembling acute rheumatism may be produced in a man, by giving large doses of lactic acid. He did so to several persons, suffering from diabetes, with the result in each he noticed that the symptoms completely subsided.
"quoted."
on omitting the drug; returning again when the drug was taken, with a regularity which proved it to be an example of an artificially produced disease. He contends that it cannot be explained by any series of accidental combinations, or idiosyncrasy. The following data then appear to have been made out:—that lactic acid has an important share in the production of some of the most obvious phenomena of this disease; and that endocarditis, pericarditis may be physiologically produced by the injection into a serous cavity of lactic acid. These data, taken with Foster's experiments, enable us to assume that a superabundance of lactic acid in the system induces phenomena of a rheumatic type. Dr. Latham however has gone a step further in his papers, written to show how this materia mortis is produced in the system, how it operates there, and how its effects can be counteracted. His theory, which all rational attempts to explain the mode of functioning of production of fever, rheumatic, or otherwise, assumes as a starting point the existence of a centre, the primary function of which is to regulate chemical action pari passu, the production of heat. These presuppose a sufficient blood supply, which is regulated by the vasomotors, so that this heat centre must have intimate relations...
(1) quoted in Wunderlich, Segun par 43.
(2) " " " " " " p 42-3 x 4.
(3) " " " " " " p 43.
(4) " " " " " " p 45.
relations with the vasomotor centre. The other side of this mechanism is shown to exist by the fact that heat production is influenced directly by stimuli from without, the influence being conveyed to the centre by a special set of peripheral nerves from the surface. The grounds on which this assumption of the existence of a heat centre are based are partly the results of clinical observation, and partly of physiological and pathological facts. (a) All the features of fever show that it is a nervous disorder, acting along the line of the vasomotor system, that its method is reflex, and its result a destructive metabolism. (b) The experiments of Schiff, Brown-Séquard, Budge, and Heberden have clearly shown that the nervous system has a direct controlling influence over the distribution of blood, the production of temperature; and it is a matter of experience that injuries, especially of the cervical portion of the cord, are accompanied by a rise in temperature. Now for this heat centre to be operative, it must control both heat production and heat elimination. The great heat producer is the mass of muscles over the body. The great heat eliminator is the skin, therefore the centre must have intimate relations with both. Now the one potent cause of rheumatic fever is exposure to cold or heat, or both. The inhibiting power of the Centre is weakened by these causes, which produce
* A résumé of Dr. Latham's theory, already referred to.
a chilling of the surface. Reflexly through the vasomotor the vessels of the muscular areas are dilated, and the nervous tissue changes are modified. The increased supply of oxygen to the tissues is used up in the oxidation of the glycocalic acids, lactic acid, which have been formed. The excess of lactic acid and the glycine with its resultant, uric acid, are unsaturated and pass into the circulation. If the cause be sufficiently operative, the centre becomes exhausted, and the stimulation of glycine + uric acid produces not stimulation but exhaustion. In consequence the vessels become further dilated; there is a continuous formation of uric acid which accumulates in the system, and modifies the functions of the nervous system, and lactic acid, which dilates the small arteries, stimulates the sweat centres. The treatment by salicylic acid operates by the removal, or rather by pre-venting the formation of uric acid + lactic acid. This it does by combining with methane cyan alcohol, the antecedent of uric acid + lactic acid, and it is ultimately converted into salicylic acid, which is passed off by the kidneys.

The Pathology of Acute Rheumatism is exceedingly meagre. Apart from the presence of Cardiac affection, it is very seldom that structural alterations are found D.N. This is to be referred to the fleeting character of the joint affection. The amount of fluid varies, sometimes it...
it is absent. But when present in amount, it has been noted that it is much more fluid than normal joint secretion, and rather resembles a chronic effusion. The cartilage layers are occasionally affected variously. Sometimes they are granular and cloudy; sometimes they are covered by a thin, easily separable coating of fibrinous exudation; sometimes the cartilaginous surfaces are distinctly eroded. The course and duration varies especially with the presence or absence of complications. When uncomplicated, it depends on the behaviour of the joint, and it has been shown that this depends largely on the age of the patient (see Appendix). If few joints are affected, it will run its course naturally in about 12 days. In severe and protracted cases, this period may extend to several months, under indifferent treatment. This is particularly true of the Convoluted Variety, and to a lesser extent, of the Perforated variety.

**Treatment.** I think it is safe to say that hardly any disease under the sun has had so many different drugs inflicted on it. The rationale of all treatment for this disease is to prevent the formation in excess of acid products, or to destroy them when formed. Nearly all the remedies and nostrums (at various times lauded — then cast aside and forgotten) have been supposed to exert this effect. Grace will not
not permit me, if I felt so disposed, to enumerate even the drugs used, and the theories
proposed in as to their mode of action. Until the
introduction of Salicornia the Salicylate, some of the
best men in the profession, notably Dr. Gull, Dr.
Sulston and Dr. Gibson, did not believe that the cause
of the disease was modified by any special line of
treatment. They adopted instead a policy of
masterly inactivity, directing all their efforts to secure
good nursing, suitable feeding and general hygienic
management. In addition they treated the various
complications suitably as they arose. Whatever line
of treatment is adopted, these indications ought to have
due weight assigned to them. It is well to insist on
certain prophylactic precautions being observed,
especially in those who have inherited or acquired a
predisposition to this disease. They ought to avoid
all sudden changes of temperature, they ought to
avoid exposure to wet, and they ought to protect
themselves, as far as possible, from the possible oper-
ation of these causes by wearing flannel or woollen
clothes next the skin, by hardening this system
by the habitual use of bathing, cold in summer, or
moderately tepid in winter. The management of
the rheumatic patient during the disease...
greatly to his comfort, and not a little to the modification of the course of the disease. Invariably insist on absolute rest to the affected parts, being secured by a suitable arrangement e.g. the toes are always raised when the ankles are affected, to take the pressure of the skin, done off the inflamed sheaths. It is always a good plan to insist on the patient refraining from undue movement of the joints, for several days after the return of temperature and joint returning to the normal. Other points will readily suggest themselves to any one giving the matter the consideration it deserves.

If the theory of Dr. Latham is true, and I believe it is in the main correct, the obvious indication for treatment is to saturate the system as speedily as possible with one of the Salicyl compounds.

The experience of most men, who give this plan a fair trial, is that improvement in the joint symptoms speedily follows, on the development of the physiological action of the drug. The pain begins to abate, almost immediately the drug is given, relief being often experienced after the first dose. The improvement in temperature and joint symptoms occur usually coincidently with saturation of the system. The effect on the complications varies, but it must be assumed to contribute to their prevention by shortening the duration of the disease, and consequently the time during which the patient is exposed to the operation of the causes which induce them. Macleay has shown that it is not operative in Gonorrhoeal Rheumatism.
Name: J. S.  
Age: 45 yrs.  
Disease: Acute Rheumatism  
Result: Recovery

<table>
<thead>
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<th>Pulse</th>
<th>M. 120</th>
<th>120</th>
<th>100</th>
<th>80</th>
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<td>120</td>
<td>120</td>
<td>100</td>
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<tr>
<td>Resp.</td>
<td>M. 26</td>
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<tr>
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<td>120</td>
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Day of Dis: 3 4 5 6

Treatment consisted of 30 gr. doses of Soda Salicylate every hour.

This is a typical case of Acute Uncomplicated Rheumatism, in which the Salicylate was well borne, its full results obtained.
Case I

Master J. S., a Carpenter, 44 yrs; a big, powerful man, of temperate habits, was seen for the first time at noon of the 14th June, 1840. He had had two previous attacks of Acute Rheumatism. The first attack, in 1834, lasted twelve weeks; the second, in 1837, lasted between thirteen and fourteen weeks.

The present attack commenced with a chill.

First Shivering on the 11th, on which day he had been out lake fishing, had been thoroughly wet through, and had neglected to change his clothes. He had repeated rigor, with wandering pains in the muscles, chiefly of the lower limbs and back, on the 12th and 13th. On the morning of the 14th, the pain became localized in the right ankle, and this joint on my visit was red, swollen and excruciatingly painful. The right knee and elbow were also involved, but to a much less extent. The heart sounds were clear, regular and rhythmic, and remained so throughout the attack.

Pulse 112, full, regular; Skin hot (T° = 102.5°F) and perspiring freely. The respiration was intensely deep, swallowing, and acid to test paper. The bowels had been freely acted on by castor oil. The tongue was coated, at the back only, by a creamy fur. Appetite, much diminished, but still fair and good.

First intense: Urine scanty, high coloured, with a copious brick-dust deposit, and very acid. Sp. Gr. 1020.

He was ordered 20-grain doses of Salicylate of Soda every hour. The affected joints were bandaged in cotton wool. The affected limbs were raised in such a way as to diminish the
The afflux of blood to the affected joints, and, at the same time, relax, as far as possible, the tendons and ligaments in connection with them. This is a simple little precaution taught me by a patient. Care must also be taken that the joints are protected from any undue pressure from heavy bed clothing or the like. But to this matter I have already referred under the General Heading of Treatment.

Food to consist of milk, with soda water, beef tea, mutton broth, and light soups, with barley water, toast water &c. to assuage his thirst. At 8 p.m. the right knee and hip were much inflamed, while the left knee and ankle were painful on movement: the elbow and wrist of the right side were also affected, but as yet only slightly. The right ankle was very much swollen, but was neither sore, nor so painful, as it had been in the morning; and he expressed himself as feeling rather easier already. The temperature had gone up to 103° 2½ F; pulse = 120, full and bounding.

June 15th.

On the morning of the 15th, the report was that he had passed a very restless night, and would insist on getting out of bed. The Rheumatic Process had made rapid progress, having successively attacked the right shoulder, the right Sterno-clavicular Articulation, and the articulation of the right lower jaw; the joints of the left leg, and also the left wrist. He complained that over night he had suffered from intense headache, and constant ringing in the Ears, with some
Some amount of stiffness. The symptoms of Salvinism had passed off, and at the time of my visit, he felt tolerably comfortable, much easier as regards pain, which he described as quite bearable now; and his chief complaint was about the perspiration, which was very profuse. The affected joints were very edematous, in marked contrast to the pain, which he felt less and less after every dose of the medicine. At night the joints first involved were almost natural, and admitted of moderate movement, and even of handling, without much pain. But the sternoclavicular and maxillary joints of both sides, being now involved, he could not open his mouth without a great deal of pain, and could take fluids only by teaspoonful at a time. So he had had two bad nights, I gave him pil opii yet to pro.

