

**The treatment of rheumatic fever with salicin and salicylate of soda / by Edward Headlam Greenhow.**

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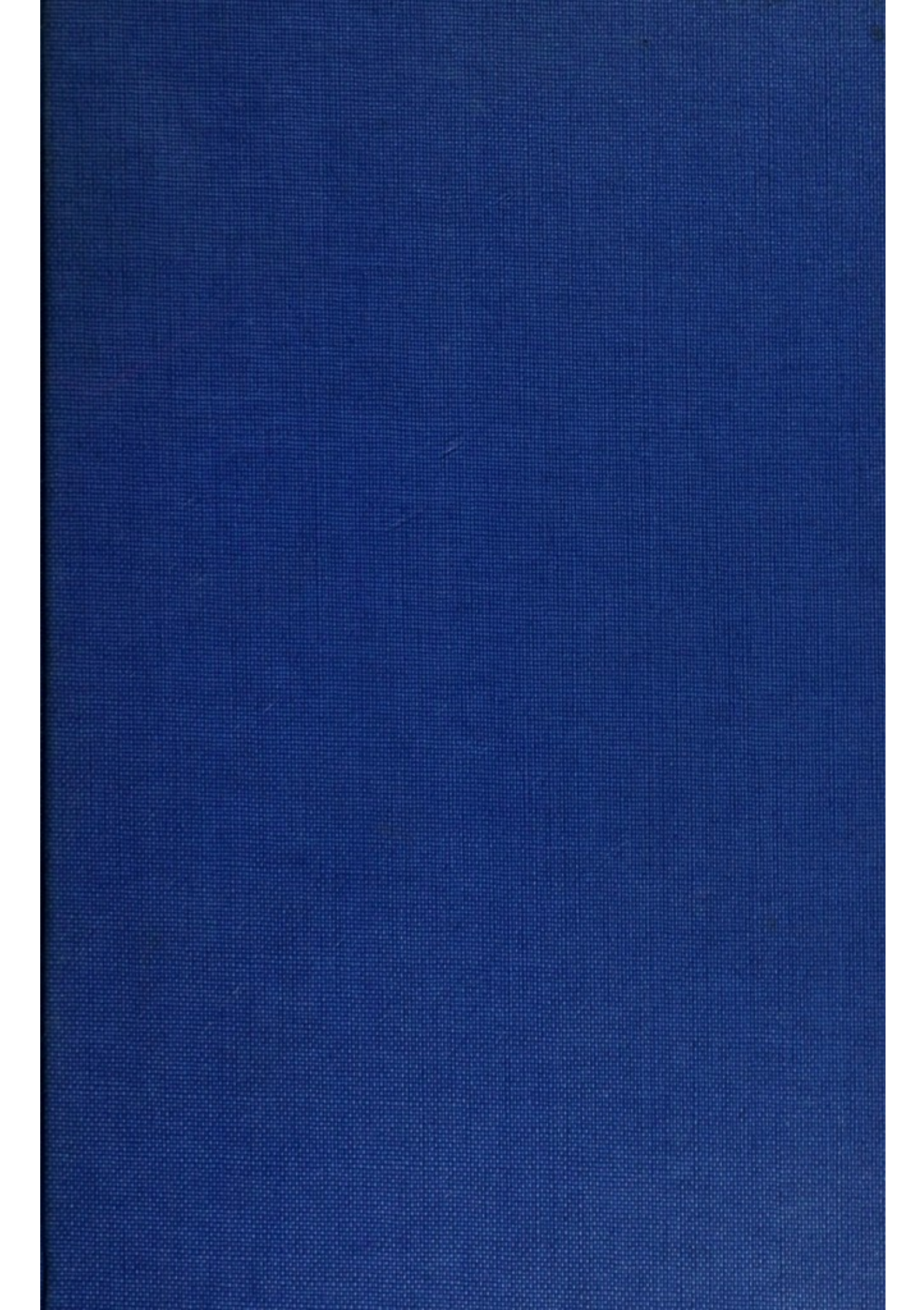
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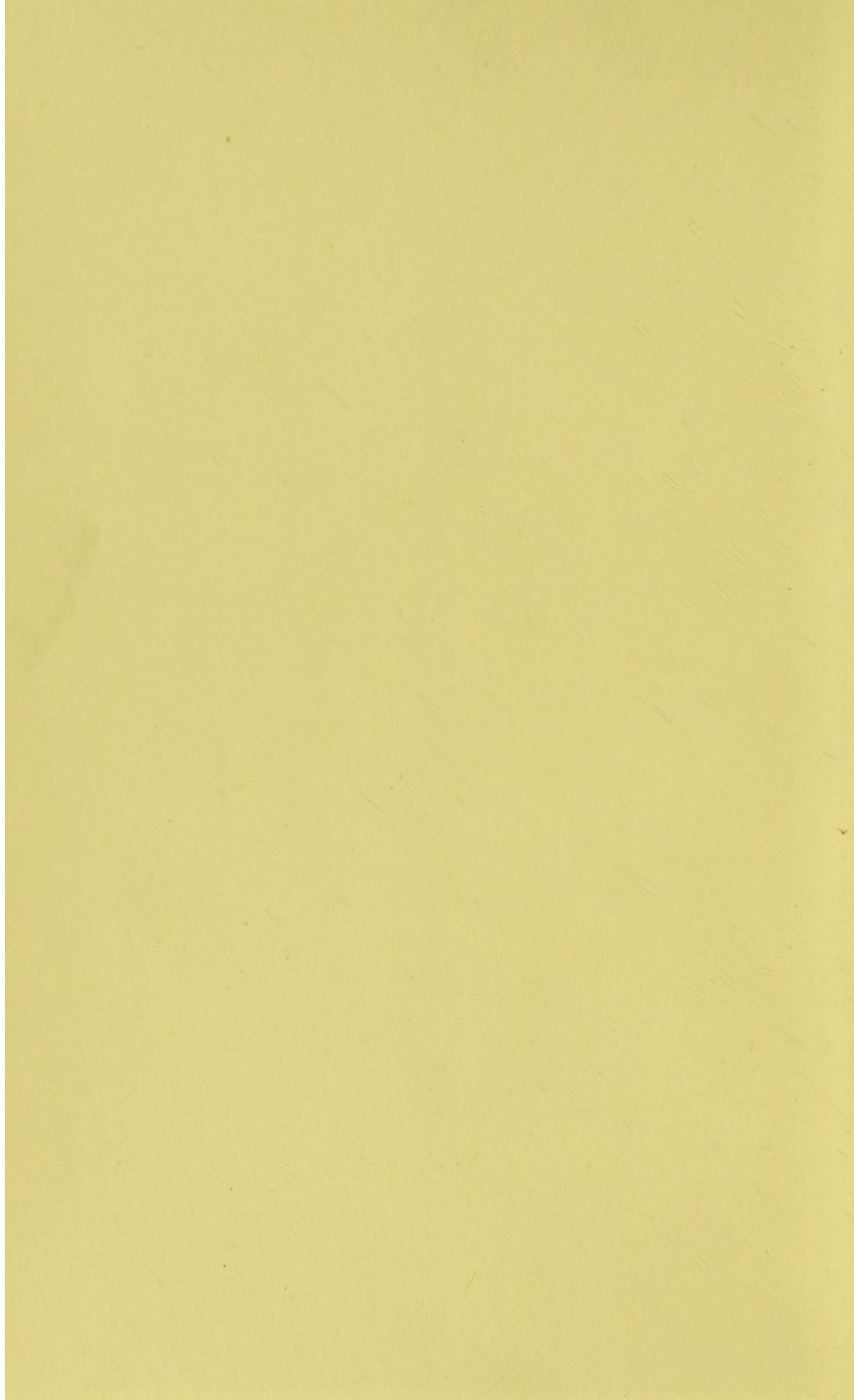
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THE TREATMENT  
OF  
RHEUMATIC FEVER  
WITH  
SALICIN AND SALICYLATE OF SODA.

BY  
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ETC. ETC.

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*From the Transactions of the Clinical Society of London.*

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1880.



THE TREATMENT

RHEUMATISM AND RHEUMATOID FEVER

SALICYL AND SALICYLATE OF SODA

BY DR. LEONARD G. BLOOM, M.D., F.R.S.

WITH AN INTRODUCTION BY  
THE LATE DR. J. H. COOPER, F.R.S.  
AND A PREFACE BY  
THE AUTHOR.

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*Cases of Rheumatic Fever treated with Salicin. Read  
May 14, 1880.*

ALTHOUGH rheumatic fever rarely proves immediately fatal it is attended by so much suffering, and so frequently causes disease of the heart, leading to death at a more or less remote period, that its treatment must always be a subject of much interest and anxiety to the physician. Hitherto, whilst many and very diverse modes of treatment, founded on different views of the nature of the disease, have been proposed, none of them has gained general acceptance with the profession.

I have been in the habit, for some years, of trying carefully and methodically, in a series of cases, the several remedies which have been from time to time proposed, on what appeared to me good authority, for the treatment of rheumatic fever. The last of these remedies I have thus tried were salicin and salicylate of soda; and notwithstanding that a very admirable paper upon the treatment of rheumatic fever with these medicines was communicated to the Society by Dr. Hermann Weber in 1877, and published in the tenth volume of our 'Transactions,' I propose to lay the results of my experience in the use of these remedies before the Society this evening.

I have had under my care in the wards of the Middlesex Hospital, during the last three years, ten cases of rheumatic fever treated with salicin, and fifty treated with salicylate of soda; and my sole purpose on the present occasion being to estimate, as far as possible, from this experience the true value of these agents in the treatment of this disease, I shall only give such a brief abstract of each case as may be useful for that purpose. In order to avoid repetition I may say that all the patients were confined to bed until the fever had entirely subsided, and were preserved by suitable clothing and bed-curtains from exposure to cold or to draughts of air. The diet during the febrile stage of the illness consisted invariably of the milk diet of the hospital, with beef-tea, and sometimes eggs. Stimulants were only administered when either the patient's condition or previous habits seemed to



render them necessary, and always as sparingly as possible. The swollen and painful joints were carefully wrapped up in cotton-wool; and where either pericarditis or endocarditis existed an ointment, consisting of equal parts of extract of belladonna and ointment of iodide of potassium, was applied over the præcordia, with a thick layer of cotton-wool over all. In most cases simple effervescing medicine was prescribed on the day of admission, and aperients and occasionally sedatives were given when required; but, in order to leave full play for the action of the remedy under trial, the latter were employed as seldom as possible. Sometimes they were ordered on the first night after the patient's admission, but were rarely repeated after the salicin or salicylate of soda was prescribed. In all the cases treated with salicin, and in many of those treated with salicylate of soda, the urine was examined the day after beginning the medicine, and found invariably to yield the characteristic reaction with solution of perchloride of iron.

Many cases of rheumatic fever, especially in young subjects—presenting severe pains in the joints, a moderately high temperature, and even some degree of cardiac complication—improve rapidly after admission into hospital, and become almost convalescent in the course of three or four days, without any treatment beyond the free use of diluents, occasional sedatives and aperients, good nursing, rest in bed, and carefully regulated diet and clothing. Being anxious to exclude a class of cases which might be a source of fallacy in estimating the value of a new remedy, I laid down the rule that no patient should be put on the treatment with salicin or salicylate of soda until he had been from twenty-four to thirty-six hours in the wards, and only then if it seemed clear that the illness was running an acute course. Notwithstanding this rule a few patients, some of whom appear to have been suffering only from this mild and manageable form of rheumatism, were placed under the special treatment at an earlier period; and considering it incumbent upon me to place the whole of my experience before the Society, I have deemed it right to include them in my report.

The progress of each patient was carefully noted from day to day, and the temperature was taken at stated intervals, in many cases as often as every two, three, or four hours; but I have not thought it necessary to quote all these observations, and shall only mention those which appear to bear upon the effects of the medicine.



Reserving my experience on the use of salicylate of soda for a separate communication, I shall now confine myself to the consideration of the ten cases treated with salicin.

## CASE I.

T. L., æt. 25, policeman, admitted on February 10, 1877. Previous health good. Five days before admission began to feel pain and stiffness in his lower limbs, which he attributed to exposure whilst on night duty. The pains extended to the upper limbs, and the day before he had felt pain in the chest on deep breathing.

*State on admission.*—Pulse 125; temperature 102°. Left wrist swollen, red, painful, and very tender; small joints of left hand also painful; pain and tenderness of both knees and right ankle; marked cantering rhythm of heart.

February 11.—9 A.M. Pulse 104; temperature 100·6°. Pains continue; profuse sour sweating.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 100; temperature 101°.

12.—9 A.M. Pulse 104; temperature 99·4°. Slept badly. Pain in left wrist decreased; right wrist swollen, very painful, and tender. Tongue furred, brown in centre; a soft pericardial rub just within left nipple. Has had very free epistaxis.

9 P.M.—Temperature 102·1°.

13.—9 A.M. Pulse 105; temperature 102°. Is much easier; sour sweating continues.

9 P.M.—Pulse 92; temperature 99·4°. Has had several returns of epistaxis during the day.

14.—9 A.M. Pulse 80; temperature 100·4°. Slight pain of right wrist excepted, is quite free from pain. Faint systolic murmur at apex of heart.

9 P.M.—Pulse 92; temperature 99·6°.

15.—9 A.M. Pulse 84; temperature 99·4°. Slight epistaxis last evening.

9 P.M.—Pulse 88; temperature 99·4°.

16.—9 A.M. Pulse 68; temperature 100°. No pain; heart sounds faint, impulse feeble.

9 P.M.—Pulse 72; temperature 100·4°.

Two drachms of brandy to be given every three hours.

17.—9 A.M. Pulse 68; temperature 98·6°. Pulse weak; no pain or sweating.

Take salicin only every four hours.



9. P.M.—Pulse 76 ; temperature 98·6°.

The pulse and temperature now kept normal for some days. On February 19, being the eighth day from the commencement of the salicin, it was reduced to a dose every six hours. On the 21st there was slight return of pain in the left elbow and right wrist, and the patient complained of feeling very weak. Was ordered half an ounce of brandy every four hours.

26.—9 A.M. Pulse 66 ; temperature 99·2°. Pains in both knees, elbows, and arms ; faint systolic murmur over præcordia, loudest at base of heart.

9 P.M.—Pulse 88 ; temperature 99·4°.

27.—9 A.M. Pulse 72 ; temperature 100·8°. Pains continue ; slept badly.

28.—9 A.M. Pulse 104 ; temperature 100·6°. Was kept awake by pains in the joints ; considerable tenderness of right elbow and both wrists ; sweating freely.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 88 ; temperature 100·6°.

March 1.—9 A.M. Pulse 84 ; temperature 99·8°. Joints easier ; sweating continues.

9 P.M.—Pulse 76 ; temperature 100·4°.

2.—9 A.M. Pulse 68 ; temperature 99·4°.

9 P.M.—Pulse 84 ; temperature 99°.

3.—9 A.M. Pulse 72 ; temperature 99·2°. Has again had several slight attacks of epistaxis.

Take salicin every four hours.

The pains now decreased. The temperature and pulse became normal, and the salicin was decreased to a dose every six hours on March 6, and discontinued on March 10. There still, however, remained some pain and stiffness of joints and sweating. On March 20, 5-grain doses of iodide of potassium were ordered to be taken every six hours in effervescing medicine. The patient was discharged convalescent on April 17.

## CASE II.

G. W., æt. 30, clerk, admitted January 22, 1877. A brother suffers from rheumatism, and patient himself has already had five attacks of rheumatic fever ; has been a free drinker. Present illness commenced about fourteen days ago with pains in the joints and headache.

*State on admission.*—Pulse 114 ; temperature 100·4°. Both wrists swollen, red, hot, and tender ; shoulders, knees, and right elbow painful and tender. Sour sweating. Blow-



ing systolic murmur at heart; first sound sometimes reduplicate; urine, sp. gr. 1028, normal.

9 P.M.—Pulse 112; temperature 101.2°.

January 23.—9 A.M. Pulse 120; temperature 100.6°. Pains continue very severe; sweating profusely. Cantering rhythm of heart.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 112; temperature 99.6°. Pains less severe.

24.—9 A.M. Pulse 100; temperature 100.6°. Slept well; sour sweating; slight pain and tenderness of left shoulder, wrist, and small joints of right hand; considerable pain and tenderness of left temporo-maxillary articulation.

9 P.M.—Pulse 112; temperature 100.4°. Complains of pain in the left infra-mammary region; pleuritic friction at seat of pain.

25.—9 A.M. Pulse 100; temperature 99.6°. Pains generally better; pain in left side entirely relieved by a mustard and linseed poultice applied last night.

9 P.M.—Pulse 100; temperature 100.5°.

26.—9 A.M. Pulse 90; temperature 99°. Slept well; pains much easier; friction on left side no longer audible.

9 P.M.—Pulse 95; temperature 99°.

27.—9 A.M. Pulse 90; temperature 99°. Urine, sp. gr. 1030, normal; pain and tenderness of both shoulders and of left hand.

9 P.M.—Pulse 95; temperature 98.7°.

The temperature now kept normal for several days. On January 29 the salicin was reduced to a dose every four hours. On the 30th there was some return of pains in various joints. On February 1 the sweating still continued, and the patient complained of nausea, and was sick. The heart sounds on this day were clean. On February 3 there were severe pains in the joints; and at 9 A.M. of February 4 the temperature ran up to 100.6°, and the pulse to 104.

The salicin was now again increased to 20 grains every two hours.

The temperature and pulse soon fell to the normal standard, but the sour sweating and more or less pain continued; and on February 7 pericardial friction, attended by slight rise of temperature, was noted; the nausea and sickness still continued, and the patient complained of headache. On February 9 the salicin was directed to be given only every four hours; and two days later, the headache and sickness continuing, it was omitted. Next day 5 grains of iodide of



potassium were prescribed every six hours; and two days later 2 grains of quinine, with 3 of extract of henbane, were ordered to be taken also every six hours. The temperature now remained normal, but the pains subsided very slowly. The patient was discharged convalescent on May 9.

### CASE III.

M. E., æt. 19, needlewoman, admitted December 9, 1876. An only sister suffers from rheumatism. Previous health good. Present illness commenced, after getting wet through six weeks ago, with neuralgia of the face, followed a few days later by pains in the elbows and other joints.

*State on admission.*—Pulse 132; temperature 100·6°. Both wrists and hands swollen, hot, slightly red, and painful; left knee and right elbow are likewise painful; pericardial friction is heard just inside the left nipple; urine, sp. gr. 1020, neutral.

Take 20 grains of salicin every two hours.

9.30 P.M.—Pulse 120; temperature 102·8°. Face flushed; profuse sour sweating.

December 10.—9 A.M. Pulse 116; temperature 101°. Slept badly; no pain in right wrist.

9 P.M.—Pulse 116; temperature 101·8°. Much less pain; still sweating.

11.—9 A.M. Pulse 116; temperature 100·2°. Urine, sp. gr. 1035, acid; no pain or sweating; first cardiac sound rough inside nipple.

9 P.M.—Pulse 92; temperature 100·6°.

12.—9 A.M. Pulse 84; temperature 99·6°.

9 P.M.—Pulse 92; temperature 99·4°.

13.—9 A.M. Pulse 72; temperature 98°.

The temperature did not again exceed 99°, and the pulse kept normal. On December 15, the first sound of the heart being very faint, 2 drachms of brandy were ordered to be given every three hours, and next day the salicin was reduced to a dose three times a day. On December 17, the first sound of the heart continuing faint, the salicin was omitted. A few days later the heart had resumed its normal force, but a distinct systolic murmur at the apex became developed, and was still present when the patient was discharged convalescent on January 3.

### CASE IV.

G. H., æt. 32, porter, admitted on January 9, 1877. Mother subject to rheumatism. Patient has already had two



attacks of rheumatic fever. Drinks spirits freely. Present illness commenced after having been exposed to wet sixteen days since. He first experienced pain in the hips and knees, and shortly afterwards in the other joints. Has a slight cough, and has sweated very copiously.

*State on admission.*—Pulse 84; temperature  $98.6^{\circ}$ . Urine, sp. gr. 1032, acid; left knee slightly swollen, hot and tender; heart's apex beating in sixth interspace two inches below nipple; impulse forcible and diffused; first sound at apex rough, long, and booming; a faint systolic murmur at base.

January 10.—9 A.M. Pulse 84; temperature  $99.2^{\circ}$ . Profuse sour sweating; pain and tenderness in shoulders, elbows, and both wrists.

9 P.M.—Pulse 92; temperature  $102^{\circ}$ .

11.—9 A.M. Pulse 102; temperature  $100.3^{\circ}$ .

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 96; temperature  $102.6^{\circ}$ .

12.—9 A.M. Pulse 84; temperature  $99.5^{\circ}$ . Slight pain only in right shoulder and hand.

9 P.M.—Pulse 85; temperature  $100^{\circ}$ .

13.—9 A.M. Pulse 80; temperature  $99^{\circ}$ . Complains of pain in the præcordia; faint to-and-fro sound just above the apex of heart.

9 P.M.—Pulse 84; temperature  $98.6^{\circ}$ .

The temperature was now normal or subnormal for several days, but the sweating and some stiffness of joints remained. The salicin was reduced to a dose every four hours on January 15, and entirely discontinued on the 25th. Next day the patient complained of pain in the knuckles of the right hand, and the sour sweating still continued; the temperature also rose to just under  $100^{\circ}$ . On January 30 the temperature rose to  $101.4^{\circ}$ , and there was pain in both shoulders and right elbow. With this accession of fever the urine acquired a sp. gr. of 1035. Effervescing draughts, with 5 grains of iodide of potassium, were now ordered every six hours. The pains and sweating gradually subsided, and the patient was discharged convalescent on March 8.

#### CASE V.

J. B., æt. 24, gilder, admitted March 3, 1877. One brother has had rheumatic fever, and patient himself has already had two previous attacks of the same disease. About a month since, after exposure to cold, he experienced pains in various joints, and was confined to bed for a fortnight. He



subsequently returned to work, but in a few days the pains returned in the knees and ankles, and have been progressively getting worse.

*State on admission*.—Pulse 100 ; temperature  $102.4^{\circ}$ . Sweating very freely ; both ankles and left knee swollen and very tender ; right shoulder and both hips painful ; heart sounds clean ; urine, sp. gr. 1025, neutral.

March 4.—9 A.M. Pulse 92 ; temperature  $101^{\circ}$ . Slept badly.

9 P.M.—Pulse 108 ; temperature  $102.6^{\circ}$ . Sweating profusely.

5.—9 A.M. Pulse 96 ; temperature  $102.1^{\circ}$ . Pains continue ; much sour sweating ; pericardial friction ; urine, sp. gr. 1032.

Take salicin, 20 grains, every two hours.

9 P.M.—Pulse 96 ; temperature  $102.6^{\circ}$ .

6.—9 A.M. Pulse 92 ; temperature  $101.8^{\circ}$ . Did not sleep well ; right wrist very much swollen and painful ; other joints easier ; soft systolic murmur at apex of heart.

9 P.M.—Pulse 88 ; temperature  $101^{\circ}$ . Is bathed in sour perspiration.

7.—9 A.M. Pulse 72 ; temperature  $98.8^{\circ}$ . Slept all night ; pain only in right hand ; epistaxis last evening ; pulse small and feeble.

Take 2 drachms of brandy every three hours.

9 P.M.—Pulse 80 ; temperature  $100.5^{\circ}$ .

The temperature now fell to the normal standard, and the pulse ranged from 52 to 70. The sweating became less copious, but wandering pains and stiffness of joints continued for several days. On March 9 the salicin was reduced to a dose every four hours ; on March 12 to a dose every six hours ; and was entirely discontinued on March 15.

Discharged convalescent on March 23.

## CASE VI.

E. L., æt. 21, servant, admitted March 12, 1877. No history of rheumatism either in patient herself or her family. Has been ailing for ten days, and has for three days been suffering from pains and swelling in her ankles, and pain in hips and left shoulder.

*State on admission*.—Pulse 112 ; temperature  $103.4^{\circ}$ . Redness, heat, swelling, and tenderness of both ankles and knees ; pain of hips. Heart sounds normal. Urine, sp. gr. 1028, alkaline.



March 13.—9 A.M. Pulse 112; temperature 103°. Slept badly.

9 P.M.—Pulse 100; temperature 103.1°.

14.—9 A.M. Pulse 100; temperature 103.2°. Sweating freely; right knee very painful.

9 P.M.—Pulse 96; temperature 101.2°.

15.—9 A.M. Pulse 100; temperature 103°. Pains and sweating continue.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 90; temperature 101.8°.

16.—9 A.M. Pulse 105; temperature 102.1°. Right knee still swollen and very painful; complains of pains across the shoulders.

9 P.M.—Pulse 84; temperature 101.8°.

17.—9 A.M. Pulse 84; temperature 101.1°. Pain in right elbow only; much sweating last night.

9 P.M.—Pulse 68; temperature 100°.

18.—9 A.M. Pulse 60; temperature 99°. Quite free from pain; sweating.

9 P.M.—Pulse 60; temperature 98.2°.

The temperature did not again exceed 99°, and was commonly rather subnormal; and the pulse ranged from 52 to 64 until after March 27. On March 20 a faint pericardial rub was audible inside the left nipple, and the patient complained of pain in the epigastrium. The salicin was reduced to a dose every four hours, and on the 24th to a dose every six hours. The pulse now became feeble, and there was sickness and pain in the epigastrium. Brandy and soda-water were prescribed; but the sickness continuing, the salicin was discontinued on the 26th. The vomiting then ceased. On March 28 and 29 there was return of pain in the right hand, and the temperature rose to 99.3°; and on the 31st to 101.8°, when there was pain in both knees and feet. The salicin was, however, not resumed; but the fever and pain subsided in a few days, and the patient was discharged on April 27.

#### CASE VII.

G. B., æt. 38, porter, admitted March 16, 1877. Previous health good, but the patient was a member of a rheumatic family, his mother and several other relatives having suffered from rheumatic fever. Two days before presenting himself at the hospital he awoke, early in the morning, with pain in the left instep. In the course of the same day the left hip became painful, and the left wrist swollen and tender. In the even-



ing the right knee and ankle became similarly affected, and he had some shivering.

*State on admission.*—Pulse 90; temperature  $102.3^{\circ}$ . Is sweating very freely; both knees and ankles and left wrist swollen, red, and very tender; heart sounds clean.

March 17.—9 A.M. Pulse 80; temperature  $101.2^{\circ}$ . Slept badly; pains rather less severe; urine, sp. gr. 1031, acid.

9 P.M.—Pulse 76; temperature  $100.6^{\circ}$ . Sweating freely.

18.—9 A.M. Pulse 80; temperature  $99.8^{\circ}$ . Pulse small; pains continue severe; did not sleep well.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 80; temperature  $100.6^{\circ}$ . Sour sweating.

19.—9 A.M. Pulse 76; temperature  $99.6^{\circ}$ . Slept well; still much tenderness of knees, ankles, and left hand.

9 P.M.—Pulse 80; temperature  $102.6^{\circ}$ . Very copious sweating.

20.—9 A.M. Pulse 68; temperature  $98.9^{\circ}$ . Pulse weak; pains much easier, but swelling and tenderness of knees and ankles continue; slept well; sweating freely.

