

A STUDY OF TREATMENT IN A SERIES OF FIFTY SIX CASES
OF RHEUMATOID ARTHRITIS ADMITTED TO HOSPITAL.

BY

THOMAS JACK.

M.B., Ch.B., D.P.H., F.R.F.P.S.

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VOLUME I.

INTRODUCTION.

In 1949, Hench and his co-workers reported a series of cases suffering from rheumatoid arthritis who had been treated with a new adrenocortical hormone, 17-hydroxy:11-dehydrocorticosterone, which they name cortisone. These cases responded dramatically to treatment with this hormone, and it was hoped at that time that a specific therapeutic agent had been found for a disease which hitherto had proved refractory to treatment. Within a short period of time, reports came from all parts of the world confirming the results of the original workers, and many were disposed to disregard the fact that Hench himself regarded this new hormone primarily as a research weapon in the field of endocrinology, and had warned against considering it as a specific drug in the treatment of rheumatoid arthritis.

It is probable that during the past five years more study and research has been carried out on cortisone, than has ever been done before, in a comparable period, on a new hormone. As a result of this, it is now abundantly clear that the original hopes for cortisone were vain, although it is unlikely that its usefulness is as limited as some

reports would have us believe. Most observers would agree with Boland (1951) who regarded cortisone as a potent anti-rheumatic weapon which should be reserved for cases who are resistant to other measures, and stated that it should not be considered as the drug of choice in all cases of rheumatoid arthritis. It is evident, therefore, that much work remains to be done on this crippling disease.

In addition to the value of cortisone as a research weapon in rheumatoid arthritis, collagen disease, and other disorders, there has been another important result of its discovery. During the past five years there has been a renewed interest in atrophic arthritis, and this has led to a considerable amount of work being carried out on this disease, and thus to a better understanding of the problems which arise in the course of such study.

My interest in rheumatoid arthritis as a subject for scientific study was aroused following Hench's visit to Glasgow in 1950 when he presented a paper giving his original observations on the use of cortisone in this disease. In particular, I was impressed by the methods of assessment of progress which had been used, and the vivid impression of rapid, dramatic improvement which these methods produced. However, from my previous experience

of this disease, I thought it possible that a number of cases of any series admitted to hospital and given any of the simple treatments available at that time, would show considerable progress within a relatively short time. Thus, realising the fundamental importance of achieving all possible accuracy in the methods used for assessing progress in the treatment of rheumatoid arthritis with any therapeutic agent, I decided to study these methods and apply them in a series of cases.

This thesis is a detailed study of the progress of fifty six cases of rheumatoid arthritis admitted to hospital under my care, who were given simple, inexpensive, treatment for short periods ranging from three to twelve weeks. The experiment was designed primarily to record the progress in an unselected series given simple treatment in hospital, and to study the methods of assessment available to a general physician without highly specialised equipment.

Although rheumatoid arthritis is not an uncommon disease in Scotland - Nisbet (1946) stated that one hundred cases were diagnosed in two months in a Scottish district with a population of forty thousand - the modern tendency is to treat the disease in units or centres specially designed for the purpose. Moreover, in many instances

mild cases are not referred to hospital for inpatient treatment, with the result that in a peripheral hospital such as Hairmyres where this work was done there are relatively few cases of the disease admitted, and selection of cases is impossible. However, Cecil and Archer (1926) stated that consecutive admissions allow a wide variety of cases to be observed with the result that such a series is not limited to any particular type. They stated that in any study of this disease selection of cases should be avoided. Thus, the fifty six cases treated during the years 1951 until 1954 are representative of the disease in all its stages, and are a fair sample of the type of cases admitted to a general hospital for treatment.

Of all the diseases which are treated in medical practice, rheumatoid arthritis is probably the one in which most difficulty is encountered in evaluating any of the therapeutic agents used at the present time. There are many reasons for this state of affairs, but it is only recently that these reasons have been fully appreciated. The disease is a chronic one which is subject to remissions and exacerbations in many instances without apparent cause, and at short intervals. This makes even short term assessment of progress hazardous unless the strictest criteria are used. The recent disappointment regarding

cortisone emphasises the fact, that any drug claimed to be a specific agent, in the future must be subject not only to accurate assessment and control, but also to a strict long term review lasting at least three years. Short and Bauer (1948) emphasised the importance of this when they pointed out that although the variable course of rheumatoid arthritis is well recognised, relatively few studies of sufficient length existed in which the natural course of the disease could be said to have been adequately studied.

There are other reasons however, in addition to the natural vagaries of the disease, to account for the confusion of claims and counter claims for different therapeutic procedures, which are found in abundance in the literature of both the cortisone and pre-cortisone era. Prior to 1949 at least, almost all the investigators failed to give sufficient information in their studies to allow adequate comparison with other series. In many, no cognisance was taken of such important factors as the duration of illness, the severity of the disease when the case first came under observation, and the personality of the sufferer. In others again, the methods of assessment were unnecessarily crude, and undue emphasis was placed on subjective gain, and increased functional capacity which

are notoriously unreliable guides in assessment. It is essential to have a clear understanding of these difficulties before any work on the subject of rheumatoid arthritis is attempted, although it is evident from some recent publications that such an understanding does not always exist, even at the present time.

Bedford (1951) has discussed in full, the errors which may arise in the course of any therapeutic study of this disease. He indicated that the main sources of error are :

(1) The crudeness of the methods of examination of the range of movement, tenderness, etc, which are in current use.

(2) The individual variation in the patient's suggestibility to the personality of the examiner, the act of being observed, and the manoeuvres entailed.

(3) The variation from hour to hour in the patient's standard of pain.

(4) The unconscious bias of the examiner.

(5) The wish of the kindly patient to please, and of the difficult patient to impress.

(6) The genuine fluctuations by the hour in the mood and symptoms of the patient suffering from rheumatoid arthritis.

These sources of error were fully considered when the

methods to be used in the examination of the patients in this work were evolved.

The most impressive feature of Hench's original results was the rapid improvement which occurred in the cases which he studied. This rapid improvement was apparent in both the cases to whom he gave cortisone, and those who received the adrenocorticotrophic hormone of the pituitary. Until the discovery of cortisone, the therapeutic agents used in the treatment of rheumatoid arthritis had all been relatively slow in their action, with the result that little attention had been paid to assessment of cases over a short period. Loxton (1950) pointed out that the assessment of rapidly acting drugs in rheumatoid arthritis presented a different type of problem from the assessment of a new treatment. This type of assessment became important in the years which followed the discovery of cortisone.

The new hormone remained expensive and difficult to obtain and many attempts were made to find a substitute for it. It was natural that other hormones should be tried and an impressive number of papers were written on this subject. To mention a few, Copeman et al. (1950) experimented with progesterone, delta-5-pregnenolone and other hormones without beneficial effect in rheumatoid

arthritis, although Davison et al. (1950) had reported favourable effects with pregnenolone. Fisk et al. (1950) and Kyle and Grain (1950) produced results similar to those of Copeman, while Stock and McClure stated that their results were equivocal. Similar conflicting reports were published regarding testosterone propionate, and other hormones which gave no benefit, were 11-desoxycortisone, 11-dehydrocorticosterone, and chorionic gonadotrophin. Kersley et al. (1950) treated a series of cases with insulin to induce mild hypoglycaemic attacks and claimed beneficial results in twenty five per cent of cases, but probably the treatment which caused most controversy was that of Lewin and Wassen (1949) who claimed considerable rapid, but evanescent, improvement in cases who had been given injections of desoxycorticosterone acetate and vitamin C.

After a time, it became apparent from critical, well controlled studies that these substitutes for cortisone were for the most part ineffective, or in a few cases of doubtful value. With the exception of insulin the attempts had been directed to finding another hormone which would have an action similar to cortisone, but at that time I considered that another line of research offered at least an equal possibility of success.

Because cortisone is a naturally occurring hormone.

produced by the adrenal cortex, I thought that it might be possible to produce more of this endogenous material with stimulation. In 1946 Selye published his important work on the effects of stress on the experimental animal. In a series of well controlled and ingenious experiments he showed that when an animal is exposed to stressor agents such as trauma, haemorrhage, and drugs, it develops adrenocortical enlargement, and this is accompanied by involution of the lymphatic organs, eosinopenia, and diminished ability to respond to topical irritation by an inflammatory reaction. These manifestations did not occur when the animal was adrenalectomised beforehand which indicated that the adrenal glands were the site of production of this antiphlogistic hormone. When purified adrenocorticoids became available it was confirmed that the same antiphlogistic action was obtained by the administration of these hormones in the adrenalectomised animal.

