Thesis for degree of M.B.

or

Some Observations on Rheumatoid Arthritis.

Since the time of my graduation in 1898 I have been in practice as a General Medical Practitioner in a country district, and have had the opportunity of making some observations on a few cases of Rheumatoid Arthritis which have come under my professional care. I have also had access, now and again, (and when I have been able to take it), to the Home for Incurables Liverpool by the kindness of Dr. Macalister of Rodney Street Liverpool, and have there also studied a few cases.

Being in a country practice I have not had the opportunities for working at the pathology of this disease which would have been available had I resided in a large town; my observations will necessarily be confined to points of clinical and therapeutic interest.
Case 7.

Elizabeth Soward, age 59 years,
Hausfrau, married.

History

Her father was troubled with
Rheumatism for some years before he died.
Mother was healthy. She has had five children.
Always been healthy up to the commencement
of this illness. Twelve years ago she first
noticed she had pains in her legs, feet,
which were jumping & spreading in character.
Shortly after this she had the same
sensations in her wrists, hands, elbows,
shoulders. Before I saw her she had
tried everything to give her relief, chiefly
embrocations for local application to the
painful parts. She traces the pains first
absorbed as commencing at 47 years of age
the time of her menopause.

Locomotor System

There is marked
deformity of both hands, with a certain
amount of ulnar flexion; knee-joints are
swollen. The pain or stiffness in the Temporomaxillary joints, the twitchings in any of the muscles since the attack first began. The wrist-joints even have become swollen at times. Muscular atrophy marked in both hands & forearms.

**Alimentary System**

Digestion good.

No attacks of vomiting.

**Circulatory System**

Palpitation marked. On auscultation there are no murmurs.

**Treatment.**

I had the patient put upon a good nourishing diet, & put her on Supr. Ferric Sol. a teaspoonful three times a day, at the same time the affected joints were rubbed with glycerine & Belladonna liniments; the above treatment was carried out for a time but as she did not derive any benefit I put her upon
Exsiccated Blood (the dry roe of which has been accomplished in vacuo, in order not to destroy such active ferments as it might contain) gives her much pain's per diem.

I may mention she has experienced much relief from this treatment.

I have this opportunity of no mentioning that this preparation of Exsiccated Blood has been made at the suggestion of Dr. Charles Macleod of 35 Rodney Street, Liverpool, by Messrs. Burroughs, Wellcome & Co London, and supplied by the Resident Rubrum which they manufacture.

Case II.

A. B. 40 years, Single

Occupation house duties.

History

Eleven years ago she slept in a damp bed, then had acute pain all over her body, later the pains seemed to affect the little fingers of the right hand. Twelve years ago she was in Chester
Infirmary suffering from a bad leg which was much swollen, the veins hard and rough, but she recovered from this.

About ten years ago she had great pain in the first interphalangeal joint of the left little finger, this joint became considerably swollen. About two months later the metacarpophalangeal joint of the left thumb was affected in the same way, the left ankle was also slightly affected. Fifteen months after this both knees swelled & became painful, the other joints still remaining bad.

Since then the third middle metacarpophalangeal joint of both hands have become affected, the left commencing first, the left shoulder was next attacked, six months later the right elbow joint. The swellings vary from time to time, sometimes disappearing.

There is no history of Rheumatism or gout in the family. The pains in the joints vary; being worse some days than others. She has more pains in her joints when the menstrual periods come on.
Locomotor System

In this case the creased cartilage shows marked Rheumatoid Change, on movement there is distinct grating & crackling felt in this cartilage; this was first noticed two or three months ago.

Patient also complains of pain when swallowing, especially solid food.

Regarding the affection of the creased cartilage in this case, the patient was once given a pill & spasm was set up in the larynx, it was thought at the time that tracheostomy would have to be performed; it was at this time that the grating sensation of the cartilage was first noticed.

The knee joints are swollen, painful, tend to bones enlarged, with a limited amount of movement. The joints can be flexed but not extended, can grip fairly well, can flex elbows; shoulders are free. Muscles of hands arms are more or less atrophied with marked deformity in the phalanges.

In this patient there is a crater on the dorsum of the right foot, the result
of an ulcer, these ulcers are I find the immediate cause of death, when present; because the lesions of four cases show death has followed perforating ulcers, in two, on the dorsum of the foot; in one, on the inside of the knee joint; and one over the Sacrum. These ulcers are very characteristic in their onset, not varying as inflammatory spots, but as a blue fanning-moss-like area, circular in outline, rapidly breaking down, clearing a deep ulcer with precipitous edges, extending down to the bone. In one case the acute inflammatory condition extended up the leg, and amputation had to be performed to save the patient's life, but this failed.

**Alimentary System**

This patient has had various attacks of vomiting without any definite cause, but Soda, Bicarb. & Soda. Subnial: cleared this up.

**Circulatory System**

No pain or palpitation, nor ascension to the lungs.
Treatment

Massage was tried on patient, derived some little benefit from it. After this she was put on Sarsaparilla Blood, three grains per dose for twelve months, & during the last few months she has derived great benefit from it, feels much better & is improved in every way.

Case III.


History

She first commenced feeling ill in January 1896; she then noticed she was faint-footed, consulted a medical man who ordered her rest, but she kept moving about. She was then ordered a change to Bath, but was too ill to take the waters, although she improved a little while there.