9 P.M.—Pulse 76; temperature  $100^{\circ}$ .

21.—9 A.M. Pulse 72; temperature  $99.4$ . Bathed in sour perspiration.

From March 21 to 31 the temperature ranged from  $97.8^{\circ}$  to  $99.7^{\circ}$ , but was usually normal. The pulse varied from 68 to 88. The pains and swelling of joints and the sour sweating gradually subsided, but did not disappear before the middle of April. The salicin was reduced to a dose every four hours on March 28, and entirely discontinued on April 9. Discharged convalescent on April 30.

#### CASE VIII.

E. L., æt. 29, married woman, admitted January 4, 1877. A history of rheumatism in mother. Patient herself had rheumatic fever at the age of 19, but has in other respects enjoyed unimpaired health. The present illness commenced with shivering and aching in the limbs ten days ago. Severe pains in the knees and wrists followed, and she became unable to move about. Is nursing an infant twelve months old.

*State on admission.*—Pulse 100; temperature  $101.8^{\circ}$ . Heart sounds clean; complains of pains in the knees and wrists, but these joints are neither swollen nor tender.

9 P.M.—Pulse 86; temperature  $101^{\circ}$ .

January 5.—9 A.M. Pulse 80; temperature  $101.7^{\circ}$ . Left



wrist and right elbow swollen, red, and very tender; urine, sp. gr. 1025, acid.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 72; temperature 99.4°.

6.—9 A.M. Pulse 72; temperature 99.8°. Pains somewhat easier; sweating freely.

9 P.M.—Pulse 72; temperature 98.8°.

From this date the temperature was always normal or sub-normal, and the pulse quiet. The pains soon subsided, but the sweating continued for some days. On January 9, the pulse being very feeble, the salicin was reduced to a dose every four hours. On the 14th it was again reduced to three doses daily, and was entirely omitted on January 17. The patient was discharged convalescent on January 27.

### CASE IX.

A. J. M., æt. 35, tailor, admitted February 3, 1877. Both father and grandfather suffered from rheumatism. Patient himself had rheumatic fever four years ago, and has occasionally had rheumatic pains since that time. Present illness began, two days before admission, with sharp pain in the back, followed by pains in most of the joints.

*State on admission.*—Pulse 96; temperature 101°. Both ankles and hands swollen, red, and painful; heart sounds clean; impaired percussion resonance and scanty crepitation in posterior base of right lung; sour sweating.

9 P.M.—Pulse 110; temperature 102.8°.

February 4.—9 P.M. Pulse 100; temperature 100.4°. Slept well; no material change.

9 P.M.—Pulse 100; temperature 102.6°.

5.—9 A.M. Pulse 84; temperature 101.2. Urine, sp. gr. 1028, acid; sweating freely. No change either in lungs or joints.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 92; temperature 101.8°. Sour sweating continues.

6.—9 A.M. Pulse 92; temperature 101.9. Sweating; has slight occasional cough; scanty crepitation in base of left as well as right lung.

9 P.M.—Pulse 112; temperature 103.2°.

7.—9 A.M. Pulse 100; temperature 101.8°. Has severe pain in left hand; other joints easier; left hand and wrist swollen, red, and tender; sweating profusely; no change in state of right lung.



9 P.M.—Pulse 92; temperature 102·8°.

8.—9 A.M. Pulse 96; temperature 101·8°. Slept well; very copious sour sweating; right front of chest expands imperfectly; impaired resonance over right back of chest from apex to base; crepitation and increased vocal vibration over dull area.

9 P.M.—Pulse 92; temperature 103°.

9.—9 A.M. Pulse 84; temperature 102·4°.

9 P.M.—Pulse 85; temperature 102·6°.

10.—9 A.M. Pulse 92; temperature 101·6°. Complains of pain in left arm; condition of right lung much improved.

9 P.M.—Pulse 85; temperature 102°.

11.—9 A.M. Pulse 76; temperature 100·6°. Pains much better.

9 P.M.—Pulse 88; temperature 101·4°.

12.—9 A.M. Pulse 84; temperature 100·2°. Pain in the right hand and in both shoulders; urine, sp. gr. 1015, normal.

9 P.M.—Pulse 84; temperature 101°.

13.—9 A.M. Pulse 78; temperature 100·5°. Sweats a good deal; lungs almost normal.

9 P.M.—Pulse 84; temperature 99·4°.

14.—9 A.M. Pulse 96; temperature 99°. Pulse very feeble; still much sour sweating; pain in right shoulder and wrist; no swelling or tenderness.

Take salicin only every four hours.

9 P.M.—Pulse 72; temperature 99°.

17.—Pulse 76; temperature 99°. Pulse very weak and compressible; sounds and impulse of heart feeble; still sour sweating.

Take salicin every six hours.

The patient continued to improve slowly; the salicin was omitted on February 19, and the patient was discharged convalescent on March 8.

#### CASE X.

D. A., æt. 20, porter, admitted January 9, 1877. Father rheumatic; patient had rheumatic fever three years since. Six days ago felt slight pain in the knees, and afterwards in the ankles, shoulders, and hands. Urine during the last few days has been of a deep blood-red colour.

*State on admission.*—Pulse 108; temperature 102°. Both feet swollen, red, hot, and tender; knees swollen, hot, and painful; sour sweating; breath sounds normal; a soft systolic murmur audible over the præcordia; urine, sp. gr. 1030, copiously albuminous.



9 P.M.—Pulse 123; temperature  $102.8^{\circ}$ ; respirations 32. Has a harsh, dry cough; very profuse sweating.

January 19.—9 A.M. Pulse 102; temperature  $103.6^{\circ}$ . Troublesome cough, attended by copious frothy sputum; resonance slightly impaired over both posterior bases; breath sounds feeble, and accompanied by faint crackling in base of left lung; breathing laboured. Pains in joints, as yesterday. Urine, sp. gr. 1030, very acid, albumen; no blood or casts.

Take 20 grains of salicin every two hours.

9 P.M.—Pulse 128; temperature  $103.2^{\circ}$ ; respirations, 60.

12.—9 A.M.—Pulse 120; temperature  $103.2^{\circ}$ . Pulse irregular both in rhythm and force; impaired resonance over posterior bases of both lungs, and also over lower half of left front of chest; breath sounds harsh in bases, no adventitious sounds; loud pericardial friction over præcordia; heart's impulse feeble.

Take half an ounce of brandy every four hours. Continue salicin.

9 P.M.—Pulse 120; temperature  $102.4^{\circ}$ . No rheumatic pains; complains of pain in præcordia; has vomited after salicin.

12.—9 A.M. Pulse 120; temperature  $102.6^{\circ}$ . Slept badly. Continue salicin.

9 P.M.—Pulse 130; temperature  $103^{\circ}$ .

13.—9 A.M. Pulse 120; temperature  $101.2^{\circ}$ . Urine, sp. gr. 1026, very acid, quantity of albumen greatly decreased. Impaired resonance over bases of lungs; breath sounds harsh and tubular in bases of both lungs.

9 P.M.—Pulse 116; temperature  $102^{\circ}$ .

14.—9 A.M. Pulse 116; temperature  $102^{\circ}$ . Right knee very painful. Dulness on percussion over lower half of sternum from its right margin into left axilla; loud pleuritic friction in right mammary region. Sputum blood-stained.

9 P.M.—Pulse 120; temperature  $102.3^{\circ}$ .

15.—9 A.M. Pulse 116; temperature  $101.6^{\circ}$ . Dulness over back of chest much diminished, breathing still harsh; dulness over lower part of sternum remains. Loud pericardial friction. Impaired percussion, resonance and tubular breathing over right front of thorax.

9 P.M.—Pulse 112; temperature  $100.6^{\circ}$ .

17.—9 A.M. Pulse 132; temperature  $100.8^{\circ}$ . Quite free from pain in joints; complains of soreness and dryness of fauces.



9 P.M.—Pulse 136; temperature 100·6°.

18.—9 A.M. Pulse 126; temperature 99·8°. Pulse irregular in force and rhythm. Dulness of thorax everywhere clearing up. Complains of pain in the præcordia, and of dyspnœa.

9 P.M.—Pulse 124; temperature 101·4°.

19.—9 A.M. Pulse 124; temperature 101·6°. Urine free from albumen; loud pericardial friction still audible.

9 P.M.—Pulse 128; temperature 101·5°.

20.—9 A.M. Pulse 118; temperature 101°. Is feeling much better.

9 P.M. Pulse 128; temperature 102°. Has been very sick.

21.—9 A.M. Pulse 116; temperature 98·4°. Sickness continues.

9 P.M.—Pulse 118; temperature 101°.

22.—9 A.M. Pulse 140; temperature 102·6°. Has again been very sick; omit salicin, and take effervescing medicine every four hours. From this time the patient made slow but steady progress. The temperature ranged from 99° to 101·4° until after February 4, and the pulse from 90 to 136; there was no return of rheumatic pains, and the chest soon cleared up; the patient was discharged convalescent on March 8, but with a systolic apex murmur.

### SUMMARY.

It will be convenient to summarise the results of the treatment in each of these cases before proceeding to deduce any conclusions from them as to the value of the remedy.

No. I.—The patient, who was suffering from a primary attack, had been ailing for several days, when he came under observation. He was put upon full doses of salicin the day after admission, when, judging by the peculiar rhythm of the heart, pericarditis was already commencing. The temperature began to fall on the third day after salicin was prescribed, and became normal on the sixth day; the pains abated on the second day, and entirely ceased on the fifth day. The salicin was taken regularly every two hours for six days, then for two days every four hours, and again for nine days every six hours. Rheumatic pains now began to reappear, and a mild relapse occurred, for which the salicin, which had never been altogether discontinued, was again prescribed more frequently. Epistaxis set in the day after the patient commenced taking salicin, and continued from time to time for several days. It returned again three days after the frequency of the dose was increased. On the fifth



day after beginning the salicin the pulse and the impulse of the heart became very feeble, requiring the administration of stimulants. The pain and stiffness of joints and sour sweating did not entirely cease for some time, and the patient was not discharged until the 66th day after admission.

No. II.—The patient had been ailing fourteen days when he was admitted for his sixth attack of rheumatic fever. He already had old mitral disease, and pericarditis was present, before he was put upon the treatment with salicin. The pain diminished on the second and ceased on the sixth day from beginning to take salicin; the temperature fell on the third, and became normal on the fifth day. The salicin was given every two hours for six days; it was then reduced in frequency to every four hours, but the pains recurred on the following day, and on the fourth day a relapse ensued, rendering it necessary to increase the frequency of the dose again to every two hours. On the eighth day of treatment with salicin sickness supervened, and after the expiry of ten more days the vomiting and headache became so severe that it was necessary to discontinue the remedy. Pleurisy supervened after the salicin had been prescribed, and during the second course of treatment pericarditis returned a second time. The patient was subsequently treated with iodide of potassium and quinine, but was not fit to be discharged until he had been 107 days in hospital.

No. III.—The patient had been ailing for several weeks when admitted for a first attack of rheumatic fever. Pericarditis was already present. She was put upon salicin the day of admission. The pains diminished very rapidly, and the temperature became normal on the fourth day from commencing the medicine. On the fifth day the first sound of the heart became so feeble that brandy was ordered to be given every three hours. The salicin was given every two hours for six days, then three times a day for two days, and finally discontinued on the eighth day. Discharged convalescent, but with an apex systolic murmur, on the 25th day after admission.

No. IV.—Patient had been ailing for some days when admitted for a third attack of rheumatic fever, but the disease was not fully developed until the day after admission. There was already old mitral disease. Two days after admission salicin was prescribed. The temperature soon fell to the normal standard, but the pains and sour sweating did not subside with it, and pericarditis supervened two days after



the salicin had been commenced. The salicin was administered every two hours for four days, then every four hours for ten days, when it was discontinued. A mild relapse now ensued, which was treated with iodide of potassium; and the patient was discharged convalescent on the 58th day.

No. V.—Patient was admitted for a relapse after a mild third attack of rheumatic fever. Salicin was prescribed on the second day after admission, when pericarditis already existed. The temperature soon became normal, and the pains greatly subsided by the fourth day, but some sour sweating and pain and stiffness of joints continued for several days longer. Epistaxis supervened, and the pulse became small and feeble on the second day after the commencement of treatment, rendering necessary the administration of brandy. The salicin was given every two hours for five days, then every four hours for three days, and finally omitted on the eleventh day. The patient was twenty days in hospital.

No. VI.—Patient was admitted into hospital for a primary attack of rheumatic fever on the third or fourth day of her illness. Salicin was prescribed on the third day; it was given every two hours for five days, then every four hours for four days, and every six hours for two days. The temperature fell to the normal standard and the pain subsided two days after commencing to take salicin, being about the eighth or ninth day of the disease. Notwithstanding this pericarditis developed when she was fully under the influence of the remedy. The pulse became very feeble, and sickness and pain in the epigastrium supervened nine days after the commencement of treatment. The sickness and epigastric pain not being relieved by the reduction of the salicin to a dose every six hours, it was omitted on the eleventh day. These symptoms now disappeared, but two days afterwards pains returned in one of the hands, and subsequently in the knees and feet, coincidently with a rise of temperature to  $101.8^{\circ}$ . Salicin was not again prescribed, but this relapse soon passed off, and the patient was discharged on the 46th day after admission.

No. VII.—Patient was admitted into hospital on the third day of a primary attack of rheumatic fever. The temperature had already fallen somewhat before salicin was prescribed. It became quite normal in three days, but the pains and sour sweating subsided more slowly. The salicin was given every two hours for ten days, when it was reduced to a dose every four hours, and was not finally discontinued until the



23rd day. No marked physiological effects followed its administration. The patient was discharged on the 45th day.

No. VIII.—Patient, a married woman, was nursing an infant when admitted, about the tenth day of a second attack of rheumatic fever. The temperature fell rapidly, and became quite normal, and the joint pains subsided within thirty-six hours from commencing to take salicin. After taking salicin every two hours for four days the pulse became very feeble; the medicine was then reduced to a dose every four hours, and was entirely omitted on the twelfth day. The patient was discharged convalescent on the 23rd day.

No. IX.—Patient was admitted on the third day of a second attack of rheumatic fever, complicated with pneumonia. He was placed under treatment, with salicin, on the second day. The temperature did not fall materially for eight days, and did not become normal until the tenth day, during all of which salicin was given in doses of 20 grains every two hours. The fall in temperature coincided with great improvement in the condition of the lungs, but the joint pains and sour sweating continued for a day or two longer. The sounds and impulse of the heart became very feeble on the twelfth day of treatment, when the frequency of the dose of salicin had been already reduced to every four hours. The patient was discharged on the 33rd day.

No. X.—Patient was admitted for a second attack of rheumatic fever, complicated with double pneumonia and hæmaturia, on the sixth day. There was a systolic murmur on admission, and pleuritic and loud pericardial friction subsequently developed. He was put upon full doses of salicin the day after admission into hospital. The pains in the joints disappeared on the seventh day of treatment, coincidently with considerable amendment in the condition of the lungs and the disappearance of the albuminuria; but the temperature remained high until after the salicin had been discontinued, on account of persistent and uncontrollable sickness. It was necessary to give full doses of chloral and morphia for many nights in order to secure rest, and brandy was freely and methodically administered. Ether and ammonia were also required from time to time, on account of feeble and irregular action of the heart and dyspnoea. The salicin was given in doses of 20 grains every two hours for seventeen days. It caused sickness at a very early period; and, after a few days, dryness and soreness of the



throat. The patient was discharged on the 58th day, at which time there was a distinct systolic apex murmur.

*Remarks.*—This experience of the effects of treating rheumatic fever with salicin was, on the whole, not so satisfactory as to encourage me in continuing to employ it. In the uncomplicated cases, indeed, the temperature appeared to be reduced, and the pains somewhat to subside, under its use; but in cases Nos. I., II., IV., and VI. relapses occurred when the salicin was either discontinued or the frequency of the dose diminished. Of the remaining cases, No. III. had already been ill for some time, and his disease may be presumed to have been approaching its close before he came under treatment; and case No. V. had already been laid up at home with a mild attack of rheumatic fever when he was admitted for a relapse, which would probably have recovered quite as rapidly under rest in bed and hospital diet. Cases Nos. IX. and X. were complicated with pneumonia. The salicin did not appear to exert any influence upon their progress, and did not reduce the temperature, which only subsided with the abatement of the lung ailment. These cases, in short, ran very much the same course similar cases run under other treatment.

On the other hand, salicin appeared to produce some inconvenient consequences. In case No. I. epistaxis very soon ensued after the patient commenced its use. This might have been regarded as accidental, but it is at least significant that the bleeding returned when, after an interval, it became necessary to increase the frequency of the dose. Epistaxis also occurred in Case No. V., coincidently with feebleness of pulse on the second day after salicin was prescribed. Marked depression of the power of the heart ensued in cases Nos. I., III., VI., and VIII. whilst the patients were taking salicin, and entirely subsided after it was discontinued. Nausea and sickness occurred in cases Nos. II. and VI., associated in the former with headache, and in the latter with severe epigastric pain. Lastly, the detention of the patients in hospital was not shortened by the treatment with salicin; on the contrary, if we except cases Nos. III. and V., which have already been said to have been approaching their close when admitted, and case No. VIII., which improved rapidly after lactation was stopped, the patients treated with salicin recovered more slowly than is common in cases of similar severity treated by other methods, their average residence in hospital having been 55 days.



*Cases of Rheumatic Fever treated with Salicylate of Soda.*  
*Read May 14, 1880.*

THESE cases, fifty in number, are too numerous to allow of their being read to the Society, even in abstract. I shall therefore only read such a selection of them as may suffice to show the effects of the treatment, but shall comprise brief reports of them all in my Paper in order that the whole of the evidence I have collected may be published in the 'Transactions.' The plan which I followed, both as regards the selection of cases for observation and their general management, having been already described in the beginning of my communication on the treatment of rheumatic fever with salicin, it is unnecessary to repeat that explanation here.

The cases were of very various degrees of intensity and character. Two of them passed into hyper-pyrexia after being placed under treatment with salicylate of soda, and ultimately recovered under the use of cold baths; two others were attended by complications which soon led to a fatal result; six others were attended by serious pulmonary complications; fourteen cases were of so mild a character that they would probably have done equally well under simple saline treatment, combined with an occasional aperient or sedative, and hospital rest and diet; the remainder were cases of severe rheumatic fever, in the treatment of which the value of salicylate of soda was fairly tested. I shall now proceed to relate them in the order in which I have named them.

CASE I.

J. P., æt. 28, housemaid, admitted July 18, 1877. Had rheumatic fever eight years since; is a nervous, hysterical woman; present illness commenced with stiffness and pains in the lower limbs on the 16th inst.

*State on Admission.*—Pulse 96; temperature 101·8°; urine sp. gr. 1034, normal. Complains of pain in almost all her joints, especially those of the right leg and both arms; skin moist and hot; breath-sounds normal; apex of heart



beats in the fourth and fifth interspaces, just within the nipple line, the impulse is forcible and attended by a faint thrill; the first cardiac sound at the apex is long, loud, and accompanied by a slight murmur, the second is reduplicated at the base; loud pericardial friction over the præcordia.

Take twenty grains of salicylate of soda every four hours.

9 P.M.—Pulse 92; temperature 102.4°.

19.—9 A.M. Pulse 108; temperature 101.6°. Sweating profusely, slept after a subcutaneous injection of morphia; face flushed; condition of heart and pains of joints as yesterday.

9 P.M.—Pulse 112; temperature 101.2°. Has now pain only in the right elbow, right knee, and both feet; copious sour sweating.

20.—10 A.M. Pulse 96; temperature 100.2°. Slept well; is free from pain except in the right leg; pericardial friction still continues. Deafness.

Take the salicylate only every six hours.

9 P.M.—Pulse 100; temperature 102.0°. Slight pain in both knees and right ankle.

Resume the salicylate every four hours.

21.—9 A.M. Pulse 84; temperature 101.6°; pulse soft and compressible; nose bled a little during the night; feels very sick; is still deaf, and fancies that she hears music; became very faint this morning on being raised up; pain in the knees on movement only, none elsewhere.

To have a dessert-spoonful of brandy every four hours.

8.30 P.M.—Pulse 88; temperature 103.1°. Has now pain on movement in the right knee only; is very deaf, still thinks she hears music; has had return of epistaxis; body covered with red miliary rash; pericardial friction and cardiac murmur unchanged.

22.—10 A.M. Pulse 100; temperature 104.2°. Has again had epistaxis this morning; wandered much during the night, saying that she saw and heard strange things, and trying repeatedly to get out of bed; was ordered a draught with chloral and morphia, but did not sleep after it; is cheerful and answers questions correctly this morning; is still very deaf, and has occasional twitchings of the face and hands.

12 NOON.—Pulse 116; temperature 105.8°. Patient says that she is burning and must get out of bed or she will be roasted. The salicylate was now discontinued, and the case was treated with cold baths and large doses of quinine.



During the next four days she had five cold baths; but, as she did not resume the salicylate, it is not necessary to follow the details of the case any further. She was discharged well on September 17.

## CASE II.

J. P., æt. 28, blacking maker, admitted January 4, 1878. Father suffered from rheumatism, and patient himself had rheumatic fever in boyhood, otherwise his health has been good. Is of temperate habits. Present illness commenced a few days before admission with pain in the right knee, soon followed by pain in other joints and attended by profuse sweating. Attributes his illness to exposure to cold and wet.

*State on Admission.*—Pulse 108; temperature  $101.4^{\circ}$ . Knees, ankles, elbows, and wrists swollen, hot, red, and very painful; face much flushed, skin moist; lungs normal; heart's apex in normal position, first sound rather prolonged and rough at the apex, second muffled.

10 P.M.—Pulse 120; temperature  $99.6^{\circ}$ . Profuse sour sweating; urine sp. gr. 1022, acid, normal; restless.

Take a full dose of chloral and morphia at once.

5.—9 A.M. Pulse 120; temperature  $100.8^{\circ}$ . Slept well after the sedative draught; pains and sweating continue; heart sounds clean; faint thrill at apex of heart.

10 P.M.—Pulse 124; temperature  $101.4^{\circ}$ .

6.—10 A.M. Pulse 120; temperature  $101.4^{\circ}$ . Slept badly, although he had an opiate; pains and sweating continue.

Take 15 grains of salicylate of soda every two hours.

10 P.M.—Pulse 126; temperature  $101.8^{\circ}$ .

7.—10 A.M. Pulse 120; temperature  $101.2^{\circ}$ . Pains rather easier; sweating continues; trunk covered with sudamina and red miliary rash.

9 P.M.—Pulse 120; temperature  $103.4^{\circ}$ . Tongue dry and brown in centre; breathing shallow; complains of giddiness and headache; manner strange; has vomited several times.

Repeat sedative draught; take salicylate only every six hours.

8.—10 A.M. Pulse 112; temperature  $101.6^{\circ}$ . No pain, giddiness, or headache; skin moist; restless; tremors; dry râles over front of lungs; heart's sounds clean; pulse of good volume and force.

9 P.M.—Pulse 116; temperature  $102.6^{\circ}$ . The temperature



has varied much from time to time during the day, and has several times been as high as  $103.2^{\circ}$ .

9.—10 A.M. Pulse 108; temperature  $102.8^{\circ}$ . More pain in joints; slept badly; profuse sour sweating continues. In the course of the day the temperature rose to  $104.0^{\circ}$ , and ranged from  $104.0^{\circ}$  to  $104.8^{\circ}$  during the following night. The patient slept only by snatches, and often awoke noisy and wandering, throwing himself about and endeavouring to leave his bed. The salicylate was now discontinued. Next day, January 10, the temperature rose to  $105.4^{\circ}$  in the axilla, and  $107.4^{\circ}$  in the rectum. The case was now treated with cold baths and quinine, with a moderate quantity of brandy.

Pericarditis supervened on January 11, but the patient made a good recovery, and was discharged to a convalescent hospital on March 4.

### CASE III.

E. C., æt. 40, servant, admitted December 10, 1879. Patient had a very severe attack of rheumatic fever in girlhood, and has, from that time, been subject to rheumatic pains and to cough in winter. Present illness commenced with pains in the knees and hips after sleeping in a damp bed.

*State on Admission.*—Pulse 90; temperature  $101.0^{\circ}$ . Pains, swelling, and tenderness in both wrists, knees, and left shoulder; percussion resonance impaired in the right infra-clavicular region, and also over the upper part of the right back of thorax; dry râles are heard all over both lungs, and a few faint crackles in the apex of the right lung; a musical systolic murmur at the apex of heart, also audible at the angle of scapula; second sound very faint.

11.—9 A.M. Pulse 96, temperature  $101.0^{\circ}$ ; urine sp. gr. 1026, normal. Slept badly; general condition unchanged.

9 P.M.—Temperature  $100.4^{\circ}$ .

12.—9 A.M. Pulse 84; temperature  $101.2^{\circ}$ . Face much flushed; profuse sour sweating; pulse irregular in rhythm; second cardiac sound much more distinct than yesterday; rhonchus and sibilus over both lungs; pains continue, though they have somewhat changed their seat.

Take 15 grains of salicylate of soda every two hours, and 2 drachms of brandy every four hours.

9 P.M.—Pulse 96; temperature  $101.2^{\circ}$ . Has severe pain in both knees and ankles; sweating freely.

13.—9 A.M. Pulse 76; temperature  $99.0^{\circ}$ . Is deaf,



and complains of a buzzing noise in the ears; slept very badly; had severe pain in the left knee and ankle during night; heart's action feeble and irregular; sweating freely; has slight pain in the left side; pleuritic friction at seat of pain.

Reduce the salicylate to a dose every four hours, and increase the brandy to half an ounce every three hours.

9 P.M.—Pulse 96; temperature  $98.4^{\circ}$ . Has been much easier during the day.

14.—9 A.M. Pulse 95; temperature  $98.0^{\circ}$ . Slept fairly; is quite free from pain; pulse very irregular and intermittent; heart's action irregular, but impulse forcible; systolic murmur less distinct; does not sweat so much.

Omit salicylate. Continue brandy, and give ether and ammonia draught occasionally.

9 P.M.—Temperature  $97.2^{\circ}$ . Complains of difficulty in breathing; no pain in joints.

15.—9 A.M. Is breathing with difficulty; pulse very small and rapid; heart's action fairly strong but irregular; is quite sensible, and not so deaf.

Died rather suddenly, soon after the note was taken.

*Post-mortem Examination.*—The pericardium was found to be everywhere firmly adherent, the heart hypertrophied and dilated, its muscular substance somewhat fatty, and both the mitral and tricuspid valves diseased. The lungs were highly emphysematous, adherent, and congested; the kidneys were congested, tough, and slightly granular.

#### CASE IV.

S. A. B., æt. 19, servant, admitted June 4, 1877. Patient was too ill to allow of our obtaining any definite previous history, but she had been under medical care for five days, suffering from rheumatic fever and pleuro-pneumonia before her admission.