It was logical to assume that stress when applied to the human would result in increased production of endogenous corticoids. I was fortunate at that time to see something of the work of Symington (1951) in Glasgow in which he showed that the administration of adrenalin to the experimental animal - in this case the rat - acted as a stressor agent, and mobilised glucocorticoid material

from the adrenal cortex. Thorn et al. (1949) produced further evidence that adrenalin stimulated the secretion of adrenocortical hormones in the body, and they postulated that this action was mediated by the anterior pituitary via the hypothalamus.

Supported by this and other evidence which will be discussed later, I decided to treat my series of cases of rheumatoid arthritis with adrenalin.

As has been stated above, the primary aim of this thesis is to record the progress in an unselected series of cases of rheumatoid arthritis when given simple treatment in hospital for a short period. Because treatment with adrenalin would be purely experimental, I thought it advisable to combine it with another form of treatment the value of which was well recognised. For many years salicylates have been recognised as a valuable method of treatment in all forms of rheumatism, and their use in rheumatoid arthritis is universally approved. Copeman (1955) observed that in many cases of the disease life is only made tolerable by the regular use of aspirin, and that the record of progress in a particular case often depends on the dose of this drug which was taken during the preceding twenty four hours. Ragan (1949) stated categorically that salicylates are the drugs of choice in the treatment of rheumatoid arthritis, and Bach (1949)

also noted their value in this condition. Kellgren (1952) observed that salicylates have a profound effect on the inflammatory features of rheumatic fever, and a diminished but definite effect in rheumatoid disease. He expressed the opinion that aspirin was more effective in this respect than sodium salicylate, and that aspirin did more than merely relieve the pain in rheumatoid arthritis.

The majority of cases in my series were treated with aspirin in addition to adrenalin during some period of their stay in hospital.

The rationale of this simple, inexpensive, but experimental treatment which was carried out in this series of cases, is that whereas adrenalin would liberate corticoid material by means of the pituitary adrenal mechanism, aspirin would relieve the pain in the affected joints and allow freer movement in those joints already mobilised by the corticoid material. There are several results of adrenocortical activity which can be investigated

Adrenocorticotrophic hormone administered to the human subject releases steroids from the adrenal cortex which have a wide variety of effects on metabolic processes. These effects are generally divided into three groups, and certain cytological and biochemical investigations can

be done to indicate activity in each of those groups.

(1) The electrolytic regulating effect, which is characterised by retention of sodium and chloride, and increased excretion of potassium and extracellular fluid.

(2) The regulating effect mediated by the so called glucocorticoids, which are exemplified by cortisone (compound E), and hydrocortisone (compound F). This effect is reflected in blood sugar levels and liver glycogen stores, increased urinary excretion of uric acid, and a lasting and almost complete disappearance of circulating eosinophils from the blood during the period of action of this group of hormones.

(3) Androgenic and anabolic effects such as the retention of nitrogen, potassium, sodium, chloride, and phosphorus.

It is now believed that hydrocortisone is the chief steroid released from the adrenal cortex by ACTH. This glucocorticoid, like cortisone, is also antiphlogistic, with action mainly of type (2) above, but has also weak electrolytic effects, and indeed, some of the careful biochemical control which was practised when cortisone was first used as a treatment, related to this latter effect. ACTH also causes a prompt rise in the excretion of 11 - oxycorticoids in the urine, and a smaller rise in the 17 - ketosteroids/

17-ketosteroid excretion. These latter steroids are the excretory products of the androgenic hormones of the adrenal cortex in the female, and the testes and the adrenal cortex in the male. They are measured as an index of this phase of adrenocortical activity.

Repeated estimations of the blood uric acid, sodium, and potassium, and of the circulating eosinophils and leucocytes, were carried out in a number of cases in my series. In a few cases also the 17-ketosteroid and the 11-oxycorticoid estimations were done on the urine. In this way it was hoped to observe any adrenocortical stimulation if present. In all cases the blood pressure was taken at intervals during the course of treatment to ascertain if adrenalin had any sustained influence upon it, such as is seen in Cushing's syndrome. The erythrocyte sedimentation rate was also estimated at intervals as a guide to the activity of the disease.

Although this work is primarily a study of treatment in hospital over a relatively short period, where possible an opportunity was taken to follow up the cases studied. Those patients were requested to return as outpatients at intervals following their discharge from hospital. It was realised that no definite conclusion regarding the efficacy of treatment could be expressed in any patient who might

have a sustained remission, because sufficient time would not have elapsed before the presentation of this thesis for such a conclusion to be justified. On the other hand, I thought that the opportunity should be taken to record rapid relapses in patients who had responded to inpatient treatment.

Finally, some features of general interest in rheumatoid arthritis have been recorded. In view of the suggestion made by Selye that rheumatoid arthritis is one of a group of diseases which are the result of maladaptation of the organism to stress, a record has been taken in this series of the occurrence of mental or physical stress prior to the onset of the disease. For the same reason a record was made of the financial and housing state of each case, and an attempt was made to assess the personality of each sufferer. The incidence according to sex, the menstrual state of the female patients, the family history regarding allergy and rheumatism, and the previous treatment has also been noted.

METHODS.

Diagnosis.

It would appear unnecessary to state that the first essential to any study of treatment in a series of cases of rheumatoid arthritis is to ensure that the diagnosis in each case is established beyond doubt, yet undoubtedly some of the confusion of therapeutic claims which has arisen in the past has been due to the fact that no general agreement existed in the definition of the disease. In 1946, Steinbocker in an article dealing with the therapeutic results in rheumatoid arthritis noted that recent authors had been more careful in the criteria they used to establish diagnosis. He emphasised the need for accuracy in this respect in 1949 when acting as chairman of a committee established to define the therapeutic criteria in rheumatoid arthritis to be accepted by the New York Rheumatism Association. Indeed, it is only within the past fifteen or twenty years that there has been universal understanding of the other syndromes which are associated with arthritis of rheumatoid type, but which differed in aetiology and other clinical features from true rheumatoid arthritis.

Although there is still some differences in nomenclature at the present time, there is a much better

comprehension of the problem. Copeman (1948) recommended that the classification proposed by the Committee of the Royal College of Physicians, in which arthritis was grouped on a clinical basis, should be accepted by physicians wishing to study this group of diseases. This has been generally accepted in Britain, and has been used to establish the diagnosis in my series of cases.

Chronic arthritis is divided into two types :

- (1) The rheumatoid type.
- (2) The osteoarthritic type.

The rheumatoid type is defined briefly as a polyarthritis of inflammatory nature, generally occurring in the smaller joints of the extremities, and travelling peripherally. There are two subdivisions of this type :

- (a) Of unknown aetiology. Classical rheumatoid arthritis and Still's disease are the main members of this group, but there are other conditions which were considered in the differential diagnosis in this thesis. The most important of those are acute and subacute rheumatic fever, but rarer conditions such as ankylosing spondylitis, dermatomyositis, scleroderma, polyarteritis nodosum, and Sjorgren's disease were also considered.
- (b) Of known aetiology. The diseases of this group which were considered in the differential diagnosis are

gout, traumatic arthritis, Reiter's syndrome, dysenteric arthritis, acute suppurative arthritis, tuberculous arthritis, gonococcal arthritis, syphilitic arthritis, and arthritis sometimes associated with haemophilia, scurvy, and purpura.

The following criteria were used to establish the diagnosis in the cases belonging to my series :

(1) An acceptable history and general clinical picture in each case. Unfortunately there is no specific diagnostic test for rheumatoid arthritis available at the present time. The clinical experience and acumen of the examiner is the most important single factor in establishing the diagnosis. The differential diagnosis depends mainly on a careful history and examination to exclude many of the other forms of arthritis, such as traumatic arthritis, gonococcal arthritis, Reiter's syndrome, etc. which have been mentioned in the classification above. In this series the patients were all examined by two consultant physicians in addition to myself, and agreement was reached regarding the diagnosis before the case was accepted.

The definition of rheumatoid arthritis expounded by Steinbrocker et al. (1949) has been used as a guide in diagnosis in this series. They define the condition as a systemic disease of unknown causation, which occurs at

all ages. It is generally a chronic progressive disease, with joint involvement as its chief feature, but it may be acute, subacute, or chronic. It may be reversible in the early stages.. In the ordinary case it is polyarticular and symmetrical, and the typical joint presents a fusiform appearance. The affected joints are characterised by pain, stiffness, and swelling. Subcutaneous nodules, tenovaginitis, and muscular atrophy are common concomitants, and the rheumatoid process often progresses to deformity, subluxation, and/or ankylosis. They stated, that in early rheumatoid arthritis joint swelling may be absent, and their dictum that the presence of such swelling is a prerequisite of inclusion of a patient in any therapeutic series has been followed in this work.