There was no deformity until the spring of 1898. Both her father & mother have suffered slightly from Rheumatism. She has had four children, youngest nine years old.
Shortly after the spring of 1898 her health first way, Rheumatism commenced in her hands & fingers, they were much swollen & red & looked like chilblains. The first joint affected was the left metacarpophalangeal joint of the thumb, it then affected all the joints of the fingers of the same hand; after this it spread in the same manner on the right hand. She attributed all this to the large amount of sewing she did. After a time it affected the right ankle & knee, then the left leg was attacked in the same way; it next passed to the right shoulder then the left; lastly, the temporo-mandibular joint of the cervical vertebrae, the latter so much so that she was unable to move her head backwards or forwards. In 1897 she was worse & experienced difficulty in swallowing.

Locomotory System

Almost plexion

If both hands is marked, the metacarpophalangeal joints of both thumbs are much distorted, as also are the other
with phalanical joints of the hands. The knees, ankles of both legs, and wrists of wrists Rheumatoid change. The Cervical vertebrae are undoubtedly affected.

**Alimentary System**

About two months ago she had an attack of vomiting, but could not account for it in any way, it was after the form of a 'Gastric crisis' a continual welling up of fluid - the vomiting was 'intractable' - after the use Perchloride of Mercury, Crocote, Bismuth & she was given Liquor Potassic Permanenatis in one drachm doses every four hours during. No vomiting followed this latter treatment.

**Circulatory System**

No pain or palpitation,

no bruises on auscultation.

**Treatment**

Extracted blood was given, three grains per dram, she was kept on lettuce for five months or experienced relief
relief. For the vomiting she was given belladonna and other remedies under the alimentary system.

Case IV.

A. S. married, age 64 years.

History

Father died at age 61 of phthisis. Mother died aged 52. Change of life. Has had ten children, six boys and four girls, four boys and two girls living. When 43 years of age patient had an attack of rheumatic fever (I think this was probable the acute stage of rheumatoid arthritis) and she has never enjoyed good health since that time. The present illness began by a feeling of pain in the right elbow joint, then the left was attacked, after this the pain passed to the right knee joint, then the left knee was attacked.

The affection of the knees prevented her walking. The disease next passed to her right hand, affecting the fingers joints. Complaints of frequent neuralgic
attacks on the right temple. She has noticed
the pain in the joints have been worse since
her periods stopped eight years ago.

Locomotory System

Right elbow is
flexed rigid; bursa over the olecranon
which contains fluid; there is much
creaking on movement. Very great creaking
in the radio-ulnar joint. Hands, wrist-
the right-thumb was never affected;
the fingers of the right hand are contracted
flexed into palm. Left hand became
affected in the same way later on.

There is limited range of movement-
in the wrists - metacarpals slightly extended.
The knees can be moved almost to full
extension. The hands can be extended
but still show nodular swellings, which
are due not only to bony thickening
of the metacarpal & phalangeal extremities
but also to a chronic synovial effusion.
Muscular atrophy of the arms is marked.
Alimentary System

No vomiting at all in this case.

Circulatory System

Hypertension marked in this system. No limits.

Urinary System

Urine - Sp. Gr. 1012.

Phosphate a fees; Chlorides a fees; no albumen.

Treatment:

Has been taking Epsom Salt.

Blood, 6 pints per annum, has noticed some benefit from it; occasionally she has noticed it had a tendency to make her feel sick, but she has never actually vomited.

Case V.


History:

Father died of disease of the liver.
Mother of Paralysis. Had no serious illness before the present one commenced.

Present illness began about four years ago with pain in the ankles of the right foot, tenderness. She consulted a doctor who recommended rest; but unfortunately she did not follow his advice; then went to manage a Boarding House, but got worse and had to give it up in six months time.

She then consulted Professor Harle of Liverpool, & carried out his treatment for three months & then went to

Hydropathic Establishment in Salthill, but got worse under their treatment, which she says was a "throw-up" treatment. Dr. Turner Batten was chief.

She left this Establishment, went home to Leicester, rested. After a time

she commenced work again in August 1900, but had, in five weeks' time, an attack of Rheumatic fever. (I think probably the acute stage of Rheumatoid Arthritis).

She followed September she went to Harrogate, had various baths, while there, & also massage; from these she derived a
little benefit. The menopause occurred two years ago, but since then she has not noticed any change in her joints.

This patient also gave a history of a bloody discharge from the nose which undoubtedly was the seat of infection. The mucous membrane of the nose looked very red with white points with a sticky secretion which was a medium in which organisms grew. Acting on this impression the nose was douched out each day several times with Boracic Acid Solution & Boracic Acid insufflated, a marked improvement began, as in October she was a cripple in bed, with feverish attacks; since, she has less pain in the joints & they are more mobile. She can even walk to church. With this case two others occurring in men are brought to mind, of what was like Rheumatism; each had nose bleeding & no relief occurred until the nose was insufflated.

In one of these cases after the injection, the man began to perspire freely, the perspiration was very offensive & sickly like; he made
a perfect recovery. These cases were supposed to be Rheumatic Fever. They had swollen tender joints, swelling temperatures, but no cardiac lesion.

**Locomotor System**

Some deformity with pain on movement; the knee joints are enlarged & painful, osteophytic changes marked.

**Alimentary System**

Patient has vomited on various occasions, could not account for it; has not been so severe that she needs take any medicine.