*State on Admission.*—Pulse 140; temperature  $103.4^{\circ}$ ; respirations 52. There is consolidation of the lower lobe of the right lung; cantering rhythm of heart; a systolic murmur at the apex, also audible at the angle of the left scapula; constant orthopnoea; very profuse sour sweating, and pains in most of the large joints; urine sp. gr. 1030, normal.

Take 15 grains of salicylate of soda every hour for six hours, and then every two hours; take half an ounce of brandy every three hours.



Within twenty-four hours from commencing to take the salicylate the temperature fell to  $98.5^{\circ}$ , the pulse to 124, and the respirations to 24. This improvement was, however, only of short duration, for during the next twenty-four hours the temperature rose again to  $103.0^{\circ}$ , and was never subsequently found below  $100.5^{\circ}$ . On the second day of the treatment with salicylate of soda the patient complained of severe headache, became very deaf, and wandered, seeing, as she supposed, strange objects, and hearing noises. The temperature continuing high, and there being no improvement in the condition of the patient, the salicylate was discontinued on the third day. The patient died on June 13, the eleventh day after admission.

*Post-mortem Examination.*—Lungs adherent throughout to walls of chest; lower lobes consolidated and granular on section; pericardium firmly adherent; muscular tissue of heart flabby and pale coloured; auricular borders of mitral valve studded with small bead-like prominences; ventricular surface of aortic valves studded with similar bodies.

#### CASE V.

W. B., æt. 40, porter, admitted September 24, 1877. Father and one brother rheumatic; has not previously had rheumatism, but had chorea in boyhood; present illness began on September 15, with pain, swelling, and tenderness of both ankles, but he was not disabled from work until three days ago, when several other joints became affected.

*State on Admission.*—Pulse 96; temperature  $100.8^{\circ}$ ; urine sp. gr. 1025, acid, normal; skin hot; high-pitched musical murmur with the systole at apex of heart, coarse to and fro sounds at base.

10 P.M.—Pulse 84; temperature  $102.8^{\circ}$ ; sweating freely. Take chloral and morphia at bedtime.

25.—10 A.M. Pulse 84; temperature  $102.0^{\circ}$ . Slept well after the draught. Pain and swelling of both ankles and right knee; loud friction over heart, systolic murmur audible both at apex and also at angle of scapula; breath sounds rough in bases of lungs; faint crackle at extreme base of right lung.

10 P.M.—Pulse 96; temperature  $103.2^{\circ}$ . Has pain in both knees.

26.—10 A.M. Pulse 96; temperature  $101.6^{\circ}$ . Slept well; pain in both knees and ankles; condition of heart unchanged;



resonance much impaired over the posterior bases of both lungs; harsh breathing in base of right lung; crepitation in extreme bases of lungs.

Take salicylate of soda 15 grains every two hours; apply two leeches to præcordia.

10 P.M.—Pulse 92; temperature  $102.2^{\circ}$ . Free sweating; muttering in his sleep.

27.—10 A.M. Pulse 88; temperature  $100.2^{\circ}$ . Is deaf and rather heavy; slept well; loud rough friction over whole of præcordia, disguising the heart sounds; deficient resonance over lower part of back of chest on both sides; breath sounds harsh in bases of lungs; large crepitation in base of left; smaller and scantier in base of right lung; increased vocal resonance; slight pain at præcordia; sweating freely.

Continue salicylate and take half an ounce of brandy every three hours.

10 P.M.—Pulse 88; temperature  $101.6^{\circ}$ . Is free from pain; feels comfortable; cough troublesome.

28.—10 A.M. Pulse 72; temperature  $99.0^{\circ}$ . Slept well with aid of a sedative draught. Left side of chest appears larger than right; area of cardiac dulness extends from the third rib downwards, and from the middle of sternum to outside the nipple. Urine, sp. gr. 1025, alkaline, free from albumen.

10 P.M.—Temperature  $99.4^{\circ}$ .

29.—10 A.M. Pulse 88; temperature  $99.4^{\circ}$ . Free from pain; no change in heart or lungs. Cardiac dulness extends 4 inches downwards from third rib, and 5 inches transversely from near mid-sternum to outside of nipple. Take salicylate of soda only every four hours.

10 P.M.—Pulse 92; temperature  $100.2^{\circ}$ . Perspiring; slight epistaxis.

30.—10 A.M. Pulse 84; temperature  $99.2^{\circ}$ . Upper margin of cardiac dulness is in first interspace; more bulging of præcordia; friction still exceedingly loud, though less so than it was; dulness of right back greatly decreased. Crepitation in base of left lung.

10 P.M.—Pulse 96; temperature  $100.2^{\circ}$ .

Oct. 1.—10 A.M. Pulse 88; temperature  $98.6^{\circ}$ . No pain; upper margin of cardiac dulness corresponds with upper border of third rib; still obvious bulging of cardiac area; loud pericardial friction. Resonance over lungs very much improved; dry râles in lungs.

10 P.M.—Temperature  $99.2^{\circ}$ .



2.—10 A.M. Pulse 84; temperature 99·8°. Free from pain. Scanty dry râles over both lungs and a little crackling in base of left lung. Pericardial friction; systolic murmur at apex, as on admission.

10 P.M.—Pulse 76; temperature 100·5°. Sweating.

The temperature now varied little for some days, being daily rather above 99° in the morning, and from 100° to 101° in the evening. The pulse ranged from 80 to 90. Sweating continued, and the condition of the heart and lungs improved slowly, but steadily. The salicylate was omitted on October 6. Next day the temperature rose to 101° in the morning, and 103° in the evening. No other change took place, but copious sweating continued.

11.—10 A.M. Pulse 96; temperature 103°. Pain and tenderness of præcordia; loud pericardial friction; bowels loose. Take 15 grains of salicylate of soda every three hours.

10 P.M.—Pulse 88; temperature 102·6°.

12.—10 A.M. Pulse 100; temperature 101·8°. Loud pericardial friction; no pain in joints; copious sweating.

10 P.M.—Pulse 92; temperature 100·2°.

The temperature now again ranged from 99° to 100·5° until October 18, when it became normal, and remained so until November 18. The salicylate of soda was reduced to a dose every six hours on October 15, and entirely discontinued on the 18th. On November 18, after having been in the garden the previous day, the temperature rose to 101·4°, and the pulse to 112; pains in, first, the right ankle, and subsequently both ankles, wrists, hands, and elbows, now set in, and continued for some days. This attack passed off without any special treatment, and the patient was discharged, but with mitral disease, on December 7.

## CASE VI.

F. H. B., æt. 13, errand boy, was admitted April 9, 1878. Was in the hospital for rheumatic fever in May 1877. Has been quite well since his discharge until a few days since, when, whilst heated with active exercise, he lay upon the grass and took cold. Next day he experienced pains in the knees and ankles, but continued at work until yesterday, when the pains became aggravated, and he began to suffer from cough.

*State on admission.*—Pulse 126; temperature 101·4°.



Knees and ankles hot, tender, and swollen; has slight sore throat and a husky cough. Rhonchus over front of both lungs; coarse crepitation behind, especially in the supra-spinous fossæ; percussion resonance rather impaired below both clavicles. Heart's apex in the normal situation; systolic apex murmur, audible also over the præcordia; urine, sp. gr. 1030, acid.

9 P.M.—Pulse 126; temperature 102°. Sweating freely.

April 28.—9 A.M. Pulse 108; temperature 102.6°. Slept badly; no pain in ankles, and less in knees, this morning; severe pains in left elbow-joint, in both wrists, and in fingers of right hand; pericardial friction near apex of heart.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 102; temperature 101.6°. Complains of severe pain at the epigastrium, and of shortness of breath; foud friction over præcordia; profuse sour sweating.

29.—9 A.M. Pulse 108; temperature 99.2°. Pulse feeble; complains much of pain in the præcordia; still sweating.

9 P.M.—Pulse 108; temperature 99.8°.

30.—10 A.M. Pulse 108; temperature 100.6°. Feels generally better, but cough is troublesome, and has occasional shooting pain in the left mammary region. Sputum frothy and transparent.

10 P.M.—Pulse 126; temperature 100.8°.

May 1.—10 A.M. Pulse 118; temperature 100.4°. Passed a restless night; pericardial friction continues. Cough troublesome.

9 P.M.—Temperature 99°.

2.—10 A.M. Pulse 100; temperature 98.8°. Is much better. Take salicylate only every six hours.

9 P.M.—Temperature 99°.

For several days the temperature ranged from 99° to 100.4° in the morning, and from 100.8° to 103.4° in the evening. The pulse ranged during the same time from 90 to 107. On May 8 the salicylate was ordered to be given every three hours, but this produced no effect on the temperature or pulse. Loud pericardial friction continued, the cough became more troublesome; dulness on percussion, and abundant crepitation, were now found over the base of the left lung; rhonchus and sibilus generally over both lungs. On May 11 the breathing was much distressed; and, the temperature continuing high, the salicylate was discontinued, and small doses of antimony and ether prescribed. The symptoms were now for several days those only of



broncho-pneumonia and pericarditis, but somewhat later there was a recurrence of rheumatic pains and swelling in many joints. Salicylate was not again administered, and the patient was discharged well, save a mitral regurgitant murmur, on June 27.

#### CASE VII.

M. D., æt. 18, laundry-maid, was admitted May 7, 1878. Patient had rheumatic fever three years ago, otherwise her health has been good. Father died of phthisis. Present illness was caused by exposure to cold a few days since. Has had pain and swelling of the principal joints of her lower limbs, and has also been coughing and spitting blood-stained sputum.

*State on admission.*—Pulse 114; temperature, 103.1°. Complains of severe pain in her wrist, knee, elbow, and ankle joints, all of which are more or less swollen, red, hot, and tender; she also complains of a sharp cutting pain in the left lower axillary region, increased by deep breathing; there is tenderness over the præcordia and pericardial friction near the apex of the heart. Movement causes so much distress that a full examination of the lungs cannot be made.

9 P.M.—Pulse 108; temperature 103.6°. Profuse sour sweating.

May 8.—8 A.M. Pulse 108; temperature 102°. Did not sleep, although she had a sedative. Urine, sp. gr. 1018, acid, a slight trace of albumen; complains much of pain in the right shoulder.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 102; temperature 101.4°. Pleuritic friction below the anterior border of the left scapula in seat of pain.

9.—9 A.M. Pulse 96; temperature 100.6°. Profuse sweating and pericardial friction continue.

9 P.M.—Pulse 102; temperature 101°. Is free from pain in wrists and elbows. Is very restless.

10.—9 A.M. Pulse 102; temperature 99.8°. Has had slight epistaxis; was wandering during the night, but had some quiet sleep. Complains much of pain on the left side of chest.

Port wine 1 ounce every six hours.

9 P.M.—Pulse 90; temperature 100°. Has had return of epistaxis. Breath sounds almost normal; pericardial friction not so intense.



11.—10 A.M. Pulse 90; temperature 99·8. Free from pain; deaf; has been restless and delirious during night.

10 P.M.—Pulse 100; temperature 102·2°. Continues restless and wandering.

12.—10 A.M.—Pulse 108; temperature 100·6°; respirations 48. Complains of pain in the præcordia; pericardial friction continues; impaired percussion resonance over lower half of left back of thorax; crepitation over dull area.

Take half an ounce of brandy every three hours.

9 P.M.—Pulse 126; temperature 100·4°; respirations 48. Is wandering, but free from pain.

On May 13 the patient had been very delirious during the night; the temperature rose to 101°, and the pulse to 132, and the salicylate of soda was omitted. For several days there was little change, the temperature having ranged from 101° to 103·4°. On May 17 the temperature rose to 103·8°, and large doses of quinine were prescribed and continued for some time. The temperature subsequently rose to 104·7°, and on two occasions to 105°; but, as salicylate of soda was not again prescribed, it is needless to follow any further the course of the case. The patient was discharged, fairly well, on July 12.

#### CASE VIII.

H. P., æt. 22, porter, was admitted October 26, 1878. Had rheumatic fever seven years ago; has suffered from occasional cough, and has sometimes observed that his sputum has been streaked with blood. Is of temperate habits. Present illness commenced on the 24th inst. with shivering, followed by pains in the hips and knees. Attributes his illness to exposure to cold and wet.

*State on admission.*—Pulse 102; temperature 99·8°. Has pain in the right shoulder and in both knees, which are tender but not swollen. A slight systolic murmur at the apex of heart; sibilus over both lungs, before and behind.

9 P.M.—Pulse 100; temperature 101·2°.

October 27.—9 A.M. Pulse 104; temperature 100·6. Knees very painful; heart's impulse seen and felt over a wide area.

9 P.M.—Pulse 100; temperature 101·0°.

28.—8 A.M. Pulse 96; temperature 99·4°. Pulse feeble; slight friction at base of heart, increased by pressure.

1 P.M.—Temperature 102°.

Take 15 grains of salicylate of soda every four hours.



9 P.M.—Pulse 96; temperature 100·8°. Right knee less painful; other joints unchanged.

29.—10 A.M. Pulse 84; temperature 98·6°. Patient feels much better; the chief pain is now in the right shoulder and left knee. First sound of heart very weak; slight giddiness; dry râles in both lungs.

Take half an ounce of brandy every four hours.

9 P.M.—Temperature 100°.

The temperature now became quite normal, and sometimes subnormal, and the pulse, for some days, ranged from 48 to 66. The pains and cough had entirely ceased by November 2, and no adventitious sounds were audible in the lungs, but there was still copious sweating, and the systolic murmur was still heard at the apex of the heart; the second cardiac sound was reduplicate at the base. The salicylate was reduced to a dose every six hours on October 31, to three times a day on November 5, and entirely discontinued on November 7. On November 12 there was pain in the left sterno-clavicular articulation, and next day the pulse rose to 90, and the temperature to 99·6°. The left knee was now swollen and painful, there was return of cough, and the breathing was rough in the bases of the lungs.

November 14.—9 A.M. Pulse 124; temperature 99·2°. Has pain in left knee, right shoulder, and wrist, with return of bronchitis; is again sweating much; heart's rhythm cantering.

9 P.M.—Pulse 108; temperature 99·8°.

15.—9 A.M. Pulse 112; temperature 100·4°.

9 P.M.—Pulse 116; temperature 100·8°.

16.—9 A.M. Pulse 104; temperature 100·6. Pains continue in shoulders and wrists; heart's rhythm cantering; systolic apex murmur; cough less troublesome.

Take salicylate of soda 15 grains every six hours.

9 P.M.—Pulse 116; temperature 100·5°. Cannot sleep on account of pain.

Take chloral and morphia at bedtime.

17.—9 A.M. Pulse 112; temperature 100·6°.

9 P.M.—Pulse 100; temperature 100°.

18.—9 A.M. Pulse 96; temperature 99·2°. Still has pains and swelling in the arms and hands; is perspiring freely; slept well without a sedative. Urine, sp. gr. 1034, acid.

9 P.M.—Pulse 100; temperature 98·6°.

From November 18 to December 3 the temperature rarely exceeded 98·6°, and the pulse ranged from 72 to 80. There



were no pains, and the urine was normal. On November 22 the salicylate was reduced to three doses daily, and entirely omitted on November 30. Three days later there was a return of pain in the hands; the pulse increased in frequency, and the temperature again rose to over 100°. There was likewise a return of pericarditis and cough. For this relapse quinine and iodide of potassium were prescribed, and the patient was finally discharged on December 31.

## CASE IX.

A. M., æt. 16, was admitted December 27, 1878. Mother died of heart disease, the consequence of rheumatic fever; patient has herself been healthy. Present illness commenced three weeks ago, with pains in several joints, but became worse two days since, when she also suffered from sore throat, and was obliged to take to bed.

*State on admission.*—Pulse 126; temperature 103.4°. Countenance anxious; complains of pain in almost all her joints; the præcordial dulness is increased outwards and upwards, and a thrill is felt over the whole cardiac region; heart sounds clean; no pericardial friction audible.

9 P.M.—Pulse 104; temperature 103.2°. Has wandered and been very restless.

Dec. 28.—9 A.M. Pulse 128; temperature 103.3°. Has had a very restless, delirious night; complains of severe pain in both shoulders; is constantly moaning and crying out from pain; heart sounds normal; pulse regular and of good force.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 120; temperature 103.2°.

29.—9 A.M. Pulse 104; temperature 100.2°. Slept better; much less pain. Slight deafness; tongue dry, and brown in centre. Area of cardiac dulness has decreased; apex beats half an inch below and within nipple; faint thrill continues.

9 P.M.—Temperature 101.2°. Has been sick.

30.—9 A.M. Pulse 104; temperature 99.6°. Has slept badly, and is very fretful. Free from pain in joints. No increase of deafness. Slight tenderness over præcordia; first cardiac sound murmurish at apex; lung sounds normal; is rather prostrate. Pulse compressible.

Take the salicylate only every four hours; to have one tablespoonful of wine every three hours.

7.30 P.M.—Pulse 104; temperature 101.6°.

31.—9 A.M. Pulse 104; temperature 102.8°. Slept well



after a sedative; deafness not increased. Has some diphtheritic-looking patches on the fauces, the first of which appeared yesterday. Musical systolic murmur audible over præcordia. Urine sp. gr. 1025, acid, albumen a trace, no blood. Percussion resonance impaired over the upper half of back of thorax on both sides; breathing harsh, expiration prolonged, except over apex of left lung, where the dulness is more marked, and the breath sounds feeble.

9 P.M.—Pulse 120; temperature 102.1°. Soon after six o'clock she became noisy, violent, and restless, throwing herself about and manifesting hallucinations, saying that she saw persons and things. A papular rash has come out upon the face.

Omit salicylate of soda. Take a chloral and morphia draught.

Jan. 1, 1879.—9 A.M. Pulse 88; temperature 99.6°. Diphtheritic patch on fauces has spread somewhat; has pain in shoulders, and indefinite wandering pains in limbs; rash on face less marked; systolic murmur continues, and there is well-pronounced friction over præcordia. Continues deaf; pupils dilated. Slight delirium. Restless.

9 P.M.—Pulse 72; temperature 100.2°.

2.—9 A.M. Pulse 60; temperature 99.8°. Slept well; fauces improving; faint crackling in base of left lung; is quieter and free from jactitation and twitchings of face and limbs; systolic murmur continues; friction has ceased to be audible; complains of pains in limbs.

9 P.M.—Pulse 76; temperature 101.4°.

3.—9 A.M. Pulse 84; temperature 101.8°. Dulness on percussion still continues; breath sounds weak; rhonchus and occasional crackling over whole of left lung; slight pains in most joints, several of which are hot; heart sounds unaltered.

During this day the temperature gradually rose to 103.8° at 6 P.M.

9 P.M.—Pulse 108; temperature 103.6°.

4.—10.30 A.M. Pulse 100; temperature 104.0°. Joints of lower limbs have become very painful, and the knees swollen; sudamina have appeared on the chest; slept well after a full sedative.

Take 30 grains of salicylate of soda every two hours for three doses.

The temperature gradually fell during the day.

9 P.M.—Pulse 88; temperature 100.2°.



5.—10.30 A.M. Pulse 88; temperature  $100.4^{\circ}$ . Dulness over bases of lungs decreased; large crepitation over back of chest; heart murmurs less intense; area of cardiac dulness still too large; pains in joints less.

Take salicylate of soda, 30 grains every two hours for three doses.

9 P.M.—Pulse 112; temperature  $100.2^{\circ}$ .

6.—9 A.M. Pulse 84; temperature  $99.8^{\circ}$ . Improving.

Repeat salicylate of soda, 30 grains every two hours for three doses.

9 P.M.—Pulse 76; temperature  $99.2^{\circ}$ . No pain in joints was sick after last dose of salicylate.

7 to 11.—During these days the temperature ranged from  $97.8^{\circ}$  to  $99.3^{\circ}$ , and the pulse from 68 to 80. There were no pains, and the salicylate was given in doses of 30 grains three times on the 7th, and once on the 8th, 9th, 10th, and 11th. She was sick on the 8th, after the salicylate had been reduced to once daily.

On the 11th there was pleurisy on the left side, and pains were complained of in the limbs.

9 P.M.—Pulse 76; temperature  $106.6^{\circ}$ .

Repeat salicylate of soda, 30 grains at intervals of two hours for three doses.

From January 12 to 17 there was no great change; the pains left after the salicylate was resumed; the temperature ranged from  $98.4^{\circ}$  in the early morning, to  $100.5^{\circ}$  at night; the pulse from 76 to 88. The physical signs were pleuritic friction and dulness on percussion over the left side of chest, and faint systolic murmur with reduplication of the second sound of heart.

The salicylate of soda was continued in 30-grain doses three times daily, at intervals of two hours between the doses.

17.—Patient again complains of pains in the limbs, although the salicylate has been continued.

9 A.M.—Pulse 84; temperature  $99.6^{\circ}$ ; urine sp. gr. 1015, not albuminous.

Take 15 grains of salicylate of soda every four hours.

9 P.M.—Temperature  $99.2^{\circ}$ .

From January 18 to 23 the temperature ranged from  $99.8^{\circ}$  to  $100.8^{\circ}$ , the higher point being always in the evening; the pulse from 88 to 96. On January 21 the urine presented a trace of albumen, and a prefix to the systole was heard at the apex of the heart. The patient being now sick after the medicine it was discontinued, and three ounces of brandy daily



were ordered. On January 23 pericardial friction and cantering rhythm were observed, and there was pain and tenderness in the præcordia. At 9 P.M. the temperature had risen to  $103.2^{\circ}$ .

Take salicylate of soda, 15 grains every three hours, and a sedative of chloral and morphia at bedtime.

24.—9 A.M. Pulse 112; temperature  $102.2^{\circ}$ . Slept well; complains of pain below left mamma; urine sp. gr. 1020, albumen a trace.

Increase salicylate to a dose every two hours.

7 P.M.—Temperature  $103.8^{\circ}$ .

9 P.M.—Pulse 104; temperature  $102.2^{\circ}$ .

25.—9 A.M. Pulse 112; temperature  $100.6^{\circ}$ ; no pains, but joints feel stiff; was sick after the medicine this morning.

Continue salicylate, and increase brandy to four ounces daily.

9 P.M.—Pulse 112; temperature  $101.0^{\circ}$ .

26.—9 A.M. Pulse 100; temperature  $99.0^{\circ}$ . Free from pain; is more comfortable; systolic murmur at apex of heart.

9 P.M.—Temperature  $100.8^{\circ}$ .

27.—9 A.M. Pulse 96; temperature  $98.2^{\circ}$ . Continues free from pain.

9 P.M.—Temperature  $99.4^{\circ}$ .

28.—9 A.M. Pulse 96; temperature  $99.2^{\circ}$ . Slight deafness; has been sick after medicine.

Take salicylate only every four hours.

29.—9 A.M. Pulse 96; temperature  $98.6^{\circ}$ . Urine sp. gr. 1030, acid, a good trace of albumen, no blood.

From January 29 to February 12 the patient remained free from pain; the heart sounds underwent no material change; the temperature ranged from  $98.0^{\circ}$  to  $99.0^{\circ}$ ; the pulse from 64 to 80. The salicylate was continued in doses of 15 grains every four hours until February 12, on which day the patient complained of palpitation and pain in the præcordia, extending down to the left elbow. The medicine was now omitted, and two ounces extra of brandy ordered.

February 13.—9 A.M. Pulse 92; temperature  $99.4^{\circ}$ . Palpitation and pain down left arm continue; is very fretful.

9 P.M.—Pulse 124; temperature  $100.6^{\circ}$ .

14.—9 A.M. Pulse 124; temperature  $99.4^{\circ}$ . Complains of shortness of breath, of pain in the left elbow, and of pain in the abdomen.

9 P.M.—Pulse 148; temperature  $102.6^{\circ}$ .

Take a sedative of chloral and morphia at bedtime.



15.—9 A.M. Pulse 156; temperature 100·6°. Aspect anxious; is unable to lie upon left side; cardiac rhythm cantering; systolic murmur at apex more pronounced; slight pleuritic friction over a small area of left lung.

Take salicylate of soda 15 grains every two hours. Repeat sedative draught at bedtime.

9 P.M.—Pulse 144; temperature 101·4°.

16.—9 A.M. Pulse 132; temperature 100·2°.

6.30 P.M.—Temperature 103·0°.

9 P.M.—Pulse 130; temperature 102·2°.

17.—9 A.M. Pulse 116; temperature 99·6°. Slept five hours after sedative draught.

9 P.M.—Pulse 128; temperature 101·4°.

18.—9 A.M. Pulse 96; temperature 98·6°. Slept without sedative; is free from pain or perspiration; faint systolic murmur at apex of heart; slight pericardial, and also slight pleuritic, friction still audible.

9 P.M.—Temperature 99·2°.

From February 18 to 24 the patient continued better, slept well, and was free from pain; the temperature never exceeded 99·0°, and was usually quite normal; the pulse ranged from 84 to 90; the salicylate of soda was continued in doses of 15 grains every four hours.

24.—Loud pericardial friction was again heard to-day; and in the evening the temperature rose to 101·0°. These symptoms continued during the two following days; sweating returned, and at 9 P.M. of the 26th the pulse counted 126, and the temperature was 104·0°.

27.—9 A.M. Pulse 136; temperature 101·0°.

Reduce salicylate to a dose every six hours.

9 P.M.—Temperature 101·8°.

28.—9 A.M. Pulse 104; temperature 99·4°.

9 P.M.—Pulse 130; temperature 101·4°.

The patient now again began to improve, and slowly became free from pain and fever; the systolic murmur continued distinctly audible, both at the apex of the heart and at the back of the scapula. Citrate of iron was substituted for the salicylate, and she was discharged apparently convalescent on April 8.

A few days after her discharge she was again admitted with pains in the knees, ankles, and elbows.

April 14.—3 P.M. Pulse 128; temperature 101·8°.

Take 15 grains of salicylate of soda every three hours.

9 P.M.—Pulse 140; temperature 100·6°. Has been in so



much pain and so noisy that a dose of chloral and bromide of potassium has been administered.

15.—9 A.M. Pulse 144; temperature 99.6°. Is in less pain; urine sp. gr. 1030, acid, albumen one-fourth, blood, lithates.

Port wine, 4 ounces daily.

9 P.M.—Pulse 132; temperature 99.4°.

16.—9 A.M. Pulse 112; temperature 98.4°. Has been sick after medicine; slight pain in knees, which are still swollen; breathing weak, otherwise normal; heart's maximum impulse in fourth interspace, just within and below nipple; there is a compound murmur, systolic and præ-systolic, at the apex; perspiring.

Take salicylate only every six hours.

9 P.M.—Temperature 98.8°.

The temperature now kept normal, and the pulse about 90. On April 17, the salicylate having again produced distressing sickness, it was omitted. The urine was now sp. gr. 1027, and quite free from albumen and blood.

29.—9 A.M. Pulse 108; temperature 99.2°. Perspiring; has slight pain in the left shoulder.

9 P.M.—Temperature 101.6°.

30.—9 A.M. Pulse 116; temperature 100.3°. Sweated much during night; still complains of pain.

Take 10 grains of salicylate of soda every three hours.

9 P.M.—Temperature 101.1°.

May 1.—9 A.M. Pulse 132; temperature 100.4°. Pains as yet unrelieved.

9 P.M.—Temperature 102.3°.

2.—9 A.M. Pulse 120; temperature 100.2°. Has less pain.