Steinbrocker (1946) pointed out that although the exact incidence of natural recovery in this disease is not known, there is no doubt that it does occur at least in the early stages. He noted that in a series of three hundred and sixty six cases admitted to hospital under his care, with a diagnosis of acute rheumatoid polyarthritis, ninety per cent had recovered within three months with general medical care. He emphasised that this fact must be recognised if treatment is instituted in cases in which the disease is of three months duration or less. In my

series, only cases in whom the duration of the disease had been three months or more, were accepted.

(2) Radiology of selected joints. This helped to establish the diagnosis by the exclusion of such conditions as gout and osteoarthritis mentioned in the differential diagnosis.

(3) The estimation of the erythrocyte sedimentation rate. Copeman (1955) stated that this rate is always elevated in the active stage of the disease, and that fluctuations in activity are reflected fairly accurately by this test. The Westergren method was used in this series, and the values advocated by Hutchison and Hunter (1951) have been used, viz, 1-7 mm. in the first hour as a normal result, 8-15 mm. in the first hour as a slightly abnormal result or one which is doubtful, and 15 -110 mm. as a grossly abnormal result. Only cases with an abnormal erythrocyte sedimentation rate were accepted for study.

(4) The estimation of the blood uric acid. To obviate the possibility of gout, only cases in which the blood uric acid was within the normal range were accepted. Harrison (1947) gave the normal range of 0.3 - 4.0 mgm. per 100 c.c. , and stated that the usual values are 2-4 mgm. per 100 c.c. No case with a value outwith this range was accepted for study.

Grouping of Cases according to Severity.

The fifty six cases of this series were divided into four stages according to the severity of the disease. There is general agreement among those who have studied therapeutic methods in rheumatoid arthritis, that the earlier the disease is treated, the better is the chance of achieving remission. It is essential therefore, to relate the effects of any treatment in an individual case to the severity of the disease in that case. In this way the possible fallacy of claiming a high percentage of improvement in a series which might contain a high proportion of early cases has been prevented.

The progression of the disease has been divided into stages according to certain objective characteristics as follows :

STAGE I (Early).

(1) No joint deformities are present although there may be some swelling of the affected joints, and some limitation of joint mobility.

(2) No adjacent muscular atrophy is present.

(3) No extra-articular soft tissue lesions such as nodules and tenovaginitis are present.

(4) X-ray evidence of osteoporosis may be present, but there are no destructive changes,

STAGE II (Moderate).

(1) No joint deformities are present although there may be some swelling of the affected joints, and some limitation of movement.

(2) Adjacent muscular atrophy is present.

(3) Extra-articular soft tissue lesions such as nodules and tenovaginitis may be present.

(4) X-ray evidence of osteoporosis with or without subchondral bone destruction is present. Slight destruction of cartilage may be present.

STAGE III (Severe).

(1) Joint deformities such as subluxation, ulnar deviation, and hyperextension, but without fibrous or bony ankylosis, are present.

(2) Extensive muscular atrophy is present.

(3) Extra-articular soft tissue lesions such as nodules or tenovaginitis may be present.

(4) X-ray evidence of osteoporosis, cartilage and bone destruction is present.

STAGE IV (Terminal).

(1) Joint deformities such as subluxation, ulnar deviation, and hyperextension, together with fibrous and/or bony ankylosis are present.

(2) Extensive muscular atrophy is present.

(3) Extra-articular soft tissue lesions such as nodules or tenovaginitis may be present.

(4) X-ray evidence of osteoporosis, cartilage and bone destruction, and ankylosis is present.

It will be appreciated that in any single case of rheumatoid arthritis it is possible to have two or more stages coinciding. Thus, for example, the hands may show the features of Stage II, whereas the disease in the knees may be more advanced, and show the features of Stage III. In practice, all cases in this series have been classified according to the changes occurring in the joint most affected by the disease.

Essentially this is the method of grouping which was recommended by the committee for therapeutic criteria of the New York Rheumatism Association (1949), but in my series more importance has been placed on the clinical features which differentiate the stages, than on the radiological criteria. When this study started, it was impossible to have all the joints affected in each case x-rayed because of an acute shortage of film in the country. Only the joints most affected in each case were x-rayed when it was necessary for purposes of classification, to ascertain if cartilage or bone destruction was present,

or if ankylosis had occurred. In any case, it is doubtful if radiology gives a great deal of assistance either in diagnosis or classification in the early or moderate stages of the disease. Stevens (1948) has reviewed the radiological changes in rheumatoid arthritis. He indicated that the early changes are osteoporosis of a generalised type, and spindle shaped swelling of the soft tissues. Neither of those criteria present any advantage over clinical findings in the diagnosis, as the former is nonspecific, and the latter can scarcely be described as a radiological change.

In effect, the most important function of grouping cases according to their severity is to distinguish the early and moderate cases (Stages I & II), in whom there are good prospects of a remission, from the later stages of the disease (Stages III & IV), in whom treatment is less likely to be effective. In practice, no difficulty was experienced in this series in making this distinction.

The Activity of the Disease.

The activity of the disease was assessed in the patients before and after treatment. Such an estimate is obviously important if the true value of any treatment is to be gauged. The elevation of the erythrocyte

sedimentation rate, the presence of anaemia, vasomotor or trophic disturbances, weakness, joint tenderness or swelling, leucocytosis, or loss of weight, were the factors which were considered, singly or in combination in most instances, to indicate the presence of active disease. Anaemia, vasomotor or trophic disturbances, weakness, and loss of weight were considered as factors only when present with other features. Such features as persistent joint swelling, with or without effusion, tenderness, and limitation of joint movement, can be recognised objectively by clinical methods at any stage of the disease.

The Assessment of Improvement.

In assessing progress I recognised that there are two types of improvement which can occur in patients suffering from rheumatoid arthritis who are under treatment.

(1) An improvement in rheumatoid activity.

(2) An improvement in functional capacity.

Steinbrocker et al. (1949) emphasised that the improvement in rheumatoid activity was the crucial basis for assessing the efficacy of any therapeutic agent in this disease. They considered that functional improvement was usefully assessed, together with improvement in activity, in order

to give a helpful insight into the whole treatment programme, but that it should never be considered alone.

In this thesis I have used the grading of improvement in rheumatoid activity, and the classification of functional impairment outlined by these workers.

Improvement in Rheumatoid Activity.

The signs presented by the patient at the first examination were taken as the maximal signs of rheumatoid activity in that case. Subsequent progress under treatment was measured in the light of those findings. The following grades of progress were recognised :

Grade I (Complete Remission).

⌘ (1) No systemic signs of rheumatoid activity, as defined above, present.

⌘ (2) No signs of joint inflammation.

⌘ (3) No evidence of activity in any extra-articular process, including nodules, tenovaginitis, and iritis.

(4) No remaining impairment of joint mobility other than associated with irreversible changes.

⌘ (5) No elevation of the E.S.R.

(6) Articular deformity or extra-articular involvement due to irreversible changes may be present.

(⌘ indicates the criteria required to be present).

Grade II (Major Improvement).

✕ (1) No systemic signs of rheumatoid activity present, with the exception of elevation of the E.S.R. and/or vaso-motor imbalance.

✕ (2) Major signs of joint inflammation such as heat and redness of the joints resolved, and minimal signs of extra articular activity.

✕ (3) No new rheumatoid process either extra-articular or intra-articular.

(4) Minimal joint swelling may be present.

(5) Impairment of joint mobility associated with minimal residual activity may be present.

(6) Articular deformity or extra-articular involvement due to irreversible changes may be present.

Grade III (Minor Improvement).

✕ (1) Diminution of systemic signs of rheumatoid activity.

✕ (2) Signs of joint inflammation only partly resolved.

✕ (3) No evidence of extension of rheumatoid activity into additional extra-articular or intra-articular structures.

(4) Decreased but not minimal joint swelling present.

(5) Impairment of joint mobility due to residual

inflammation may be present.

(6) Articular deformity or extra-articular involvement due to irreversible changes may be present.

Grade IV (Unimproved or Progressive)

✕ (1) Undiminished signs of rheumatoid activity regardless of functional capacity. E.S.R. may be any rate.

✕ (2) The signs of joint inflammation the same or worse.

✕ (3) Rheumatoid activity the same in extra-articular or intra-articular structures, or may have extended to new sites.

(4) Joint swelling the same or increased.

(5) Joint mobility may be the same, better, or worse.

(6) Articular deformity may be present or not.