16th........ Had a good night, and feels decidedly easier, the swelling is rapidly disappearing, and the pain almost gone. Can move both legs freely, also the wrists and elbows. The other joints, especially the shoulders, are still swollen and stiff, but painful only on movement.

17th........ Today he feels almost well, and sits up in bed. Appetite is returning; and as the tongue is quite clean, the bowels are acting freely, allowed him white fish and eggs beat up in milk or coffee.

Temperature
Temperature and Pulse rate practically normal, and no
relapse. Downstairs, dressed on the 20th.

Remarks... This may be taken as a typical case
of Acute Rheumatism, and a pretty
severe one too. His testimony to the value of Salicin
was most emphatic. Being the son of an unqualified
Medical man of the old school, he took considerable
interest in his treatment. On the occasion of his first
attack, in 1837, he was treated by Alkalies; and he declares
that on the occasion of his second attack, in 1872, he got
nothing but coloured water. On both occasions he was confined
to his room for over 12 weeks. On this occasion he was
downstairs dressed on the 7th day. Although it is rather a
gross way of Estimating the Value of a drug, it is worth
mentioning that, on each of the previous occasions, he lost
nearly three stones in weight. On this occasion he lost only
thirteen pounds. Note that the symptoms of Salicinism
in this case were very transient, and did not interfere with
the exhibition of the Salicylate to the full extent that of
Speedy saturation as recommended by Dr. MacEgan.

Curiously enough, this same man sent for me
to see him in January 1881, asking me to bring the medicine
with me, a sensible precaution, as he lived nearly 5 miles off.
He had another very similar attack, which was treated in the same
way, with the same result. Of this I was so confident that I
saw
Case II.

Saw him only twice afterwards.

is one of Acute Rheumatism, complicated with Syphilis.

John N., about 27 yrs, a Blacksmith by trade, in comfortable circumstances, has had three previous attacks of Acute Rheumatism, at intervals of about two years. For his last attack, about two years ago, he was treated by Salicin, and made a good recovery. The patient informed me that Dr. Milner Sothern had told him that both Valves of his Heart had been affected in his previous attacks.

Seen for the first time on the 21st February 1880, he was found to be suffering from a mild attack of Acute Rheumatism. The joints affected on this, the third, day of the Fever were the Elbow and wrist, the Knee and ankle of the right side, and the left ankle slightly. Patient is a spare rather delicate looking man, but has a fair amount of muscular development. He lies most easily on his back, but can turn without much pain or difficulty. The Skin was moderately hot (Temp. 101.40) perspiring, but not excessively. Respiration acid and Sour smelling. The Heart's action was rapid and rather irreg. There were soft diastolic murmurs both at Apex and Base, from old Endocardial mischief. The first sound at the Base was slightly prolonged, or appeared to be so. No precardial pain or Dyspncea. Respiration Normal. Tongue covered with a moist white fur. Bowels rather constive, and was ordered a large dose of Taster Oil which
which operated freely twice. Urine scanty, high coloured, acid, 1020, containing a small quantity of albumen. He was put on 10 grain doses of Soda Salicylate, every hour, and very full directions as to diet, nursing, and general hygiene
management of the case were given. This was the more important as the patient was seven miles off.

February 22nd. Next day he felt tolerably well in the morning, but in the afternoon, when I saw him, the ankles, wrists, metacarpal and phalangeal joints were red, swollen and acutely painful. The pain seemed out of proportion to the amount of joint affection apparent. None of the larger joints beyond those previously mentioned, shewed any appearance of becoming involved. And, as I have frequently observed that, when the smaller joints are specially affected, the disease is not so amenable to treatment, and is invariably protracted, I was compelled to form an unfavourable prognosis. The joints were wrapped in cotton-wool, and from time to time were gently rubbed, or rather brushed, with a Belladonna and Chloroform Liniment. No alteration could be detected in the condition of the heart. Bowels acted once. In other respects just as yesterday.

23rd. No improvement generally, but complained of two attacks of dyspnoea and palpitation, for which he was ordered sympathins to the precordia, and
and some doses of H. Valerian. Ammoniac. Heart’s action
still rapid; no alteration in the sounds. The dose of
Salicyplato increased to 15 grains every hour.

24th

Decidedly better. The palpitation recurred once
over night, while he was sound asleep, but was promptly
relieved by the Valerian. Symptoms of Salicinism
(tinnitus, slight deafness, flushings and giddiness,
with the heavy aspect so peculiar to Salicinism) were
complained of. Shortly after commencing the larger dose of the
drug, but they soon disappeared, and, when I saw him,
the pain, swelling and heat were rapidly diminishing.
Had a good motion from quite H. Cologythsum Hydarg.

25th

Almost well. The finger joints are stiff and swollen,
but not painful. Perspiration almost stopped, and
Temperature practically normal. On trying to sit up in bed,
he had felt very giddy, and another attack of palpitation had been
induced, but this speedily stopped on his regaining the rec.
Cumbent posture, and taking a dose of the Valerian.

Pulse, 90, full, strong and jerky. The heart was now acting
regularly; apex beat diffuse, & strong impulsion, indicating some
amount of hypertrophy. But this it was impossible to confirm
by percussion, the superficial dulness being quite normal.

Thus I am rather at a loss to account for, considering the
long standing of the disease. The Aortic diastolic murmur
was still soft, blowing, and running up almost to the
next
next systole. But the Mitral Diastolic Murmur had altered in character. At first it was loud and stringy. On the 23rd it was of the same character. On the 24th it was musical but steadily diminishing in intensity.

Appetite fairly good for fluids; no appetite for solids. He was put on Iron, Quinine and Digitalis in small doses, and I did not see him for three days.

On the 28th I was sent for this day to see him. His rheumatism was completely gone; not a trace of it left in any of the joints.

During the past three days the bowels had acted irregularly; smart diarrhoea alternating with constipation, without any ascertainable reason. There was absolutely nothing in his diet to explain the diarrhoea, or the subsequent phenomena. On the 27th and again on the 28th (the day of my visit), he had complained of transient, chilly, and tenderness in the right Iliac region. He now complained of a painful tender spot in the right Iliac fossa, and of pain extending from this spot over the hip to the Great Trochanter, and sometimes to the Groin and Testicle. His face bore an exceedingly distressed and anxious expression. Skin hot (Temp. = 101°) and tympanitic pulse 120. Tongue furrowed. The Bowels had been moved slightly, but motion was very foetid. Lying mostly on his back.

On examination I found a slight swelling, which could be seen as a slight prominence from the abdominal outline, situated about 2-3" internally to the right Anterior Superior Iliac
Slight pain, and on a level with it. On palpation it could be felt as a deep seated rather firm swelling, the margins of which were rather obscure, and could not as yet be accurately mapped out. In addition to the fulness, there was tenderness and dulness on percussion. No vomiting or nausea so far. Ordered six leeches to be applied over the swelling, and prescribed an Effervescent mixture of Chlorate of Potash, each dose containing in addition 1/8 of Chloral. Diet restricted to milk, with lemonade or seltzer water, and small quantities of beef tea.

February 28th

The swelling had increased considerably, and the margins were now well defined. On palpation it was easy to make out what Niemeier describes as a 'sausage-shaped mass', the upper border rather higher than the anterior superior Sissic Spine, and on a level with the Umbilicus. The external border extended to within 1/2 of the Spine. The lower border extended downwards in the direction of Poupart's Ligament. But this margin, as also the internal one, was not so sharply defined. A finger passed into the Inguinal Canal could detect nothing abnormal. There was now some oedema of the thigh, and slight numbness of the limb. He lay either on his back, or on his right side; but in either position, he always kept his thigh flexed at an acute angle with his body, and could extend it beyond this.

Pain.
Pain came on in periodical exacerbations, with intervals of comparative ease. He described the pain as of a rheumatic character. When at its worst, it compelled him to lie on his right side with the thigh drawn up, and his body bent forward, but every movement gave rise to great pain. He had felt very sick several times, but had been unable to get anything up. The bowels had moved once very slightly in the night. Pulse soft and compressible, but only excited. Was ordered to continue the opium freely, and painted on a fluid blister, with instructions to begin to poultice in three hours. Was sent for between eleven and twelve the same day.

The pain, oedema and numbness had increased, and he had been very sick several times. When I saw him he was retching ineffectually, and was in a state of great prostration, bordering on Collapse; he was bathed in a cold sweat. Pulse small, quick, feeble and jerky. Gave him a half souptee of Brandy, which speedily came back, but the pulse and general condition began to improve. Gave him half a grain of the Acetate of Morphine hypodermically. This instantly quieted the pain, and stopped the sickness most efficiently. This was followed up by 15 grain doses of the Subnitate of Bismuth, in just sufficient fluid to enable him to swallow it.

March 1st. It was impossible to make any particular examination of the Abdomen for two reasons: - the right Iliac region was...
was so hindered by pressure that the slightest touch caused him to contract his abdominal muscles. The abdomen in addition was so swelled and tympanitic all over. In fact he had all the symptoms of a smart attack of General Peritonitis. The sickness was not so urgent now, but the stomach was in too irritable a condition to give anything by the mouth, except a little ice to suck, or an occasional mouthful of Champagne. He was therefore mainly fed by nutritive Enemata, consisting of Cream of Brandy, Ice and Opium. This was given every 4 hours.

When I saw him at night, he was no better in any respect, but he now complained most of great tenesmus, probably induced by the Enemata. I gave him a hypodermic injection (h.e. morphia aceb) to relieve the local pain, and hoped to relieve the tenesmus by means of the Suppositori, Morphiae BS (1/4 gr). The abdomen had been diligently poulticed all this time, and this always afforded a little temporary relief. The blister applied on the 29th had not taken any effect whatever.