9 P.M.—Temperature 101.6°.

3.—Pulse 112; temperature normal all day. Has vomited a coffee-coloured, grumous fluid after the last two doses of medicine.

Take salicylate of soda only every eight hours.

4.—Temperature 97.6°; pulse 96. Has again vomited coffee-coloured fluid.

Omit salicylate.

The temperature kept normal, and the patient seemed to be going on well until May 17. She was very anæmic, and was taking citrate of iron.

17.—9 A.M. Pulse 108; temperature 101.2°.

Take simple effervescing medicine every four hours.

9 P.M.—Temperature 100.4°.

18.—9 A.M. Pulse 130; temperature 99.5°.



9 P.M.—Pulse 120; temperature 101.4°.

19.—9 A.M. Pulse 130; temperature 98.9°. Considerable pain in right shoulder and arm; also in right hand and knee; urine sp. gr. 1026, acid, not albuminous.

9 P.M.—Pulse 136; temperature 101.7°.

20.—9 A.M. Pulse 132; temperature 99.8°. Take 15 grains of salicylate of soda every eight hours.

9 P.M.—Pulse 128; temperature 100.8°, complains of pain in the right mammary region, in which situation some pleuritic friction is heard.

21.—9 A.M. Pulse 120; temperature 100.2°. There is dulness on percussion on the right side of chest from the nipple downwards, and also at the extreme right posterior base. Pain on deep breathing but no friction; voice sounds ægophonic at margin of dulness.

9 P.M.—Pulse 112; temperature 101.2°. Is more comfortable.

22.—Pulse during day about 116; temperature 100.5°.

23.—9 A.M. Pulse 100; temperature 98.8°.

9 P.M.—Pulse 116; temperature 100°.

24.—9 A.M. Pulse 108; temperature 98.5°. Pain in side much easier; perspiring freely.

From this date the temperature remained normal, with the exception of three or four days in the beginning of June, when it rose in the evening to 100.2°, and the patient perspired much.

Discharged well, but with a compound murmur, on June 26.

Was readmitted towards the end of the year with dilated heart and dropsy, of which she died.

#### CASE X.

J. W., æt. 5, was admitted on February 7, 1879. No history of rheumatism in family; previous health good. Has been chilly and had pains in the left foot and knee for several days.

*State on admission.*—Pulse 138; temperature 103.4°. Skin hot and dry; musical systolic murmur at apex of heart; no præcordial tenderness; heart's apex in normal position.

9 P.M.—Pulse 116; temperature 104.4°.

February 8.—9 A.M. Pulse 140; temperature 103°. Free from pain; expression heavy; systolic murmur over præcordia; urine, sp. gr. 1030, alkaline, not albuminous.



1 P.M.—Temperature  $104.2^{\circ}$ . Take 5 grains of salicylate of soda every two hours.

9 P.M.—Pulse 108; temperature  $103.2^{\circ}$ .

9.—Pulse 120; temperature  $102^{\circ}$ . Slept well; is free from pain.

9 P.M.—Pulse 110; temperature  $102.6^{\circ}$ .

10.—9 A.M. Pulse 96; temperature  $99.4^{\circ}$ . Has coughed frequently; was restless and talkative during night; urine, sp. gr. 1030; albumen, a trace.

9 P.M.—Pulse 92; temperature  $101^{\circ}$ .

11.—9 A.M. Pulse 72; temperature  $100^{\circ}$ . Systolic murmur fainter; impaired percussion resonance and occasional crackling over base of right lung.

9 P.M.—Pulse 96; temperature  $99^{\circ}$ .

12.—9 A.M. Pulse 80; temperature  $98.4^{\circ}$ . Pulse irregular and intermittent; no pain; sweating freely.

Take salicylate every four hours; port wine, a dessert-spoonful every three hours.

9 P.M.—Pulse 60; temperature  $98.6^{\circ}$ .

13.—9 A.M. Pulse 96; temperature  $98.2^{\circ}$ .

9 P.M.—Temperature  $100.2^{\circ}$ .

14.—9 A.M. Pulse 76; temperature  $99^{\circ}$ .

9 P.M.—Temperature  $100.8^{\circ}$ .

15.—9 A.M. Pulse 80; temperature  $98.8^{\circ}$ . Heart's action very irregular; systolic murmur, loud and blowing; chest covered with sudamina.

1 P.M.—Temperature  $100.8^{\circ}$ . Add 3 grains of salicylate of soda to each dose of medicine; brandy, 1 ounce daily, instead of wine.

The temperature now fell, and remained about normal until February 20, and the pulse ranged from 64 to 88; the urine still continued for some time albuminous, and the cardiac murmur remained; the breath sounds improved and became quite healthy. On February 18 vomiting ensued, and, as it continued, the salicylate was discontinued on February 19. Next day, February 20, the evening temperature rose to  $100.2^{\circ}$ , and during the few following days ranged from  $103^{\circ}$  to  $104.2^{\circ}$ ; the pulse from 96 to 128. On February 23 she had sore throat; the fauces were injected, and she suffered from headache and intolerance of light. She was very restless, crying and screaming out without obvious cause. This state passed off, and she was much better, when, towards the end of March, she had an attack of chorea, and subsequently of pericarditis, accompanied by



pyrexia, the temperature again ranging from  $103^{\circ}$  to  $104.4^{\circ}$ . The salicylate was not again administered, and she was discharged quite well on May 16.

## CASE XI.

J. M., æt. 14, cabinetmaker, was admitted February 4, 1878. Family and personal history satisfactory. Present illness began about two weeks ago with pains in various parts, and two days ago the ankles became swollen and painful.

*State on admission.*—Pulse 96; temperature  $99.6^{\circ}$ . Right ankle hot, swollen, red, and painful; breath and heart sounds normal; urine normal.

Take 10 grains of salicylate of soda every four hours.

9 P.M.—Pulse 104; temperature  $101.4^{\circ}$ .

February 5.—10 A.M. Pulse 92; temperature  $99.6^{\circ}$ .

10 P.M.—Temperature  $99.4^{\circ}$ .

6.—10 A.M. Pulse 68; temperature  $98.8^{\circ}$ . Ankle better; no pain elsewhere.

The temperature and pulse now kept quiet. The salicylate was reduced to a dose every six hours, and discontinued in a day or two. Discharged convalescent on February 16.

## CASE XII.

F. C., æt. 9, was admitted on September 22, 1879. Father is subject to rheumatism, and a brother died of disease of the heart, the result of rheumatic fever. Patient has not been robust, but has not previously suffered from rheumatism. Present illness commenced a week ago with pains in the knees, followed, a few days later, with pains and swelling in several joints.

*State on admission.*—Pulse 98; temperature  $101.4^{\circ}$ . Both ankles, knees, and left wrist are swollen, red, hot, and painful. The heart's apex beats in the fifth interspace outside nipple; rough pericardial friction over præcordia; lungs healthy. Is perspiring freely.

9 P.M.—Pulse 100; temperature  $102.4^{\circ}$ .

September 23.—9 A.M. Pulse 88; temperature  $100.4^{\circ}$ . Urine, sp. gr. 1037, acid; turbid, with lithates.

Take 10 grains of salicylate of soda every two hours.

9 P.M.—Temperature  $100.6^{\circ}$ .

24.—9 A.M. Pulse 80; temperature  $90^{\circ}$ . Pains generally easier.

9 P.M.—Temperature  $97.4^{\circ}$ .

25.—9 A.M. Pulse 60; temperature  $97.6^{\circ}$ . Much better;



free from pain ; sweating freely ; both cardiac sounds rough at the apex.

Take the salicylate every four hours.

9 P.M.—Temperature  $97.4^{\circ}$ .

26.—Pulse 57 ; temperature  $97.6^{\circ}$ . Pains better, but not entirely gone ; much less sweating.

Take the salicylate every six hours only.

During the next ten days the temperature ranged from  $97.6^{\circ}$  to  $98.4^{\circ}$ , the pulse from 56 to 60. On September 29 the pulse was rather thrilling ; and the pains having entirely gone, the salicylate was discontinued. The urine, however, continued of high sp. gr. ; the pulse was irregular in rhythm, and the first cardiac sound prolonged and rough.

Discharged convalescent on October 14.

### CASE XIII.

W. W., æt. 9 years, was admitted October 5, 1878. Father suffers from rheumatism. Previous health good ; present attack commenced on September 30 with headache and pains in the limbs, and the day before admission left ankle and knee began to swell.

*State on admission*.—Pulse 120 ; temperature  $102.4^{\circ}$  ; urine, sp. gr. 1040, acid. Left ankle and both knees swollen and painful ; pericardial friction and cantering rhythm of heart's action.

9 P.M.—Temperature  $103.2^{\circ}$ .

October 6.—10 A.M. Pulse 120 ; temperature  $101.2^{\circ}$ . All the pains are better ; both the right ankle and knee are, however, considerably swollen and red ; heart sounds very rough.

9 P.M.—Temperature  $103.6^{\circ}$ .

7.—8 A.M. Pulse 114 ; temperature  $101.4^{\circ}$ . Pericardial friction not so loud as yesterday.

Take 10 grains of salicylate of soda every three hours.

11 P.M.—Temperature  $99^{\circ}$ . Has just taken the fourth dose of salicylate.

8.—8 A.M. Pulse 84 ; temperature  $98.2^{\circ}$ . Much improved.

9 P.M.—Temperature  $97.2^{\circ}$ .

The temperature now kept normal, or subnormal, and the pulse ranged from 72 to 90. On October 12, the first sound of the heart being almost inaudible at the apex, the salicylate was omitted, and 1 ounce of brandy was ordered to be given in small doses at stated intervals. The patient was discharged quite well on October 29.



## CASE XIV.

L. P., æt. 16 years, servant, was admitted October 22, 1878. Has already had three attacks of rheumatism in the knees and ankles; suffers from cough in winter; present illness commenced on the 18th inst. with pain in the knees and ankles; had shivering the day before admission.

*State on admission.*—Pulse 138; temperature 101.8°. Knees and ankles swollen and very painful; loud pericardial friction over the præcordia.

9 P.M.—Pulse 138; temperature 101.6°.

October 23.—9 A.M. Pulse 116; temperature 100°. Pains rather better; urine, sp. gr. 1032, acid; heart's impulse rather heaving; loud friction all over præcordia; systolic murmur at apex, also audible at back of scapula.

9 P.M.—Temperature 101.6°.

24.—9 A.M. Pulse 116; temperature 99.8°.

9 P.M.—Temperature 101.4°.

25.—9 A.M. Pulse 100; temperature 100.6°. Cardiac impulse less forcible; area of dulness slightly increased; friction not so audible; systolic murmur continues.

Take 15 grains of salicylate of soda every three hours; brandy, 2 ounces.

9.30 P.M.—Temperature 99.6°. Has had only two doses of salicylate.

26.—9 A.M. Pulse 95; temperature 98.4°. Sweating slightly; has been sick after medicine.

9 P.M.—Pulse 100; temperature 99.4°. Has vomited after the salicylate; vomit contains blood.

27.—10 A.M. Pulse 92; temperature 98.4. Complains of deafness and giddiness; has again been sick after medicine.

Discontinue salicylate of soda.

The temperature now continued at or below the normal standard; the pulse ranged from 72 to 96; there was no return of pain in the joints, but the cardiac murmur did not entirely disappear. On October 28, after discontinuing the salicylate, the urine, sp. gr. 1036, contained a notable proportion of albumen.

Discharged convalescent on November 11.

## CASE XV.

W. E., æt. 15 years, errand boy, was admitted November 2, 1877. No history of rheumatism either in patient or



family. Present illness began with pain in the chest and limbs, shivering and general malaise a few days ago.

*State on admission.*—Pulse 120; temperature  $101.4^{\circ}$ . Complains of pains in the knees and ankles; left ankle swollen, red, hot, and tender; breath sounds normal; heart's action irregular; a thrill at apex; friction at base; urine normal.

10 P.M.—Pulse 112; temperature  $102.2^{\circ}$ . Sweating freely.

November 3.—10 A.M. Pulse 108; temperature  $100.6^{\circ}$ . Passed a restless night; ankles less painful; heart's action irregular; cantering rhythm.

10 P.M.—Pulse 104; temperature  $101^{\circ}$ . Pulse intermitting.

4.—10 A.M. Pulse 92; temperature  $100.6^{\circ}$ .

Take 15 grains of salicylate of soda every four hours.

6 P.M.—Temperature  $102.4^{\circ}$ .

10 P.M.—Pulse 96; temperature  $100.2^{\circ}$ .

5.—10 A.M. Pulse 100; temperature  $99.6^{\circ}$ . Complains of pain in both feet; faint systolic murmur at apex of heart.

6 P.M.—Temperature  $101^{\circ}$ .

10 P.M.—Temperature  $99.2^{\circ}$ .

6.—The temperature, normal in the morning, rose at 7 P.M. to  $100.4^{\circ}$ , but fell to  $99.2^{\circ}$  at 10 P.M. It now remained, for the most part, subnormal for several days, falling on two occasions as low as  $96.2^{\circ}$  and  $96.6^{\circ}$ . The pulse ranged from 60 to 86. On November 6 gastric irritability and injected tongue supervened, and the salicylate was discontinued. The pains altogether disappeared after November 8, but the patient still continued to sweat, and the first cardiac sound remained long, rough, and murmurish.

Discharged convalescent on November 17.

#### CASE XVI.

G. W., æt. 30, policeman, admitted December 12, 1877. Had an attack of rheumatic fever two years ago; had measles six weeks since, and after resuming duty was exposed to wet; four days since began to suffer from pains in the knees and ankles, and afterwards in the elbows and shoulders.

*State on admission.*—Pulse 104; temperature  $101.3^{\circ}$ . Face flushed; skin moist; right wrist red, swollen, hot, and tender; both shoulders very painful and tender; faint systolic murmur at apex of heart.

9 P.M.—Pulse 96; temperature  $100^{\circ}$ .



December 13.—10 A.M. Pulse 120; temperature  $100.2^{\circ}$ . Urine, sp. gr. 1030, normal; complains of pain across the loins.

Take 15 grains of salicylate of soda every four hours.

10 P.M.—Temperature  $103^{\circ}$ . Perspiring.

14.—10 A.M. Pulse 100; temperature  $104.1^{\circ}$ . Vomited during night; complains of soreness of throat; fauces injected.

10 P.M.—Pulse 112; temperature  $101.4^{\circ}$ . Has again vomited.

15.—10 A.M. Pulse 104; temperature  $101.4^{\circ}$ . Has passed a restless night; perspired very copiously; slight systolic murmur at apex of heart; cantering rhythm.

10 P.M.—Pulse 112; temperature  $99.2^{\circ}$ .

16.—10 A.M. Pulse 88; temperature  $99.6^{\circ}$ . Has vomited several times this morning; is deaf.

10 P.M.—Pulse 88; temperature  $92.2^{\circ}$ . Urine, sp. gr. 1030, alkaline.

The temperature now remained normal or subnormal; the pulse ranged from 64 to 88. On the 18th there was a pericardial rub as well as a systolic murmur. The patient still sweated, and the specific gravity of the urine continued high until December 23. There was occasional vomiting, especially after the medicine. On December 20, the patient being quite free from pain, the salicylate was discontinued. Discharged well on January 4.

#### CASE XVII.

A. H., æt. 35, housewife, admitted November 23, 1879. Had rheumatic fever at the age of 16 years; subsequent health good; caught cold ten days ago, and awoke with pains in the ankles, afterwards spreading to other joints.

*State on admission.*—Pulse 116; temperature  $102.2^{\circ}$ . Has pains in most joints; heart's impulse forcible; systolic murmur at apex; second sound reduplicate.

9 P.M.—Pulse 120; temperature  $103.2^{\circ}$ .

Take 15 grains of salicylate of soda every four hours.

November 24.—9 A.M. Pulse 96; temperature  $100.2^{\circ}$ . Slept well; pains continue.

9 P.M.—Temperature  $100.2^{\circ}$ . Complains of pains in shoulders.

25.—9 A.M. Pulse 76; temperature  $98.4^{\circ}$ . Has pain only in right shoulder and hand.

9 P.M.—Pulse 90; temperature  $98.5^{\circ}$ .



From this time the temperature kept at or below the normal, with the exception of one or two evenings, when it reached  $99.4^{\circ}$ ; the pulse ranged from 90 to 98. The pains subsided slowly, and only finally ceased about December 15. On November 27 the first cardiac sound was feeble, and the tongue dry; next day the patient complained of vertigo and noises in the ears; two ounces of brandy were ordered, and the salicylate was omitted. A thrill was felt at the heart on December 3, and a præsystolic murmur became developed, which still remained when she was discharged, on December 24.

#### CASE XVIII.

H. L., æt. 16, errand boy, was admitted June 13, 1879. Previous health good; mother is subject to rheumatism. Got wet at beginning of last week, and a day or two afterwards experienced slight pains in the ankle-joints, which soon became swollen; pain in other joints soon appeared, and he became disabled.

*State on admission.*—Pulse 100; temperature  $100.8^{\circ}$ . Both knees and ankles swollen, red, and painful; skin hot and dry; heart sounds clean.

Take 15 grains of salicylate of soda every four hours.

9 P.M.—Pulse 108; temperature  $102.3^{\circ}$ . Skin hot and dry; complains of severe pain in the left knee, which is much swollen.

June 14.—Pulse 80; temperature  $99^{\circ}$ . Feels much better; no pain in left knee this morning.

9 P.M.—Pulse 72; temperature  $99.6^{\circ}$ .

15.—9 A.M. Pulse 72; temperature  $98^{\circ}$ .

9 P.M.—Temperature  $98.3^{\circ}$ .

16.—9 A.M. Pulse 72; temperature  $98.4^{\circ}$ . Free from pain; joints much less swollen; the first cardiac sound is feeble; no murmur.

Take the salicylate only every six hours.

The temperature now ranged from  $97.4^{\circ}$  to  $98.8^{\circ}$ , and the pulse from 68 to 88; there was no return of pain, and the swelling soon subsided. The medicine was reduced to three times a day on June 17, and discontinued a few days later. Discharged convalescent on July 15.

#### CASE XIX.

L. C., æt. 14 years, was admitted January 22, 1878. A brother and a sister suffer from rheumatism; had rheuma-



tism himself two years ago, but otherwise previous health good; present illness commenced on 20th inst. with pains in the knees and shivering.

*State on admission.*—Pulse 124; temperature 101.4°. Face flushed; ankles and knees swollen, red, hot, and painful; skin hot and dry; considerable hyperæsthesia of general surface; is confused in manner and slightly incoherent; systolic murmur at heart.

Take 10 grains of salicylate of soda every three hours.

10 P.M.—Pulse 108; temperature 102.6°. Perspiring freely.

January 23.—10 A.M. Pulse 108; temperature 100.8°. Slept well, but was wandering and talkative at times; knees considerably swollen, red, and tender; ankles less so than yesterday; well-marked pericardial friction over base of heart; urine normal.

10 P.M.—Pulse 88; temperature 99.4°.

24.—10 A.M. Pulse 84; temperature 98.8°. Free from pain, and generally better; pericardial friction less marked.

10 A.M.—Pulse 70; temperature 98.8°.

25.—10 A.M. Pulse 64; temperature 97.6°.

The temperature and pulse now kept at or about the normal standard, and there was no return of pain. The salicylate was discontinued on January 28. Discharged convalescent on February 26.

#### CASE XX.

C. C., æt. 10 years, was admitted on March 18, 1878. Previous health good; no history of rheumatism in family. Illness commenced with pains in the hips and ankles 17 days before admission.

*State on admission.*—Pulse 128; temperature 101.2°. Pains in ankles, feet, and wrists; wrists red, hot, and tender; other joints also tender, but not swollen; rough systolic murmur at base of heart.

9 P.M.—Pulse 140; temperature 101.6°. Sweating freely.

March 19.—9 A.M.—Pulse 128; temperature 100.2°. Urine, sp. gr. 1035, acid, sweating; pericardial friction over base of heart.

Take 10 grains of salicylate of soda every three hours.

9 P.M.—Pulse 90; temperature 100.5°. Sweating freely.

20.—10 A.M. Pulse 96; temperature 98.8°. Skin moist still has pains in the wrists. Vomited after medicine this morning.



9 P.M.—Temperature 99·4°.

21.—10 A.M. Pulse 96; temperature 99·2. Pericardial friction still audible; swelling and pains of joints much subsided. Vomited after medicine this morning.

Brandy, 1 ounce daily.

9 P.M.—Temperature 98·3°.

The temperature now ranged from 99° to 98°, the pulse from 80 to 96. Sweating continued for many days, but there was no return of pains. Vomiting recurred occasionally until the salicylate was discontinued. On March 26 it was reduced to a dose every six hours; and on March 28, the heart's impulse being very feeble and the first sound very faint, it was entirely omitted. Discharged convalescent on April 26.

### CASE XXI.

C. G., æt. 17 years, servant, was admitted March 14, 1878. Mother has had rheumatic fever; patient's previous health good. Present illness commenced on the 10th inst. with shivering, followed by pains in the elbows and knees.

*State on admission.*—Pulse 124; temperature 100·0°. Right knee and elbow hot, swollen, and very tender; face flushed, skin moist; faint systolic murmur at apex of heart.

9 P.M.—Pulse 124; temperature 101·4°. Sweating freely.

March 15.—10 A.M. Pulse 118; temperature 100°. Cantorizing rhythm of heart; right knee much swollen, hot, and painful.

9 P.M.—Pulse 128; temperature 101°.

16.—10 A.M. Pulse 100; temperature 99·8°. Faint thrill at heart; systolic murmur continues.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 116; temperature 103·2°. Knee still very painful; sweating profusely.

17.—10 A.M. Pulse 100; temperature 100·6°. Knee less painful.

9 P.M.—Temperature 101·6°.

18.—10 A.M.—Pulse 108; temperature 100·6°. Urine, sp. gr. 1030, alkaline; right knee still much swollen.

9 P.M.—Pulse 112; temperature 100·8°.

19.—10 A.M. Pulse 88; temperature 99·6°. Free from pain; systolic murmur at apex of heart.

20.—10 A.M. Pulse 88; temperature 98°. Sweating profusely; free from pain.

Between March 20 and April 3 the temperature ranged



from  $97.6^{\circ}$  to  $98.6^{\circ}$ , the pulse from 84 to 60. The systolic murmur continued audible until the patient left the hospital. On March 21, the patient complaining of intense headache, the salicylate was reduced to a dose every six hours; and on March 27, as the headache continued, the pulse was very irregular, and the first sound of the heart almost inaudible, and the patient complained of noises in the ears, the medicine was entirely discontinued. Discharged convalescent on April 24.

#### CASE XXII.

F. Y., æt. 18 years, footman, was admitted April 14, 1878. Father gouty, mother died of disease of the heart. Patient's previous health always excellent. Present illness commenced on 13th inst. with pains in the knees.

*State on admission.*—Pulse 96; temperature  $99.8^{\circ}$ . Both knees and ankles swollen, hot, and tender; skin moist; both cardiac sounds a little rough.

April 15.—9 A.M. Pulse 96; temperature  $99.2^{\circ}$ . Ankles rather less swollen and painful, knees still very painful.

9 P.M.—Temperature  $99.4^{\circ}$ .

16.—9 A.M. Pulse 96; temperature  $98.4^{\circ}$ . Almost free from pain; skin still moist.

9 P.M.—Pulse 92; temperature  $100.4^{\circ}$ . Both ankles again swollen and painful.

17.—9 A.M. Pulse 90; temperature  $98.2^{\circ}$ . Right ankle still swollen and painful, left much better; systolic murmur at apex of heart; both sounds rough at the base.

9 P.M.—Temperature  $100.5^{\circ}$ .

18.—9 A.M. Pulse 90; temperature  $99.6^{\circ}$ . Free from pain.

9 P.M.—Temperature  $100^{\circ}$ . Still perspiring.

19.—9 A.M. Pulse 92; temperature  $99.6^{\circ}$ . Ankle and right knee swollen; systolic murmur at heart fainter; second sound very rough at the base.

Take 15 grains of salicylate of soda every four hours.

9 P.M.—Temperature  $101.4^{\circ}$ .

20.—9 A.M. Pulse 96; temperature  $98.6^{\circ}$ . No pain in the joints.

9 P.M.—Temperature  $99^{\circ}$ .

The temperature now kept down to almost the normal standard, having only twice risen above  $99^{\circ}$ . The pains also entirely ceased after April 22, but the sweating continued for some days. The salicylate was reduced to a dose every eight hours on April 23, and discontinued on the 30th. A small trace of albumen was found in the urine on



May 6. The cardiac murmur became fainter, but had not gone when the patient was discharged, on May 10.

### CASE XXIII.

L. F., æt. 14, was admitted December 4, 1877; had rheumatic fever at 11 years of age. Present illness commenced on December 2 with shivering, pain in the back, and pains and swelling of knees and feet.

*State on admission.*—Pulse 104; temperature 101·8°. Skin hot and dry; ankles and elbows red, hot, swollen, and very tender; systolic murmur at apex of heart, most intense just within the nipple, and not audible behind.

December 5.—9 A.M. Pulse 105; temperature 99·4°. Pains as yesterday.

10 P.M.—Pulse 130; temperature 102·1°. Perspiring freely.

6.—9 A.M. Pulse 112; temperature 101·4°. Complains of pain in the lower part of sternum and also in the left knee and right elbow; urine, sp. gr. 1035, acid; pericardial friction at base of heart.

Take 15 grains of salicylate of soda every two hours.

10 P.M.—Temperature 102·4°. Sweating copiously.

7.—10 A.M. Pulse 100; temperature 100·4°. Much less pain; joints less tender and swollen; complains of nausea after medicine; still pericardial friction and a systolic murmur at apex of heart.

10 P.M.—Pulse 86; temperature 98·8°. Has vomited after last two doses of medicine.

8.—10 A.M. Pulse 100; temperature 98·6. Has again been sick after medicine. Free from pain; still sweating; deaf; pulse feeble; complains of swimming in the head.

Brandy, 1 ounce; omit salicylate, of which she has taken 265 grains.

10 P.M.—Temperature 98°.

The temperature now remained normal or subnormal, and the pulse quiet; there was no return of pains, but the sweating continued for some days. Discharged convalescent on January 3, 1878.

### CASE XXIV.

J. L., æt. 17, footman, was admitted on February 27, 1879. Previous health good; mother subject to rheumatism. Present illness began three weeks ago, but subsided, and he resumed his duty. He then got wet on the 25th, which brought on a recurrence of pains in the legs.



*State on admission.*—Pulse 96; temperature  $102.4^{\circ}$ . Pains in the knees, ankles, and right wrist. The affected joints are hot, swollen, and tender; sweating freely. Heart sounds clean.

February 28.—9 A.M. Pulse 104; temperature  $102.4^{\circ}$ .

Take salicylate of soda, 15 grains, every two hours.

9 P.M.—Temperature  $102.7^{\circ}$ .

March 1.—9 A.M. Pulse 84; temperature  $98.4^{\circ}$ . Pains much better; is rather deaf.

9 P.M.—Pulse 80; temperature  $99^{\circ}$ .

2.—9 A.M. Pulse 88; temperature  $97.6^{\circ}$ . Free from pain; complains of giddiness; wandered during night; sweating freely.