In the original grading used by Steinbrocker et al. radiographic signs were used to help assessment. This study is essentially a short term one, and it was considered that in many instances the period of treatment was too short to allow any changes in the x-ray appearances, with the result that the patients were not x-rayed at the end of treatment. Similarly the period of treatment was considered to be too short to allow the Stage of the disease to change.

Method to Determine Grading.

It is in this part of the work that a therapeutic study presents the most difficulty, and is most subject to error. The allocation of a certain grade of improvement to a case at the end of a period of treatment, means in effect, the determination of the state of rheumatoid activity in that case, and this is not always an easy matter. It will be seen from the definition of rheumatoid activity that there are many factors to be considered which are difficult to measure accurately, and the importance of those factors which can be measured, albeit crudely in many instances, may well vary from case to case. For example, in one case the chief disability may be swelling and stiffness of the fingers, whereas in another case the hands may not be affected to any great extent by the disease, but the patient suffer from tenderness of the wrists with tenovaginitis, nodules, and a high erythrocyte sedimentation rate.

Such vagaries in the activity of the disease make the construction of an absolute index of progress an impossibility. In this thesis certain tests were used to aid in the allocation of a grade of improvement to each case. It must be emphasised that no specific range

of figures, in any of the tests, was used in the allocation of the four grades of improvement, but that the results of these tests were considered with the overall clinical picture.

The lack of uniform, precise, and objective criteria of response to treatment has been a great source of error in many of the reported works, and several attempts have been made to overcome this difficulty. Bayliss and Hall (1943) described a method of assessment which they called a therapeutic yardstick, and Steinbrocker and Blazer (1946) standardised a method of appraising the results of treatment in the form of a therapeutic score card, but as explained above such indices are impractical. Janus (1950) applied more precise and scientific methods in assessing progress, but the methods he described are time consuming, require special apparatus, and are not suitable in general work.

The most objective tests available are these which deal with joint swelling, joint movement, and joint tenderness, although in the case of the latter two, the examination can never be wholly objective. The following tests were used in this work :

(a) Joint Swelling. In the case of the major,

measurement of the swelling is relatively easy, and can be done by ringing the affected joint at the point of maximum swelling with an indelible line, and thereafter measuring the joint at intervals. Unfortunately however, rheumatoid arthritis most commonly affects the small peripheral joints in the first instance. The hands are especially involved, and the swelling of the finger joints are not readily measured in this way.

Hart and Clark (1951) described an ingenious way of measuring these joints. They had noted that many of their patients complained that during an exacerbation of the disease they were unable to remove their rings, and this suggested the use of jewellers rings to measure finger joint swelling. The rings used were the "Wheatsheaf" type with twenty six standard rings graded alphabetically in increasing sizes from A to Z with a few further extensions useful when the joints were swollen beyond Z.

The authors found this method to be of great value because of its simplicity, sensitivity, and relatively small source of error. They noted that the greatest variation in a patient with a static condition of the joints was plus or minus one ring size for each finger, and that the greatest possible variation for all ten

fingers was plus or minus ten ring sizes.

The ring sizes were estimated at intervals during the course of treatment in thirty eight cases of my series. I found it necessary to standardise the technique of this examination. The middle interphalangeal joints were the ones examined in this way, and the size of the ring which could just be made to slide over each joint was allocated to that joint.

(b) Joint Tenderness. I used the method described by Copeman et al. (1950) for measuring joint tenderness. Four degrees of tenderness were established :

0. Firm pressure over the affected joint does not give rise to pain.

1. The same pressure over the joint gives rise to pain but the patient does not wince or withdraw.

2. The same pressure over the joint gives rise to pain and the patient winces, but does not withdraw.

3. The same pressure over the joint gives rise to pain and the patient winces and withdraws.

No special instrument was used to exert pressure. In practice, I did not find it difficult to exert the same amount of pressure with my fingers. The crudeness of the method was realised, but Copeman et al. have been

using this method for several years, and consider it the most satisfactory.

(c) Strength of Grip. Because the joints of the hands are most commonly affected in rheumatoid arthritis, and the consequent pain and stiffness in those joints has a direct effect on the strength of the grip. it is important to have a way of measuring this function. In this instance, also, the method recommended by Copeman et al. (1950) has been adopted.

The cuff from a sphygmomanometer was sewn into a suitable shape for gripping in the palm of the hand, and than attached to the instrument. The cuff was then inflated to a pressure of 30 mm. of mercury, and the patient was then invited to squeeze the cuff as tightly as possible. The average of three readings was taken as a record of the grip, and the procedure was then repeated for the other hand.

(d) Joint Mobility. The measurement of the range of movement of the joints affected by rheumatoid arthritis used as a guide to progress can be subject to considerable error unless extreme care is taken. When the patient is in bed, the nightclothes often hamper examination, and one has to guard constantly against slipshod measurement. Moreover, the patient in his desire to please the doctor

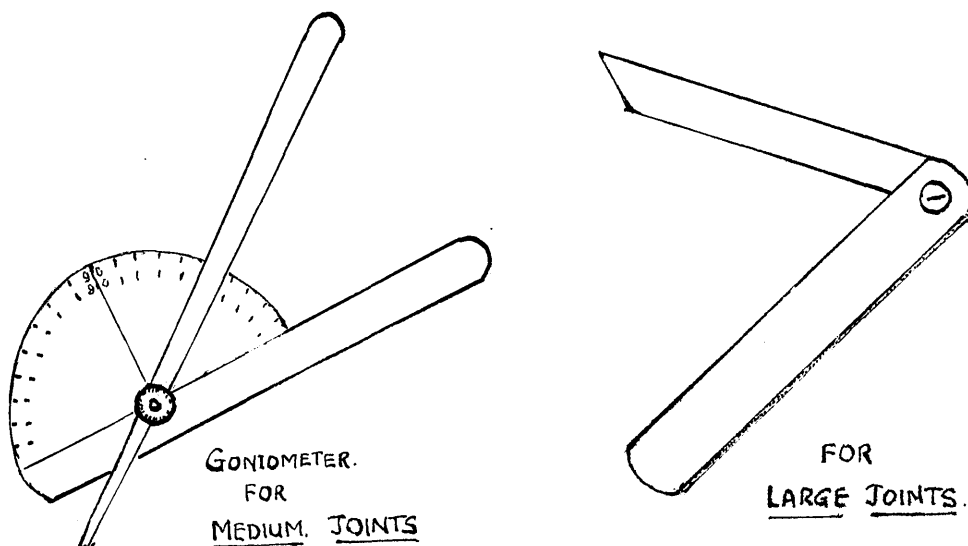
and perhaps convince himself of his improvement, may achieve a range of movement of a joint greater by several degrees than he would manage in ordinary circumstances. Such an effort, akin to that produced in a crisis, is not constant, and in order to obviate it the examination was repeated two or three times, and the result recorded only when I was satisfied that ordinary movement was taking place.

Another source of error which could cause some inconsistency in results is the fact that patients suffering from this disease vary considerably, at least in their performance, at different times of the day. Stiffness of joints and tenderness tends to be maximal in the early morning, and to improve in the later part of the day. Therefore, in this series, the measurement of joint swelling, tenderness, grip, and range of movement, and the tests of function detailed below were carried out in individual patients at the same time of day for the initial examination and all subsequent progress examinations.

Two types of goniometer were used to measure the range of movement of joints. A small type with protractor attached was found most useful for measuring the wrists and ankles, but this was found too inaccurate for the large

joints. Satisfactory measurements were secured using two long hinged wooden arms as shown in figure 1.

Figure 1.



The movements of rotation and adduction were not considered because of the difficulty in measuring them. All movements were measured in the first instance in degrees of a circle. It was found, however, that these recordings on paper did not readily show progress or regression in joint movement, and for this purpose I divided the range of movement in each joint into three grades or degrees in much the same way as tenderness was graded. The following table shows the movements which were measured and the method of recording in grades or degrees.

Joint.	Type of Movement.	Grade or Degree of Disability.	Range Permitted.
Shoulder.	Abduction.	1.	90° - 120°.
		2.	45° - 89°.
		3.	0° - 44°.
Elbow.	Extension. (angle of)	1.	160° - 175°.
		2.	130° - 159°.
		3.	90° - 129°.
	Flexion. (angle of)	1.	60° - 45°.
		2.	90° - 61°.
		3.	- 91°.
Wrist.	Extension.	1.	50° - 75°.
		2.	25° - 49°.
		3.	0° - 24°.
	Flexion,	1.	50° - 75°.
		2.	25° - 49°.
		3.	0° - 24°.
Knee.	Extension (angle of)	1.	160° - 175°.
		2.	140° - 159°.
		3.	- 139°.
	Flexion. (angle of)	1.	70°- 45°.
		2.	100°- 71°.
		3.	-101°

Joint.	Type of Movement.	Grade or Degree of Disability.	Range Permitted.
Ankle	Dorsiflexion	1.	10° - 15°.
		2.	5° - 9°.
		3.	0° - 4°.
	Plantarflexion.	1.	50° - 60°.
		2.	25° - 49°.
		3.	0° - 24°.