**Circulatory System**

No bruises, listless

marked.

**Treatment**

Insufflation of Boracic acid into the nose together of Mercury rubbed into knees. Pot. Iod. has been taken for
Case VI.

I. Y., aged 44 years, Married.

History.

Father about age 73, Mother died aged 69 from Bronchitis. Her mother had an attack of Rheumatic Fever when 40.

Patient herself has never enjoyed her best health; at 18 years of age she had an attack of Diving. She was married at 27, has had twins. After this she had to work hard and consequently overran her strength. All her joints appeared to pain her at one time, gradually got worse and worse, so that at times she was quite a cripple. She went to an Hydropathic Establishment, was there for six months. While there she appeared to get a little better stronger. Soon after she came out she had an attack of Influenza and became worse.
Locomotor System

All the joints are more or less deformed with a certain amount of atrophy of the muscles.

Patient has difficulty in letting food between her teeth, the Temporo-Maxillary joints being affected. Inconspicuous to the sternum is marked, which contributed to the Rheumatism.

Alimentary System

No faecal disturbances.

Circulatory System

No marked change.

Treatment

Patient has had six months' treatment of massage chiefly for the knee joints but has not improved any.
Case VII.

A.B. Aged 63 years. Single.

History.

She first began to be ill sixteen years ago, when she had an attack of Rheumatic Fever (I think possibly the acute stage of Rheumatoid Arthritis) which lasted for eight weeks; after this she became worse, the left knee joint was painful, then the left arm, followed later the right arm, and the right knee joint.

For the last six months her knees have been gradually getting worse, swelling and more painful; the back of her neck is also stiffer than it was. She experiences some difficulty in moving her head from side to side, back ward or forwards.

The Temporo-Maxillary joints are painful, she experiences some difficulty in masticating her food.

Locomotor System

Jaws: Very limited movement; thickening of Condyles,
creaning. Wrist - are flexed, rigid, metacarpus slightly extended. Thumbs - Straight, with slight portion of extension & flexion, digits strung between thumbs & middle of flexed index finger. Fingers - are all completely flexed and terminal phalanges curved in towards the palm. No dislocation. The curvature of the fingers increases from the index to the little. The little fingers are quite approximated to the palm.

The muscles of the hand are atrophied, thin over the hands fleshy. She has two ulcers on the right leg which appeared about six months ago.

**Alimentary System.**

She has had attacks of vomiting at various times, could not account for them in any way.

**Circulatory System.**

No bruising, but patient is affected with palpitation at times.
Treatment.

Patient has been taking
Dissociated blood, Six grains per diem.
She finds she has experienced some
benefit from it.

Case viii.

E. J. aged 42 years. Single.

History.

Two other family have had
Rheumatism. Her Mother had Rheumatic
Fluor when young. Patient had an
attack of Rheumatic Fever when a girl,
but after this she was quite well up to
the year 1885, when she was suddenly
seized with a pain in her right arm,
this gradually became worse, so that
in a short time her arm became so stiff
that she could not move it from her
side. The pain then extended to the
thumb finger of the right hand, then
all the other fingers of the same hand
became swollen at the joints & became
flected one by one at the interphalangeal
Joints: The wrists became stiff to swallow. Shortly after this her left hand was affected in exactly the same manner as the right one, but in the same order, but in a much more rapid manner.

Eight years ago the left knee joint commenced to swell so that she was unable to walk. Her menstrual periods are regular, the uterus no change in her pain from these.

**Locomotor System**

Both hands appear flattened and elongated, wrists stiff and swollen, fingers flexed; atrophy of muscles. Right hip joint is partially dislocated. Right knee joint a little painful but swollen. Both temporo-maxillary joints are slightly stiff at times, they also swell.

**Alimentary System**

Occasionally, patient has attacks of vomiting.
Circulatory System

No thrill marked.
No palpitation, no bruise.

Urinary System

Urine 8th Oct. 1870.
Acid, trace of albumen, chlorides a few.

Treatment:

Patient is having
Exhausted Blood. Six frnnsis per day.
Experience little benefit from it.

Case IX.

A. O. aged 61 years. Single.

History

Her Mother has had Rheumatism.

In 1855 patient herself had an attack of Rheumatism; it affected her hands & wrists, & they began to swell; following this her knees & ankles commenced to be inflamed & swell up. As she was getting better the swelling of the joints was passing off, she noticed her left--
Knee joint was dislocated. In 1891 the back of her neck became stiff & painful, so much so that she could not move her head about or keep it up.

**Locomotor System**

The whole joints are swollen & partially dislocated. The pain in the temporal & maxillary joints. Pain marked in the cervical vertebrae.

**Alimentary System**

No vomiting.

**Circulatory System**

No bruises. Has experienced no palpitation.

**Urinary System**


No albumen. Phosphates present.

**Treatment.**

She was put upon a low salt diet. Relieved B Lorenz 15 franci per day in the found
some relief from this treatment.

Case X.

H. M. Age 48 years. Married.

History.

No history of Rheumatism in the family. Patient has had two children.

Three years ago patient began with a pain in her left shoulder, due, as she thought, to a cold; this pain became worse and passed down to the left hand. After a time she could not lift her arm up, so she had to give up her work.