Take salicylate every three hours.

9 P.M.—Pulse 88; temperature  $98.6^{\circ}$ . Sweating; wanders.

3.—9 A.M. Pulse 84; temperature  $98^{\circ}$ . Free from pain; still deaf.

Brandy, 1 oz. daily; take medicine only every six hours.

9 P.M.—Pulse 76; temperature  $98.4^{\circ}$ . Sweating.

4.—9 A.M. Pulse 76; temperature  $98.5^{\circ}$ . Deafness continues; second sound of heart reduplicate; slight epistaxis.

Omit salicylate.

The day after the salicylate was discontinued the temperature rose to  $100^{\circ}$ , but soon fell again to the normal standard. The pulse ranged from 52 to 80; there was no return of pains, and the patient was discharged well on March 25.

## CASE XXV.

T. A., æt. 24, warehouseman, was admitted December 13. 1877. Previous health good. Mother has suffered from rheumatic fever; had been laid up at home for six weeks with rheumatic fever before admission.

*State on admission.*—Pulse 112; temperature  $100.4^{\circ}$ . Right knee swollen, red, and painful. Pericardial friction; systolic murmur at apex of heart, also audible behind.

9 P.M.—Pulse 112; temperature  $102.4^{\circ}$ . Sweating copiously.

Dec. 14.—10 A.M. Pulse 116; temperature  $102.6^{\circ}$ . Right wrist and hand, right knee and both ankles swollen, hot, and painful; sweating copiously. Heart's action irregular, faint thrill; systolic murmur and prefix at apex of heart; pericardial friction not so distinct.

Take salicylate of soda, 15 grains, every four hours.



9 P.M.—Pulse 108; temperature 101°. Restless; joints remain very painful.

15.—9 A.M. Pulse 104; temperature 100·8°. Still sweating; pains in joints diminished; heart's condition unchanged.

9 P.M.—Temperature 99·8°.

Take salicylate only every six hours.

From this date the temperature fell, and was always normal after the evening of the 16th; on the 17th the urine had a sp. gr. of 1038, and continued high for several days. On the 18th there was still pericardial friction. The salicylate was discontinued on December 23, and the patient was discharged on January 4, but with a systolic murmur.

## CASE XXVI.

J. W., æt. 14, was admitted on March 23, 1878. Previous health good. No history of rheumatism in family. Present illness began with pains in the legs on March 15; next day the knees became swollen and painful, and she experienced uneasiness in the præcordia.

*State on admission.*—Pulse 116; temperature 103·4°. Profuse sour sweating; both knees and left ankle swollen, red, hot, and very painful. Pericardial friction over præcordia; loud systolic murmur at apex of heart.

9 P.M.—Temperature, 102·5°.

March 24.—10 A.M. Pulse 106; temperature 101°. Right elbow and arm very painful.

10 P.M.—Temperature 100°.

25.—10 A.M. Pulse 100; temperature 98·2°. Knees better; right arm still painful.

10 P.M.—Temperature 98·6°.

26.—10 A.M. Pulse 90; temperature 98°. Free from pain.

10 P.M.—Pulse 108; temperature 101·0°. Perspiring very freely; complains of much pain in both elbows and wrist.

27.—10 A.M. Pulse 84; temperature 98·2°.

Take 15 grains of salicylate of soda every four hours.

10 P.M.—Temperature 99·8°. Skin moist; free from pain. From this time the temperature kept normal or sub-normal, and the pulse quiet. The pains did not recur, but a systolic murmur was still audible at the heart, when the patient was discharged, on April 28.



## CASE XXVII.

M. H., æt. 20, nursemaid, was admitted October 10, 1877. Previous health good, but a brother had suffered from rheumatic fever. Illness commenced on October 7 with pain in the back. Pains subsequently developed in knees and feet.

*State on admission.*—Pulse 124; temperature  $102.3^{\circ}$ . Urine, sp. gr. 1030, alkaline. Face flushed; knees and ankles swollen, red, and painful. Heart's impulse feeble, and accompanied by a thrill. Canterng rhythm. A musical systolic murmur at apex; slight friction inside nipple line.

9 P.M.—Pulse 124; temperature  $102^{\circ}$ .

October 11.—9 A.M. Pulse 128; temperature  $101.6^{\circ}$ . Pains not better. Condition of heart unchanged.

10 P.M.—Pulse 124; temperature  $101.8^{\circ}$ .

12.—9 A.M. Pulse 124; temperature  $101.8^{\circ}$ . Pains are less severe, and swelling of joints diminished.

2 P.M.—Temperature  $102.2^{\circ}$ . Sweating copiously; friction at heart still continues.

Take 30 grains of salicylate of soda every two hours.

10 P.M.—Pulse 128; temperature  $100.8^{\circ}$ . Sweating profusely; very little pain.

13.—Noon. Pulse 104; temperature  $99.6^{\circ}$ . A little pain in knees only; sweating; murmur at apex of heart; pericardial friction at mid-sternum. Slight deafness; sick after each dose of medicine.

Take 15 grains of salicylate of soda every three hours, and 1 drachm of brandy after each dose.

9 P.M.—Pulse 104; temperature  $100^{\circ}$ . Sweating; no pain. Still occasionally sick after medicine.

14.—9 A.M. Pulse 90, of good volume; temperature  $99.2^{\circ}$ . Sweating; no pain; faint friction and murmur at apex of heart.

10 P.M.—Pulse 96; temperature  $101^{\circ}$ . Perspiring; is rather deaf; no pain; sick after the last dose of medicine.

The temperature now ranged from  $99.8^{\circ}$  to  $97.6^{\circ}$ , and the pulse from 76 to 90. There was no return of pain. Perspiration continued for some days and the deafness increased; there was no return of sickness. On October 15 a small trace of albumen appeared in the urine, but was transient. On October 17 the deafness still continuing, and the patient complaining of noise in the ears, the salicylate was discontinued. The patient gradually improved in general health, but a faint systolic murmur was still audible when she was discharged, on November 9.



## CASE XXVIII.

A. M., æt. 22, was admitted November 28, 1876. Previous health good; no history of rheumatism in family; present illness commenced with a severe cold, followed after a few days by pains in the arms and legs.

*State on admission.*—Pulse 104; temperature 100·7°. Left wrist and knee and right instep very painful, but not swollen; pericardial friction at the left border of the sternum; perspiring copiously.

9 P.M.—Pulse 109; temperature 103°.

Nov. 29.—9 A.M. Pulse 104; temperature 100·7°. Pain and tenderness in the right shoulder; urine, sp. gr. 1030, normal, but loaded with lithates.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 88; temperature 101·4°.

30.—9 A.M. Pulse 76; temperature 100°. Pains diminished.

9 P.M.—Pulse 84; temperature 98·8°.

December 1.—9 A.M. Pulse 84; temperature 98·3°. Sweating profusely; pains less; pericardial friction continues, but is less marked.

9 P.M.—Pulse 92; temperature 98·2°. Sour sweating continues.

2.—9 A.M. Pulse 96; temperature 98·6°. Free from pain; still sweating; complains of giddiness and of feeling sick after medicine.

Omit salicylate.

The temperature now ranged from 99·8° to 97·9°, but rarely exceeded 98·6°; the pulse from 104 to 56. The pains gradually subsided, and the patient was discharged on December 16, when there was still a faint systolic murmur at the apex of the heart.

## CASE XXIX.

A. C., æt. 26, nurse, admitted on March 18, 1879. Had an attack of rheumatism two years ago; no history of rheumatism in family; illness commenced two days before being warded.

*State on admission.*—Pulse 92; temperature 100·4°. Sweating freely; complains of pains in the knees and ankles, but these joints are neither swollen nor tender; first sound



of heart prolonged and rough; impulse of heart rather forcible.

9 P.M.—Pulse 108; temperature 101°. Sweating freely.

Take 30 grains of salicylate of soda every eight hours.

March 19.—9 A.M. Pulse 100; temperature 100.5°.

Take salicylate every four hours.

9 P.M.—Pulse 92; temperature 99.8°.

20.—9 A.M. Pulse 96; temperature 99.6°. Pains diminished; less sweating.

9 P.M.—Temperature 99.6°. Restless.

21.—9 A.M. Pulse 88; temperature 99°. Is free from pain.

9 P.M.—Pulse 84; temperature 99.4°.

22.—9 A.M. Pulse 76; temperature, 99.6°. Perspires much; no pain.

9 P.M.—Temperature 99°.

23.—9 A.M. Pulse, 91; temperature 99.2°.

9 P.M.—Temperature 100.3°.

24.—3 A.M. Pulse 96; temperature 100°. Slight pain in right wrist and shoulder; perspires less.

Take salicylate every three hours.

9 P.M.—Temperature 100.8°.

25.—9 A.M. Pulse 108; temperature 100.6°; urine, sp. gr. 1035, acid.

9 P.M.—Temperature 101.6°.

26.—9 A.M. Pulse 100; temperature 100.2°. Complains of deafness and of uneasy sensations in the head.

9 P.M.—Temperature 100°.

27.—9 A.M. Pulse 80; temperature 99.3°.

Omit salicylate; take two grains of quinine every four hours.

The temperature now fell, and only twice again reached 99.8° for a few hours; the pains disappeared, and the patient was discharged convalescent on April 9.

### CASE XXX.

F. D., æt. 14 years, van-boy, admitted April 22, 1878. Illness commenced a few days since with chilliness and pains in the arms and shoulders.

*State on admission*.—Pulse 118; temperature 103.5°. Cheeks flushed; skin moist; complains of pains in back and limbs; has slight sore throat; urine, sp. gr. 1013, contains a trace of albumen; heart healthy.



10 P.M.—Pulse 108; temperature 102·5°. Skin moist.

April 23.—10 A.M. Pulse 96; temperature 102·2°. Pains chiefly in muscles of back and neck.

Take 10 grains of salicylate of soda every four hours.

9 P.M.—Pulse 100; temperature 101·4°.

24.—10 A.M. Pulse 98; temperature 102°. Sweating profusely; pains much better; faint systolic murmur at apex of heart; urine, sp. gr. 1020, free from albumen.

10 P.M.—Pulse 116; temperature 104·4°. Face flushed; skin hot and dry; patient wandering.

25.—10 A.M. Pulse 72; temperature 99·6°. Pulse rather irregular; sweating freely; was delirious during night.

Take salicylate every two hours, brandy 1 ounce daily.

9 P.M.—Temperature 100°.

26.—9 A.M. Pulse 84; temperature 99·2°. Perspiring.

Take salicylate only every three hours.

9 P.M.—Temperature 98·4°.

27.—9 A.M.—Pulse 78; temperature 100°. Is very deaf; complains of giddiness on being raised up; sweating freely.

9 P.M.—Temperature 98·5°.

From this date the temperature only once exceeded 99·2°, and was commonly normal or subnormal. The pulse ranged from 48 to 76, but became more irregular and feeble, rendering it necessary to give brandy more freely. The sweating continued for some days, but the pains ceased on April 30. The systolic murmur was still audible on May 17. The salicylate was gradually discontinued, and the patient was discharged convalescent on May 28.

### CASE XXXI.

J. B., æt. 45, carman, was admitted October 17, 1877. Mother and three brothers have suffered from rheumatic fever; has also himself had that disease twice; is a free liver; present illness commenced on October 15 with pains and swelling of the knees.

*State on admission.*—Pulse 108; temperature 101·4°; Urine, sp. gr. 1011, acid, albumen one-twelfth. Expression anxious; knees, ankles, and left wrist swollen, tender, hot, and painful; some of the finger-joints are also swollen and painful; lungs emphysematous; heart's impulse feeble; sounds clean; arteries tortuous.

10 P.M.—Temperature 101·2°.

18.—10 A.M. Pulse 104; temperature 100·0°. Pains easier.



Has pleurisy on left side; rhonchus audible over front of chest.

10 P.M.—Pulse 112; temperature 100·8°.

19.—10 A.M. Pulse 108; temperature 99·8°. Much pain in right arm.

9 P.M.—Pulse 108; temperature 101·8°.

20.—10 A.M. Pulse 100; temperature 100·4°. Urine still albuminous. Pains easier.

Take 15 grains of salicylate of soda every three hours.

10 P.M.—Pulse 92; temperature 100·4°. Sweating profusely.

21.—10 A.M. Pulse 94; temperature 99·4°. Right hand still very painful. Dulness on percussion over back of thorax; tubular breathing; effusion in lower part of left pleura.

10 P.M.—Pulse 84; temperature 101·6°.

22.—10 A.M. Pulse 96; temperature 99·0°. Profuse sweating; extremely deaf, says that he feels wandering and hears noises like a barrel organ and a steam hammer; complains of extreme frontal headache.

Brandy three ounces daily.

10 P.M.—Pulse 90; temperature 99·0°.

23.—10 A.M. Pulse 92; temperature 99·3°. Feels much better; headache less; has noises in ears; a little pain on movement only.

Take salicylate only every six hours.

10 P.M.—Pulse 88; temperature 99·0°.

24.—10 A.M. Pulse 90; temperature 98·2°. Pain in right wrist, elbow, and knee; condition of lung improving. Urine no longer albuminous.

Omit salicylate.

The pains continued, and the temperature rose on October 26 to 100·6°. Sulphate of quinine was now prescribed. The pains subsided slowly, but the lung mischief cleared up rapidly. Discharged convalescent, with a slight systolic murmur at the apex of the heart, on December 4.

## CASE XXXII.

W. D., æt. 19, clerk, admitted July 19, 1877. Previous health good; no history of rheumatism in family. Present illness commenced with chilliness on July 14, followed next day by pains in the feet and hands.

*State on admission.*—Pulse 128; temperature 103·6°.



Skin hot and moist. Ankles, feet, and right knee swollen, hot, red, and painful. Heart sounds normal.

10 P.M.—Pulse 108; temperature  $104.2^{\circ}$ . Sweating freely.

July 20.—9 A.M. Pulse 126; temperature  $102.8^{\circ}$ . Slept after a dose of chloral and morphia. Sweated very profusely during the night; loud friction over præcordia.

Take 30 grains of salicylate of soda every two hours.

8. P.M.—Pulse 132; temperature  $102.6^{\circ}$ ; respirations 50. Pulse very compressible; is rather deaf; face pale; complains of breathing being short and difficult.

Discontinue salicylate, of which two and a half drachms have been taken; ordered two drachms of brandy every two hours, subsequently increased to half an ounce.

21.—10 A.M. Pulse 180; temperature  $102.8^{\circ}$ ; respirations 60. Pulse very compressible. Sweating; has been sick; continues very deaf. Heart sounds feeble, first scarcely audible; pericardial friction and soft blowing systolic murmur at apex of heart. Pains in right elbow, wrist, hand, and knee on movement only.

The salicylate was not resumed. The temperature fell in the course of a few days, and the pains, pericarditis, and sour sweating subsided. Discharged quite well on September 7.

### CASE XXXIII.

S. J. P., æt. 30, housewife, admitted August 26, 1879. Had rheumatic fever at the age of 20 years, and has suffered since from winter cough. Present illness commenced about six days ago with pains in the knees, hips, and left hand.

*State on admission.*—Pulse 88; temperature  $100.3^{\circ}$ . Severe pain in both knees, ankles, and left hand. A soft systolic murmur at apex of heart traceable into axilla. Skin moist.

9 P.M.—Pulse 96; temperature  $101.4^{\circ}$ .

Take 15 grains of salicylate of soda every four hours.

August 28.—9 A.M. Pulse 100; temperature  $100.0^{\circ}$ . Pain in the left hand very severe. Pericardial friction.

9 P.M.—Temperature  $101.0^{\circ}$ .

29.—9 A.M. Pulse 100; temperature  $100.0^{\circ}$ . Pain in right shoulder and wrist; sweating profusely.

9 P.M.—Temperature  $100.0^{\circ}$ . Complains of deafness.

30.—9 A.M. Pulse 108; temperature  $101.6^{\circ}$ . Deafness.



Take salicylate only every six hours.

9 P.M.—Temperature  $100.4^{\circ}$ .

31.—9 A.M. Pulse 88; temperature  $100.2^{\circ}$ .

9 P.M.—Temperature  $99.4^{\circ}$ .

September 1.—9 A.M. Pulse 88; temperature  $99.3^{\circ}$ .

Pericardial friction well marked; less deafness.

9 P.M.—Pulse 88; temperature  $100.4^{\circ}$ .

2 to 26.—The temperature reached  $100.8^{\circ}$  on the evening of September 3, but, with this exception, ranged from  $96.8^{\circ}$  to  $99.4^{\circ}$ , and was after the 3rd mostly subnormal. The pulse ranged during the same period from 60 to 68. Pericardial friction continued throughout this time, and on September 4 some dulness on percussion and crepitation was found on the left side of thorax.

The salicylate was reduced to a dose three times a day on September 6, and discontinued on the 9th.

On September 26, when considered as convalescent, there was return of pains in several joints and of pericardial friction. The temperature and pulse rose with this relapse, but not so high as previously. On October 2, 15 grains of salicylate of soda were ordered to be taken every three hours, and two ounces of brandy to be given daily, in small doses, at regular intervals. Deafness soon followed the use of the medicine, and on October 5 the patient was wandering, and saw persons at her bedside. The salicylate was now reduced to a dose every six hours. The sweating continued, and the pains did not cease until after October 10. The medicine was now reduced to a dose twice a day, and entirely omitted on the 14th. Patient was discharged convalescent on October 31, but a systolic murmur was still audible.

#### CASE XXXIV.

D. H. P., æt. 21, draper's assistant, admitted April 27, 1877. Has had three previous attacks of rheumatic fever. Present illness commenced a few days ago, with pains in the feet, knees, and shoulders, and much sweating.

*State on admission.*—Pulse 108; temperature  $101.2^{\circ}$ . Sour sweating; pains in both shoulders, right elbow and wrist, and left knee. Heart sounds clean.

For five days after admission the temperature ranged from  $101.4^{\circ}$  to  $103.4^{\circ}$ , and the pulse from 108 to 116. The pains wandered from joint to joint, and pericarditis became developed. During this time quinine was administered in large doses.



May 3.—9 A.M. Pulse 96; temperature 102·0°. Has severe pain in both hands; sweating freely; impaired resonance on percussion, and abundant crepitation over posterior bases of both lungs.

Take 30 grains of salicylate of soda every two hours.

9 P.M.—Pulse 116; temperature 99·0°.

4.—9 A.M. Pulse 118; temperature 97·8°. Perspiring profusely; pains in both wrists and elbows.

9 P.M.—Pulse 118; temperature 97·3°. Has no pain; very deaf; sweating freely.

Omit salicylate.

The temperature kept normal or subnormal, and the pulse about 90, until May 7; trunk covered with sudamina; free from pain. On May 7 the temperature rose to 99·6°, and a faint systolic murmur was heard, with reduplication of the second sound of the heart. On May 9 there was pain in the left knee, and pericardial friction was audible.

9.—9 P.M. Pulse 112; temperature 101·3°. Pain in right ankle and left knee; sweating profusely.

10.—9 A.M. Pulse 112; temperature 101·6°. Sour sweating. Pains in right ankle, left knee, and both elbows; pericardial friction.

Take 30 grains of salicylate of soda every two hours; brandy four ounces daily.

11.—9 A.M. Pulse 120; temperature 101·4°. Respirations 28; left elbow swollen, red, hot, and painful; other joints free.

9 P.M.—Pulse 116; temperature 100·4°.

12.—9 A.M. Pulse 100; temperature 98·0°. Sweating very freely. Very slight pain in left elbow. Deafness has returned; tongue tremulous.

The temperature now remained normal, and the patient appearing to improve, the salicylate was omitted on May 16, when he was extremely deaf. On May 20 the temperature rose to 99·4°. Profuse sweating returned, and he complained of pains in the chest. On May 24, at 10 P.M., pulse 112; temperature 102·5°. Perspiring copiously; pain in hips and chest.

Take 15 grains of salicylate of soda every two hours.

25.—9 A.M. Pulse 84; temperature 100·4°. The temperature now again fell rapidly, but free sweating continued, and deafness returned.

Discharged well on June 12.



## CASE XXXV.

W. C., æt. 16, printer's boy, admitted May 15, 1877.

Previous health good. Present illness commenced two days ago with pains in legs and ankles.

*State on admission.*—Pulse 108; temperature 102.0°. Both knees, ankles, and elbows more or less swollen, hot and tender; heart's impulse diffused and attended by a thrill; faint pericardial rub at apex; sibilant râles over front of lungs.

9 P.M.—Pulse 108; temperature 104.2°.

16.—10.30 A.M. Pulse 110; temperature 104.0°. Pains much less severe, but still present in same joints as yesterday.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 88; temperature 100.8°. Profuse sour sweating.

17.—9.45 A.M. Pulse 84; temperature 97.8°. Pains have much diminished, but there still is much pain on movement of the affected joints. There is also to-day some redness about the right knee, wrist, and ankle; sour sweating. Heart sounds normal; pulse rather feeble.

9 P.M.—Pulse 88; temperature 97.4°. Still sweating; has very little pain. Is rather deaf and has been sick this evening.

18.—8 A.M. Pulse 80; temperature 97.8°. Still sweats; increased deafness; has been repeatedly sick after medicine. Omit salicylate of soda.

9 P.M.—Temperature 98.0°.

19.—8.30 A.M. Pulse 74; temperature 98.2°. Scarcely any pain in joints, but they still remain swollen; perspiring gently; pericardial rub still audible.

9 P.M.—Temperature 97.5°.

The temperature now remained normal until June 1; the pulse became weak and irregular, and ranged from 44 to 60. There were no pains, but the cardiac murmur continued audible.

June 1.—9 A.M. Pulse 92; temperature 99.6°. Free from pain.

9 P.M.—Pulse 64; temperature 100.0°. Sweating profusely.

2.—9 A.M. Pulse 92; temperature 100.2°. Has pains in elbows, right shoulder, and hand; sweating freely.

9 P.M.—Pulse 100; temperature 101.6°.



3.—9 A.M. Pulse 100; temperature 101.4°. Pains continue.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 84; temperature 99.8°. Pains in both elbows, right shoulder, and wrist.

4.—9 A.M. Pulse 90; temperature 99.2°. Sweated much during night. Joints still painful, but pain not so severe; murmur still audible at præcordia.

9 P.M.—Pulse 72; temperature 99.8°.

5.—9 A.M. Pulse 72; temperature 97.8°. Pulse soft and compressible; sweating freely; slight pain in right elbow only. Has been sick.

Take salicylate only every four hours.

9 P.M.—Pulse 76; temperature 97.8°.

The temperature now kept normal or subnormal, and the pulse from 65 to 72; brandy was given in small doses for the sickness; the pains and sweating did not entirely disappear until June 9, on which day the medicine was discontinued. The patient was discharged quite well, but with a faint thrill at the heart, and also with both a slight systolic and præ systolic murmur, on June 19.

#### CASE XXXVI.

F. W. B., æt. 13, butcher's boy, admitted May 18, 1877.

Had rheumatic fever six years ago; health otherwise good. Present illness commenced on 14th instant with pains in the feet and knees.

*State on admission.*—Pulse 109; temperature 101.0°. Knees and ankles swollen, red, hot, and painful. Loud pericardial friction, intensified by pressure, is audible at second left costal cartilage.

11 P.M.—Temperature 100.6°.

20.—10 A.M. Pulse 116; temperature 99.6°. Complains of severe pain at the epigastrium.

9 P.M.—Pulse 128; temperature 99.4°.

21.—9 A.M. Pulse 108; temperature 100.5°. Pain, both in epigastrium and limbs, better.

Take 10 grains of salicylate of soda every two hours.

9 P.M.—Pulse 92; temperature 98.0°. Has taken only two doses of salicylate.

22.—Pulse 72; temperature 98.4°. Has no pain, but there is still swelling of joints.

Take salicylate only every six hours.



The salicylate was discontinued on May 23. The temperature had remained subnormal, and the pains and swelling had altogether subsided for some days, when on June 1 the patient complained of pain in the right knee. Next day both knees were hot, swollen, and painful. Sweating returned, and in the evening the pulse had risen to 90, and the temperature to  $100\cdot4^{\circ}$ .

June 3.—9 A.M. Pulse 108; temperature  $99\cdot8^{\circ}$ . Pains in both knees and ankles; sweating freely.

Take 10 grains of salicylate of soda every two hours.

9 P.M.—Pulse 100; temperature  $99\cdot8^{\circ}$ .

Next day the temperature had again become normal, the pains were easier, and the pulse soft and compressible. The progress towards recovery was now steady; the salicylate was discontinued on June 10, and the patient was discharged quite well on June 19.

#### CASE XXXVII.

M. A. R., æt. 25, laundress, admitted August 10, 1877.

Had rheumatic fever two years ago, and has subsequently suffered from palpitation; present illness commenced on 2nd inst. with pain and swelling of several joints.

*State on Admission.*—Pulse 126; temperature  $101\cdot4^{\circ}$ . Urine, sp. gr. 1026, acid, albuminous, face flushed; right hand, wrist, and elbow swollen and painful; both shoulders and hips are also painful on movement, and there is considerable pain and tenderness over the lower half of sternum; lungs normal; heart's impulse diffused, faint thrill at apex, cantering rhythm; heart's sounds weak, and the first obscured by a murmur; pulse small, but firm; is sweating profusely.

Take 15 grains of salicylate of soda every three hours and apply two leeches to præcordia.

August 10.—9 P.M. Pulse 128; temperature  $101\cdot6^{\circ}$ .

11.—8 A.M. Pulse 116; temperature  $101\cdot0^{\circ}$ . Much easier, but still has pain in several joints, including the articulation of lower jaw.

10 P.M.—Pulse 116; temperature  $100\cdot2^{\circ}$ . No pain except on movement; pericardial friction continues; sweating freely; is rather deaf, and hears a noise, as of an engine, in ears.

12.—9 A.M. Temperature  $99\cdot6^{\circ}$ . Quite free from pain; very deaf; fancies she hears people speaking close to her, and when she closes the eyes sees all manner of things.



Take salicylate only every four hours; brandy two drachms every three hours.

9 P.M.—Pulse 104; temperature  $99.4^{\circ}$ . Is depressed and very low; very deaf; feels queer, and has much noise in the head; sick after medicine; pain in left hand only.

Take salicylate every six hours.

13.—After reducing the salicylate last night the temperature ran up to  $102.6^{\circ}$ .

9 A.M.—Pulse 100; temperature  $100.6^{\circ}$ . Urine free from albumen, sp. gr. 1030; still has noises in head and deafness; no return of sickness; sweating; loud systolic murmur at apex of heart; slight pericardial friction at base.

9 P.M.—Temperature  $100.2^{\circ}$ .

14.—9 A.M. Pulse 100; temperature  $100.6^{\circ}$ . General condition improved; noises in head and deafness decreased.

9 P.M.—Pulse 104; temperature  $100.2^{\circ}$ .

15.—9 A.M. Pulse 100; temperature  $100.0^{\circ}$ . Improving; still has sweating and præcordial pain; has a singing noise in ears, and still fancies she sees things when she closes the eyes; loud pericardial friction and systolic murmur at apex.