By this method only noteworthy increases in the range of movement are recorded. It is, of course, possible for the range of movement in a joint to pass from one grade into another when in fact only a few degrees of a circle have been gained. For example, if at the beginning of treatment the angle of extension of the elbow was 46° and at the end of treatment it became 53°, then one grade or degree in the range of movement would be gained with only a very small gain in the actual range of movement. It was considered, however, that this error would be cancelled out by the fact that there was an equal chance of only one grade of improvement being given where the range of movement was maximal to that grade.

It was found to be impractical to carry out actual

measurement of the movement of the finger joints. It was realised, however, that any account of movement of the joints in this disease would be incomplete without some reference to the joints most commonly affected.

I decided, therefore, to allocate one degree of movement disability to each finger with which a patient could not touch the palm of the hand when making a fist. If, for example, on making a fist a patient was unable to touch the palm with three fingers of the right hand, and with two fingers of the left hand, then a total of five degrees of movement disability was allocated to that patient. If, at the end of treatment, the patient was able to touch the palms with all five fingers, this represented a gain of five degrees of movement. In this way it was considered that equal importance was given to the movement of the fingers and the other joints of the body.

Improvement in Functional Capacity.

Most authors agree that improvement in functional capacity is of secondary importance to improvement in rheumatoid activity, although there can be no doubt that such improvement is of great importance to the patient. In this study all patients were classified according to

their functional capacity before and after each phase of treatment. Again, the classification recommended by the New York Medical Association (1949) has been used, viz :

Class 1. Complete functional capacity with ability to carry on all the usual duties without handicap.

Class 2. Functional capacity adequate for normal activities, despite the handicap of discomfort or limited motion in one or more joints.

Class 3. Functional capacity limited, with ability to carry out little or none of the duties of the usual occupation or self care.

Class 4. Patient largely or wholly incapacitated, being bedridden or confined to a wheelchair, and able to carry out little or no self care.

Method to Determine Class of Function.

The factors which determined the class of function in the cases studied were the patient's own history, the report of the sister in charge of the case, and personal observation of the patient's activities. Certain simple tests were given which related to functional capacity of the patient to carry out activities of everyday living. Observations were made on the ability to wash the hands

and face, take a bath, dress the hair, use a knife and fork, dress himself, and walk. Whenever possible I observed these activities without the knowledge of the patient, and in the case of bathing, inquiries were made from the ward sister. In this way the influence of mood on performance was eliminated as much as possible. To begin with certain tests which try to relate time and function were also used. For example, the time taken to tie six knots in a piece of string, or to don a certain article of clothing, or to walk a certain fixed distance was recorded at intervals during treatment. Those tests, however, were abandoned as unsatisfactory. There was no doubt in my mind that in the case of tying knots the patients developed a certain facility for this test which bore no relationship to their progress. Again, such tests as timing dressing and walking are open to the serious objection that they are in the nature of a race and thus the patient makes a special effort.

Subjective Improvement.

Subjective sensations, notoriously, are of little or no value in assessing the value of treatment in rheumatoid arthritis. It is of interest to record subjective improvement provided that this is clearly separated from

objective and functional improvement, and no conclusion regarding the efficacy of treatment are based on it.

As far as possible, I avoided asking my patients direct questions about their progress, but relied on the many conversations we had together to make this clear. The subjective improvement has been recorded in simple terms in each case.

Cinematography.

Loxton et al. (1952) have criticised the tests in current use for assessment of progress in rheumatoid arthritis. They considered that their clinical judgement was more sensitive, because the clinical impression is a whole one, whereas these tests are abstracts of one or more aspect of the whole which are necessary for statistical purposes. Bywaters et al. (1950) similarly have observed a lack of sensitivity in the tests, and Dresner and his co-workers (1950) stated that the tests failed to show the over-all improvement in performance in patients treated with A.C.T.H. They considered that the cinematographic film was the best record of this improvement.

Loxton et al. (1950) devised a method of split-screen cinematography which allowed comparison of cases before and after treatment, and in 1952 they introduced a

more complicated method of assessment using automatic still and cine photography. Despite the fact that they claim that this method can be worked without the aid of a professional photographer, by a physician inexperienced in photographic technique, the method is obviously expensive and best suited to a special unit. On the other hand ordinary cinematography can, with a little practice, be carried out by an ordinary physician without a great amount of time or money being spent.

Serial cinematography was done on fourteen cases of this series (Cases No 8, 10, 2, 13, 43, 18, 20, 11, 6, 49, 44, 15, 48, and 25.) and this is presented as Part III of my thesis. These cases are a representative sample of the series, and include cases of Stage II, Stage III, and Stage IV severity.

The photography was done in the operating theatre of the hospital, which was found to be a satisfactory location for filming because of its spaciousness, and the fact that the green walls are ideal for colour work. Eight millimeter Type A Kodachrome was used throughout. There is slight loss of definition with this type of film compared with sixteen millimeter gauge, but this is amply offset by the fact that it is only twenty five per cent of the cost of this latter gauge.

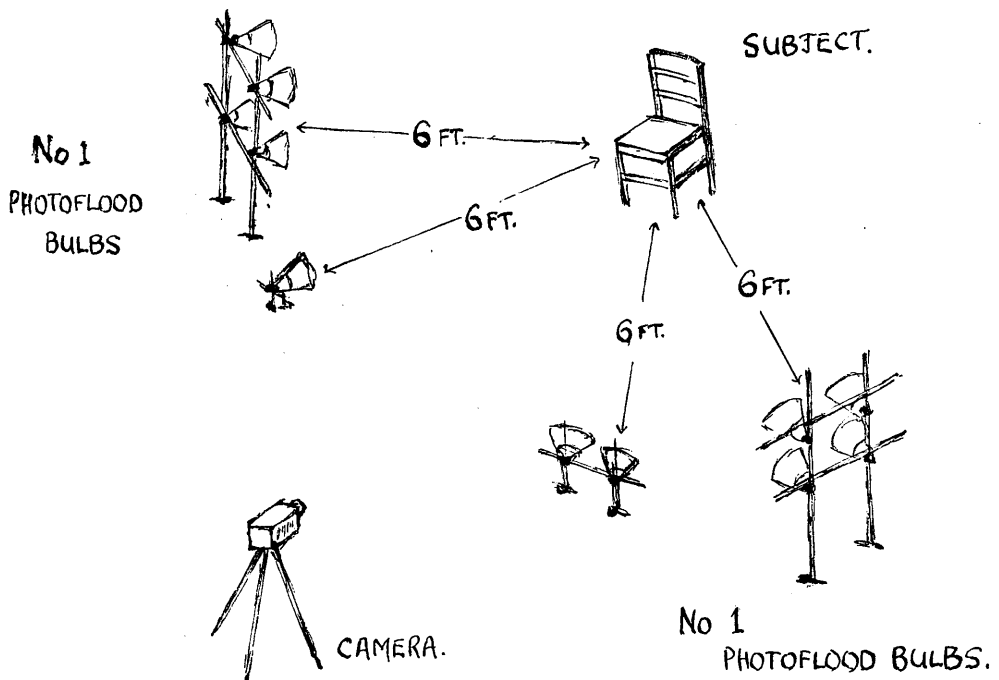
The most troublesome part of this work was the determination of the correct exposure to be given to the film. When one is working with a film of lesser gauge in colour cinematography, the margin of error is small. Such factors as the deterioration in brightness of the photoflood bulbs which occurred within a relatively short time, and the leakage of light which resulted from somewhat imperfect shuttering of the operating theatre have affected the finish of the film to a certain extent. However, although in some cases the exposures are by no means perfect, the over-all result is satisfactory, and gives clear visual evidence of the condition of the patients before and after treatment.

A Paillard Bolex camera (Model L.8. with 2.8 Kern lens) was used in this work. The definition of the film has been greatly aided by the fact that this camera has a focussing mount - an unusual feature in an eight millimeter camera. It enabled me to take long shots of patients at twenty feet range when they were walking or climbing stairs, medium shots at between eight and fifteen feet to illustrate their general appearance, and close-ups at three feet to show the hands.

The plan of the simple set used is shown in

Figure 2. below. In order to secure adequate exposure, it was found necessary to use ten No. 1. Photoflood bulbs, and these were arranged in banks, six feet from the subject as illustrated. The range of exposure varied from between f.2.8 and f. 4.5 depending on the subject, and the distance from the camera.