March 2nd — Much better generally, as he had had a comparatively good sleep. From July 28th up to this time the bowels had not acted; he had now been able to pass a good deal of flatus, and later in the day, a medium sized enema of Soap and Water with Iss of Castor oil, brought away some crumbly little pieces of feculent matter.
matter, mixed with very fetid purulent material, the
quantity of which it was impossible to estimate. He now
felt very much better. The tympanitis was considerably less.
The oedema and numbness of the thigh were improving. The
pain in the Cecal region was less severe and less frequent.
The tenderness much the same. I now ordered Brandy Essence
of Beef, of which he was able to partake freely, varying
this with milk and lime-water, and good home-made beef
tea. Soap and water enemata were continued every 4 hours
for the next 24 hours, and twice a day thereafter until
the evening of the 5th March, when he had a natural motion.
During the 3rd and 4th he improved rapidly, and when
I saw him on the 5th, he felt wonderfully well, and
was able to sit up a little in bed, but was very weak.
There was still a hard, rather sausagey, swelling, etc.
accompanying the site of the tumour described. Evidently
there had been an extension to, and a matting
of, the tissues outside the Cecum, giving rise
to peritonitis, which in turn had lit up the gen-
eral peritonitis. It was still very tender to the
touch; but both swelling and tenderness yielded
slightly. Considerably to the diligent use of Ver. Hyd. & Morph. (20%)
while internally, he took a mixture of Citrate of Luminine Iron.

He had slight rheumatic pains in the left
wrist, and as the urine had become very acid, I gave
Mar 9th. Rheumatism decidedly worse, and once more gave him Sod. Salicylat. 20 gr. doses every two hours. From this date until the 16th, he went through an attack, in most respects identical with that of the 21st to 25th February. It was however more protracted, and the Salicylate of Soda not anodyning, (it gave rise to great nausea, depression and weakness) had recourse freely to Stimulants and Amodyne; on the 12th I put him on the Reins-Alkaline Treatment, recommended by Dr. Garrod.  

15th. Complained of severe precordial pain, which rapidly disappeared on the application of a Belladonna Plaster.  

17th to 23rd. During these days he made tolerably satisfactory progress towards recovery. The caecal swelling and tenderness had never quite gone, and, on the latter date, he fancied it felt more tender. He was however at the time suffering from a smart attack of diarrhoea, which was speedily moderated by the Exhibition of Sulphur Comps. in full doses. The diet was restricted to milk and lime-water and light puddings. On the 24th and 25th the diarrhoea considerably abated, but the caecal tenderness and swelling continued to increase. On the afternoon of the 26th he had a slight rigor, and on visiting him in the Evening, his temperature had
had gone up to 104°F, with a complete recurrence of the symptoms described on pp. 30 to 34. At this juncture the late Professor Sanders, who was on a visit to Perth, advised me to try the effect of Atropine hypodermically. I injected locally about 1 minims of the 1/30 solution of the sulphate. The immediate effect was to diminish the pain beyond belief, and also to stop the constant retching. A little later, after I had left, decided physiological action was produced: - flushed face, mouth throat parched and dry, bright, glassy, dilated pupils, and slight incoherent delirium of a rather hectic character.

Next morning he was decidedly better; the pain was very reduced; the swelling had not increased, and was less tender to touch. Mouth very dry; no vomiting or sickness. No Evidence of Peritonitis, and patient felt very comfortable and happy. During the next three days he consoled slowly, but surely. As the Tumour remained very stationary, I gave him 10 gr of the Iodide of Potash 3% daily, and ordered him to be painted twice a day with equal parts of Lin. Belladonnae and Lin. Iodi. Under this treatment he made a rapid and uninterrupted recovery.

Remarks: - Have gone very fully into the details of the foregoing case, perhaps at needless length, but
but I have been induced thereby, that I have never heard, or read of a case like it, and that Dr. J. M. Madagan, who was good enough to read the notes of the case, informed me that, so far as he knew, it was quite unique. There was nothing in the course, or character of the rheumatic attack, which could throw any light on the occurrence of this complication. The initial joint affection could not be called severe, and the heart complication ran a favorable course. The complete subsidence of the inflammation of the joints, before the advent of the bowel symptoms, its prompt recurrence on the disappearance of those symptoms, and its equally speedy subsidence on the advent of the bowel symptoms for the second time, show that there was a distinct causal connection, existing between these two series of events, and entirely put out of court any plea of accidental occurrence. We know that the improvement of the joint affection generally coincides with improvement in the general symptoms. We also know that the rheumatic "poison," which circulates in the blood in rheumatic fever, produces effects on the mucous membrane of the stomach, giving rise to a well recognized form of "rheumatic" dyspepsia, but this does not in the least modify the course of the fever. Here, on the other hand, we have improvement taking place on the advent of an entirely different set of symptoms. We may at least infer from analogy that the metastatic development of rheumatic inflammation in the cecum, had a distinct influence on the lessening of the joint inflammation.

Referring to the pathology of tophilitis, we fail to find any mention of
(1) Habershon - Diseases of the Abdomen 3rd Ed.
Cop y passim.

of a "Specific Cause". The causes cited are either extension of ulcerative processes in the caecum (TYPHOID, TUBERCULAR or DIAPERTIC), or mechanical causes in the caecum or its appendix, setting up a local peritonitis in the first instance, as evidenced by the repeated attacks of pain in the bowels with vomiting, so frequently complained of in the earliest stages of this disease. The Text-books agree in saying that the disease is much more common in young males than females. My experience is quite the other way. I have met with it most frequently—in 15 cases—in middle aged and elderly females, and specially among maiden ladies of sedentary habit. I recently lost a fatal case in a school girl of 15, where I found rupture of the appendix. But in no single instance have I had a male patient suffering from ordinary TYPHOID.

The pain in the iliac region (as also the numbness) is to be explained by the pressure exercised on the last dorsal and Genito-Crural nerves. The oedema is evidently due to pressure on the veins. The peculiar position of the patient is the one in which he can best relax the muscles of the abdomen—especially the Psoas and Sciæus. And this suggests the first Cardinal point in the treatment, which is to secure perfect rest to the part, to the muscles which drag on the intestine, and to the intestine itself, and especially to the quelling of its periodic movements by GUM. The recumbent position must be maintained until all swelling, and tenderness have gone. I have usually found these symptoms yield readily to the diligent use of Soûde of Potass internally, and
(1) quoted in Dr. Ringer's Therapeutics on p. 524, Ed. 1880
(2) " " " " pp. 574-575"
and the oles of Mercury externally. Occasionally the use of Iodine externally has seemed to me to limit the inflammatory exudation in the early stages, and to hasten resolution in the later stages. No attempt should be made to force the bowel to resume its function. After the fever and tenderness have abated, it usually resumes its function spontaneously. If it is necessary to interfere, it is safest to coax it by means of repeated injections of soap and water, with or without Castor oil. I always advise my patients to resume fluid diet, and the recumbent posture, and, beyond everything, to avoid the use of purgative medicines, on the least recurrence of the pains. In this way this obstinately recurring complaint may be checked.

I wish to add that I have frequently been able to verify the magical result obtained from the use of Atropine hypodermically in this case. If I find that the late Dr. Andie considered it the best remedy to mitigate every kind of pain in the pelvic viscera. He recommended its use hypodermically for the relief of local pain and spasm, remarking that when it did succeed, its effects were much more permanent than those produced by the hypodermic injection of Morphia. Indeed hardly point out that the history of this case confirms Dr. Andie's conclusions in every particular.
### Medical Chart

**Name:**

**Age:** 15

**Disease:** Pericarditis with Effusion

**Result:** Recovery

<table>
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<tr>
<th>Date</th>
<th>Pulse</th>
<th>Resp.</th>
<th>Motions</th>
<th>Urine, ozs.</th>
<th>Sp Gr</th>
<th>Reaction</th>
<th>Chlorides</th>
<th>Albumen</th>
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**Day & Dis.** 13-20
Case III.

is one of Acute Rheumatism with Pericarditis, in which I had to perform Paracentesis Pericardi.

I was sent for to see C. H., a pupil teacher, in a Church School, on the 9th February 1883. He had been ill nearly a fortnight, during which time he had been treated homoeopathically, but without any medical advice. Had been delicate from birth: had had two previous attacks of acute Rheumatism, one in 1876, and the other in 1880. Of both of these attacks, which were slight, he had no medical aid. Had not at any time suffered from shortness of breath, or palpitation, but had habitual cough, worse in the winter. I had examined him about a year previously, when he was apprenticed, and failed to find any sign of heart disease. Patient belonged to an unhealthy family. His father had been phthisical, but died of acute Rheumatism: his relations were mostly phthisical. Two of the boy's sisters had died of phthisis, and a third sister was, at the time, suffering from the same disease. No history of any other near relation having suffered from Rheumatic fever.

He caught a chill, while witnessing a football match on Blackheath, on Saturday the 27th January. Felt chilly and shivery all evening: Next day felt worse, complaining of sore throat, general Malaise, and a feeling of soreness and bruising all over. Fell hot and febrile.
feverish, with stiffness of the knees and ankles over night; and in the morning, the joints began to swell, and he began to perspire; but the attack was never severe. On the following Sunday (Feb. 4th), he began to complain of pains in the left side, with occasional attacks of palsy and palpitation, and shortness of breath. This did not become materially worse until the evening of the 8th, when, after a severe fit of coughing, he found he could not lie down again for some time. He had several of these attacks in the night. When I saw him for the first time on the morning of the 9th, he was sitting propped up in bed, with both hands clasped over his heart, which felt as if it would burst." He was a pale, delicate, unhealthy-looking boy, aged 15, very peaked for his age, and of a distinctly rachitic diathesis. Expression distressed and anxious. On inspection note that the chest was rachitic—sternum projecting forwards and upwards; costal cartilages crowded, and sloping sharply inwards and upwards to the sternum; laterally chest much flattened roshallow. Muscular system meagre and ill-developed. Limbs rachitic, shown mainly by the expansion of the ends of the long bones. Head not rachitic, but well formed; ordinary expression was unusually bright and intelligent. Slight dry cough; no physical signs: chest expands well equally. Breathing shallow
and rapid—60—being almost purely Costal. All his efforts were directed to keeping his body still and his diaphragm quiet. The slightest movement induced pain, etc., spreading from the Cardiac region, down the left arm to the fingers. Pulse quick, very excitable, as also rather hard and full. It varied from 110 to 125. Skin moist. Perspiration
Temperature was noted three times, and registered 103°F.
Thirst moderate. Urine scanty, high coloured, oxalbumin.
:mo: Bowels natural. The ankles and knees were first affected, and had become nearly well by the end of the first week. Since then the ankles had remained free, but the knees had suffered a relapse and were now swollen & pitted on pressure at the sides in front. The wrists be: Came affected as the ankles were improving, and they were now nearly well. The Elbows had been affected a few days later than the wrists. They were still somewhat swollen and stiff, but not painful or tender. In fact the joint pain had been almost abolished on the onset of the acute pericardial symptoms, the day before my visit. His more urgent symptoms having abated, on the Exhibition of 37° of brandy, he was able to lie down, but was not able to make an complete an examination, as I could not have wished, as he dreaded to have his chest touched. alleging that it brought on severe precordial & Epigastric pain. On applying my open hand over the precordial
I could feel a distinct harsh grating thrill. A very slight impulse could be felt behind the 5th costal cartilage, just inside the nipple line. He was not able to bear the pressure of the stethoscope, I was however able to detect my own presence of extended cardiac dullness from the presence of that friction thrill, I at the time concluded that the effusion was small in amount, and with a view of relieving the symptoms, and, if possible, of limiting the effusion, I applied six leeches over the precordia, and ordered the leeching to be followed by a large soft linseed meal poultice, as soon as the bleeding stopped. Internally I was ordered to give him, a mixture of Tincture of Atropine every 15 minutes, until the violent throbbing abated, and he was able to maintain the recumbent posture, after which a dose was to be given hourly, with instructions to give brandy in frequently repeated doses, if prostration or faintness came on. In the evening he appeared much relieved, but as he could not bear the weight of the poultice, it was replaced by cotton wadding. Could lie easily on his back with his head shoulders supported rather high on a wedge shaped pillow. Breathing much easier, and able to take fuller and deeper inspirations. T had not risen since morning, pulse rapid, 120, but regular and softer than
Than in the morning. Heart's action, rather indistinctly heard; was rhythmically irregular, 8 sharp quick beats alternating with from 14 to 16 beats, slower and more laboured. The rhythm of the beats was obvious enough, but their character, as also the presence or absence of Endocardial murmurs, was obscured by the toffro friction sound, which could be distinctly heard over the bedclothes. The description of the heart's beats therefore is the nearest approximation to accuracy that could be made under the circumstances.