9 P.M.—Pulse 106; temperature  $100.0^{\circ}$ .

For several days the temperature ranged from  $99.4^{\circ}$  to  $100.0^{\circ}$ , and the pulse from 90 to 98; the sweating continued, but the pains altogether subsided after August 15. The condition of the heart was unchanged, and the noises in the ears, with vertigo and headache, were troublesome. On the 19th the tongue became tremulous, and severe retching and sickness supervened; the medicine was then discontinued.

On August 24 there was return of pains in the shoulders and right wrist. At 9 P.M. the pulse was 96; the temperature  $101.2^{\circ}$ . Next day the temperature was over  $100.0^{\circ}$  all day, and rose in the evening to  $102.3^{\circ}$ . On August 26 the rheumatic pains were much worse, and the action of the heart was cantering.

Take 10 grains of salicylate of soda every three hours.

During the following three days the temperature remained over  $100.0^{\circ}$ ; the pulse from 86 to 108. On August 29 the temperature fell to  $98.7^{\circ}$ . There was no pain, but there was some uneasiness in the head caused by the salicylate. This was discontinued on September 6, and the patient was discharged well, but with both a systolic and præ systolic murmur, on October 10.



## CASE XXXVIII.

C. T., æt. 16, printer, admitted September 14, 1877.

No personal or family history of rheumatism; illness commenced on September 11 with pains in the knees and arms.

*State on Admission.*—Pulse 128; temperature  $101.8^{\circ}$ . Wrists, hands, elbows, knees, and ankles more or less swollen, red, hot and painful; cantering rhythm of heart.

Take 10 grains of salicylate of soda every three hours.

September 14.—9 P.M. Pulse 120; temperature  $101.2^{\circ}$ .

15.—10 A.M. Pulse 112; temperature  $100.6^{\circ}$ . Pains easier; rough friction over base of heart.

10 P.M.—Pulse 96; temperature  $100.5^{\circ}$ .

16.—10 A.M. Pulse 96; temperature  $99.4^{\circ}$ . Sweating; severe pain in right elbow; pericardial friction continues.

10 P.M.—Temperature  $99.4^{\circ}$ . Pains much decreased.

From this date until September 26 there was little pain, and the temperature only twice reached  $100.0^{\circ}$ ; it ranged, with these exceptions, from  $97.2^{\circ}$  to  $99.6^{\circ}$ ; the pulse from 68 to 88. The salicylate was discontinued on September 21. On September 24 the patient complained of slight pain in the elbows and knees, and next day the temperature, previously quite normal, rose to  $99.8^{\circ}$ .

26.—10 A.M. Pulse 108; temperature  $101.6^{\circ}$ . Pains in shoulders.

Take 10 grains of salicylate of soda every six hours; brandy, two ounces daily.

9 P.M.—Pulse 88; temperature  $100.6^{\circ}$ .

27.—10 A.M. Pulse 84; temperature  $101.4^{\circ}$ .

Take salicylate every three hours.

9 P.M.—Pulse 80; temperature  $99.8^{\circ}$ . Severe pains in right knee and shoulder; pulse extremely soft and compressible.

28.—10 A.M. Pulse 92; temperature  $101.6^{\circ}$ .

10 P.M.—Pulse 84; temperature  $100.4^{\circ}$ .

29.—10 A.M. Pulse 84; temperature  $100.4^{\circ}$ .

10 P.M.—Pulse 72; temperature  $99.8^{\circ}$ .

30.—9 A.M. Pulse 88; temperature  $100.6^{\circ}$ .

9 P.M.—Temperature  $99.6^{\circ}$ .

October 1.—9 A.M. Pulse 88; temperature  $99.8^{\circ}$ . Pain now only in right knee.

Omit salicylate.

9 P.M.—Temperature  $99.8^{\circ}$ .



2.—9 A.M. Pulse 80 ; temperature  $99.2^{\circ}$ .

9 P.M.—Pulse 88 ; temperature  $100.2^{\circ}$ .

The pains now entirely disappeared, but the temperature remained rather above the normal for some time. Discharged well on November 10.

### CASE XXXIX.

F. T., æt. 19, draper's assistant, admitted September 17, 1877. Had rheumatic fever ten years ago ; present illness commenced on 15th inst. with pains and stiffness in several joints.

*State on Admission.*—Pulse 96 ; temperature  $103.4^{\circ}$ . Knees, ankles, and right shoulder painful, swollen, and hot ; redness of ankles ; soft blowing systolic murmur at apex of heart ; skin dry ; rough grazing friction at base of heart.

Apply four leeches to præcordia ; take 15 grains of salicylate of soda every three hours.

September 17.—10 P.M. Pulse 88 ; temperature  $102.4^{\circ}$ .

18.—10 A.M. Pulse 92 ; temperature  $101.8^{\circ}$ . First cardiac sound weak and almost inaudible at the apex of heart ; pains and swelling of joints continue.

10 P.M.—Pulse 80 ; temperature  $100.6^{\circ}$ . Is wandering ; manner excited ; pains very severe ; eyes injected.

19.—10 A.M. Pulse 96 ; temperature  $100.6^{\circ}$ . Patient wandering and restless all night.

Salicylate omitted from 10 P.M. last evening. This morning the patient is restless and irritable, but sensible ; complains of pain in left knee and right shoulder ; pleuritic friction on left side ; crepitation in base of left lung ; pericardial friction at base of heart.

Resume salicylate every six hours.

10 P.M.—Pulse 88 ; temperature  $100.6^{\circ}$ . Is less restless.

20.—10 A.M. Pulse 96 ; temperature  $100.6^{\circ}$ . Joints of hands more swollen and painful.

Take salicylate every four hours.

10 P.M.—Pulse 92 ; temperature  $101.8^{\circ}$ . Pain in left hand much worse ; pain has also returned in right shoulder.

21.—10 A.M. Pulse 80 ; temperature  $102.4^{\circ}$ . Friction at extreme base of left lung ; slight rub at apex of heart ; second sound reduplicate at base ; pains in joints less.

6 P.M.—Temperature  $103.2^{\circ}$ .

10 P.M.—Pulse 92 ; temperature  $100.6^{\circ}$ . Little pain except on movement.



22.—10 A.M. Pulse 92 ; temperature  $100.6^{\circ}$ . More pain in knees, less in arms.

During this day the temperature varied much, and ranged from  $102.0^{\circ}$  to  $103.5^{\circ}$ .

10 P.M.—Temperature  $102.3^{\circ}$ .

23. 10 A.M. Pulse 88 ; temperature  $101.8^{\circ}$ . Still has wandering pains in knees and hands ; heart sounds very muffled ; no friction or murmur.

10 P.M.—Pulse 80 ; temperature  $102.0^{\circ}$ .

24.—10 A.M. Pulse 76 ; temperature  $99.6^{\circ}$ . No pain in joints.

10 P.M.—Pulse 72 ; temperature  $99.6^{\circ}$ .

25.—10 A.M. Pulse 84 ; temperature  $97.5^{\circ}$ . No pain ; systolic murmur at apex of heart ; no pericardial friction ; scanty crepitation in bases of lungs.

Take salicylate every six hours.

10 P.M.—Pulse 68 ; temperature  $99.4^{\circ}$ .

The pain now remained absent, and the temperature ranged from  $98.5^{\circ}$  to  $99.6^{\circ}$  until September 30. The pulse fell to 56, became very feeble, and the second sound of the heart was reduplicate at the base. The patient had repeated attacks of epistaxis ; two drachms of brandy were given every three hours, but as the depression continued, the salicylate was discontinued on September 29. On September 30, the temperature rose to  $101.2^{\circ}$ , and on October 2 to  $102.3^{\circ}$ . The patient now again complained of stiffness in several joints, and sweating recommenced. The salicylate was then ordered to be given in doses of 15 grains every four hours.

October 3.—10 A.M. Pulse 100 ; temperature  $101.6^{\circ}$ . Complains of pains in legs and back.

10 P.M.—Pulse 104 ; temperature  $100.2^{\circ}$  ; had been  $102.8^{\circ}$  at 2 P.M.

4.—10 A.M. Pulse 100 ; temperature  $100.4^{\circ}$ . Less pain ; pleuritic friction in left axilla ; deficient percussion resonance and harsh breathing in posterior bases of both lungs ; faint systolic murmur at apex of heart.

10 P.M.—Pulse 110 ; temperature  $102.2^{\circ}$ .

5.—10 A.M. Pulse 112 ; temperature  $101.3^{\circ}$ .

10 P.M.—Temperature  $102.2^{\circ}$ .

6.—10 A.M. Pulse 100 ; temperature  $101.6^{\circ}$ . Pains in knees and ankles.

10 P.M.—Pulse 104 ; temperature  $102.3^{\circ}$ . Pulse small and very feeble.

Take half an ounce of brandy every three hours.



From October 7 to 12 the temperature ranged from  $101.0^{\circ}$  to  $102.8^{\circ}$ , the pulse from 92 to 100. On the 9th there was pain in the left shoulder and the pulse became very weak. The brandy was increased from 4 to 6 ounces in the day. There was much perspiration, and both a systolic and præ-systolic murmur were audible at apex of heart.

12.—10 P.M. Pulse 96; temperature  $99.2^{\circ}$ . No pain. During the 13th and 14th the temperature ranged from  $98.0^{\circ}$  to  $100.0^{\circ}$ . There was pain in the left wrist and copious sweating.

From October 14 to 22 there was no pain; the temperature was about normal, and the patient being very anæmic the medicine was discontinued, and tincture of perchloride of iron given. He improved very much in appearance under this treatment, but on October 22 the pulse became more rapid and the temperature rose to  $99.4^{\circ}$ .

25.—10 A.M. Pulse 132; temperature  $101.4^{\circ}$ . Right wrist, hand, and instep swollen and painful.

Take salicylate of soda, 15 grains every three hours.

26.—10 A.M. Pulse, 16; temperature  $101.2^{\circ}$ . Pains continue.

10 P.M.—Pulse 120; temperature  $101.6^{\circ}$ .

27.—10 A.M. Pulse 124; temperature  $99.2^{\circ}$ . Has pain now only in the right instep.

10 P.M.—Pulse 120; temperature  $100.3^{\circ}$ .

The temperature now fell rapidly, and did not exceed the normal after noon of October 28; it subsequently ranged from  $97.0^{\circ}$  to  $98.4^{\circ}$ . There was no return of pain; vomiting supervened on the 28th. The salicylate was discontinued on November 2, and the patient was discharged convalescent towards the end of the month.

## CASE XL.

F. P., æt. 19, clerk, admitted October 19. Previous health good; present illness began on October 16 with pains in the knees and ankles; had rigors on the day of admission.

*State on admission.*—Pulse 90; temperature  $101.0^{\circ}$ . Complains of pains in the shoulders, knees, and ankles; frontal headache; sore throat; fauces congested; dry râles over front of left lung; heart sounds normal.

8 P.M. Pulse 96; temperature  $102.6^{\circ}$ .



20—10 A.M. Pulse 104; temperature  $101.6^{\circ}$ . Canterring rhythm of heart.

10 P.M.—Pulse 96; temperature  $101.8^{\circ}$ .

21.—10 A.M. Pulse 110; temperature  $102.0^{\circ}$ . Pericardial friction just within nipple; slight redness and tenderness of affected joints.

Take 15 grains of salicylate of soda every two hours.

10 P.M.—Temperature  $101^{\circ}$ .

22.—10 A.M. Pulse 96; temperature  $99.5^{\circ}$ . Sweating; no pain except on movement; is deaf; pulse soft and compressible.

10 P.M.—Pulse 88; temperature  $99.8^{\circ}$ . Slight epistaxis; increased deafness.

Take salicylate only every four hours.

23.—10 A.M. Pulse 88; temperature  $99.2^{\circ}$ . Complains of pain in the mid-sternum and left shoulder; rather less deaf.

10 P.M.—Pulse 76; temperature  $99.6^{\circ}$ . Faint systolic murmur at apex, and slight rub at base of heart.

24.—10 A.M. Pulse 72; temperature  $98.8^{\circ}$ . No pain.

Take salicylate only every six hours.

10 P.M.—Pulse 76; temperature  $99.8^{\circ}$ .

From October 25 to 31 inclusive, the temperature ranged from  $97.2^{\circ}$  to  $99.4^{\circ}$ , the pulse from 60 to 74. Slight pains continued, but were chiefly felt on movement; the systolic murmur did not entirely cease, and the pericardial rub was heard for several days. On November 1 the salicylate was discontinued, and iodide of potassium and quinine prescribed instead. On November 2 the pulse and temperature began to rise again. On November 3 the temperature was  $100.1^{\circ}$  all day, the pulse 100. Both pulse and temperature remained a little elevated, and pains in the elbows and shoulders, with sweating, returned. On November 16, the pains being worse, but the temperature only  $99.3^{\circ}$ , the salicylate was again prescribed in doses of 15 grains every four hours. The pulse and temperature were lowered at once, but the pains did not rapidly subside. Deafness supervened and became extreme. On November 26 there was still pain in the left elbow. Discharged, but not altogether free from occasional pain and a systolic murmur, on December 14.

#### CASE XLI.

H. L., æt. 13 years, page, admitted November 6, 1877. Previous health good; no history of rheumatism in



family; present illness commenced a few days ago with shivering and chilliness, followed by pains in the knees.

*State on admission.*—Pulse 138; temperature 103°. Knees swollen and painful when touched; complains of pain in the præcordia, increased by deep breathing; skin hot and dry; cantering rhythm of heart; both sounds rough.

10 P.M.—Pulse 140; temperature 101·6°.

Nov. 7.—10 A.M. Pulse 132; temperature 101·4°. Both ankles and knees swollen and very painful; much tenderness over the præcordia; cantering rhythm continues.

Take 15 grains of salicylate of soda every three hours.

10 P.M.—Pulse 128; temperature 102·4°. Has been wandering; is very restless.

8.—10 A.M. Pulse 112; temperature 99·2°. Pains in limbs better; deafness; faint friction inside left nipple.

10 P.M.—Temperature 99°.

The temperature now fell, and only on a few occasions during the following week rose to 99·6°, being for the most part normal, or a little below the normal standard; the pulse ranged from 80 to 100. Cardiac friction and a systolic murmur were persistently audible, and there still remained some pain and tenderness over the præcordia; the pains in the limbs soon passed away. The boy became exceedingly deaf. On November 13 the tongue was very dry, and vomiting had set in; the salicylate was, therefore, discontinued. On Nov. 17 the temperature rose to 100·6° and the pulse to 100, and continued so until the 19th, when the patient complained of pains in both knees and right shoulder. At 10 P.M. the pulse was 96; the temperature 103·1°.

20.—10 A.M. Pulse 100; temperature 100·2°. Both knees and left elbow are swollen, hot, and tender; both cardiac sounds rough.

Take 15 grains of salicylate of soda every three hours.

The pulse and temperature fell to the normal height on the 21st. On November 30 there was extreme headache, and the medicine was left off. On December 8 there was another accession of pains with fever, which subsided rapidly, and the patient was discharged convalescent, but with a systolic apex murmur, on January 14.

## CASE XLII.

M. R., æt. 24 years, servant, admitted June 4, 1877. Previous health good; illness commenced on May 28 with



pains in the knees, followed next day by pains in elbows and other joints.

*State on admission.*—Pulse 92; temperature 99.1°. Both knees, left wrist, elbows, and shoulders painful; first cardiac sound rough; no definite murmur or friction.

9 P.M.—Pulse 108; temperature 101°. Pains more severe; has pain in mid-sternum.

June 6.—9 A.M.—Pulse 88; temperature 100.4°. Pain and swelling of every joint of left upper and lower extremities, and also in right ankle, and wrist.

9 P.M.—Pulse 96; temperature 101.4°. Much pain in joints.

7.—9 A.M. Pulse 100; temperature 100.1°. Pains unchanged.

9 P.M.—Pulse 105; temperature 102.8°.

8.—9 A.M.—Pulse 92; temperature 100°. Knuckles of right hand much swollen, red, and very painful; pains elsewhere as yesterday.

Take 30 grains of salicylate of soda every two hours.

10 P.M.—Temperature 100.2°.

9.—9 A.M. Pulse 116; temperature 101.4°. Sour sweating. Complains of head being hot and stupid; is not quite coherent; wandered last night.

9 P.M.—Pulse 116; temperature 99.4°. Has pain in left wrist only; deaf; seems weak.

10.—9 A.M. Pulse 100; temperature 99.3°. Passed a restless, delirious night; pulse weak; headache; deaf; faint blowing systolic murmur at apex of heart; pericardial rub at base; slight epistaxis last evening.

Take salicylate only every four hours.

9 P.M.—Pulse 120; temperature 100.8°. Headache; sickness after medicine; throat dry; deafness.

Omit salicylate.

11.—9 A.M. Pulse 100; temperature 98.8°. No pain in joints; slight epistaxis; systolic murmur and pericardial friction still audible.

10 P.M.—Pulse 100; temperature 101.4°.

12.—Temperature from 99° to 99.6° all day. Pulse 90. No pain; still sweating.

13.—9 A.M. Pulse 76; temperature 99.6°. Sour sweating; has recurrence of pain; heat and redness in several joints.

Take salicylate of soda, 30 grains, every four hours.

9 P.M.—Pulse 88, small and compressible; temperature 100°.



14.—9 A.M. Pulse 92; temperature 101.3°. Pains in knees, shoulders, elbows, and right wrist.

Take the salicylate every two hours.

9 P.M.—Pulse 88; temperature 100°. Headache; profuse sweating.

15.—9 A.M. Pulse 92; temperature 98.6. Very little pain in joints; deafness has returned.

The temperature now never exceeded 99.4°, and was commonly quite normal. The pulse ranged from 60 to 90. On June 16 severe retching and sickness set in; the throat became dry, the hands tremulous, and the patient restless at night. The deafness also continued for some days. Slight pains recurred from day to day; more or less sweating continued, and pericardial friction was noted on June 21. The salicylate was reduced to a dose every eight hours on June 18, and discontinued on June 24. Discharged well, and without any cardiac murmur, on July 13.

### CASE XLIII.

T. L., æt. 25 years, carpenter, admitted February 5, 1878. Father gouty; has had three previous attacks of rheumatic fever. Illness commenced on 3rd inst. with pains in knees and ankles.

*State on admission.*—Pulse 116; temperature 101.4°. Right wrist, and both knees and ankles swollen, red, and tender; pain in præcordia; systolic murmur and rough second sound at base of heart.

Take 15 grains of salicylate of soda every four hours.

10 P.M.—Pulse 120; temperature 102.1°. Skin moist.

February 6.—10 A.M. Pulse 108; temperature 102.4°. Pains in joints easier; profuse perspiration.

10 P.M.—Pulse 80; temperature 101.2°.

7.—10 A.M. Temperature 101°. Free from pain in joints; pericardial friction.

9 P.M.—Temperature 100.4°.

8.—9 A.M. Pulse 88; temperature, 99°. Only slight pain in right knee.

9 P.M.—Temperature 98.6°.

From February 9 to 14 inclusive the temperature was normal or subnormal; the pulse ranged from 76 to 84; there was no pain; systolic murmur at apex of heart, also audible at the angle of scapula. Friction still continued.



The medicine was reduced first to three times and then to twice a day, and discontinued on the 14th.

15.—Pains began to recur, and the temperature rose slightly. On the 17th the temperature was  $100.8^{\circ}$ , and the ankles had become swollen and painful. On Feb. 18 and 19 the temperature was  $101.8^{\circ}$ , and there were pains in the wrists.

19.—Take salicylate of soda, 15 grains, every two hours.

9 P.M. Pulse 120; temperature  $102^{\circ}$ .

20.—9 A.M. Pulse 104; temperature  $100.6^{\circ}$ . Sweating; pericardial friction; pains in wrist less severe.

9 P.M.—Pulse 100; temperature  $100.6^{\circ}$ .

21.—9 A.M. Pulse 104; temperature  $99.6^{\circ}$ . Still pain in right wrist; sweating freely.

The temperature fell next day to normal, and continued so until the beginning of March. Sickness supervened on Feb. 23, and the salicylate was left off on the 26th.

A return of fever and pains in the joints occurred early in March, with profuse sweating. For some days this relapse was treated with iodide of potassium only; but on March 7, the joints of both hands being swollen and very painful, and the temperature over  $101^{\circ}$ , 15 grains of salicylate of soda were ordered to be given every four hours, small doses of brandy being administered at the same time.

9 P.M.—Pulse 108; temperature  $101.6^{\circ}$ .

8.—10 A.M. Pulse 100; temperature  $100.0^{\circ}$ . Pains much better; systolic murmur at apex; friction at base of heart.

9 P.M.—Temperature  $98.7^{\circ}$ .

From the 8th to 23rd of March the temperature ranged from  $97^{\circ}$  to  $98.6^{\circ}$ , the pulse from 68 to 90. The pains subsided, and the pericardial friction became less loud. The salicylate was reduced to a dose every six hours on March 9, further reduced to three times a day on the 13th, and finally omitted on the 16th. On March 24 there was return of pain in the right knee and sweating, and the temperature rose to  $101^{\circ}$ . The fever and pains continued until March 27, when, the wrist and knee-joints having become swollen and painful, the pulse being 126, and the temperature  $101.4^{\circ}$ , 15 grains of salicylate of soda were again ordered to be taken every four hours.

9 P.M.—Temperature  $101.6^{\circ}$ .

28.—9 A.M. Pulse 96; temperature  $101.5^{\circ}$ .

9 P.M.—Pulse 88; temperature  $100.6^{\circ}$ .



Next day the temperature fell to the normal, and the patient again improved. The salicylate was gradually discontinued, and finally left off on April 6.

A few days later the temperature again rose, and there was a return of pains, but less severe. The salicylate was not again prescribed, and the patient was discharged, on April 25, with an apex systolic murmur.

#### CASE XLIV.

F. A., æt. 14 years, admitted March 20, 1878. Father has had rheumatic fever, and patient has himself had one previous attack; present illness commenced with pains in the principal joints about three weeks since; he had, however, returned to work when the pains in the joints recurred, and he experienced pain in the præcordia.

*State on admission.*—Pulse 84; temperature 99°. Skin moist; both knees swollen, hot, and painful; apex of heart beats outside and below nipple; impulse heaving and diffused; compound murmur at base; faint systolic murmur at apex; pericardial friction over præcordia.

9 P.M.—Pulse 88; temperature 102.2°. Urine normal.

March 21.—9 A.M. Pulse 90; temperature 98.4°. Sweating; no pain.

9 P.M.—Pulse 90; temperature 100.2°.

For several days the temperature ranged from 98.5° to 100.5°, but the patient did not become worse. On March 24, the pains having increased, and the morning temperature being 99.4°, 15 grains of salicylate of soda were ordered to be taken every four hours. The temperature fell within a few hours, and on March 28 the salicylate was reduced to a dose every six hours, and on the 30th to a dose three times a day. On April 8, the boy appearing to be weak and anæmic, the salicylate was discontinued and citrate of iron substituted. On April 10 the temperature rose to 100.4°, and the pulse to 100; sweating and pains in both knees and ankles recurred; and, as the fever increased and the pains attacked other joints, 15 grains of salicylate were ordered to be taken every four hours on April 11.

April 12.—9 P.M. Pulse 116; temperature 101.5°. Sweating.

13.—9 A.M. Pulse 104; temperature 98.6°. The temperature now kept normal or subnormal, and the pulse quiet until April 29; the patient was likewise free from pain. On



April 15 the salicylate was reduced to a dose three times a day, and on the 17th, in consequence of the occurrence of vertigo and severe headache, it was reduced to one dose daily. Brandy was also prescribed in small doses. On April 26 the medicine was altogether discontinued. Two transient attacks of fever, with pains and sweating, subsequently occurred; each lasted four or five days, but salicylate was not again had recourse to, and the patient was discharged convalescent, but with the cardiac murmur, on June 28.

## CASE XLV.

E. B., æt. 46, servant, admitted October 21, 1878. Has already had one attack of rheumatic fever. Present illness commenced a week before admission with wandering pains in the limbs.

*State on admission.*—Pulse 114; temperature 100·6°. Pain of shoulders, and pain and swelling of both knees and right wrist; occasional sibilus over chest; thrill at apex of heart; well-pronounced præ systolic murmur and roughness of first sound.

9 P.M.—Temperature 102·6°.

October 23.—9 A.M. Pulse 96; temperature 100·6°.

9 P.M.—Pulse 112; temperature 102·4°.

24.—9 A.M. Pulse 100; temperature 100·7°. Knees are less painful; now complains of pains in the hips and shoulders.

Take 15 grains of salicylate of soda every four hours.

9 P.M.—Pulse 104; temperature 102·5°.

25.—9 A.M. Pulse 95; temperature 100·8°.

9 P.M.—Pulse 96; temperature 100·4°.

26.—9 A.M. Pulse 84; temperature 98·4°. Feels much better; has now pain only in right wrist and hips.

9 P.M.—Temperature 99°.

27.—9 A.M. Pulse 84; temperature 98°. Complains of deafness, giddiness, and tinnitus aurium.

Omit salicylate.

Remained free from pain until the evening of the 30th, when pains returned in both knees; the temperature had previously risen to 100°. Next day there was pain in the right wrist, and at 9 P.M. the pulse was 92, and the temperature 102°.

Take 10 grains of salicylate of soda every four hours.

November 1.—9 A.M. Pulse 92; temperature 99·4°.



Skin hot and dry; complains of feeling sick; pains diminished.

9 P.M.—Pulse 96; temperature 102°.

November 2.—9 A.M. Pulse 88; temperature 99·0°. Still pain in right hand and shoulder.

9 P.M.—Pulse 88; temperature 100·6°.

3.—9 A.M. Pulse 76; temperature 99°. Sour sweating; no pains; deaf.

9 P.M.—Pulse 88; temperature 98·2°.

4.—9 A.M. Pulse 68, irregular and intermittent; temperature 98·2°. Deafness increased.

Omit salicylate; brandy, 2 drachms, every three hours.

The temperature beginning to rise during the day, the salicylate was resumed, but next day, the impulse of the heart having become feeble, and other symptoms of the effect of the medicine having manifested themselves, it was reduced to a dose three times a day.

The temperature now kept normal or subnormal until Nov. 12; pulse about 74. Patient complained of so much oppression at the chest on the 9th that the salicylate was again discontinued.

On Nov. 12 felt rather chilly, and in the evening the left wrist and some of the small joints of the hand became painful and swollen. Pulse 92; temperature 101·8°. This continued until, on the 14th, other joints also became painful, the rhythm of the heart cantering, and the temperature persistent at 101·6°.

Take 10 grains of salicylate of soda every four hours.

9 P.M.—Pulse 100; temperature 102°. Has been sick.

15.—9 A.M. Pulse 96; temperature 99·8°. Pains less.

9 P.M.—Pulse 96; temperature 101·2°.

16.—9 A.M. Pulse 88; temperature 99·8°. Deaf.

9 P.M.—Pulse 84; temperature 98°.

The temperature now kept normal or subnormal; the pulse ranged from 56 to 80. The action of the heart became irregular; deafness increased; the patient complained of humming noises in the head, and was very sick. Brandy was administered in increasing doses, and the medicine was reduced to a dose every eight hours on November 20, to twice a day on the 27th, and finally omitted on December 4. Discharged, with the cardiac murmurs, as on admission, on December 10.