Figure 2.



Plan of Simple Set used in Part III

A total of twelve hundred feet of film was used in this study, but I have presented the eight hundred feet which remained after I had cut shots which were superfluous or in which the exposure was faulty, and added the titles. The main titles of the film were prepared using a technique of double exposure with red plastic letters, and the other titles were photographed on a green background.

In addition to illustrating the results of treatment in some of the cases of my series, Part III of this thesis demonstrates some of the methods used in assessing progress such as the grip test, the use of Hart's rings, and the measurement of movement range.

Special Investigations.

Eosinophil Counts. The method chosen for this investigation was that advocated by Kellgren and Janus (1951) which they reported as a modification of Dunger's method (1910).

Fresh blood was obtained by a needle prick and drawn up to the usual mark in a standard white cell pipette. It was then diluted 1 in 10 using a freshly filtered solution of eosin 0.05% and acetone 5% in distilled water. The pipette was shaken gently twenty

times and the usual first one tenth was discarded, and then a double Fuchs-Rosenthal counting chamber was filled immediately from the pipette. The chambers were allowed to stand for five minutes so that the cells settled and stained properly, then all eosinophil cells in both chambers were counted with the $2/3$ objective using a bright light. The number of cells counted was multiplied by the factor 1.55 which gave the number of eosinophils per cubic millimetre of blood.

The eosinophil counts were carried out four hours after the first injection of adrenalin in the morning. Recant et al. (1950) have described the biphasic reaction which occurs in the circulating eosinophils following adrenalin injection. According to those workers there is at first a temporary rise in the eosinophil count which occurs about an hour after injection, but this is followed by a progressive fall which is maximal at the end of four hours. Although in my work the hyperdureic form of adrenalin was used, I found by experiment that the maximal fall, when it did occur, was found also at the end of four hours, and this was the basis for doing the counts at that time.

Blood Uric Acid, Serum Potassium, Serum Sodium, Urinary 17-Ketosteroids. These estimations were done by the

hospital laboratory.

Treatment.

The details of treatment are given with each case in the Appendix of this thesis. The two main forms of treatment which were used were aspirin alone, and aspirin combined with injections of adrenalin. In order to make control observations injections of sterile water were substituted for adrenalin in some cases, and/or a powder containing citric acid and chalk made to taste like aspirin, was substituted for this latter drug. Fifty three cases of the series were given aspirin and adrenalin for some period during the course of treatment. Of the remaining three cases, one was given only adrenalin and powder, one was given only aspirin and injections of sterile water, and the other was given only inactive powder and sterile water injections, during the whole course of treatment.

The period of absolute rest in bed was standardised as far as possible. All cases were confined to bed at least during the first week in hospital. Thereafter they were allowed up for a limited period which varied according to the severity and activity of their disease; in a number of cases, of course, it was not possible to allow the patient up until a longer time after admission

to hospital. No specific physiotherapy or orthopaedic measures were carried out during the time of observation, but whenever possible the patients were encouraged to perform a full range of active movement of the affected joints several times daily.

The hyperdureic solution of adrenalin was used in the fifty four cases which received treatment with this drug. In this preparation adrenalin is given in the form of the mucate instead of the ordinary tart~~rate~~, and this allows a slow and uniform liberation of the active base resulting in prolonged pharmacological action. It was my practice to start treatment with a small dose of adrenalin given subcutaneously three times daily, and to increase the dose by a minim a day until the patient complained of the effects, and was observed to have a mild reaction to the drug. The symptoms of reaction were palpitation, a feeling of excitement, a sinking or fluttering sensation in the stomach, and occasionally some tightness in the chest; the usual signs were tachycardia, a slight elevation of the blood pressure, and blanching of the skin of the face. The dose was maintained at the level which produced these reactions because it was found that to go higher produced considerable distress to the patient. After a time some tolerance was established

to this maintenance dose, but in view of two alarming reactions which occurred in patients early in the series it was decided not to raise the dose of the drug higher than this level. The maintenance dose varied between six minims of hyperdurec adrenalin three times a day, and twelve minims three times a day with the majority of patients receiving eight or nine minims, viz,

Dose of Adrenalin t.i.d.	Number of Patients maintained on.
6 minims	1
7 minims	4
8 minims	20
9 minims	21
10 minims	8
12 minims	1.

(The usual dose of adrenalin in hyperdurec form is 2 - 8 minims or 0.12 - 0.5 cc.)

The dose of aspirin which was given was sixty grains daily in four doses of fifteen grains. The aspirin was powdered and given with milk to combat gastric disturbances and to make it difficult to distinguish the control powder when this was given.

The Control of the Study.

The first and most important problem which it was hoped that this study would elucidate, was the effect of simple treatment in hospital on rheumatoid arthritis in all its stages, when this treatment was given for a relatively short period of time. Some of the cases responded more quickly to treatment than others, and did not require therapy for the full twelve weeks which was chosen arbitrarily as the longest period of treatment to be given to any case. The duration of treatment is shown in the following table :

Stage.	Mean (weeks)	Range (weeks)	No. of Patients.
Stages I & II	6.2	3 - 12	33
Stages III & IV	7.3	4 - 12	23
All Stages	6.6	3 - 12	56.

When this work was started, I realised that if the cases treated with aspirin and adrenalin showed considerable improvement it would be important to discover if this effect was due to the aspirin alone, or if the addition of adrenalin gave some benefit. In an endeavour to answer this question, an experiment was

designed within the framework of the main trial outlined above. Forty five cases of the series were chosen and divided into four groups. The first group of sixteen cases were given aspirin and adrenalin during the first three weeks in hospital, the second group of thirteen cases were given aspirin and sterile water during the first three weeks in hospital, in the third group of six cases it was intended to give them adrenalin and powder during the first three weeks in hospital, and in the fourth group of ten cases it was intended to give them sterile water and powder during the first three weeks in hospital. I endeavoured, within the limits imposed by the small number of the whole series, to distribute the cases in each group as evenly as possible into the two divisions Stages I & II and Stages III & IV. This distribution is seen in the following table :

TABLE 2.

	STAGES I & II	STAGES III & IV	TOTAL
Aspirin & Adrenalin.	9	7	16
Aspirin & St. Water.	7	6	13
Adrenalin & Powder.	5	1	6
St. Water & Powder.	5	5	10
TOTAL	26	19	45

The remaining eleven cases were treated during the first phase of treatment with either aspirin without sterile water, adrenalin without powder, or rest alone for varying periods. Their distribution is shown in the following table :

TABLE 3.

	STAGES I & II	STAGES III & IV	TOTAL
Aspirin alone.	3	1	4
Adrenalin alone.	3	0	3
Rest alone	2	2	4
TOTAL	8	3	11.

Unfortunately, it was not possible in this experiment to carry out the so called double blind technique, in which neither the examiner nor the patient is aware of the treatment which is being given. This was not feasible as I was working alone and required to select my cases according to stage so that comparisons would be as accurate as possible. Mason (1953) has pointed out that the need for observer control diminishes with the experience of the examiner. A corollary to this statement must surely be, that the error which may arise when the examiner is aware of the type of treatment which the patient is having, is diminished when the

examiner is fully conscious of the source of that error.

Two further procedures were adopted in an attempt to assess the efficacy of aspirin and adrenalin as a treatment of rheumatoid arthritis. The cases who were given aspirin and sterile water, adrenalin and inactive powder, or sterile water and inactive powder, and did not as a result of this treatment show major benefit (Grade I or II) were treated for a second identical period of time with aspirin and adrenalin and the results were recorded.

Treatment was discontinued in ten cases who had received considerable benefit from aspirin and adrenalin and the effects of this manoeuvre were recorded. Treatment was then recommenced, and again the effects were recorded.

Outpatient Follow-up.

After discharge from hospital the patients were requested to return as outpatients at the end of a month, and thereafter at three monthly intervals. During the first month after discharge they were instructed to take forty grains of aspirin in divided doses every day, and at the end of that time they were instructed to take aspirin as required for the relief of pain. Seven cases were readmitted for further treatment.

RESULTS.

The details of each case including history, examination, treatment, progress, special investigations, and outpatient record, are given in the Appendix of this thesis. The following summaries show in each case the stage of the disease, its activity, and the class of functional impairment on admission to hospital. The various forms of treatment given to each case are shown, and the grade of improvement and class of functional impairment following each phase of treatment is noted.

The condition of each patient in terms of stage and activity of the disease, grade of improvement, and class of functional impairment is recorded at the time of discharge, and at subsequent outpatient attendances. Any special features of note have been indicated.