Cardiac impulse, somewhat undulating, could now be seen and somewhat distinctly felt in the 3rd, 4th, 5th intercostal spaces.

Cardiac dulness much increased. Its upper limit was marked by a line drawn horizontally through the Manubrium Sterni, at the level of the middle of the 4th intercostal space.

Laterally it extended, on the left from a point in the above line, two fingers breadth from the left sternal edge, downwards and outwards just outside the nipple to the level of the basal line; on the right it extended, in an almost vertical line, at the distance of one finger breadth, from the right sternal edge, reaching from the upper limit line above to the Epigastrium below. From here a line, drawn horizontally over the chest, to within two fingers breadth of the Scapula's line, marked what I have called the basal line. Transverse dulness at the level of the nipple, nearly 5 inches.
Here, and below to the basal line, dulness was absolute; and, on percussion, it gave a marked sense of resistance. Above this level, dulness not so absolute, especially in inspiration. Sense of resistance less marked.

As the precordial pain, I thought, had abated so much, and, as there was a doubt in my mind as to whether the amide had induced the Cardiac irregularity, I thought it prudent to omit it for the present, and instead prescribed M. 20
dr. E. Ether, Nitroso, Syr. Amnon. Aequ. + \& \%
em. Digital, to be taken every 3 hours, with a sulphuric Ether and
Morphine draught, to be given if required for restlessness,
or dyspnoea; and to give liquid nourishment in small
quantities half-hourly, or hourly.

On seeing him next morning, by request, at 7 am, I was
informed that he had passed a very restless night, that
from 3 am. till 7 am., he had suffered from extreme
urgent orthopnoea. The Effusion did not appear to have
very materially increased; certainly it did not appear
to be as extensive as it was later in the day, but there
was a fallacy here to which I may allude. It is only
reasonable to suppose that the fluid would not reach
to such a level above, when the patient was in the
erect or semi-erect position, as when he was in the
recumbent position. It is also likely that it is the pressure,
exercised by the fluid, on the vessels on the tissues,
Landit, June 12th 1869.
which compels him to assume the erect posture.
I dry-cupped him with prompt relief of the urgent
symptoms, and in half an hour he was able to lie
down. And now I noticed that he assumed the pec-
culiar position described by Dr. Clifford Allbutt in
his masterly description of a similar case. He lay,
crouching forward and downward, on his left side.
Before the cupping his face was pinched and sharp,
pulse 160, weak, irritable: breathing 68, panting.
After the cupping the pulse fell to 120: the breathing to
44. To was not noted before the cupping, but after
it, it was 102°F. I saw him again at 10 am, when
his condition was much as when I left him in the
morning. At 2 pm he appeared much worse, so
I cupped him again. But this time he did not ex-
perience so much relief. I repeated the operation
at 6 pm, without any benefit whatever. His
condition was now much worse. He still had the
pits of dyspnoea, but he made no attempt to get up,
as the last time he did so, he had a sharp attack
of syncope. The dulness now extended absolutely
almost to the top of the sternum, and quite two
fingers breadth on either side of the bone. At
the level of the nipple it extended from ¾ of an
inch outside the left nipple, to within two fingers
breadth
Breath of the right nipple. Below the lateral line could not be accurately determined, on account of the extreme pain, caused by the slightest touch on the Epigastic region.* (Tenderness above not so marked) Here was a distinct bulging of the 4th, 5th, & 6th inters. Costal Cartilages, and widening of the 4th & 5th intercostal spaces. Friction murmur faintly audible. Heart sounds weak & distant. Pulse 160-180 weak & fluttering. Breathing shallow and gasping. Face pinched & peculiarly haggard, covered with a cold clammy sweat—perfectly pallid except lips, nose, ears which were blue. Hands clammy, fingernails blue. T = 100° F.

He was manifestly in extremis, but very anxious to live, and I determined to give him the chance afforded by tapping the Pericardium, to which he readily assented. This operation performed at 7 p.m.

Standing first on his left side, I made an incision in the 5th intercostal space, beginning about an inch to the left of the sternal edge, and carrying it outwards along the upper edge of the 6th rib to the distance of an inch, and exposing the bulging intercostal muscle. Then, going over to his right side, I cautiously introduced a No. 2 Curved aspirator needle, an assistant at the moment of insertion, turning the stop cock of the aspirator, to exhaust any air in the rubber tubing, or in the needle, and thus prevent the entrance of air into the
The pericardium. The needle, which was entered at the external limit of the incision, was pushed directly outwards and slightly backwards, away from the internal mammary artery. The needle thus lay at the base of the pericardial sac, near its anterior wall, and clear of the heart. The moment the needle fairly entered the sac, a continuous stream of pale straw coloured fluid escaped into the receiver; the needle meantime vibrating synchronously with the cardiac impulse. The fluid, the specific gravity of which was successively noted as 1.025, was allowed to flow to ounces, without distress to the patient. In fact, during the operation, he began to experience relief, and as soon as I had withdrawn the needle, and closed the external wound, he was able to lie down. For some time after the operation he complained of a good deal of feeling pain, presumably from the external wound; and, remembering the old adage among the avoidance of unnecessary physical examination, I made no attempt to ascertain the amount of diminution of cardiac dulness then. Slightly noted that the pulse fell almost immediately to 112, and R = 40. At 10 p.m. the relief was still maintained: P = 103, Systolic: R = 32; T = 90.2° F. Cardiac dulness had diminished to 1/2 in. transversely, and 1/2 in. vertically. To continue the nitrous oxide. Had passed a good night, much better, gaining strength, some stiffness in the knees. No sensibility of the abdomen nor dyspepsia. Skin slightly moist; T = 99.8° F; P = 110, regular, fairly compressible. Cardiac dulness had not increased since last night at 10 p.m. Transversely.
Transversely it commenced \(\frac{3}{4}\)" outside left nipple, and extended to just beyond the right sternal edge. Above it reached to the under surface of the 2nd rib. Sense of resistance diminished all over. Apex beat + cardiac impulse, in the same position, and much of the same character as on the Evening of the 9th. Friction sound distinctly audible along the right sternal edge. Heart sounds indistinct at the apex, clearer at the base, well closed: no murmurs. Out side the area of dulness the percussion note was natural, back of seat.


To continue the mixture, and take fluid nourishment hourly. In the evening, much the same: attacks of dyspnœa & palpitation recurred only under the influence of any excitement. Cardiac dulness not increased. T = 99.5°F. P = 106. R = 29. Bowels acted naturally.

Urine rather scanty, high coloured, slightly acid: no albumen.


Feb 13th. Better: Complained only of slight cough, with frothy expectoration: no physical signs: R = 26; T = 99.5°F; P = 100, fuller & weaker. Cardiac dulness diminishing to the right: extends to the left of the nipple line, measuring transversely \(4\frac{1}{4}\)" barely. Friction sound - reduced, rubs heard all over dull area. To continue the lodicule mixture.

Feb 14th. Decided improvement: able to sit up in bed. The swelling & stiffness of the joints appeared to be improved by the lodicule, which
(2)

Record of 10 cases of Pericarditis observed in Burnley,
Lancashire during the winter of 1878-9. Total number of cases of Rheumatic fever treated = 40.

1 female, 1st attack, suffering from Phthisis.
2, 1st attack, previously healthy.
1 male, 2nd attack, suffering from Bright's disease.
2, 2nd attack, previously healthy.

In 4 cases, the two boys and two girls, Pericarditis was developed when they were first seen. All resulted favourably, as to the immediate effects. The case of the man suffering from Bright's disease however terminated fatally 8 months afterwards, from the Kidney affection.

(3)

Record of 10 cases observed in Kendal, Cumberland and in Greenwich, London, St. Total cases under treatment = 130.

1 male, 1st attack, complicated with Peritonitis: a drunkard.
1 female, 2nd attack, weakly and intemperate.
1 male, 2nd attack, suffering from old mitral disease.
1, 1st attack, weakly and intemperate.
1 male & 1 female, 1st attack, previously healthy.

In each case the disease was developed, or developing when first seen. Results were all immediately favourable. E. G. however had a very protracted illness, and he eventually recovered.
was now increased to 90 x daily. T, R & P rates improving. Axial beat can be distinctly felt in the intercostal space (the 5th). Cardiac dulness 3/4 in across, hardly reaching to the right sternal edge. The 1st, 2nd, and 3rd intercostal spaces are clear; the 3rd rib.