Then the back of her neck became stiff; afterwards the right arm was affected; the shoulder being first attacked, then the elbow joint, followed by the wrist and fingers. In October 1900 the pain began in both legs, first in the heel, then the knee and feet; all the joints were swollen and sore to the touch.

Locomotor System.

The back is more
or less stiff with limited movement, either from side to side or forwards or backwards, pain being felt in the cervical vertebra.

All the joints of her hands are swollen with limited movement: wrists, elbows, shoulders painful; also hips, knees, ankle joints. Fingers, right hand are distorted and extended. No pain in temporomaxillary joints.

Alimentary System

She has had attacks of vomiting at different times, but could not account for them.

Circulatory System

No palpitation or

no bruise.

Treatment

Exsiccated Blood; none
found per channel, with some improvement from it.
Case XI.

H. L. Age 48 years. Married.

History.

Patient has had eleven children; her illness first commenced when she had had her last child eight years ago, thus being about two months after confinement. She attributed it to a chill she had when working in her own garden, which seemed to cause her knees to swell and become painful; after a time all her bones commenced to be painful; during this period she was able to move about and attend to her household duties for about eighteen months, but even then she was not feeling well bodily. After this both her feet swelled, began to swell so much so that she was unable to wear her boots.

Six years ago viz. from October 1907 she was obliged to take to her bed and has never been able to get out of bed since. After taking to her bed both hands became puffy and swollen, and stiffness occurred in the fingers, followed by a change of shape.
The left shoulder joint was next attacked and became stiff; her right wrist joint became quite stiff and the left soon followed in the same way. Last year both temporomaxillary joints were affected, so much so that it is with the greatest difficulty she can separate her jaws, even a little, to take food.

At times she complains of muscular spasms thro'things at various intervals.

Locomotory System

The joints elevate to the ulnor side, the first-interphalangeal joints are only extended; the wrist joints are more or less fixed. The hip joints are fixed & painful; knees flexed & painful. The temporomaxillary joints have only a very limited amount of movement. The muscles of the hands & forearms are atrophied.

Alimentary System

Nothing marked in this System; no vomiting.
Circulatory System

Patient is troubled with palpitation at times to bruit.

Treatment

I placed her upon as good nourishment diet as she could obtain.
Locally I had applied Belladonna & Glycerine Liniment - this did not seem to produce any marked effect although ceased for some time.

Syr: Ferri: 1/2 oz. per day.

Ghim, 2 draughts, three times a day, and was also used for a while without producing any change. I next gave her Exsiccated Blood & she is still taking nine grains per day & it is giving her more relief than any other drug she has used.

Case XII.

J. L. Age 62. Male.

History

The patient's former occupation were those of a Rail Road & Water works worker, he has been much exposed to damp rest...
His father died aged 68 of some tubercular affection of the knee joint; his mother died of pleurisy aged 59. Two of his brothers have died of consumption. In the spring of the year 1875 he noticed he had pains more or less marked in both knee joints; after a time stiffness of the knees followed; then both wrists were affected in a similar manner, but the wrists were first red and inflamed, painful and stiff; following this the right hip joint was attacked. In the Autumn of the same year viz 1875 he went to Belfast Hospital and was there three months, but he did not feel any better, so he came home again started work, after a time he felt better. He continued to work until 1882 when his old pains recurred twice again, first in the wrists, hands, then shoulders, hips; later on it returned in the knees; his legs and began to swell so he had to stop any work he could do.

**Locomotory System**

The fingers of both hands are considerably flexed, & both hands
deviate to the ulnar side. The wrist joints move fairly well, but the elbow joints are ankylosed. The left shoulder is swollen & painful. In this joint only a limited amount of movement can be obtained. Both knee joints are flexed, with a limited amount of movement & a distinct guarding sensation is felt on slight movement.

On the anterior surface of both legs there is marked extravasation of blood. There is marked atrophy of the extensor & flexor muscles of the hands & arms.

**Alimentary System**

No vomiting, but

The patient at various times has had marked abdominal pain which has been relieved at once by the administration of 5 grain doses of Salol.

**Circulatory System**

There are no bruises & no palpitation. No pericarditis.
Treatment

Internally the patient has had two drachm doses of Syr. Ferric. Jod. three times a day; the affected joints have been rubbed with Glycerine & Belladonna liniments, equal parts.

He has also had Exsiccated Blood, three grains per diem, increased to nine grains, which has given him relief, more so than did the Syr. Ferric. Jod.

As mentioned before, 5 gran. doses of Salol have been administered for the abdominal pain, & this has given him great relief.
Etiology

Sex.

From cases of Rheumatoid Arthritis that have come under my professional care, rotter cases I have examined, it appears to me that the female sex is more liable to the disease than the male. From the writings of various authors that I have perused, & which I will mention, I notice that many of them agree with me on this point, viz:--

1. Dr. A. E. Garrod:-- in his work on the subject says the females supply the larger number. Of 500 of his cases 411 occurred in females, & only 89 in males.

2. Dr. Frederick Taylor in his manual of Practice of Medicine says that the female sex supplies the greater number of cases.

3. Dr. Bannalynne in his book says:--
   "There is no doubt it is commoner in
women than men; out of 243 of his cases only 41 were in men & the rest in women.

4. Sir Anthony Beaumont-Brabazow, Senior Physician to the Bath Hospital, writing on the subject of Rheumatoid Arthritis in the British Medical Journal of March 21st 1894, page 723, says - "Taking into consideration sex &c., other facts borne out by statistics & clinical history of the disease, it is proved that the weaker sex supply the vastly larger number of sufferers."