The gain or loss in degrees of tenderness, degrees of movement range (as defined in Methods), ring sizes and grip for both hands, the number of performance tests carried out, and in the subjective benefit, together with any other factors such as erythrocyte sedimentation rate, percentage of haemoglobin etc., which help to determine grade or class are given in detail in the Appendix.

Case No 1.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	3	-
After 3 weeks Aspirin.	II	active	3	III
After 6 weeks Aspirin.	II	active	3	III
After 3 weeks Aspirin & Adrenalin.	II	active	1	III
After 6 weeks Aspirin & Adrenalin	II	not active	1	I
On discharge, after 12 weeks treatment.	II	not active	1	I
	<u>Out-patient.</u>			
One month after discharge	II	not active	1	I
Six months after discharge.	No signs of rheumatoid arthritis.			
Two years after discharge.	No signs of rheumatoid arthritis.			

(Note : In this, and subsequent summaries, the grade of improvement refers to the improvement which has taken place since admission, and not the improvement from the previous treatment. Similarly the improvement noted in O.P record refers back.)

Summary : This was an acute case of rheumatoid arthritis of recent origin. The possibility of acute rheumatism was considered, but the history and physical findings pointed to rheumatoid arthritis. The fingers showed the typical spindle shaped swelling, and there was atrophy of the interossei muscles. Treatment with aspirin alone gave slight benefit, but there was rapid improvement when she was given adrenalin injections in addition. There was a complete remission at the end of twelve weeks treatment, and no relapse in the following two years.

Case No 2.

Stage of Disease, Activity, Class & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin	II	active	2	III
After 3 weeks Aspirin & Adrenalin	II	active	1	III
Treatment stopped for 1 week.	II	active	2	III
Further 3 weeks Aspirin & Adrenalin	II	active	1	III
On discharge After 10 weeks	II	active	1	III

Out-patient.

This patient reported onemonth after discharge from hospital. A severe relapse had occurred, and the deterioration in her condition was most marked. Within this short time there had been considerable loss of weight and rapid advancement of the disease to Stage III.

She was readmitted for further treatment.

Case No 2 (re-admission)Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On re-admission	III	active	4	-
After 3 & 4 weeks Aspirin & Adrenalin.	III	active	3	III
After 9 weeks Aspirin & Adrenalin	III	active	2	III *
On discharge after 26 weeks.	III	slightly active	2	II
	<u>Out-patient.</u>			
One month after discharge.	III	slightly active	2	II
3 months after discharge.	III	active	2	III
6 months after discharge.	III	active	2	III

* inpatient record considered only to this point in thesis.

Summary : The most striking feature of this case was the severe relapse which occurred shortly after her first discharge from hospital. The rapid advance of the disease and the emaciation which occurred within a month is well illustrated in the cinematographic film.

This patient had a severe reaction to adrenalin three months after her second admission to hospital.

On the first admission, the second phase of treatment with aspirin and adrenalin was associated with more improvement than the first phase with aspirin alone. Cessation of treatment for one week resulted in striking exacerbation of signs and symptoms, but there was a remission when treatment was recommenced. The disease was still active at the end of ten weeks so that despite the improvement in function, only Grade III of improvement in activity resulted from treatment.

Similarly, nine weeks of aspirin and adrenalin treatment in the second admission produced only grade III improvement in activity, despite the fact that the class of functional impairment improved from Class 4 to Class 2. At the end of twenty six weeks Grade II improvement in activity had been produced, but this was maintained as an outpatient for only three months.

Case No 3.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	3	-
After 2 weeks Adrenalin	II	active	3	IV
After 2 weeks Aspirin & Adrenalin	II	active	1	III
Treatment ceased for 1 week.	II	active	2	III
Further 3 weeks Aspirin & Adrenalin	II	not active	1	II
On discharge after 8 weeks.	II	not active	1	II
<u>Out-patient.</u>				
One month after Discharge.	II	not active	1	II
six months after Discharge	II	not active	1	II
One year, three months after Discharge.	III	active	2	IV.

Summary : This was an acute case of rheumatoid arthritis of recent origin. The subsequent progress of the case as an outpatient with development of typical

rheumatoid deformity of the hands showed the differential diagnosis from acute rheumatism to have been correct.

There was no improvement with the first phase of treatment with adrenalin alone, but during the second phase with aspirin and adrenalin there was marked functional and objective improvement. However, there were still signs of activity at the end of that time so that only Grade III could be allotted to the case.

At the end of all treatment, eight weeks after admission there were no signs of activity, but during her surveillance as an outpatient there were minor exacerbations from time to time, and the disease was quietly progressive with very few symptoms. This patient gave herself three courses of aspirin and adrenalin as an outpatient with some benefit on each occasion. It is noteworthy that fifteen months after discharge from hospital she was now in Stage III of the disease because of her hands; the disease had been progressive, and thus by this time she was Grade IV improvement in activity. On the other hand, her functional impairment was much less than on admission to hospital, and she was not nearly so disabled.

Case No 4.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 & 4 weeks Adrenalin.	II	active	1	III
After 3 weeks Aspirin & Adrenalin	II	only BSR raised.	1	II
On discharge after 7 weeks.	II	only BSR raised	1	II
<u>Out-patient.</u>				
One month after discharge.	II	BSR still raised	1	II
Four months after discharge.	II	not active	1	I
7 months after discharge	III	active	4	IV

Summary : This was a mild case who made some progress during the first phase of treatment with adrenalin. Her condition became stationary, and then she made further progress on aspirin and adrenalin. The most interesting feature is the marked recurrence which occurred before she died of subacute hepatitis in the surgical wards.

(see Appendix).

Case No 5.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 2 weeks Adrenalin.	II	active	2	III
After 2 weeks Aspirin & Adrenalin	II	not active	1	II
On discharge after 4 weeks.	II	not active	1	II
<u>Out-patient</u>				
2 months after discharge.	There are no signs of rheumatoid arthritis.			
9 months after discharge.	II	not active	1	II
1 Year & 9 months after discharge.	II	active	2	III

Summary : This case made some improvement on adrenalin alone during the first phase of treatment, but more marked improvement during the second phase with aspirin and adrenalin. The reactivation of his duodenal ulcer during treatment with aspirin and adrenalin is noteworthy. The operation may have had some influence on his progress as

an outpatient, as it has been noted by many workers including Hensch that surgical stress often has a favourable influence on the course of rheumatoid arthritis.

Case No 6.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & Adrenalin	II	active	1	III
Treatment ceased for 3 weeks.	II	active	2	III
After a further 3 weeks Aspirin & Adrenalin.	II	only BSR raised.	1	II
On discharge after 9 weeks treatment.	II	only BSR Raised.	1	II
	<u>Out-patient.</u>			
One month after discharge.	II	active	2	III
One year after discharge.	III	active	2	IV

Case No 6 (Readmission)Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On readmission	III	active	2	-
After 3 weeks Aspirin & Adrenalin.	III	active	2	III
On discharge after 4 weeks aspirin & Adrenalin	III	active	2	III

Summary : This patient made good progress during the first phase of treatment with aspirin and adrenalin. The loss of all functional impairment is well shown on the cinematographic film. Cessation of treatment was followed by a relapse, and there was a prompt remission when treatment with aspirin and adrenalin was recommenced. When she was discharged the only sign of activity was the elevation of the sedimentation rate.

At the end of a year as an outpatient, it was apparent that the disease had advanced to Stage III. The benefit from the second admission was much less than that received on the first admission.

Case No 7.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On Admission .	III	active	4	-
After 3 weeks Aspirin.	III	active	4	IV
After 3 weeks Aspirin & Adrenalin.	III	active	3	III
Treatment ceased for 2 weeks.	III	active	4	IV.
On discharge after 8 weeks.	III	active	4	IV
one and a half yrs. after discharge.	<u>Out-patient.</u> No evidence of rheumatoid arthritis.			

Summary : This patient was admitted with a very acute exacerbation of rheumatoid arthritis which first troubled him eleven years ago. He was completely incapacitated on admission. Treatment for the first three weeks with aspirin alone made little difference to his condition, but the following three weeks with aspirin and adrenalin resulted in considerable improvement - only Grade III could be given however, as the disease was obviously still active. A

noteworthy feature was that during the three weeks on aspirin alone, the patient had a low intermittent pyrexia, which settled within two days of commencing aspirin and adrenalin.

When treatment with aspirin and adrenalin was discontinued for two weeks, a relapse promptly occurred. The patient, however, refused to have any further treatment with aspirin and adrenalin, because the injections had given him severe tremors, excitement, and palpitation.

When he returned one and a half years later, he was found to have made a spontaneous complete recovery.