Feb 15th to 21st. Made steady improvement during these days, and on the 21st was allowed to sit up. The effusion had steadily diminished under the use of the iodide. Cardiac dulness normal. Friction sound, apparently increased by the pressure of the stethoscope, but not affected by posture, could be heard over an area, the size of a crown piece, just to the right of, and above the apex beat, which was now in its normal position. He was now put on the syrup of the iodide of iron and liver oil, and under this treatment he made an uninterrupted recovery. The friction sound finally disappeared on Feb 28th, 1883.

I am sorry to have to add that this patient died in the autumn of 1887 from acute tuberculosis.

Remarks. There is great difference of opinion, as to the relative frequency of Pericarditis in Endocarditis in acute Rheumatism. Dr. Seebach, one of the most careful observers, found it occur 6 times in 71 cases. Other observers have found it happen much more frequently. I have found it 12 times in 170 cases, 6 times in the first 40 cases, and 6 times in the next 130. Dr. Markham says it attacks the heart rather than those of strong constitution, that it is more common in the delicate.
(1) Vide analysis app. pag. 50.
(2) Wilks - Irish - Lecture on Pathological Anatomy, p. 98.
(3) Medical Times for 1885 p. 232 of part ii.
and young than in the vigorous. I have noticed it in 7 cases in young adults from 14 to 18. In 5 cases, age ranging from 25 to 46. All these latter were drunkards, or suffering from some other debilitating disease. From this list I exclude 2, as only including those cases, where pericarditis was actually identified. The rationale of the relative infrequency of Pericarditis appears to me to resolve itself into a purely anatomical question. It would appear to be due, not so much to the direct action of the rheumatic poison on the membrane, as to an extension of the rheumatic process from the fibrous tissues of the heart. And this is supported by the observation of Wilkins & Monson that you can always find inflammatory lymph, deposited at the base of the heart, about the great vessels.

In acute pericarditis, pain increased on pressure over the heart or Epigastrum is usually the first thing complained of. But this, as also the other functional Symptoms - dyspnea &c. - can only excite suspicion. Moreover these symptoms vary greatly in different cases. In some, in fact, the disease would appear to be solatant, as not to excite remark, & to be discoverable by physical signs alone.

In the literature of Pericarditis, is unsatisfactory from its discrepancies, that of Paracentesis Pericardi is equally unsatisfactory, from its meagreness. Professor Grainger-Stewart has given an analysis of 38 successes, and 59 failures. Dr. Leech of Manchester gives an analysis of
Of these 48 recovered, 13 were relieved, and 22 died. But most of the fatal cases were complicated with other serious maladies, which rendered the operation hazardous; and they could be expected to receive temporary relief only. The statistics are on the whole fairly encouraging, and judged by the greatly improved results obtained in the sister operation, Paracentesis Thoracis, it ought to be more frequently resorted to. It appears to me to be most urgently called for in those cases, where effusion has taken place rapidly, and by its amount threatens to produce cardiac failure. Where the effusion takes place slowly, the heart & the pericardium adapt themselves gradually to the altered condition, and we frequently find these cases progress to recovery undisturbed by operative interference. The one objection to the operation is the danger from fatal Syncope. This is best provided against by a very gradual withdrawal of the fluid, to allow the displaced lung tissue time to expand and occupy the space vacated by the fluid. If the withdrawal be conducted slowly enough, I do not apprehend that the actual amount withdrawn matters so much. This can be done most efficiently by the modification of Dieulafoy's aspirator made by Messrs. Grant & Son. The curved needle supplied with this instrument, appears to me to possess distinct advantages over straight ones, in this particular operation.
Case IV

is one of Acute Rheumatism with Hyperpyrexia, terminating fatally on the third day of treatment.

James J..., an Analytical Chemist, aged 45, in comfortable circumstances, consulted me on the 26th June 1884, for an attack of Sciatica on the right side, with rheumatic pains and stiffness of the muscles of the arms. Temperature normal. Has never had rheumatic fever, nor any rheumatic affection, which did not readily yield to a Turkish Bath, to the use of which he was much addicted. Neither is there any history of rheumatism in his near relatives, who are all exceptionally healthy and long-lived. He never had any illness in his life, and has always enjoyed excellent health. He is a rather stout and florid, but healthy-looking man; height 5ft 8½ in, and weight 13 ½ stones. His Muscular System is well developed, with a good covering of Subcutaneous fat. Has not been in such good condition as usual, lately, and has gone rather flabby. Strictly temperate, and regular in his habits. Lately he has had a very great deal of worry and anxiety, partly of a business character, and partly from domestic trouble. Two of his children, to whom he is very firmly attached, had recently been treated by me for a severe attack of Malignant Scarlet Fever. He had lost two very promising children from a precisely similar attack, about six years previously. Although the children were now doing well, he was still much depressed, and I, attributing this to the pressure of his Business Engagements.
Rp  Potassii Iodidi qvo x
     Soda Ricarb. qvo xx
     Spi. Ammon. c. mxv
     Tin. Colchici mxx
     Aquam ad 3f

Sig. The mixture, to be taken 3 x daily.
Engagements; advised rest from business worry, and put him on 20-grain doses of Soda Salicylate every four hours, and restricted his diet to milk, fish and soups with a little whisky and self יל at bedtime. This treatment was continued till the evening of the 4th, without any apparent benefit, and, as he was entitled to a holiday, I acquiesced in his expressed wish to go to the sea-side for change of air, and more complete rest. He accordingly went to Eastbourne on the 5th, and, while there, took, by my directions, ten grains of the Potassii Sodii in the mixture on the opposite page. He reported to me on the 12th, that, as he was very little better, he would, on his own responsibility, try the effect of the Seaweed Baths; merely asking me to advise him what to take for his intense sleeplessness, and for which I prescribed Chloral & Bromide. I heard nothing more of him until the afternoon of the 19th, when I was sent for to see him on his return to London.

June 19th, 1884. On my visit, at 2 P.M., I found him suffering from an acute attack of Rheumatic Fever, his condition doubtless being much aggravated by the pain and fatigue consequent on a railway journey of several hours. Seeing him within an hour of his arrival, it was to me a matter for extreme surprise how he was able to be moved at all. He was even more depressed and despondent than when he went away, but trying to put a good face on the matter, he
He remarked "Well, Doctor, I have now got something for you to work on". He informed me that during the first week of his stay, his general health improved some what, and the muscular pains completely disappeared, but the Sciatica got worse. After his first bath he felt rather better, but after the second and third, which were prolonged to a most unnecessary length, he had slight attacks of shivering, subsequent to which he felt pain and stiffness in both ankles; and after a fourth bath, which he insisted on having, on the day previous to his return, he had another & much more severe rigor, followed by pain and stiffness in the right knee, with an increase of the symptoms in both ankles, and a considerably increased amount of fever, thirst and skin action. The fever, pain and joint swelling grew rapidly worse during the night of the 18th, and next day he returned home. Note that the Medicine and diet were persevered with as ordered during the whole of his stay in the Country.

June 19th. He had now an expression of intense weariness, anxiety and pain: face flushed: skin felt hot & sweating (T=102.5°F), moist on the head face & neck, but dry on the rest of the body. Pulse 112, rapid, but regular and of good quality. Breathing normal. Heart & Breach sounds normal. Complained that he ached, and felt sore and bruised all over, worse in the knees, ankles and insteps, which were swollen and painful.
Painful: There was a distinct Erysimatosus blush on both inner malleoli, and here the swelling felt on pressure. Handling the joints produced great pain. The joint measurements were as follows: right knee 16½"; right calf 15½"; left knee 16½"; left calf 15½"; right ankle 12½"; over instep around heel 12½"; left ankle + metatarsal: measurements practically the same as "right." He complained of a constant tendency to doze, interrupted by muscular jerks, which prevented him from getting any refreshing sleep. Tongue coated: appetite poor: thirst: moderate.

I ordered the joints to be slightly but securely bound up with cotton wadding, and as there was a decided tendency to Shiver, he was placed between two soft blankets. He was restricted to milk diet and placed on 25 gr doses of Soda Carbonate with 30 minims of Quin. Aromat. every four to six doses.

I saw him again in the evening at 9pm, when I was struck with the rapid spread of the Rheumatic process. He was uneasy in any position, felt very fidgety, and wished to be constantly moved, but refrained from movement on account of the pain, which was thereby caused. The ankles and insteps had in 12 hours increased an inch in girth. The knees has increased 1½". Both ankles and knees were covered with a true Rheumatic blush. The right wrist, Elbow and Shoulder were stiff, painful and swelling; the shoulder last to: the left wrist was also slightly affected. The muscles and joints of the back felt stiff and bruised. In other respects he felt easier. He had been
been able to dose in an attack of 15 to 20 minutes, during the last two hours, without a return of the Subsultus, and felt somewhat more refreshed, but complained of occasional slight attacks of giddiness, of considerably increased thirst, and total loss of appetite. Tongue now completely coated with a thick fur. Skin hot ($T=103.5^\circ F$), every where flushed, and moist, with a characteristic sour-smelling acid perspiration. Pulse 108.

He made water shortly after his arrival, but this was not kept, and had not made any since. Ordered to continue the Salicylate mixture every two hours, unless symptoms of Salicinism came on; and, as his bowels were rather sluggish, to take 2ij of the American Extract: Cassia: Sagad. liq., to be followed by a Scillia powder in the morning. Note he had now taken 50 grains.

**June 20th.**

On seeing him on the morning of the 20th at 8 am, I learned that he had had a very bad night, and at 3 am had been com- pelled to take the Chloral draught, to control the sleeplessness, and tendency to wander. He incessantly talked about business matters, and especially about a speculation in shipping, which was turning out badly, of the result of which he had unfortu- nately been advised on his return. He was perfectly rational, and more collected than he had been so far. The joint pains were decidedly easier, and he felt less depressed and dependent.