5. One writer is Dr. I. Mitchell Bruce in the Index of Medicine differs from the above, as he says - "It is commonly believed to be more frequent amongst females but this is doubtful."

Age.

I believe it is a disease of the degenerative period of life, attaining its maximum between 40 and 60 years of age. Of the cases I have seen the average of the age was between 40 & 60 yrs, more being married than single.

1. Dr. A. E. Garrod says:—"500 cases show that the number of females increases steadily with each 5-year period until between 45 & 50 was reached, when the numbers declined."

2. Dr. Britton in the British Medical Journal of March 21st 1896 says, regarding the average ages of cases admitted to the Bath Hospital for treatment:

   **Females**

   - Ages: 30 to 40: 18
   - Ages: 40 to 50: 27

In young children I notice it occurs between the ages of 5 and 7 years, & in children it appears to affect the female sex.
Ulterine Disorders

I think there can be no doubt as to this disease being influenced by uterine disorders. In many cases I have noted paroxysms of particular pain at, or about, the same time of each menstrual period, but I have failed to observe that the pain was at all unilateral—viz.: over the region of the ovary on the same side as the articular pain, as mentioned by Sir Garrod. I have also noticed that after rapid child-bearing, attacks of rheumatoid arthritis have followed.

Sir A. Garrod points out the sudden appearance of the disease after rapid child-bearing or severe haemorrhages.

Abnormal Menstrual Periods as regards quantity:—this I have observed. Sometimes it is more, sometimes less.

Sir A. Garrod says:—"Of 241 of his cases there were 176 in which the Catamenia were noted, 105 menstrual periods were normal, whilst the remaining 71 were abnormal as to periods.
or quantity.

Dr. Bannatyne in his work says:—

"It frequently follows child bearing, in 293 of his cases 18 occurred after confinement or during pregnancy and 2 after miscarriage."

From the cases I have had I am inclined to think that the disease is more acute and widespread if the patient has borne a large family, but so far I have not seen any special mention of this in the works on the subject.

Dr. Fuller says:—"in almost every instance which has fallen under my notice of its occurrence in early life it has either been hereditary or else connected with disordered uterine function."

Dr. Odland attaches great importance to uterine disorders as causes of Rheumatoid Arthritis: in 30 of his cases some such deviation—slight or severe—was present.

I, myself, have also observed that it occurs when leukorrhea is present.
Heredity

I have failed to trace this in any of the cases I have had, although Dr. A. Garrod says: "In some cases it is very well marked but is by no means uncommon to see two or more sisters suffering from Rheumatoid Arthritis; also Dr. Bannaline says: "It may be described as occurring sporadically, four of a family of brothers and sisters, some are affected and others escape.

Ghareli - out of 41 this cases 11 were due to heredity.

Dr. J. Mitchell Bruce in the Index of Medicine says: "the disease is hereditary."

Phthisis

Dr. A. Garrod says the disease has an association with Phthisis. In two cases I have had there was a history of Phthisis in the family - the father of the patient dying of the disease in one case, in the other, two brothers.
Dr. A. Garrod is the only author I notice mentioning Phthisis as having any connection with Rheumatoid Arthritis.

Cancer

I have not observed any mention of this by various authors, but I have noticed its occurrence in two cases; one in the shin, and the other in the breast, which died.

Damp and Cold

Two cases under my care have described to me the origin of their illness as being due to the above causes—one to sleeping in a damp bed and the other to getting a chill shortly after her confinement, by working in a garden.

Professor Charcot regards damp and cold amongst the most important causes of the disease, but such conditions require to be prolonged in order to produce this effect. Patients, he says, often ascribe their malady to getting wet through or sleeping in a damp bed.
Dr. Frederick Taylor in his book of Medicine page 841, says: "Cold & damp often lead to an attack as well as predispose to it."

**Rheumatism and Rheumatic Fever.**

In the majority of cases I have had, I observe the patients have either had Rheumatism or Rheumatic Fever or there has been a family history of such.

Dr. J. Mitchell Bruce in the Index of Medicine says regarding this: "in a considerable proportion of cases rheumatoid arthritis follows ordinary acute rheumatism immediately, or it appears after an interval of several years, during which time chronic rheumatism of a milder degree may have been complained of."

Dr. Taylor writes: "As to its antecedents in a small number of cases there has been one or more attacks of acute rheumatism.

**Remarks:** One case has come under
my observation who suffers at times from this affection previous to the disease appearing. Regarding this Dr. Bennet writes: "I have traced the onset in several cases almost with certainty to catarrhal tonsillitis."

**Emotional Causes.**

I have never been able to trace, in any of my cases, a history of the above. Stewart mentions 4 cases caused by worry.

**Injury.**

In my cases I have not obtained any history of accident or injury as causative of the disease, although it has been observed, according to some writers, to follow fracture, 

**Micro-organisms.**

I think there can be no doubt that Rheumatoid Arthritis is caused by a micro-organism or microorganisms. To point out that an
advance has been made towards this theory, I wish to quote a communication read before the Pathological Society of London on January 7th 1902 by Dr. J. F. Poynter and Dr. Alexander Paunin.

The authors brought forward the results of an experimental investigation with a diplococcus isolated after death from the knee joint of a man aged 69, who had suffered from chronic arthritis.