## CASE XLVI.

E. R., æt. 31 years, dressmaker, admitted January 8, 1879. Had rheumatic fever in childhood; health subsequently good. Present attack commenced with pains in the wrists and knees on the 5th inst.

*State on admission.*—Pulse 100; temperature  $101.2^{\circ}$ . Both knees and ankles are swollen and painful; faint systolic murmur at apex of heart.

9 P.M.—Pulse 100; temperature  $100.8^{\circ}$ . Pains have increased.

January 9.—9 A.M. Pulse 104; temperature  $98.8^{\circ}$ .

1 P.M.—Temperature  $101.4^{\circ}$ . Pericardial friction; complaints of pain in lower part of sternum; pains in joints more severe.

Take 30 grains of salicylate of soda every two hours, for four times.

10.—9 A.M. Pulse 96; temperature  $101.2^{\circ}$ . Pains increased; pericardial friction very loud.

Repeat the salicylate every two hours for four times.

9 P.M.—Pulse 98; temperature  $100.8^{\circ}$ . Is easier; slight deafness.

11.—9 A.M. Pulse 98; temperature  $100^{\circ}$ . Pulse feeble; right hand only painful.

Repeat salicylate every two hours for four times; 2 drachms of brandy every three hours.

9 P.M.—Pulse 84; temperature  $99.1^{\circ}$ .

12.—9 A.M. Pulse 72; temperature  $98.4^{\circ}$ . Pains greatly relieved; pericardial friction continues.

Take salicylate every two hours for three times.

9 P.M.—Pulse 88; temperature  $99.4^{\circ}$ .

13.—9 A.M. Pulse 72; temperature  $99^{\circ}$ . Left ankle and both knees are again painful.

Take 30 grains of salicylate every two hours for four times.

9 P.M.—Pulse 84; temperature  $99.2^{\circ}$ .

14.—9 A.M. Pulse 88; temperature  $99.6^{\circ}$ . Pains and pericardial friction continue.

Take 15 grains of salicylate every two hours.

The temperature now ranged from  $98.6^{\circ}$  to  $99.2^{\circ}$  until January 27; the pulse from 72 to 96. The pains continued severe until the 18th, and then subsided; headache, vertigo, and deafness now supervened. The salicylate was reduced to a dose every three hours on the 18th, and omitted on January 31, on account of an attack of diarrhoea, attended by griping.



On February 1 pain again reappeared in the right knee and ankle; on the 3rd other joints became affected, and the patient had an anxious aspect, and could not rest without opiates; the temperature rose to  $101.2^{\circ}$ , and the pulse to 108.

Take 15 grains of salicylate of soda every two hours; brandy, half an ounce, every four hours.

February 4.—9 A.M. Pulse 116; temperature  $101.6^{\circ}$ . Pains easier. Perspiring copiously.

9 P.M.—Pulse 100; temperature  $100.8^{\circ}$ .

5.—9 A.M. Pulse 96; temperature  $99.2^{\circ}$ . Is free from pain in the joints, but has pain in the abdomen, and has been retching; sweating freely. Bowels relaxed.

9 P.M.—Pulse 92; temperature  $99.2^{\circ}$ .

The temperature was now normal until February 10. The salicylate was discontinued on the 7th, in consequence of severe headache. On February 11 the morning temperature was  $99.6^{\circ}$ , and the evening  $100.8^{\circ}$ ; and the right knee had again become painful.

12.—9 A.M. Pulse 102; temperature  $99^{\circ}$ . Knees and ankles hot and painful.

Take salicylate of soda, 15 grains, every four hours.

9 P.M.—Temperature  $99.6^{\circ}$ .

13.—9 A.M. Pulse 100; temperature  $100.4^{\circ}$ . Pains decreased.

9 P.M.—Temperature  $100^{\circ}$ .

Next day the temperature was subnormal, and the pulse 84; the patient was generally better, and had very little pain. The improvement was progressive, and the salicylate was reduced to a dose every six hours, on the 18th, to three times a day on the 22nd, and discontinued on the 26th. On March 2 there was again a rise of temperature to  $100^{\circ}$ , and of pulse to 96, with return of pains in the left elbow, knee, and ankle. The salicylate was resumed every two hours, and the fever and pains again speedily gave way.

Discharged, at her own request, on March 13.

#### CASE XLVII.

C. B. W., æt. 21, colourer, admitted January 24, 1879. Previous health good; illness began a few days before admission with pain and swelling of the left ankle, and copious perspiration.

*State on admission.*—Pulse 100; temperature  $100.6^{\circ}$ .



Left ankle much swollen, hot, red, and very painful. Faint thrill and loud systolic murmur at the apex of heart.

9 P.M.—Pulse 100; temperature 103.0°. Restless.

January 25.—9 A.M. Pulse 92; temperature 101.1°. Sweated freely during night. Left knee painful.

9 P.M.—Pulse 104; temperature 102.4°.

26.—9 A.M. Pulse 92; temperature 101.6°. Left knee more painful.

9 P.M.—Pulse 100; temperature 102.9°.

27.—9 A.M. Pulse 88; temperature 100.2°. Pain in left knee and ankle much better; right ankle slightly painful.

9 P.M.—Pulse 96; temperature 102.6°.

28.—9 A.M. Pulse 88; temperature 100.4°. Much pain in right knee, and some pain in hips.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Temperature 102°.

29.—9 A.M. The temperature has ranged from 100° to 101° during the night; it is now 99°; pulse 88. Slept well. Pains decreased. Slight deafness; feels sick after medicine. Sweating.

Take 2 drachms of brandy every three hours.

9 P.M.—Pulse 76; temperature 100.4°.

30.—9 A.M. Pulse 80; temperature 98.2°. Has only occasional twinges of pain in joints. Complains of sore throat, deafness, vertigo, and buzzing in the ears; perspiring freely; back of fauces covered with tenacious mucus.

Take salicylate only every three hours.

9 P.M.—Pulse 76; temperature 98.6°.

The temperature, with one exception, now remained normal until February 25. On January 31 there was sickness and diarrhoea; three minims of tincture of opium were added to each dose of medicine, which was now reduced to a dose every four hours. The pains ceased, but sweating continued; sickness occasionally occurred. On February 11, when there had been no pain for several days, the salicylate was omitted; it had been continued every four hours up to that date. On February 24 pain was felt in both arms and shoulders; sweating still continued at night.

February 26.—9 A.M. Pulse 108; temperature 103.1°. Skin moist; complains of pains in legs; ankles slightly swollen and tender.

Take 15 grains of salicylate of soda every three hours.

27.—9 A.M. Pulse 112; temperature 101.8°. Copious sweating; right ankle swollen, red, and very painful.



9 P.M.—Temperature  $101.2^{\circ}$ .

28.—9 A.M. Pulse 100; temperature  $100^{\circ}$ . No pain except on movement.

9 P.M.—Pulse 96; temperature  $100.6^{\circ}$ .

March 1.—9 A.M. Pulse 85; temperature  $99^{\circ}$ .

1 P.M.—Temperature  $101.4^{\circ}$ .

Take the salicylate every two hours.

9 P.M.—Temperature  $99.4^{\circ}$ .

The temperature now again became normal; the pains left, but sweating continued. On March 2 sickness set in, and the medicine was reduced to a dose every four hours. Next day, although the temperature had again risen to  $100^{\circ}$ , the sickness continuing, the medicine was discontinued. At night the temperature was  $102.6^{\circ}$ , and it ranged during the following three days from  $101.8^{\circ}$  to  $103^{\circ}$ . On March 10, there being some threatening of a relapse of pain, the salicylate was again prescribed in doses of 15 grains every three hours; this again caused sickness and diarrhoea; three minims of tincture of opium were added to the salicylate, and in two days the temperature fell to the normal. On March 14 the salicylate was reduced to a dose every six hours, on the 16th to a dose every eight hours, and it was finally omitted on the 21st. After its omission the temperature rose to  $101^{\circ}$ , but fell again in a couple of days, and the patient was discharged convalescent at the end of March.

#### CASE XLVIII.

E. P., æt. 21 years, admitted on May 3, 1879. Had rheumatic fever at 10 years of age; father was likewise rheumatic. Illness commenced about a week ago with pains in the loins and knees, and sweating at night.

*State on admission.*—Pulse 104; temperature  $102.8^{\circ}$ . Has pain in most of the larger joints; right wrist, knee, and ankle swollen and tender; high-pitched systolic murmur at apex of heart.

9 P.M.—Pulse 120; temperature  $102.4^{\circ}$ .

May 6.—9 A.M. Pulse 128; temperature  $100.3^{\circ}$ . Pains much the same.

9 P.M.—Pulse 108; temperature  $102.5^{\circ}$ .

7.—9 A.M. Pulse 100; temperature  $101.9^{\circ}$ . Pulse intermitting; pains easier.

9 P.M.—Pulse 104; temperature  $102.3^{\circ}$ . Severe pain in the left sterno-clavicular articulation; slight delirium.



8.—9 A.M. Pulse 108; temperature  $103^{\circ}$ . Right knee very painful, red, and swollen; complains of pain over the middle of sternum; heart's rhythm cantering; wandered during night.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Pulse 104; temperature  $101.8^{\circ}$ .

9.—9 A.M. Pulse 104; temperature  $99.2^{\circ}$ . Urine, sp. gr. 1031, acid, albumen one-seventh. Had a restless night. Complains of pain across the loins.

9 P.M.—Pulse 127; temperature  $100.8^{\circ}$ . Has pleurisy on the left side.

10.—9 A.M. Pulse 84; temperature  $98.8^{\circ}$ . Pulse intermittent; tongue dry and brown; wandered much during night; is free from pain.

9 P.M.—Pulse 88; temperature  $101.6^{\circ}$ .

11.—9 A.M. Pulse 88; temperature  $98.5^{\circ}$ . Slept better, free from pain; coarse pleuritic friction on left side; rhonchus over front of lungs.

Take salicylate of soda, 15 grains, every four hours.

9 P.M.—Pulse 96; temperature  $100.4^{\circ}$ .

12.—9 A.M. Pulse 96; temperature  $100.4^{\circ}$ . Pleuritic friction over left side, and also at right posterior base. Pulse intermittent; can move limbs freely.

9 P.M.—Pulse 96; temperature  $100.6^{\circ}$ .

13.—9 A.M. Pulse 96; temperature  $99.6^{\circ}$ . Urine shows a bare trace of albumen.

From this date until May 22 the temperature never rose above  $99.6^{\circ}$ , and the pulse ranged from 72 to 90. On May 14 there was reduplication of the first cardiac sound at the base. Two ounces of brandy daily were then ordered, and the salicylate given only every four hours. On the 17th, the temperature being quite normal and the pulse quiet, it was reduced to three doses in the day. On May 19 the mouth became aphthous, and the salicylate was omitted. On May 23 there was pain in the right knee, and the evening temperature rose to  $101.4^{\circ}$ . During the next two days the temperature was over  $99^{\circ}$  in the morning, and  $101.3^{\circ}$  in the evening. Pains now returned in several joints. On May 28 the right knee and left wrist were swollen, and the other knee and ankles were painful. Pulse 92; temperature  $102.1^{\circ}$ .

Take 15 grains of salicylate of soda every four hours.

9 P.M.—Pulse 72, intermittent; temperature  $102.8^{\circ}$ .

29.—9 A.M. Pulse 72, thrilling; temperature  $98.2^{\circ}$ .



The temperature and pulse now remained normal until June 7. On May 31 the salicylate was reduced to three doses a day, and on June 3 it was omitted. On the evening of June 7 the temperature rose and kept a little over the standard of health until June 10, when it was  $101.7^{\circ}$ , and the pulse 108. The patient now complained of pains in the knees. Slight pleurisy again occurred. On the evening of June 14 the temperature was  $103.2^{\circ}$ , and the right wrist and hand were swollen, red, and very painful. Next day 15 grains of salicylate of soda were ordered every four hours. In thirty hours the temperature again fell, and the pulse became normal in frequency. The pains entirely subsided, and the patient was discharged convalescent on July 18. The systolic murmur and a slight prefix to the systole were still audible.

### CASE XLIX.

A. B., æt. 22 years, nurse, admitted April 29, 1879. Previous health good; illness began two or three days before admission with pains in various joints.

*State on admission.*—Pulse 120; temperature  $101.2^{\circ}$ . Knees and left wrist swollen, red, and tender; pain also in right ankle and shoulder; skin dry; dry râles over lungs and scanty crepitation in base of left lung.

Take 15 grains of salicylate of soda every three hours.

April 30.—9 A.M. Pulse 120; temperature  $102.1^{\circ}$ . Sweating; joints continue painful.

Take salicylate every two hours.

9 P.M.—Pulse 124; temperature  $101.8^{\circ}$ . Very restless.

May 1.—9 A.M. Pulse 100; temperature  $99.5^{\circ}$ . Adventitious sounds in lungs have nearly cleared off.

10 P.M.—Pulse 92; temperature  $100.2^{\circ}$ .

2.—9 A.M. Pulse 100; temperature  $100^{\circ}$ . Pains easier; is rather deaf.

9 P.M.—Pulse 88; temperature  $100^{\circ}$ .

3.—9 A.M. Pulse 84; temperature  $99^{\circ}$ . Free from pain; perspires much.

9 P.M.—Pulse 92; temperature  $98.1^{\circ}$ .

Take salicylate every four hours.

The temperature kept about  $99^{\circ}$  until May 8. On this day the left wrist again became hot, swollen, and tender, and there was some pain in the left leg; the temperature rose to  $100.4^{\circ}$ . The salicylate was increased to a dose every four hours. During the next two days the temperature ranged from  $101^{\circ}$  to  $103^{\circ}$ , and the pains increased.



11.—9 A.M. Pulse 116; temperature 103°. Perspiring; right arm very painful.

Take 15 grains of salicylate of soda every two hours.

9 P.M.—Temperature 101.6°.

12.—9 A.M. Pulse 116; temperature 101.5°. Has pain on left side of thorax; pleuritic effusion into left pleura; less pain in joints; sweating.

9 P.M.—Pulse 100; temperature 101.9°.

The temperature remained stationary on the 13th, but became normal on the 15th. The pains, though not gone, were much easier. The salicylate was reduced to a dose every four hours, and on 17th to three times a day. On the 21st there was some return of pain, and the temperature rose to 101.2°. These pains increased, and the temperature kept above the normal until, on May 24, the right knee and left ankle became swollen and painful, and there were less pronounced pains in other joints. Pulse 96; temperature 101.3°.

Take 15 grains of salicylate of soda every four hours.

9 P.M.—Pulse 104; temperature 102.4°.

The next two days the temperature ranged from 100° to 101.5°, and the pains subsided. From May 28 until June 15 the temperature was normal, and the pulse ranged from 84 to 56. The pains left entirely on May 31, and on June 2 the salicylate was discontinued. Discharged well on June 24.

#### CASE L.

E. H., æt. 19, housemaid, admitted on July 21, 1879. Previous health good. Present illness commenced a few days before admission with pains in knees, ankles, and shoulders.

*State on admission.*—Pulse 92; temperature 102°. Sweating; both knees and left ankle swollen, red, and painful; complains of pains in the præcordia; a systolic murmur heard over the præcordia.

10 P.M.—Pulse 96; temperature 101.4°.

July 22.—9 A.M. Pulse 92; temperature 101.2°.

10 P.M.—Pulse 88; temperature 101.7°.

23.—10 A.M. Pulse 84; temperature 102.2°. Left hand swollen and very painful; sweating profusely.

Take 15 grains of salicylate of soda every three hours.

10 P.M.—Pulse 96; temperature 101.4°.

24.—10 A.M. Pulse 76; temperature 99.4°; complains



of deafness and of noise in the ears; no pain in the limbs; first sound of heart very indistinct, tenderness over the præcordia; pericardial friction. Brandy, two drachms, every four hours.

10 P.M.—Pulse 88; temperature  $100\cdot4^{\circ}$ .

25.—9 A.M. Pulse 80; temperature  $98\cdot8^{\circ}$ . Has still pain in left knee, other joints easy; deaf.

11 P.M.—Temperature  $99\cdot1^{\circ}$ .

26.—9 A.M. Pulse 68; temperature  $99\cdot2^{\circ}$ . Has pain in loins and hips.

9 P.M.—Pulse 68; temperature  $100\cdot2^{\circ}$ .

The temperature now scarcely exceeded the normal until July 31. The pains also entirely left. On July 29 the salicylate was reduced to a dose every four hours, and was omitted on the 30th, because the pulse became irregular both in force and rhythm and the tongue much injected. On the evening of the 31st some pain was experienced in both knees and left shoulder; and the temperature rose to  $100\cdot3^{\circ}$ . On the evening of August 1 the temperature was  $102\cdot2^{\circ}$ .

August 2.—9 A.M. Pulse 104; temperature  $101\cdot4^{\circ}$ . Pains in both hands; left wrist swollen; pains in knees and shoulders.

Take salicylate of soda, 15 grains, every four hours.

9 P.M.—Pulse 108; temperature  $102^{\circ}$ .

3.—9 A.M. Pulse 85; temperature  $100\cdot4^{\circ}$ . Sweating; knees and ankles still very painful; hands less painful.

9 P.M.—Pulse 90; temperature  $101\cdot4^{\circ}$ .

4.—9 A.M. Pulse 72; temperature  $98^{\circ}$ . Complains of pain in right shoulder; sweating.

9 P.M.—Temperature  $100\cdot2^{\circ}$ .

From August 5 to August 20 the temperature was for the most part normal, and never exceeded  $99\cdot2^{\circ}$ ; the pulse under 70. The pains did not entirely subside until August 11, but were slight. Pericardial friction and the apex systolic murmur were still heard on August 11. The salicylate was reduced to a dose every six hours on August 11, and to a dose three times a day on August 15; it was then discontinued. On August 21 pains returned in the left hand, and the temperature rose to  $102^{\circ}$ .

Take 20 grains of salicylate of soda every eight hours.

The temperature fell slowly, and did not become normal until August 27; the pains having likewise subsided, the medicine was discontinued on September 7. Two additional



relapses occurred subsequently, and were likewise treated with salicylate of soda. The patient was discharged, at her own request, on October 16. The cardiac murmur was still present on her discharge.

### SUMMARY.

I now proceed to give a brief summary of each of the above described cases before endeavouring to draw any conclusions from them:—

No. I.—The patient, who had previously had an attack of rheumatic fever, was admitted at an early stage of her illness, and was at once placed upon 20-grain doses of salicylate of soda every two hours. She was already suffering from pericarditis when admitted.

The salicylate produced no very obvious effect either upon the temperature or the course of the disease, hyperpyrexia being developed on the fourth day after beginning the treatment, which was then discontinued, and recovery took place under the use of cold baths and full doses of quinine.

Deafness, epistaxis, sickness, and considerable depression soon followed the administration of the salicylate; she also manifested hallucinations both of sight and hearing.

No. II.—The patient had already had one attack of rheumatic fever. The second day after admission she was put upon 15-grain doses of salicylate of soda every two hours.

Headache, giddiness, and vomiting commenced within thirty hours from the commencement of the treatment, and hyperpyrexia set in on the third day. The salicylate was then discontinued, and the patient recovered under the use of cold baths and full doses of quinine.

No. III.—The patient, a middle-aged woman, who had already suffered severely from rheumatic fever in early life, was admitted with rheumatic fever, complicated with bronchitis and emphysema; she was also the subject of serious cardiac disease. The day after admission she was placed upon full doses of salicylate of soda, which certainly appeared to produce a decided and rapid effect. The temperature fell within thirty-six hours to the normal standard, and, though not so quickly, the pains also subsided. This improvement was coincident with the development of deafness, noises in the ears, and increased irregularity of the



heart's action. The salicylate was discontinued after the patient had taken it for forty hours, and death ensued on the following day.

No. IV.—The patient was very ill when admitted. The disease was attended by pneumonia of the right lung and pericarditis. She was placed upon the salicylate before I saw her. The temperature, pulse, and respirations all fell very quickly under somewhat large and frequent doses of the medicine, but this improvement was only of brief duration, for the temperature rose again in a few hours to its former height; meanwhile deafness, delirium, and, notwithstanding the free use of brandy, such extreme prostration had set in, that it became necessary to discontinue the salicylate. The patient died on the eleventh day.

No. V.—The patient had suffered from chorea in boyhood. When he came into the hospital there was already pericarditis, and pneumonia was commencing in the right lung. He was put upon 15-grain doses of salicylate of soda every two hours on the second day after admission. The temperature appeared to be somewhat controlled by it, and the pains subsided, but considerable effusion took place into the pericardium; epistaxis supervened on the third day, but the salicylate was continued, though less frequently, for ten days. When it was discontinued the temperature rose again as high as at first, but again came down when the treatment was resumed. When the medicine was omitted a second time the temperature once more rose, and the pains in the joints reappeared, but the salicylate was not prescribed for this second relapse. Deafness and epistaxis followed the use of the salicylate. The patient was 74 days in the hospital.

No. VI.—The patient was suffering from a second attack of rheumatic fever, complicated with bronchitis; pericarditis developed a few hours after admission; on the next day he was placed upon treatment, with full doses of salicylate of soda. The temperature at first fell rapidly, and became normal on the fourth day, but soon rose again and remained above the normal standard until the broncho-pneumonia subsided. The salicylate appearing to exert no permanently beneficial influence, was abandoned after thirteen days' trial. The patient was discharged on the 62nd day.

No. VII.—The patient entered the hospital for a second attack of rheumatic fever, complicated with pericarditis and pleuro-pneumonia. She was put upon the treatment, with full doses of salicylate of soda, the day after admission. The



temperature was materially reduced on the second day, but did not become normal; and the salicylate appearing to have no permanent effect, it was discontinued on the fifth day.

Epistaxis, deafness, and delirium supervened on the second day from beginning the treatment. The patient was 66 days in hospital.

No. VIII.—This patient had also had a former attack of rheumatic fever, and been subject to cough. The disease was complicated with bronchitis from the first, and pericarditis supervened on the second day. Placed upon full doses of salicylate of soda the second day after admission, the temperature and pulse speedily fell, and the pains ceased. The treatment was persevered with for ten days, but five days after it was discontinued the pains recurred, pericarditis again became active, and the temperature rose. On the fourth day of this relapse salicylate of soda was again prescribed, and once more the temperature came down, and, though more slowly, the pains subsided. The salicylate was continued for fourteen days, when convalescence seeming to be established, it was omitted. At the expiry of three days there was another relapse, both of rheumatism and also of bronchitis and pericarditis, but the salicylate was not again prescribed.

Soon after being placed upon the treatment the first sound of the heart became very feeble, and there was slight giddiness. The patient was 66 days in hospital.

No. IX.—The patient came into the hospital for a primary attack of rheumatic fever, attended with delirium, and apparently some pericardial effusion, although no friction was audible. She was placed upon full doses of salicylate of soda the day after admission. The temperature fell in a few hours, and the pains diminished, but the temperature did not fall to the normal standard, and pneumonia was developed after the physiological effects of the salicylate had become manifest. The treatment was intermitted on the fourth day. Three days subsequently pains returned in several joints, and the temperature rose until it touched 104°. Large doses of salicylate of soda were then administered, and the temperature and pulse became normal, and the pains subsided in three days. When the medicine had been for two days reduced to a single dose of 30 grains daily, pleurisy set in, and pains in the joints recurred. The salicylate was now again administered more frequently, with the effect of reducing the temperature and diminishing



the pains. Three similar relapses subsequently occurred; and when at length the patient was discharged her heart was so damaged that she was readmitted some months afterwards, and died of the cardiac disease consequent upon the rheumatic fever.

Sickness and deafness soon occurred after commencing the treatment, and the patient became noisy, restless, and the subject of hallucinations, supposing that she saw persons and heard noises about her bed. Sickness occurred whenever the salicylate was resumed, and on one of these occasions the matters vomited were of a grumous nature. She was 181 days in hospital.

No. X.—The patient, a young child, was admitted for a first attack of rheumatic fever, with endocarditis and a very high temperature. Salicylate of soda was ordered the day after admission, and the pulse and temperature fell and the pains subsided rapidly. On the fourth day, when the little patient was already under the full influence of the medicine, pneumonia occurred. The salicylate was discontinued on the eleventh day, and its omission was followed by a relapse. Pericarditis, accompanied with chorea, followed this relapse, and there was some reason for supposing that embolisms had passed both into the spleen and kidneys.

Sickness commenced some days after commencing the treatment, and was so persistent that it became necessary to discontinue the salicylate. She was 98 days in hospital.

No. XI.—The patient was admitted for a very mild attack of rheumatism. The temperature was under  $100^{\circ}$  at the time of admission, but rose to  $101.4^{\circ}$  on the evening of the same day. Put upon 10-grain doses of salicylate of soda every four hours, the temperature fell and the pains subsided within twenty-four hours. The patient was only 12 days in hospital.

No. XII.—The patient, a young child, was admitted for a mild primary attack of rheumatic fever attended by pericarditis. The day after admission 10-grain doses of salicylate of soda, every two hours, were prescribed. The temperature and pulse became subnormal next day, and the pains subsided soon afterwards. Discharged well 22 days after admission.

No. XIII.—The patient, also a young child, was admitted for a mild primary attack of rheumatic fever with pericarditis. Placed upon 10-grain doses of salicylate of soda every three hours on the second day after admission, the tempera-



ture fell at once to the normal standard and the pains disappeared.

Four days after commencing the treatment the first sound of the heart was found to be almost inaudible. The salicylate of soda was now discontinued, and brandy ordered. Was 24 days in hospital.

No. XIV.—The patient had already had three attacks of rheumatic fever. Pericarditis was present on admission. The temperature was already subsiding when, on the third day after admission, she was put upon 15-grain doses of salicylate of soda every three hours, and it became in a few hours afterwards quite normal.

Deafness, giddiness, and sickness soon supervened, and the vomit contained blood. Recovery was rapid, and the patient was discharged on the 20th day.

No. XV.—The patient was admitted for a mild primary attack of rheumatic fever, with pericarditis. On the second day he was ordered 15 grains of salicylate of soda every four hours. The temperature fell within a few hours, and the pains altogether left on the fourth day.

Gastric irritability and injected tongue supervened on the second day after commencing the treatment. Discharged convalescent on the 15th day.

No. XVI.—The patient was admitted for a mild second attack of rheumatic fever. Placed upon 15-grain doses of salicylate of soda every four hours the day after admission, the temperature, previously as high as  $103^{\circ}$ , became normal within 48 hours.

Injection of the fauces, sore throat, sickness, and deafness soon followed the use of the salicylate. Was 23 days in hospital.

No. XVII.—The patient, who had suffered many years before from rheumatic fever, was admitted for a second attack. She was placed upon 15 grains of salicylate of soda every four hours on the day of admission. The temperature became normal within 36 hours, but the pains abated more slowly.

On the fourth day after beginning the treatment the first sound of the heart became very feeble, and next day the patient complained of giddiness and noises in the ears. Discharged on the 31st day.