His face had lost a great deal of the anxious, hemmed look that it wore on the 19th. He had taken the mixture every two hours from 9:30 pm to 7:30 am. making 300 grains of the
the drug. This large amount had occasioned very little permanent inconvenience beyond a slight amount of deafness and stiffness. He however complained of a distinct but transient feeling of intoxication. He was now perspiring profusely; the perspiration ran off his face in streams, "it is good," he said, "as being in the hottest room of a Turkish Bath." The skin was reddened all over the body, especially on the face and neck. His face and neck did not remain permanently flushed, but became pale and flushed by turns, just as if he were blushing excessively. The pains in the instep, ankles, and knees had almost gone, but the inflaming had actually increased, and the extension of the synovial membrane above the patella of the right knee contained fluid. The joint co could now be handled, as was requisite from time to time to remove the bathed cotton dressing, and replace it with dry. Although these joints had been so much benefited, the Salicylate seemed powerless to prevent the spread of the rheumatism to the other joints. The back - all along the spine from the nape of neck to the sacrum - was swollen and painful, worse over both sacral. The right wrist measured 10 3/4", the right elbow 13", and the joints about the shoulder were swollen in like proportion. The left wrist, elbow and shoulder were now swollen, red and exquisitely painful. He was thus in a most helpless state. T = 102.6° F; P = 98, rather weak, but quite regular. Heart and Breath sounds normal. As above remarked, his
his nervous symptoms had greatly improved. Tongue coated and
crummy: thirst intolerably great; and for this he was ordered the
Imperial Mixture, which he took with relish. Appetite still
bad: no sickness or nausea, but he could be persuaded to take
a little milk and soda with great difficulty. Bowels had acted
freely in the night, and this I attributed to the large quantity
of the Salicylate taken. (Have often seen it give rise to smart
diarrhoea). My experience of Cascara is, that, while it is a sure
aperient and diaphoreze, it is rather slow in its action. The bowels
acted again in the course of the day, and from this action he
experienced great relief, and this I was disposed to think was
due to the Cascara. Urine rather scanty, high coloured, with
a copious deposit of urates, very acid; sp.gr. 1025, no sugar
or albumen. The Salicylate to be given every 3 hours.

When I saw him again at 8pm, he had taken 4 more doses
of the Salicylate, or 400 grains in all. He was then much
better, with this exception that he presented in characteristic
degree the symptoms almost to a toxic extent. His expression
was dull and heavy, the flushing of the face was even more
pronounced, and more dusky: the eyes were suffused. He
complained of extreme deepness, tinnitus, and of frontal and
temporal headache, at times very severe: his breathing was
quicker (36) and shallow, but the breath sounds were nat-
ural, and he made no complaint of difficulty of breathing: there
was marked muscular weakness and tremor, especially marked:
when
When he stretched out his hands or legs, he complained of tingling sensations. There was no muscular irritability.

The body, trunk, and limbs, were still red, and there was an eruption of sudamina over the chest. The joints, although still swollen as much as ever, were now quite free from pain, with the exception of the joints of the left arm. They were all more or less stiff, doubtless owing to the amount of effusion. They could be handled freely. He was able to turn over in bed, and any change of position was very grateful to him.

The skin was merely moistened by an alkaline perspiration.

The tongue was clean, but slightly tremulous; appetite for fluids returning. Temperature 101° F.; pulse 90, rather weaker, and ordered him to take a tablespoonful of whiskey with his milk and soda, and to omit the saline until next morning, and then to give it in 15 gr. doses 3¢ daily.

June 21st, at 9:45 a.m.

I saw him next day at 9:45 a.m., and learned that the symptoms of Salicinum had quickly abated on the omission of the drug, that the pains had quite gone, and that, as a consequence, he had slept well. He had passed a very good night, the best he had had for the last fortnight.

He still complained of some deafness, but in all other respects he was in comparative comfort. He was sitting up in bed, writing: his hands were tremulous, and he complained that his fingers quickly became cramped and astatic. The swelling of the joints had gone down, and they were quite natural in appearance.
appearance. They now measured: — Elbow 11½", wrists 8½", knees 15½", ankles and insteps 11½. Skin still slightly moist, T = 99°, P 78, regular, rhythmical and good. Heart and breath sounds normal, R = 18. Tongue clean and no longer tumescent: appetite good and I ordered him white fish for dinner. Bowels had acted naturally in the morning: urine copious, neutral, of a pale straw colour; no sugar, albumen or bile. Ordered him to lie down and keep perfectly quiet, until I should see him next day. Fearing that my instructions would not be obeyed in this particular, and knowing that my patient was being very inefficiently nursed, I paid him a surprise visit at 5:30 p.m., arriving just in time to find him at the height of a severe rigor of a pronouncedly agueish character. I ascertained that he had missed on sitting to finish his correspondence, and then feeling somewhat chilly, oppressed and drowsy, he lay down and soon went to sleep, and slept soundly (with restless sighs and bites, during which time he muttered a good deal) for nearly three hours. He awoke at 1:30 feeling no better, and still inclined to shiver. He complained of a feeling of weariness and discomfort, and also oppression in his head, back and limbs; mouth clammy, tongue furrowed, appetite bad, thirst great. He ate very little dinner, and then went to sleep again. He was awakened before 3 p.m. by the onset of a smart shivering fit, lasting about 15 minutes.
The shivering was speedily followed by heat and flushing, after which he perspired freely. After this he felt better, the pains in the back and limbs disappeared, but the headache persisted, and he had occasional slight shiverings.

He remained in this condition until within half an hour of my visit, when he began to feel prostrate and uncomfortable, with a tendency to be sick. The chilly feelings came on again on his back, and spread rapidly over the trunk and limbs. This was speedily succeeded by another and much more violent rigor. When I saw him, his teeth were rattling like castanets; he was trembling convulsively all over. His face was pinched and pale; his skin was dry and hot and had the characteristic goose-flesh appearance. His tongue and lips were bluish. Pulse, rapid, small and hard - 120.

Respiration 40 quick and gasping. T = 105:6°F. In a few minutes the shiverings abated in violence, and were succeeded by a gradually increasing feeling of warmth, with occasional slight remissions of shivering. The skin became merely moist, no profuse perspiration. The temperature fell in half an hour to 103:5°F. The pulse became less frequent - 96 - and softer. Respiration became normal.

The headache disappeared, some deafness only persisting. He felt very drowsy, and had some difficulty in keeping him awake until at 6:15, I was able to administer 30 grs of the Sulphate of Quinine in acidulated camphor water. This
I observed he looked as if it were so much water, and on enquiry he told me that he felt no taste or smell whatever.

When I saw him again at 7.15, his appearance was peculiar. He had not been able to sleep, but seemed very heavy, drowsy, and rather stupid-looking—no delirium. From this condition he would rouse himself by an effort, and then his expression became anxious and beseeching. His mind was at such times perfectly clear, and he was quite rational. He said he felt very prostrate, and was very much in dread of a recurrence of the rigors. Partly to reassure him, and partly to reduce his temperature, which meanwhile had gone up to 105°F, I gave another dose (30 grs) of Quinine. His breathing was again rather quicker—28—and superficial, but not in the least laboured. He complained of extreme deafness and giddiness, but not of Tinnitus. Had made a large quantity of hysterical looking urine. Pulse had run up to 104, full, soft and regular. Hands and tongue rather tremulous. The lividity of the tongue and lips had not quite passed away; his face was very pale. He had no pericardial pain or sense of dip; pulse: Cardiac dulness on percussion quite normal: Apex beat in the 5th intercostal space: Heart sounds clear: no murmurs on pericardial friction: Breath sounds normal both back and front. I advised 3 oz. of brandy to be given every half hour until the feeling of prostration passed off, and to give another.
another dose of the Quinine, if any shivering came on. I was sent for in less than an hour and a half, and on my arrival at 8:45, there was no longer, in my mind, any doubt as to the nature of his condition, of which the rigors had manifestly been merely the precursors.

I ascertained that almost immediately after I had gone (i.e. 7:35), he lapsed into a condition of stupor, which at first was mistaken for sleep. By degrees he became restless and wandering, and would insist on getting out of bed. Then he would sink back into stupor again, and, when roused by shaking him, he took no notice of anything. It was noticed that his skin had become dry, and pr Ungently hot to the touch, and that his hands and arms twitched occasionally.

On the supposition that another rigor was imminent a third dose of the Quinine was given him, and it was observed that he took it with difficulty, and that while some of it ran out of his mouth, the attempt to swallow the remainder was ineffectual, and it was ejected principally through his nose. This gave rise to a severe fit of coughing which woke him up, but as he speedily lapsed into stupor again I was sent for. He was now lying on his back with his eyes wide open. The lividity previously noticed about his lips had spread all over his face and neck. His breathing was rapid—14 to 16—and shallow, occasionally stertorous, at other times accompanied by a loud moaning sound.
Sound. The muscles of the face, and, a little later, those of
the hands and arms worked convulsively. T=107.5°F. P 130, full
hard and incomprehensible. The heart's action could be heard
several inches away from the chest wall, and gave one the
impression of the fast regular thrust of an express locomotive.
On being roused, with difficulty he recognized me perfectly.
His articulation was peculiarly guttural and difficult, as
if he had entirely lost control over his lips. There was no
paralysis of any of the limbs. He was able to make me
understand that he felt he was dying. He appeared to under-
stand questions perfectly, but answered them very briefly,
chiefly in monosyllables. In this way I gathered that he had
no pain, that he felt no prostration and weak as to feel utterly
alone. His eyes were red, the conjunctivae being much injected.
The pupils were normal, of Equal size and sensitive to light.
Heart and Lung sounds same as at 7:15.