The cause of death had been carbonic acid taken by misadventure while engaged in his employment. Several joints were found much damaged by the arthritis, and the changes were such as are usually associated with the rheumatoid arthritis of later life. The fluid in the joints was almost clear and was scarcely in amount. There was a small foreign body formed probably by the organisation of inflammatory exudation. The cartilages were eroded and the bones carbonated. The synovial membrane was much thickened.
A diplococcus was demonstrated in the uninoculated and incubated synovial membrane, was isolated and grown on blood agar. Injected intravenously into two rabbits, arthritis resulted in both instances, without either valvulitis or suppuration in the viscera. One rabbit was killed upon the fifteenth day. No erosion of cartilage or alteration in the bones forming the joints was found. The other developed a monarthriti of the right knee with wasting of the muscles of the thigh and leg. The animal was killed in the tenth week, a specimen was shown to the society. The exudation was scanty, clear and sterile, the cartilages were ulcerated in some places, in others had lost their gloss. The articular surfaces of the bones were elegantly flattened, in places ulcerated with edges much thickenened and dried.

The muscular atrophy was quite definite. The joint capsule and peri-articular tissues were but little thickened, but the cruciate ligaments had lost their
lustré were swollen & puffy. A condition of these arthritis, had, therefore, resulted from the intra-venous inoculation of a diplococcus isolated from a case of rheumatoid arthritis. This type of arthritis the authors had not observed hitherto, as a result of inoculation with the diplococcus rheumaticus.

They pointed out that the other investigators had isolated micro-organisms from the exudations in rheumatoid arthritis, for example, Max-Schüller, Bannalp, Wohlmann & Bloxall, Chaucford & Raymond had isolated bacilli; von Bungern & Schneider a minute diplococcus. They emphasised the fact that the monarthritis in their investigation had been the result of an intra-venous inoculation, not of a direct-injection into the joint; they summarised their conclusion as follows:

1st. - a diplococcus was present in the synovial membrane of the knee joint of a man aged 67, several of whose joints showed the chronic destructive
Changes of one type of Rheumatic Arthritis

2nd. This diplococcus had been isolated & cultivated.

3rd. Intra venous inoculation into rabbits had upon two occasions produced arthritis without cardiac lesions.

4th. The organism had been isolated from the joint exudates.

5th. In one instance an osteo-arthritis had resulted which was non-suppurative, which differed in the character of the changes from which they had hitherto observed in experiments with the diplococcus of Rheumatic Fever.

6th. They considered this diplococcus to be the cause of an arthritis, both in the case from which it was isolated & in the rabbit.

Cultures of the diplococcus were demonstrated and sections showing it in situ in unincubated and incubated fragments of the synovial membrane. The diplococcus rheumaticus was also demonstrated in the synovial
membrane from a case of early rheumatic arthritis. Macroscopic specimens of the arthritis changes were also shown, with pipettes containing the fluid removed from the affected joints.

I believe the disease is due to microorganisms arising in the affected joints which are absorbed and give rise to products which pass through the central nervous system and cause various nerve symptoms.

My grounds for stating this is:

I. Rheumatoid arthritis following such infective diseases as:

1. Gonorrhea, Rheumatism, etc.
2. Affections of the female generative organs viz. increased or diminished menstrual flow, leucorrhoea, etc.
3. Colds & damp, Chills.
4. Affections of the nose.

The above all allow of a suitable index for bacteria to enter the system and spread to all parts of the body.
II. Harve Symptoms present— for which no reason can be ascribed:—

This appears to me to be a strong point in favour of the disease being due to micro-organisms.

III. The polyarticular character of the disease, is enough to show its infectious nature.

IV. The course the disease runs:— also show its infectious character. Viz. Swellings which show periodic changes.

V. Result of Treatment, by such drugs as Epsiecate Shold, Salol, &c. Such drugs freeing the system of effete products set up by micro-organisms.

I believe some ferment is supplied by the Epsiecate Blood which is perverted by the action of poisons.

VI. Tachycardia. Bezanceau says this is due to pressure on the Vagus, but also suggests it is more often due to the absorption of toxins.
VII. Anaemia. Hunter says the pernicious anaemia is caused by bacterial poisons; if so, may not this be said also of the anaemia in Rheumatoid Arthritis?

VIII. Ulcers - due to embolism.

causes quoted by other authors:

I. Charcot says: "It is a secondary form of Rheumatism" - but the disease may arise as a primary disease, therefore, I do not think this theory will hold. He thinks it may follow an attack of acute Rheumatism.

II. Dr. Sippy Smith says: "It is a disease of acute character" - but Rheumatoid arthritis may come on in young persons, therefore, I fail to see as this theory can be true.

III. Forsbrooke says: Anaemia is the cause of the joint changes, he holds the Vaso Motor Centre in the Medulla is
stimulated, too causes a constriction of the blood vessels which supplies the joint tissues, so nutrition is interfered with, and in time causes organic change, reflex vasomotor syndrome be stimulated for some time it causes exhaustion and inflammation of the joints.

I think the Anaemia is caused by poisons which set up the disease, therefore it is not a cause but a sequel, Forsbrooke's theory seems to me to show that the Anaemia is present before any joint affection comes on, but Anaemia is not always present at the commencement, therefore, it cannot be a cause.