No. XVIII.—The patient was admitted for a mild primary attack of rheumatic fever. He was placed upon 15-grain doses of salicylate of soda every four hours on the day



of admission. The temperature very rapidly came down, and was normal on the second day; the pains also subsided. Discharged on the 32nd day.

No. XIX.—The patient was admitted for a second attack of rheumatic fever, accompanied by pericarditis, and placed upon 10-grain doses of salicylate of soda every three hours. The temperature and pulse became normal within 36 hours, and the pains and swelling of the joints subsided. Discharged convalescent on the 35th day.

No. XX.—The patient, a young girl, was admitted for a primary attack of rheumatic fever and pericarditis. She was put upon salicylate on the day after admission. The temperature became normal within a few hours, and the pains abated on the third day.

Vomiting soon followed the use of the medicine, and the impulse of the heart became feeble and the first sound very faint on the eighth day. Discharged quite well on the 39th day.

No. XXI.—The patient came into hospital for a first attack of rheumatic fever and pericarditis. She was placed upon 15 grains of salicylate of soda every two hours the second day after admission. The temperature and pulse fell to the standard of health on the third day from commencing the treatment, and the pains left the next day.

Intense headache manifested itself on the fifth day after beginning the salicylate, which was then reduced in quantity, and was discontinued altogether on the seventh day, because the pulse became irregular and the first sound of the heart almost inaudible, and the patient complained of noises in the ears. Discharged convalescent on the 41st day.

No. XXII.—The patient was admitted for a primary attack of rheumatic fever. He was not put under special treatment until the fifth day after admission, when 15 grains of salicylate of soda were ordered every four hours. The temperature fell to the normal standard and the pains subsided within 24 hours. Discharged on the 26th day.

No. XXIII.—The patient was admitted for a second attack of rheumatic fever with pericarditis. Put upon treatment, with 15-grain doses of salicylate of soda every two hours, the second day after admission, the temperature fell to the normal standard, and the pains subsided within 24 hours.

Vomiting supervened the day after beginning the treatment; and deafness, vertigo, and feeble pulse ensuing the next



day, the salicylate was discontinued after the patient had taken 17 doses. Discharged well on the 30th day.

No. XXIV.—The patient was admitted for a relapse of his first attack of rheumatic fever. On the day of admission he was placed upon 15 grains of salicylate of soda every two hours. The temperature fell to the normal standard within twenty-four hours, and the pains soon subsided. Discontinuance of the medicine was followed by a temporary rise of temperature, without any recurrence of pains.

Deafness ensued the day after beginning the treatment, and vertigo, wandering of mind, and epistaxis followed. The heart was apparently unaffected by the rheumatism, but the second sound became reduplicate when the physiological action of the salicylate was developed. Discharged well on the 26th day.

No. XXV.—The patient had already been laid up for six weeks with a first attack of rheumatic fever when admitted. Both pericarditis and endocarditis were already present. The day after admission he was put upon 15 grains of salicylate of soda every four hours. The temperature became normal in 36 hours, and the pains in the joints rapidly diminished. Discharged on the 22nd day.

No. XXVI.—The patient was admitted for a primary attack of rheumatic fever and pericarditis on the eighth day of her illness. She was placed under treatment, with 15 grains of salicylate of soda every four hours, on the fourth day after admission. The temperature had already fallen when the treatment was commenced, and did not rise again. Discharged on the 32nd day.

No. XXVII.—The patient was admitted for a first attack of rheumatic fever attended by pericarditis. On the second day after admission she was put under treatment, with 30 grains of salicylate of soda every two hours. The pains soon abated, and the temperature fell, but did not become normal until the third day of treatment.

Deafness and sickness set in soon after beginning the treatment, and were followed by noises in the head and transient albuminuria. Discharged on the 32nd day.

XXVIII.—The patient was admitted for a first attack of mild rheumatic fever attended by pericarditis. The day after admission 15 grains of salicylate of soda were ordered to be taken every two hours. The temperature fell to the normal standard in twenty-four hours, and the pains disappeared next day.



Sickness and vertigo set in on the third day after commencing the salicylate, rendering it necessary to discontinue it. Discharged on the 19th day.

XXIX.—Patient was admitted for a second attack of rheumatic fever. On the day of admission she was ordered to take 30 grains of salicylate of soda every eight hours. The temperature fell, and the pains were relieved at once, but the temperature did not become normal nor the pains entirely subside, and a recrudescence took place on the fifth day, which did not yield to more frequent doses of salicylate.

Deafness and discomfort in the head then supervened, and quinine was substituted for the salicylate of soda. Discharged on the 22nd day.

No. XXX.—The patient was admitted for a fully developed attack of rheumatic fever, with slight albuminuria. On the day after admission he was put upon 10 grains of salicylate of soda every four hours. The temperature fell very gradually, and became normal on the fourth day of the treatment. The pains did not subside until the seventh day, when the medicine had been increased to a dose every two hours.

An endocardial murmur developed after the commencement of the medicine, and delirium, deafness, and vertigo subsequently supervened; the action of the heart also became very irregular and feeble, requiring the free administration of brandy. Discharged convalescent on the 36th day.

No. XXXI.—The patient was admitted for his third attack of rheumatic fever. The urine was albuminous, and pleurisy appeared next day. He was put upon 15-grain doses of salicylate of soda every three hours on the second day after admission. The temperature fell somewhat and the pains abated on the second day; but as his state did not materially improve quinine was substituted for the salicylate after four days' trial.

Deafness, wandering, extreme frontal headache, and noises in the ears followed the use of the salicylate. Discharged convalescent on the 48th day.

No. XXXII.—The patient was admitted for a severe primary attack of rheumatic fever. The day after admission he was placed upon 30 grains of salicylate of soda every two hours. Pericarditis had already manifested itself.

Depression, deafness, sickness, and great weakness of the pulse and first sound of the heart followed the administration



of the salicylate, rendering it necessary to discontinue its use after the fifth dose, before either the temperature had been materially lowered or the pains relieved. Discharged well on the 50th day.

No. XXXIII.—The patient, who had been subject to bronchitis, was admitted for a second attack of rheumatic fever. She was placed upon 15 grains of salicylate of soda every four hours on the day after admission. The temperature and pains did not subside for several days, and pneumonia supervened whilst she was under treatment. When the salicylate had been discontinued for 17 days a relapse occurred, for which it was again prescribed, but the pains subsided very slowly.

Deafness followed the first administration of the salicylate, and deafness and hallucinations the second. Discharged on the 66th day.

No. XXXIV.—The patient was admitted for a fourth attack of rheumatic fever. Pericarditis, and subsequently pneumonia, were developed after admission. The treatment with salicylate of soda was not commenced until the sixth day after admission, and then in doses of 30 grains every two hours. The temperature fell almost at once, and the pains left within thirty hours. Two days after the discontinuance of the treatment the pains recurred, and the temperature again rose. The medicine was resumed in the former doses, and again the pulse, temperature, and pains subsided. The omission of the salicylate on this second occasion was likewise followed by a relapse, for which the medicine was once more prescribed.

Deafness followed the use of the salicylate on each of these occasions. Discharged on the 46th day.

No. XXXV.—The patient was admitted for a primary attack of rheumatic fever and pericarditis. He was ordered to take 15 grains of salicylate of soda every two hours on the day after his admission. The temperature became subnormal, and the pains diminished within a few hours, but deafness and persistent sickness compelled the intermission of the treatment at the end of 48 hours. Swelling of the affected joints continued, even after the pains had almost gone, and 14 days after leaving off the medicine fever reappeared, followed next day by a recurrence of pains in the joints. Salicylate of soda was again prescribed, and again the temperature quickly fell, but the pains more slowly. Sickness returned with the resumption of the medicine, and persisted until the latter was discontinued.



Deafness and violent sickness followed the employment of salicylate of soda on each occasion. Discharged on the 35th day.

No. XXXVI.—The patient was admitted for a second attack of rheumatic fever complicated with pericarditis. On the third day after admission, he was ordered 10 grains of salicylate of soda every two hours. The temperature fell at once, and the pains and swelling of the joints subsided. A week after the salicylate had been discontinued there was a return of fever with swelling and pains in the joints. The salicylate was recommenced, and this relapse was likewise soon relieved. Discharged on the 32nd day.

No. XXXVII.—The patient was admitted for her second attack of rheumatic fever about the 8th day of her illness; pericarditis and old mitral disease were present on admission. She was placed under treatment with 15 grains of salicylate of soda every three hours on the day of admission. The temperature subsided and the pains abated, but not entirely, and when, on account of its physiological consequences, the salicylate was reduced in quantity on the third day, the temperature rose again in a few hours, and remained of febrile height for some days. After this recrudescence had passed away the medicine was entirely discontinued, and three days afterwards there was a severe relapse. The salicylate was again prescribed in smaller doses, and after a few days the temperature and pain subsided permanently.

Deafness and noises in the ears supervened on the second day after beginning the treatment, and were soon followed by hallucinations, sickness, vertigo, and headache. Discharged on the 61st day.

No. XXXVIII.—The patient was admitted on the third day of a first attack of rheumatic fever complicated with pericarditis. Salicylate of soda in doses of 10 grains, every three hours, was ordered on the day of admission. The temperature and pulse were reduced and the pains abated in a few days. The omission of the medicine on the seventh day was followed in a couple of days by a relapse, for which salicylate was again prescribed. The symptoms slowly subsided, and the patient was discharged on the fifty-seventh day. The only unpleasant effect of the salicylate observed was weakness of pulse, for which brandy was given.

No. XXXIX.—The patient was admitted for a second attack of rheumatic fever complicated with pericarditis. He was put under treatment, with 15 grains of salicylate of soda,



every three hours, on the day of admission. Pleurisy developed after the medicine had produced great weakening of the first sound of the heart. The medicine was intermitted for a few hours on the second day, but resumed again next morning. The temperature varied greatly, but remained very much above the normal until the seventh day of treatment, when both pulse and temperature fell and the pains subsided. The salicylate was discontinued on account of its serious constitutional effects on the twelfth day. Next day the temperature again rose and pains reappeared in the joints. The salicylate was now again prescribed in 15 grain doses every four hours; but it had little influence on either the pains or the temperature for twelve days, and the temperature did not become normal, or the pains altogether disappear, until the fourteenth day. Again when the salicylate was omitted, a relapse took place, and the medicine was again prescribed, and on this occasion seemed to act more quickly.

Within a few hours of commencing the use of the salicylate the first sound of the heart became almost inaudible. This was followed next day by wandering, excited manner, and injected conjunctivæ. Reduplication of the second sound of the heart was noted in this as in several other patients. At a later period repeated attacks of epistaxis, and ultimately vomiting, supervened. Discharged about the 64th day.

No. XL.—The patient was admitted for a primary attack of rheumatic fever on the third day of his illness. Pericarditis developed the day after his admission. On the third day he was put upon 15 grains of salicylate of soda every two hours. The temperature fell rapidly and became normal on the third day, when also the patient was almost free from pain. The pains and slight fever relapsed when the salicylate was discontinued. It was then resumed, but its influence on the pains appeared only slight.

Deafness, epistaxis, and depression of the circulation followed the use of the medicine. Discharged on the 63rd day.

No. XLI.—The patient was admitted for an attack of rheumatic fever, with pericarditis. The day after admission he was put upon 15 grains of salicylate of soda every three hours. The temperature and pains soon subsided, but the day after the salicylate was omitted he suffered a severe relapse, for which the treatment was resumed. After taking



the medicine on this occasion for ten days, it was again discontinued on account of the severe constitutional effects which it caused, and a second relapse took place, for which, however, the salicylate was not prescribed.

Wandering, restlessness, and deafness supervened within a few hours of beginning the treatment. On the sixth day vomiting set in so persistently that it became necessary to stop the treatment. When resumed intense headache again compelled us to discontinue the salicylate. Discharged on the 69th day.

No. XLII.—The patient was admitted for a first attack of rheumatic fever. The special treatment was not commenced until the fourth day, when 30 grains of salicylate of soda were ordered to be taken every two hours. The temperature became almost normal, and the pains ceased on the second day of treatment, coincidently with the development of some of the constitutional effects of the medicine. It was then discontinued, but a relapse took place, and the treatment was resumed on the second day after it had been intermitted. The temperature now again fell within forty-eight hours, but the pains disappeared more slowly.

Delirium, deafness, headache, and epistaxis commenced the second day after beginning the salicylate. These were followed by sickness. The deafness, accompanied by severe retchings, restlessness, tremor of hands, and dryness of the fauces, returned when the treatment was resumed. Discharged on the 39th day.

No. XLIII.—The patient was admitted for his fourth attack of rheumatic fever, attended by pericarditis. He was placed under treatment, with 15 grains of salicylate of soda every four hours, on the day of admission. The temperature and pulse fell to the normal standard on the third day, and the pains ceased shortly afterwards. The salicylate was discontinued on the ninth day. Two days afterwards he suffered a relapse, for which salicylate was again prescribed. The temperature and pulse again became normal in three days, but the medicine was again discontinued, on account of its constitutional effects, on the seventh day. A few days afterwards a second relapse occurred, and was after a time treated with salicylate, which again rapidly brought down the temperature, and the pains subsided. A third relapse took place under similar circumstances, for which recourse was again had to salicylate, and, lastly, a fourth relapse occurred, for which the salicylate was not prescribed.



Albumen was found in the urine the day after the treatment was commenced, but it cannot with certainty be attributed to the salicylate, as the urine had not been examined previously. Its presence was only transient, for two days afterwards it had disappeared. Sickness followed the second administration of the salicylate in this patient, but with this exception, the constitutional effects of the medicine were not so marked as usual. Discharged on the 79th day.

No. XLIV.—The patient was admitted for a relapse of his second attack of rheumatic fever. There was already pericarditis and also old-standing disease of the aortic valves and hypertrophy of heart. He was put under treatment with 15 grains of salicylate of soda every four hours, on the fourth day after admission. The temperature fell within a few hours. Two days after discontinuing the medicine the temperature and pulse again rose and pains in the joints and sweating recommenced. Salicylate of soda was again prescribed, and again the temperature and pains rapidly abated. Two subsequent slight relapses occurred when the salicylate had been finally discontinued.

The use of the medicine produced vertigo and severe headache. Discharged on the 100th day.

No. XLV.—The patient was admitted for a second attack of rheumatic fever with old mitral stenosis. On the third day after admission she was placed on 15 grains of salicylate of soda every four hours. The temperature and pulse became normal within twenty-four hours, and the pains rapidly abated. The treatment was discontinued on the third day on account of the severe constitutional effects of the salicylate, and three days afterwards the fever and pains relapsed. Salicylate was again prescribed and the pains again abated, and the temperature and pulse became normal on the third day and remained so until the treatment was again intermitted after having been continued for nine days. Once more the disease relapsed, and once again the salicylate was prescribed with the same effect as on former occasions.

Deafness, vertigo, and tinnitus aurium followed the administration of the salicylate on the second day, leading to its being omitted the first time. Sickness, deafness, and weakness of pulse and of the heart rendered it necessary to intermit the treatment on the second occasion, and similar symptoms followed the third use of the medicine. Discharged on the 50th day.



No. XLVI.—The patient was admitted for her second attack of rheumatic fever. On the day after admission she commenced taking 30 grains of salicylate of soda every two hours for four consecutive doses. Pericardial friction was audible the day after admission. The temperature and pulse became normal, and the pains were greatly relieved on the third day. A diminution of the salicylate to three doses in the day was followed by a slight rise of temperature and increase of pains in some of the joints. The medicine was then given in doses of 15 grains every two hours. The temperature again fell, but the pains continued severe for several days longer. The salicylate having been reduced to a dose every three hours on the ninth day, was discontinued on the twenty-second day. On the following day the pains returned and the temperature and pulse became febrile. The medicine was now again prescribed, with the former result, but on being discontinued on the fourth day, in consequence of severe headache, there was a third relapse.

Headache, vertigo, and deafness followed the first employment of the medicine, which was notwithstanding continued until an attack of diarrhœa supervened. Sickness and diarrhœa followed the second administration of the salicylate, and very severe headache the third. Discharged prematurely at her own request on the 64th day.

No. XLVII.—The patient was admitted for a first attack of rheumatic fever. He was put upon 15 grains of salicylate of soda every two hours on the fourth day after admission. The temperature and pulse became normal on the second day, and the pains very soon abated greatly. The medicine was continued for fourteen days. Twelve days after its discontinuance there was a severe relapse, for which salicylate was again prescribed, and again the temperature fell and the pains disappeared. The treatment was now discontinued after five days, on account of persistent vomiting, and a second relapse took place, for which salicylate of soda was once more prescribed. A third slight relapse supervened, when the medicine was discontinued for the third time, which passed off without special treatment.

The use of the salicylate was followed on the second day by deafness and nausea, and next day by sore throat, vertigo, and buzzing in the ears. A few days later diarrhœa and vomiting set in, and tincture of opium was added to the medicine in order to restrain them. Persistent sickness compelled the medicine to be discontinued on the second and third occasions. Discharged on the 60th day.



No. XLVIII.—The patient was admitted for a second attack of rheumatic fever. On the third day after admission 15 grain doses of salicylate of soda were ordered to be taken every two hours. Albuminuria and pleurisy developed after the medicine was prescribed. The temperature fell slowly and did not become normal until the fifth day, and the pains disappeared about the same time. The treatment was continued for eleven days. Three days after it was intermitted pains and fever recurred, which were again treated with salicylate of soda. It was on this occasion omitted on the sixth day, and a few days afterwards there was a third relapse, for which the medicine was again prescribed. Delirium occurred soon after the salicylate was commenced, and on the eleventh day the mouth became aphthous. Discharged on the 72nd day.

No. XLIX.—The patient was admitted for a first attack of rheumatic fever accompanied by bronchitis. On the day of admission she was placed upon 15 grains of salicylate of soda every three hours, increased to every two hours on the next day. The temperature did not fall to the normal height until the fourth day, when the pains also had abated. Some of the constitutional effects of the medicine having now become developed, the dose was ordered to be given only every four hours, and a few days later the temperature again rose and the pains returned. There was now likewise pleurisy with effusion. An increase of the salicylate again brought down the temperature in a few days and the pains subsided, but, so soon as the medicine was again decreased in quantity, the pains and temperature once again increased.

Deafness soon followed the first administration of the salicylate. Discharged on the 56th day.

No. L.—The patient was admitted for a first attack of rheumatic fever and pericarditis. On the second day after admission she was put upon 15 grains of salicylate of soda every three hours. The temperature and pain were soon influenced by the medicine, and she was quite comfortable on the fourth day. The salicylate was omitted on the seventh day, and next day a relapse set in for which salicylate of soda was again prescribed. Reduction of temperature and subsidence of pain soon ensued, and the salicylate was again discontinued on the 15th day. Three subsequent relapses occurred, for each of which salicylate of soda was prescribed.

The first sound of the heart became very indistinct, and deafness and noises in the ears supervened on the second day



after beginning the treatment. A little later the pulse became very irregular both in force and rhythm and the tongue much injected. Discharged prematurely, at her own request, on the 87th day.

*Remarks.*—I have already, in a previous communication, stated the results of my experience in the treatment of rheumatic fever with salicin. A perusal of the foregoing cases shows that the effects produced by salicylate of soda are almost identical with those produced by salicin, save that the former is by far the more energetic of these agents. The study of the cases treated with salicylate of soda suggests two points for consideration which come properly within the scope of this Paper: namely, first, the physiological effects of the medicine; second, its value in the treatment of rheumatic fever.

I.—The physiological effects of salicylate of soda.

One of the most obvious effects of the treatment in the majority of cases was a speedy fall of temperature, sometimes within a few hours from the commencement of the treatment, and for the most part within two or three days. The pulse usually, but not quite invariably, came down in frequency with the fall of temperature. Certain well-marked symptoms commonly attended the reduction of the fever. In several cases of so mild a character that I should have expected them to make a rapid recovery under the favourable conditions of confinement to bed, quietude, and hospital diet, the improvement was so rapid that time was not allowed for the development of these physiological consequences of the medicine. Nevertheless, in forty-five cases out of the fifty I have recorded, such effects did more or less ensue. These effects may be considered under the heads of affections of the nervous system, of the organs of circulation, and of the gastro-intestinal tract.

To the first group, affections of the nervous system, belong deafness, vertigo, headache, noises in the ears, delirium, and hallucinations.

Deafness was often an early result of the treatment, and was noticed in twenty-seven cases; sometimes it was very intense. Vertigo was also frequent, and occurred in fourteen cases. Noises in the ears, often accompanying deafness or vertigo, were complained of in eleven cases. They were described as being like the noise of a steam-hammer, the rushing of water, or as buzzing or singing in the ears. Very intense headache, chiefly frontal, though less frequent than deafness



and vertigo, was, when it occurred, a much more distressing symptom. It was complained of in nine cases, and in several of them recurred on the resumption of the medicine after it had been temporarily discontinued. Delirium was present in eight cases, and was usually attended by great restlessness. Hallucinations presented themselves in four or five cases. The delusions were of the same kind in all of them, and consisted in the supposed presence of objects or persons around the bed or in the immediate vicinity of the patient. In several cases they were associated with the impression that distant music was heard.

Marked depression of the pulse and action of the heart were the most important of the consequences produced upon the circulation. More or less weakening of the pulse, requiring the free administration of stimulants, occurred in nearly every case. This was accompanied by great weakening of the impulse of the heart, and in ten cases by almost complete obliteration of the first sound. In two or three cases irregularity of pulse appeared fairly referable to the treatment; in several cases the pulse became dichrotous, and in four or five cases the second sound of the heart became reduplicated.

The symptoms referable to the gastro-intestinal tract were sickness—often uncontrollable sickness—which happened in twenty-two cases. In three of these cases the vomit was grumous. In many cases there was marked injection of the tongue. Soreness of the fauces, apparently arising from the treatment, occurred in three cases, and an aphthous state of the tongue also in three other cases. In one of the latter several small vesicles formed upon the tongue and buccal mucous membrane. Diarrhœa also occurred in two cases, and was evidently due to the treatment, for it subsided when the medicine was discontinued, and returned again when it was subsequently resumed.

Epistaxis occurred in seven cases—in some of them repeatedly—and in more than one of them, after ceasing when the medicine was intermitted, it returned again when it was resumed. Transient albuminuria was observed in two cases, and in two other cases tremor of the hands and tongue, but it is not quite certain that these were really results of the salicylate of soda.

II.—The value of salicylate of soda in the treatment of rheumatic fever.

My experience leads me to regard salicylate of soda as



the most powerful antipyretic agent with which I am acquainted. As I have already shown, the temperature soon falls under its use; the pulse commonly falls at the same time, and the pains also usually soon abate very considerably, and in most cases entirely cease within a few days. If this were all, and there were no drawbacks to recount, the value of this medicine in the treatment of rheumatic fever would be unquestionable. The improvement of the symptoms, however, only takes place coincidently with the development of one or more of the physiological phenomena already described; and, in all the more acute cases, the relief produced by the medicine soon passed away when the treatment was intermitted, and a relapse—in many cases several relapses—took place. On this ground I cannot regard salicylate of soda as a specific in the treatment of rheumatic fever.

Relapses occurred in twenty-one cases; but in estimating the comparative frequency of their occurrence, several cases ought to be excluded from the calculation. As I have already said, the cases were of very various degrees of intensity and character. Several belonged to that mild form of rheumatic fever which soon subsides, after the patient is admitted into hospital, irrespective of any special treatment. To this class belonged twelve cases (Nos. XI., XII., XIII., XIV., XV., XVIII., XX., XXII., XXIII., XXIV., XXVI., and XXVIII.). In several of these cases the temperature had already fallen before the treatment with salicylate of soda was commenced, whilst in others it became normal about the second or third day after admission and within a very few hours after the salicylate had been prescribed. Then the two cases (Nos. I. and II.) which passed into the state of hyperpyrexia whilst under the influence of salicylate of soda; the two fatal cases (Nos. III. and IV.); and lastly two other cases (Nos. XXXI. and XXXII.) in which the salicylate was discontinued after a very short trial; in one because it failed to produce any decided benefit, in the other on account of the severe constitutional effects it caused, ought likewise to be omitted. Excluding these eighteen cases there were therefore relapses in twenty-one out of the remaining thirty-two cases. In seven of these cases there was only one relapse; in nine there were two, in two there were three, in two there were four, and in other two there were five relapses. It is, indeed, unquestionable that relapses are apt to happen in rheumatic fever, under every mode of treatment; but certainly in not so large



a proportion as in twenty-one out of thirty-two cases. It was also quite obvious that, in most of these cases, the relapse was due to the influence of the medicine passing off; because in most instances the relapse took place shortly after its physiological effects had ceased, and, in those cases in which more than one relapse occurred, the later relapses happened in precisely similar circumstances.

Whilst, therefore, we must freely admit the great immediate relief that in many cases follows the employment of salicylate of soda in the treatment of rheumatic fever, there still remains for consideration the question whether, upon the whole, this treatment is successful. The answer to this question must depend upon: 1st. whether the complications which are apt to arise in the course of rheumatic fever are less frequent under this mode of treatment; 2nd. whether the condition of the patient after recovery is better or worse than under other modes of treatment; and, lastly, whether the length of time in hospital is longer or shorter under this than other modes of treatment.

1st.—We might perhaps have expected that hyperpyrexia, at least, would have been prevented by the use of so powerful an antipyretic agent. But the two first cases I have recorded negative this expectation, for hyperpyrexia was developed in both of them after the proper physiological effects of the salicylate of soda had become manifest. Pericarditis was already present in many cases before the special treatment was commenced; but it also supervened subsequently in several cases. In three cases pneumonia, and in four others pleurisy, supervened when the constitutional effects of the salicylate had become manifest. On the other hand, several cases that were admitted with either pleuro-pneumonia, broncho-pneumonia, or bronchitis ran very much the same course we are accustomed to see similar cases run under other modes of treatment. It thus appears that treatment with salicylate of soda neither prevents nor diminishes the frequency of complications in rheumatic fever.

2nd.—Patients treated with salicylate of soda become very anæmic; they are long in becoming able to resume their ordinary occupations, and they appeared to me to regain health and strength more slowly than patients treated in other modes.

3rd.—If the two cases of hyperpyrexia, the two fatal cases and nine of the very mild cases, which were each on the



average less than twenty days in hospital, be left out of account, it appears that the remaining thirty-seven cases were each on an average fifty-seven days in hospital. This period, however, by no means represents the duration of their disabling illness, for all of them had been at least a few days ill previous to admission, and probably none was discharged in a condition to resume work; many having been sent to convalescent hospitals and others to their friends in the country to recruit. On an impartial consideration of my experience, therefore, I am compelled to conclude that, although the pain and distress of the patient are undoubtedly assuaged, for a time, by salicylate of soda, the duration of his illness is not shortened, neither is his recovery so rapid as under other modes of treatment.

In conclusion, another question now presents itself for consideration, namely, whether it is not possible that some injurious consequence may result from the powerful action of the medicine upon the heart; and, I am bound to express my fears that the marked weakening of the first sound of the heart, observed in so many cases, indicates the exertion of an influence upon the muscular structure of that organ which may not always pass entirely away when the treatment is suspended, more particularly where inflammation of either the endocardium or pericardium or of the muscular structure itself exists during the treatment.