I gave him some brandy and water, but he had the same
difficulty with it which he had with the Luminie draught.
Thereupon gave him an Enema of brandy, retained; re-
peating this a little later with the addition of ammonia
and Ether, as his weakness and prostration increased
alarmingly. He rallied for a few minutes, did not
regain complete consciousness, and then lapsed into
insensibility from which no Efforts could arouse him.
He lay on his back perfectly limp. By 8:55 his breathing
had
had increased in rapidity to 148. It was now deeper slumber, it was accompanied at times by loud snoring, but mostly by a peculiar hissing, rapping and at times sucking sound, caused by the forcible drawing of the lips against the teeth, and their equally forcible expulsion. Next (at 8:55) had him removed to the edge of the bed, and laid his head face and shoulders drenched with a constant stream of cold water. In spite of this the temperature rose, and in 25 minutes from the time of my arrival it had gone up to 108.5°. I had him immediately packed in a wet sheet, placing several blankets over him to hasten evaporation. In another 15 minutes the ice, for which I had sent, arrived; and he was vigorously rubbed with lumps of ice all over his body. In default of a proper ice bag, lumps of ice were placed under his head and neck, and along the spine. Ten minutes later as the pulse seemed flagging I gave him another Enema of Brandy, Ammonia, and Ether, and continued the application of the ice. The temperature notwithstanding continued to rise rapidly. His coma deepened; his breathing became more and more aspierous, gasping and irregular, each gasp being accompanied by retrocession of the chest wall. His pulse seemed to have become more rapid, but it was almost imperceptible, and could not be counted. As a last resource...
I injected a stream of ice cold water into his rectum. But
the breathing gradually became slower and slower, and at the
same time more and more irregular, and he died at 9.46 P.M.,
within an hour of my arrival, and within two hours
from the time he first fell into stupor. His temperature,
taken just before he died was 110°F. Two hours after death,
and after the body had been washed, it registered 110.5°F.
It was then noticed that the dusky purple colour, which
the face and neck assumed, while he was dying, had spread
over the body, affecting even the hands and feet, fingers
and toe nails. Indeed that the lips were even more infected.
There was also a pinkish zone around the cornea in the
ciliary regions, and the irides had the appearance of
Commencing iritis. Ten hours later (twelve after death) the blue
colour had given place to a uniform muddy, dusky purple, with
numerous excretaions of blood pigment. The cuticle was rising in
Tanniculent blisters, mainly over chest wall, and back.
Twenty-four hours later (thirty-six after death) the body was of
one uniform black colour: decomposition far advanced,
Tanniculent froth and fluid oozing steadily from the orifices
of the mouth and nose, also from the orbits and ears. The
stench was so unbearable as to prevent any further exami-
nation. I have already referred to this case when con-
sidering the question of Hyperpyrexial temperatures on April 11st 1870, p. 66.
a few observations mainly on the treatment of this complication. It is also one of hyperpyrexia in the course of acute Phren.

Case V. 13th Oct. 31, a brewer's drayman, of incorruptible habits, was seen for the first time, on the evening of September 14th, 1884. He was suffering from his first attack of rheumatic fever. He said he had always enjoyed good health, but his account could not be much relied on. There is some recollection of being taken to an attack of fever. This he denied, but was able to satisfy himself on the point.

His powerful, countryman of splendid physique, but had gone somewhat flabby and bloated of late. Always irritable, temper at times violent and ungovernable. Had been ill nearly a week, but had ob.

estimatedly refused medical aid. No history of a chill. The weather, just previously, had been very wet, and he admitted he did not take any notice of a wetting or two, more or less.

All his joints were affected on this, the eighth day of the attack, and the fifth day of acute symptoms. The knees and ankles, the elbows and shoulders, being especially red, swollen and acquisitely painful. He simply roared out, if any one came near, shook the floor or touched the bed on which he lay flat on his back, and perfectly helpless. Face and surface generally flushed, perspiring copiously; perspiration intensely acid, offensive and sour smelling; sudamina generally distributed over trunk and limbs: Tongue tremulous, dry and brown: appetite bad. Thirst very great, constantly demanding beer.

Urine
Minty scanty, hyperacid and high coloured, no albumen.

Bouelle regular: T = 104.5°. Pulse 110, regular, large soft and
compressible. R = 24.3. Complained of dyspnœca and precordial
pain. Heart sounds sharp, noisy and prolonged, especially the
first sound, indicating increased tension: no pericardial
friction. Had not been able to sleep for several nights
on account of pain. Ice bag ordered for the precordial.

To this at first he strongly objected, but speedily became
accustomed to it, and made no further objection, when he
found that the dyspnœca and precordial pain did not return.

Ordered milk diet, and 30 gr. doses of salicylate of soda,
with 30 gr. ammonia: 5 per cent. Acetate to be
taken every hour. This he took to four doses, but finding
that it increased the perspiration, so that it ran off
him in streams, and saturated the bedclothes, he would
not continue it, and no persuasion could alter this
resolution. Next day the joints were much the same.

Complained of slight deafness. Still perspiring actively.

Gave him on 50 doses of the Bicarbonate of Bicac, to
be taken every three hours in homemade lemonade,
which he was allowed to drink "iced" ad lib. for thirst.

Precordial

Precordial pain and dyspnœca gone: tongue moist,
covered with a dirty yellowish fur. No wandering or delirium
noticed. T remained high; in the morning it was 102.8°,
and in the evening it was 103°. Pulse 90-102. As the
Pulse had become softer, and there was some amount of muscular tremor, and his sleeplessness appeared to be wearing out his strength. Unwillingly gave him M. 50 Sol. Morph. with a glass of whiskey and water at bedtime.

Sept 3rd. Had slept on and off all night, with intervals of restlessness and wandering. Towards morning he had some slight delirium, but this soon passed off, and when I saw him he was quite cool, alert, and much quieter and more subdued than he had been before. Face not flushed, but rather paler than usual: complained of feeling very prostrate and weak and of a tendency to be sick. Skin hot, barely moistened with acid perspiration; urine rather free, but very high coloured, containing bile. I could not however detect any alteration in the size or the shape of the liver, and there was no uneasiness in the right hypochondrium. The urine contained no sugar or albumen. Breathing quicker and rather shallow: respiration in heart or breath pounds: joints just the same as yesterday. Pulse 105, smaller, not perfectly rhythmical. T = 101°, higher than yesterday mornings by 1.2°.

Ordered an ice bag to be applied over the head and neck. This order was not promptly complied with, as an awkward contretemps occurred just then. Patient's wife, who expected to be confined in a few weeks, but who had been suffering from labour pains all night, had just come into the room to make some enquiry, when
She was seized with a severe pain, and was delivered on the floor for death. I was now compelled to leave him, but left instructions to send for me if stupor or delirium came over. Returning in two hours (1 p.m.) I learned that he had in the first place become very excited and abusive, then wandering and delirious. When this passed off he sank into a stupor, just before my visit. From this he was easily roused, but his answers were rambling and incoherent. He seemed dazed and stupid, and appeared to be oblivious to his condition and his surroundings. Had objected to the ice bag being applied to his head, and immediately he was aroused he threw it in my face. His face was deeply flushed, especially his nose and ears. His temples stood out in relief against the general cutaneous surface. Lips and tongue moist and tremulous; articulation slow and difficult. Skin dry and burning. T = 106° F. Perspiration had gradually ceased since the omission of the soda solutions. The temperature had steadily increased, and there was no improvement in the joint condition. The pain had quite gone after the fright he had from his wife's sudden illness. The joints were still swollen, but could be handled without exciting complaint. Pulse 108 full, hard, and incomprehensible. Heart's action throbbing. Carotids throbbed violently.

Apraxia
After-beat, in the 5th interspace, diffuse: pronounced.
Epi gastric pulsation, Ener more markedly icteric than
suffused: jaundice medium, equal and sensitive.
Breathing irregular and jerky; but did not seem to be
aware of it. He merely complained of feeling very
heavy and wished to be allowed to go to sleep. In
other respects he said he felt very well, and did not
understand why he was being disturbed. The symptoms
as a whole appeared to me to be significant of the approach
of some serious complication; and although the Pulse-
Temperature ratio puzzled me at the time, it appeared to
me to be the proper thing to do to reduce the temperature
and watch the Evolution of Events. I sent for pilocarpine,
immediately on concluding my Examination, and until its
arrival half an hour later, his body was rubbed with large
pieces of ice - all over back and front of the trunk and
limbs. The ice bag to the head was renewed. By this
time he had become quite passive, and in fact he
seemed too prostrate to do anything. The temperature
meantime had gone up to 106.8°F, without variation of
the pulse rate or respiration. I injected ½ gr of the
Hydrochlorate of Pilocarpine hypodermically, and prepared
to give an injection of ½ gr of Atropine, if toxic symptoms
were induced. In 5 minutes (1:35 pm) the patient, who had
meantime been wrapped up in blankets, showed flushing of the
face.
face and neck, of a uniform vivid red, just as if he had been inhaling the fumes of nitrite of amyl. The pulse at the same time began to grow softer & quicker. In 5 minutes more, beads of perspiration were standing out on his forehead, and spreading over his face. In another 5 minutes the body was perspiring actively—perspiration neutral and not offensive. As soon as the perspiration was generally induced, the flushing began to disappear, and in half an hour his face became pale. He was now bathed in a copious perspiration; his eyes watered, the salivation became salivated; his breathing, which at first had become quicker, now became slower and fuller and deeper. During the first 15 minutes, his pulse ran up to 140, but it now began to slow down gradually; and I was gratified to find that it became larger and softer, and that the temperature had remained stationary. Gradually the salivation became more profuse, the secretion running from his mouth in a constant stream. The perspiration continued profuse, and speedily saturated the bedclothes, and bed. In an hour the T had fallen 1° (to 105.5°). There was no recurrence of the lividity; pulse 120 and less tense. He complained now of some frontal headache, ache & dullness, but experienced great general relief. Eyes no longer suffused, but distinctly jaundiced. The pulse continued to grow softer & slower. In two
Two hours it had fallen to 103, and the temperature to
105.3°. No nausea or sickness induced. He made use
freely to 12 ounces of a dark olive green: but did not
at any time complain of pain in the bladder. But about
now he complained for the first time that his sight was
dim, and I noted that the pupils were constricted. The
bowels acted naturally without diarrhoea or tenesmus.

The perspiration lasted for 5 hours; the skin at 6:30
p.m. was still moist: T 104°, pulse 100. He went to
sleep several times during the vaccinating, but could easily
be roused, and he became gradually more rational.
He now expressed himself as feeling very comfortable,
and seemed to have a very hazy recollection of the
events of the day. Ordered to continue the ice bag to the
head and neck. On seeing him at 10 p.m. I noted that
the skin was perspiring, perspiration acid and somewhat
offensive; pains in the joints showed a tendency to return;
the swelling was the same, but tenderness also increased.

T. 104°7, pulse 108, of good volume and fair quality. Had
slept quietly, without any wandering or delirium, for 10 hours.
Heart sounds normal, no dyspnoea or precordial pain.

Sept. 4th. Next day I found that the rheumatism was fully reestablished.
T. 101.5°F, pulse 90, skin perspiring, had slept well when permitted by joint pains. As the case promised to be very
sedious, he was placed under the care of a Dispensary
Surgeon.
(1) Medical Times Gazette, Oct 5th 1867.
(2) Lancet, Aug 19th 1871.
(3) Lancet, Dec 23rd 1871.
Surgeon. I heard of his progress from day to day. In brief, he had a protracted attack of rheumatism, but there never was any tendency to the development of the hyperpyrexial state.