IV. Dr. Brod says: — "It is entirely caused by reflex action set up by uterine or viscerol derangement."

V. Sir Byrne Buckworth, Senator & Remar. "think the disease is due to abnormal nerve conditions."

VI. Hutchison says: — "It is the result—"
of Rheumatic Gout.

VII. Dr. Spencer advances certain nerve lesions, viz.: - "he has noticed various nervous phenomena soon after the joint lesions & pigmentation of skin, local swellings, neuralgia, tachycardia." he says: - "the muscular atrophy of Rheumatic Arthritis is a reflex tropho-neurosis, a pure irritation of the articular nerves causing atrophy through the anterior cornu of the cord, whilst that of Rheumatoid Arthritis is an integral part of the disease, and the cause of the Arthritis is the cause of the Atrophy."

I, myself, have noticed the muscular atrophy is as a rule well marked from the first; the extensors are chiefly affected - this selection of muscle seems to show that it cannot be due to disease alone. According to some writers it is attributed to some reflex nervous influence, arising in the peripheral nerves of the affected joints.
Symptoms

At first there is pain in the affected joint with swelling, tenderness on movement or pressure, later there may be tingling and numbness in the extremities. Then changes occur in the joints (due to doubt to organisms in the joints) they may swell and become very much enlarged or, in some cases, the swelling may not be great; the skin over the joint may be reddened. The affected joints may also become large and tender and have crepitation on movement, which may cause pain; ankylosis is sometimes present. Trophic changes occur, so giving rise to such a state as glossy skin.

Distribution of Lesions.

Notice the joints of the hands are usually those first affected, then the feet and knees.

Regarding this Professor Charcot says
"In 41 of his cases 25 were attacked in the joints of the feet before any others. Dr. Old says: "Out of 38 of his cases 24 affected the hands." Dr. Garrod says: "Out of 500 of his cases 252 commenced in the hands, 64 in the knees, 428 in the feet."

I find the disease always seems to spread from the periphery to the centre viz.: fingers, elbow, shoulders; it never seems to spread down a limb. Dr. Huxley, says: "Arthritis spreads as a rule from the periphery to the centre."

One point I particularly wish to draw attention to viz.: The Temporo-Maxillary joint. This is attacked but not in all cases, but it appears to me that this joint is attacked by this disease more frequently than by any other affection. I wish to mention what Sir. A. Garrod says regarding this joint: "The affection of this joint is most typical of the disease of Rheumatoid Arthritis; in
true Rheumatism this joint is rarely affected."

In my cases showing this affection the joint was so attacked that almost all movement was prevented, & it was with great difficulty the patient could eat.

The joints of the "cervical vertebrae", in two of my cases were no doubt attacked by the disease and to such an extent that movements of the head and neck were considerably interfered with. I fail to notice any mention in writings on the subject of these joints being affected by arthritis change.

I wish to mention another very interesting point which was forcibly brought before me in one of my cases viz.: "marked Articular Change in the Cricoid Cartilage" - this caused pain when swallowing food, also a Choking sensation.

A distinct pricking sensation was obtained on movement of this
cartilage from side to side. I have never heard of, or seen in any writings on the disease, that this joint has been so affected.

I have observed the marked symmetry of the lesions: the same joint of both hands may be affected. In some cases, the disease is only unilateral.

Pain.

I have noticed that this varies in character: it may be or pain, cramp-like, or neuralgic, worse on movement or when warm in bed. The pain may not be complained of in the joint itself, but in muscles, ligaments, and tendons. Muscular spasms and cramps are common.

Dislocations. These may be complete or partial, from lengthening of certain ligaments, or increased
lotion in certain muscles, while others have lost their control. The ends of bones may be ulcerated and so cause dislocations.

**Ankylosis.**

This may only be fibrous or true.

**Deformities.**

I notice the chief of these occur in the hands & knees. In the hands there may be ulnar deflection or radial deflection, or both combined. The deformities are chiefly due to relaxing of tendons and ligaments.

**Cardiac Symptoms**

(Probably due to the action of micro-organisms).

Among the cases which have come under my care, I have not yet been able to trace the presence of Endocarditis or Pericarditis; no murmurs have been
present.

Sir. A. Garrod says: - "I have never met with an instance in which I could trace the occurrence of pericarditis or endocarditis to rheumatoid arthritis disease, and I am of opinion that the absence of cardiac inflammation is one of the best tests for distinguishing this malady from genuine Rheumatism."

Dr. Bannatyne says: - "Endo & pericarditis, especially the former, are commoner complications than one thinks. Out of 293 cases, 17.9 per cent. suffer from cardiac conditions. Clinically there is a booming systolic murmur; pericarditis is often severe & extreme."

Tendinous Reflexes.

In the cases I have examined I have failed to find any change whatever in the tendon reflexes.

Dr. A. Garrod mentions that these
may be increased, normal, or diminished.

Dr. Bannalyne says they are usually slightly increased.

Contour of limbs.
The wrist. With enlargement of the wrist the contour of the part, I observe, is changed; and in some cases the forearm down to the hand appears as one uniform thickness.

Muscular System.

Muscular atrophy.

(Probably due to the absorption of microorganisms). This has been more or less marked in my cases, and I believe it is one of the earliest symptoms. The extensors & interossei are chiefly affected; the atrophy, in some cases, may be so slight as to be unobserved.

Regarding this muscular atrophy I am inclined to believe that it is due to some toxic effect (probably micro-organismal) on the cells of the
Anterior Cornea of the Spinal Cord.

My reasons are:

1. The whole of the muscle or muscles are affected, so it cannot be due to any local change.

2. Atrophy from want of use is slow, and attacks the whole of the muscles of a diseased limb, thus the whole of a limb being affected abandons any change due to inflammation.

Circulatory System.

Tachycardia.

In three of my cases this was well marked.

Dr. S. Buckworth was the first to point out this condition in connection with the disease, and he says:—"Palpitation of the heart is by no means uncommon."

Dr. Spender says:—"There is also an increased pulse-rate & high tension."
Anaemia.

was marked in a few of my cases. I think the more advanced the disease, the more marked is the anaemia.

Hæmorrhages.

In one of my cases subcutaneous hæmorrhages in the front of the legs was well marked. I attribute these to the toxic poisons causing anaemia & dilatation of the blood vessels, setting free of their contents.

Trophic Changes.

The patient's hands suffering from the disease are usually cold & clammy, but I have never noticed any marked sweatings of the palms as mentioned by such authors as Dr. G. Garrod. The nails are sometimes deeply ridged in a longitudinal direction, and are inclined to chip. Pigmentation in
my case has never been very marked.

**Alimentary System**

I have no doubt that in some cases there is a "Gastric Crisis" at certain stages of the disease.

In the greater number of my cases this was very prominent, but I do not observe any mention of this by various authors. I attribute it to the action of micro-organisms on the digestive tract, as the symptoms in most cases at once disappeared on the administration of such drugs as Salol, hydri Potaëse Permanganate.

**Urinary System**

This, I have observed, is normal in the greater number of cases - albumen was sometimes present.
Treatment:

Diet:

I have found that patients suffering from Rheumatoid Arthritis should not—on any account—be put on a "low diet"; this was formerly followed for some time in the belief that the disease was due more or less to Gout. Now as it is known that this is not so, the diet, I think, should be of the same nature as that given to a patient suffering from Pulmonary.

If, however, any febrile state is present then fluid nourishment must be given until this is over. Care should be taken that any derangement of the digestive organs should be watched and diet reviewed accordingly. The diet should be of a mixed kind and nourishing.

Stimulants can be given, but just sufficient to stimulate the faecal secretion.

Food should be given at regular intervals and often.
Dr. A. E. Garrod says regarding diet:-

"It should be light and nutritious. Meat should form a considerable portion, and when it cannot be taken cooked, then take it in the form of potted meat. Take care that the whole of the price is added. Mustard should be taken with meals."

"There is no evidence (he says) that alcoholic beverages are in any way injurious when the disease is once developed, or have any share in its causation; malt-liquors and the wines are of great benefit when taken in small quantities with meals. Thus a glass of sherry or a glass of port or Burgundy may be taken with the midday meal."

\[clothing\]

"Should be warm, and of worsted, all unnecessary exposure to damp and cold must be guarded against."
Drugs.

I believe numerous drugs have been tried in this disease with varying success.

I. External Applications.

I have found these do good in some cases and not in others — but, I think where their use has been of benefit, it has been more from the friction and massage in the process of their application, than from the drugs themselves. I have obtained the best results from Glycerin and Liniment of Belladonna in equal parts.

II. Internally.

I have used and obtained satisfactory and good results from the internal administration of Extracted Blood, the drying of which had been accomplished in vacuo, in order not to destroy such active ferments as it might contain, thus I have referred to previously.
I propose to commence with three grains per diem, and increase gradually to nine grains per diem and continue it for a few months.

I do not say it cures any deformity if present, but it certainly does greatly increase movements in the affected joints. Joints, which I have observed to be almost rigid have regained a considerable amount of their movements under this treatment.

I believe its efficacy is in its having a direct antitoxic action to counteract action on bacteria & their products; after absorption it acts as an eliminative substance, combining with toxic products & favouring their elimination, thus having a specific action on microorganisms.

I have no doubt too, that it acts on the system generally, improving the general nutrition.

I do not think I have too readily drawn a conclusion that this drug
has no direct action on the micro-
organisms themselves - could it not,
to a great extent, prevent them
growing and multiply up if it does
not destroy them?

This is one of the arguments I
advance in favour of the disease
being caused by micro-organisms,
that a drug like Exsiccated Blood
is of use. The same, I think, can
be said of Liquor Potasse Permanganatic,
and Salol: both drugs I have observed
to be of more or less success in
Rheumatic Arthritis; also Boracic Acid.

Sir A. Garrod and Dr. A. S. Garrod both
look upon the Iodide of Iron as the
most efficient drug. I have used
it, but did not obtain any good
results from it.

Arsenic has also been largely
spoken of, given as the Liquor, by
various authors viz.: Beckmann, of
Manchester; Charcot; & Helon Fagge.
I notice there is a treatment—
mentioned by Methylene Blue, in the British Medical Journal of April 24th 1899, page 1064, which I will quote, as it lends partly to bear out my statements regarding the treatment I have advanced. The writer says—

"I prescribe it mainly in those cases in which I saw reason to suspect that toxines formed in the intestinal canal were setting up and keeping up irritation in the joint-centres of the spinal cord. My reason for doing so was that I believed it to be a powerful oxygen carrier and a destroyer of bacilli."

Signed

April 1902.