Remarks. The most cursory glance at these two cases will suggest certain points of agreement, and certain other points of difference. To treat them with any approach to adequacy entitle the discussion of, among other things, 1. the mode of production of the hyperpyrexial state in acute rheumatism; 2. the rationale of the fatal results always observed in cases left to nature. 3. The means by which this convulsion may be best and earliest recognized. 4. Its proper management.

Having already discussed 1. and 2. elsewhere, I shall try to illustrate 3. and 4. by the two cases just described.

3. The symptoms, when fully developed, are usually so characteristic that any one, moderately acquainted with the literature of the profession, ought to be able to recognize them, even if he has never seen them before. They have been so well described in the classical cases published by Dr. Sydney Rigler, Dr. Nelson Fox and Dr. Clifford Allbutt that to attempt a detailed description of them here would be to waste your time as mine. It is therefore no excuse to say that I had never seen anything like them before when they were presented to me in the case of ... It may be that you will think that I ought to have interfered actively sooner; and I think so myself now; but that is the wisdom which comes after the fact. I was however, misled, in a way which you will at least understand. A few
Lancet Aug 12th 187 - "The Bumphy"
two weeks before, she was under my care the wife of a shipwright, suffering from Carcinoma Uteri. When I saw her for the first time, she had just returned from Devonport, and she was suffering from a sharp attack of undoubted Ague, contracted at the seaside.

The symptoms in the case of J. F. were, up to a certain point, an exact reproduction of those in the case I have just mentioned. It was not until I saw him for the last time (at 8.45 p.m.), that I fully recognized the gravity of the symptoms with which I had to cope, although I must confess to feeling some uneasiness, when I found the temperature rise again after the second rigor. I must also submit that it was one of the most rapidly fatal cases on record.

In the first of Dr. Fox's published successful cases, a steady but gradual rise took place all day. As evening came on the T was more rapidly, but steadily to 105.6° at 5.30, 107.1° at 8.5 and 109.1° at 9.50 p.m. In J. F.'s case the T marked 105.6° at 5.30. But it fell nearly five degrees in the next half hour, rising to 105.5°. It fell nearly five degrees in the next half hour, rising again in 1½ hours, at which time he had all the symptoms of the onset of another rigor. So sudden an upheaval of T amounting to 6½° in 1½ hours, apart from the rigors, would have been most alarming, and called for prompt and decided interference. In the case of J. F. the first thing that suggested hyperpyrexia to me was the marked variation in the morning remission of temperature. On the morning of the 2nd it amounted to 17°, which was in itself noticeable. But on the 3rd it amounted to 19° only, and it was higher than that of the 2nd by 1.2°, i.e. it was 102° at
Mrs. M. 46
Name G. G.
Age 46
Disease Pericarditis + S. attack. Result Recovery.

Temperature Fahrenheit Scale

<table>
<thead>
<tr>
<th>Pulse M.</th>
<th>102</th>
<th>101</th>
<th>100</th>
<th>98</th>
<th>96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse E.</td>
<td>108</td>
<td>105</td>
<td>104</td>
<td>106</td>
<td>108</td>
</tr>
<tr>
<td>Resp M.</td>
<td>24</td>
<td>22</td>
<td>22</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Resp E.</td>
<td>25</td>
<td>22</td>
<td>25</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Motions</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Urine, oz.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sp. Gr.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Reaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chlorides</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Albumen</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Day of Dis.</td>
<td>8th</td>
<td>6th</td>
<td>7th</td>
<td>8th</td>
<td>9th</td>
</tr>
</tbody>
</table>

Temperature Centigrade Scale

| Pulse M. | 120 | 120 | 78  | 80 | 102 | 100 |
| Pulse E. | 112 | 112 | 82  | 90 | 105 | 104 |
| Resp M.  | 30  | 28  | 20  | 18 | 25  | 23  |
| Resp E.  | 29  | 29  | 23  | 22 | 28  | 25  |
| Motions  | 8   | No  | 1   | No | No  | 1   |
| Urine, oz. | -   | -   | -   | -   | -   | -   |
| Sp. Gr.  | -   | -   | -   | -   | -   | -   |
| Reaction | -   | -   | -   | -   | -   | -   |
| Chlorides | -   | -   | -   | -   | -   | -   |
| Albumen  | No  | No  | No  | No  | No  | No  |
| Day of Dis. | 8th | 6th | 10th | 11th | 12th | 13th | 14th | 15th |

Note: Sural injections; bed rest; increased diet; ammonium. The ammonium chloride!
at 10 am. At 1:30 or 1 hour later— it was 104.8°. I have placed the two charts on one page for convenience of reference. The difference in the temperature range is obvious—most striking.

Before the full development of the symptoms, there are certain indications which, though individually taken, are not characteristic but, taken collectively, they ought at least to put us on our guard.

2. I must note that this condition occurs most frequently in first attacks of rheumatic fever. 3. It appears to happen with greater frequency in the intemperate, or those previously reduced much below par, by debilitating habits or disease. It is a matter of common observation to find a great deal of cerebral disturbance during the acute stage in such cases. They almost invariably exhibit a marked degree of restlessness, delirium, and at night. This was well seen in case of A.D. and it was much exaggerated in G.G. whose chart I append. In these latter cases hypothermic symptoms never showed, the maximum T in the one case being 104.5°, in the other 103.4°. Another condition frequently noted is the presence of shock, worry, or anxiety. This I am disposed to look on as a cause, one referred to it elsewhere. I may just point out that, if you have a history of shock, or upset, followed by delirium, accompanied by fever more than moderate, the indication becomes a valuable one.

4. Frequency of Pulse. In rheumatic fever the pulse is generally quick. If it is merely quicker than the T will explain, it may indicate cardiac weakness.
if it is progressively increased in frequency from day to day, the T remaining the same, or varying only slightly, we must expect some complication, and this compels us to be on our guard.

2. The course of the T will aid greatly in some cases, but not in all. Where this complication occurs in the course of acute symptoms, we frequently find a suspicious increase of T from evening to morning, or for a morning or two the remission may become progressively less. If there is nothing in the course of the joint symptoms or onset of other complications to warrant this, we must look on the behaviour of the T with grave suspension. Further, any increase of T, maintained for more than 24 hours, without the ordinary remissions, and without the development of Heart or Lung Complication, in the meantime, is also very anxious.

I am disposed to think that, by carefully noting the P/T ratio, much may be learned. That there are many discrepancies in the P/T ratio in acute febrile diseases, especially in Acute Rheumatism, is well known. But this does not absolve us from not heeding the warnings conveyed.

2. Where the hyperpyrexia comes on in the course of Acute Symptoms, one of the earliest, most unfailing indications is the sudden retrocession of the joint pain.

2. Another invariable symptom, under these circumstances, is the gradual, or sometimes rapid, Cessation of Feveration. Fox has pointed out that these symptoms, unaccompanied by decided improvement in other respects, are of ominous Allargy.
1) Ibid.
2) Ibid.
4. He further points out that, if these symptoms are accompanied by an elevation of the T+P rate, out of proportion to the other symptoms, the indication is all the more ominous.

5. Where the hyperpyrexia comes on during the (apoplectic) period of condensation, the earliest symptom to call attention is usually the onset of delirium.

4. The recognized method of treatment in hyperpyrexia, is by the abstraction of heat by the direct application of cold, either to the surface of the body in the form of cold baths, ice packs, ice bags and friction by lumps of ice, applied all over the surface, or by the half-hourly injection of ice cold water into the bowel. Dr. For the greatest advocate of the cold baths (cooled down to 66° or even 60°) says that "it is the surest, most speedy and effectual method" by which heat can be abstracted. Life saved.

Dr. Allbutt describes this as heroic treatment, and points out that the rapid withdrawal of heat is followed by a corresponding increase of heat production.... in virtue of the reaction between the surface and the interior. And he quotes Siemens' argument, that to modify reaction, we must modify the withdrawal of heat, and rather than compel the organism into another Equilibrium. This certainly seems the more scientific way of looking at the question. Dr. Allbutt thinks that the baths should be commenced about the temperature of the body, that they need never be brought lower than 80°. In this way, the patient may be immersed for two hours or more. And certain it is that Dr. Allbutt's cases have been equally successful and have not been marked by the sudden depression of vital energy,
The temperature, by increasing the elimination of heat by the skin (from 1.5° to 2°). The perspiration, induced by Pilocarpine, are admitted by non-sympathetic, at first, but, in the case of T.B., they became 20, and were speedily followed by a recurrence of the joint symptoms. And Dr. Fox has shown that recovery has always been accompanied by a return of perspiration & joint pain. I note that my friend, Dr. P. Morrocks, records a case [in the Lancet for June 13th, 1855] of convulsions during pregnancy treated by the use of Pilocarpine, with the best results. Other observers have obtained good results in other diseases. And I certainly think that Pilocarpine deserves more extended trial in cases of high temperature, acute accelerated pulse & respiration threatened collapse.
as evidenced by the signs of threatening collapse, with scarcely perceptible pulse, which are recorded in the case of D. S. Foo.

I was encouraged to try Pilocarpine in the case of J. B. from the excellent results which I have obtained, especially in the treatment of Pneumonia, from the use of an infusion of Sabaranda. I have found, especially since the use has been given at the outset, but have had good results, when given later to relieve high temperature, oppression of breathing, threatening Col.: copae. The symptoms in every case commended to improve on the advent of profuse perspiration, to have seldom found the prostration increased; seen temporarily, but rather benefited, while the general relief Copae.

incurred, has been both marked and permanent. To use appears to me to be specially indicated in those cases, where hyperpyrexial symptoms are developed in the course of an acute attack, and where the perspiration, previously profuse, has suddenly ceased. The substitution of sweat, judging by my experience in Pneumonia, is the turning point in the malady. It is a matter of Clinical observation that diseases, which rapidly reach their climax, as rapidly improve, if they do not terminate fatally. Hyperpyrexia, left to itself, is rapidly inevitably fatal. The temperature rises steadily (or with merely minor oscillations) to a point, which experience has shown to be incompatible with life. If the upward ascent can be checked, even for a few hours, and especially, if the skin can, at the same time, be induced to resume its normal function, the heat regulating apparatus has time to recover from the shock from which it has suffered. My argument is that Pilocarpine fulfills both those indications. During the perspiring, it lowers the

(For continuation please turn to opposite page.)