Case No 8.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	3	-
After 3 weeks Aspirin & Adrenalin.	II	active	1	III
Treatment ceased for 1 week.	II	active	2	III
After a further 3 weeks Aspirin & Adrenalin.	II	only BSR raised.	1	II
On discharge after 7 weeks.	II	only BSR raised	1	II

Case No 8 Contd.Out-patient.

	Stage	Activity	Class	Grade
Two months after discharge.	II	active	2	III
Four months after discharge	II	active	2	III
<u>Case No 8 Readmission.</u>				
On readmission	II	active	2	-
After 3 weeks Aspirin & Adrenalin	II	active	2	III
After 6 weeks Aspirin & Adrenalin (and on discharge)	II	only BSR raised	1	II
	<u>Out-patient.</u>			
One month later	II	only BSR raised	1	II
One year later	III	active	2	III

Summary. Treatment was most successful in this case on both admissions. I had personal knowledge of the patient

since the onset of the disease, and had noted the rapid development of functional impairment. Treatment was associated with reversal of this functional impairment, and arrest of the rheumatoid activity. The improvement in functional capacity achieved during three weeks treatment consisting of aspirin and adrenalin is well illustrated in the cinematographic film.

It must be noted that despite the considerable functional improvement within three weeks on the first admission, the disease was still active, and only Grade III improvement in activity could be given at the end of that time. The correctness of this assessment is shown by the prompt relapse which took place when treatment was discontinued for a week.

During the second admission, three weeks after treatment with aspirin and adrenalin had commenced, the patient had a severe reaction to adrenalin. She collapsed following the injection of nine minims subcutaneously, and showed signs of shock for about five minutes. Subsequent injections of a smaller dose of the drug had no untoward effects.

One year after the second treatment, the patient was showing some deformity of the hands, and the disease had progressed to Stage III. Nevertheless, she was not so incapacitated as when she was first admitted to hospital.

Case No 9.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	4	-
After 3 weeks Aspirin & Adrenalin	III	active	4	III
Treatment ceased for 2 weeks.	III	active	4	III
Aspirin & Adrenalin for 3 weeks	III	active	3	III
After 8 weeks treatment and on discharge.	III	active	3	III
One and a half yrs. after discharge	<u>Out-patient</u>			
	III	active	2.	III

Summary : This was an advanced case who was totally incapacitated on admission. Although there was notable improvement in tenderness, and some improvement in movement range after three weeks aspirin and adrenalin, this is not reflected by any improvement in Class or Grade. When treatment was discontinued for two weeks there was a relapse.

There was some improvement in function at the

end of all treatment, although she was still greatly incapacitated, and the disease was obviously still active. It was apparent when she returned as an outpatient that there had been a remission, and the disease was now in a quiescent phase.

Case No 10

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	3	-
After 3 weeks Aspirin & Adrenalin	III	active	3	III
Treatment ceased for one week.	III	active	3	III
After 3 weeks more Aspirin and Adrenalin	III	active	3	III
After 7 weeks treatment and on discharge.	III	active	3	III
<u>Out-patient</u>				
One and a half yrs after discharge.	III	active	3	III

Summary : This patient was blind and deaf which made the assessment of incapacity from rheumatoid arthritis

less accurate. Any diminution of functional impairment which occurred during treatment was cancelled by the fact that he was greatly incapacitated from other causes.

After three weeks treatment with aspirin and adrenalin there was considerable diminution of tenderness and swelling of the finger joints, and some improvement in movement range, but the disease was still active as was shown when treatment was discontinued for a week. The relapse which occurred then was slight and did not return him to his original state. For this reason it cannot be recorded in terms of Class and Grade (see Appendix p. 92)

A further three weeks of aspirin and adrenalin was given and there was additional improvement. It is noteworthy that despite this, only Grade III improvement in activity could be given to the case. The functional impairment is illustrated in the cinematographic film. When the patient returned one and a half years after discharge his condition was still improved from that on admission.

Case No 11.

(over)

Case No 11.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	2	-
After 3 weeks Aspirin & Adrenalin	III	active	1	III
After 4 weeks Aspirin & Adrenalin and on discharge	III	only BSR raised	1	II

This patient did not return as an outpatient.

Summary : The disease only affected a few joints, and whereas the stage was advanced, there was not a great deal of functional disability. Some of the functional impairment was undoubtedly related to the fact that she was a neurotic introspective type of patient. The functional improvement is illustrated in the cinematographic film. After three weeks aspirin and adrenalin when film was taken she was given only Grade III improvement because of slight residual joint tenderness, and some swelling of the finger joints persisting. After another week of aspirin and adrenalin this had disappeared, and it was possible to place her in Grade II.

Case No 12.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & Adrenalin	II	? active	2	II
After 6 weeks Aspirin & Adrenalin and on discharge.	II	only BSR raised.	2	II

The patient did not return as an outpatient.

Summary : In this case there was marked improvement after the first three weeks on aspirin and adrenalin. It was difficult at that time to judge if the disease showed any other signs of activity except slight elevation of the sedimentation rate and slight swelling of the finger joints. Grade II improvement was given, although the subsequent fall in ring sizes during the next three weeks proved to be greater than expected.

Case No 13.

(Over)

Case No 13.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	3	-
After 2 weeks Sterile water & Powder	III	active	2	III
After 2 weeks Aspirin & Adrenalin	III	? active	2	II
After 3 weeks Aspirin & adrenalin (i.e. a further week) and on discharge, after 5 weeks treatment.	III	only BSR raised	2	II
<u>Out-patient</u>				
One month after discharge.	III	only BSR raised	2	II
3 months after discharge.	III	active	2	III
One year after discharge.	III	active	2	IV

Summary : The improvement in function and activity which occurred during the first two weeks with rest, sterile water injections, and powder must be noted. The movement range, however did not improve during that time, but did so during the following phase of treatment with

aspirin and adrenalin. The functional improvement during this phase is shown in the cinematographic film. After two weeks aspirin and adrenalin it was possible to give Grade II improvement in activity, and the fact that there was no relapse when treatment was discontinued as an outpatient indicated that this assessment was correct, and that major improvement in activity had occurred.

Case No 14.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin.	II	active	2	III
After 1 week Aspirin & Adrenalin	II	active	1	III
Treatment ceased for one week.	II	active	2	III
After a further 3 weeks Aspirin & Adrenalin.	II	not active	1	I
On discharge after 8 weeks treatment.	II	not active	1	I
	<u>Out-Patient</u>			
One month after discharge.	No signs of active disease.			
One year later	No signs of rheumatoid arthritis.			

Summary : This was a case of rheumatoid arthritis of recent origin in whom there had been rapid progression of functional impairment. There was little change in his condition during three weeks treatment with aspirin, but there was dramatic improvement when the treatment was changed to aspirin and adrenalin. Within a few days the change was obvious, and at the end of a week there was no functional impairment, although the disease was still active. The striking diminution of ring sizes merits special mention, but despite the improvement in activity only Grade III could be given because of the signs that the disease was still active.

When treatment was discontinued for one week there was a relapse, although the patient did not revert to his former state. Renewal of treatment with aspirin and adrenalin coincided with renewed improvement, and at the end of a further three weeks, there were no signs of activity. One year later the patient had no signs or symptoms of rheumatoid arthritis.

This patient also suffered from hypertension, but the administration of adrena~~l~~idid not disturb him unduly, and there was no permanent alteration of the blood pressure.

Case No 15.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 3 weeks Aspirin & Adrenalin.	III	active	2	III
After 6 weeks Aspirin & Adrenalin.	III	only BSR raised	2	II
After 8 weeks Aspirin & Adrenalin and on discharge.	III	only BSR raised	2	II
<u>Outpatient.</u>				
One month after discharge.	III	active	2	III
4 months after discharge.	III	active	3	III
Further comparison vitiated by patient taking Butazolidine				

Summary : This was a depressed melancholic patient suffering from chronic disease in a fairly advanced stage, who was treated with aspirin and adrenalin without variation. The improvement in function is well illustrated in the cinematographic film which, perhaps, also shows the change in his temperament. There was a rapid relapse after discharge from hospital.

Case No 16.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 2 weeks Sterile water & Powder.	II	active	2	IV
After 2 weeks Aspirin & Adrenalin	II	only BSR raised	1	II
One week later After 3 weeks Aspirin & Adrenalin	II	only BSR	1	II
After 5 weeks treatment and on discharge.	II	only BSR raised	1	II
	<u>Out-patient.</u>			
one month after discharge.	II	only BSR raised	1	II
3 months after discharge	II	active	2	III

Summary : This patient's condition did not improve during the first fortnight in hospital when she was given sterile water injections and powder. There was considerable improvement when aspirin and adrenalin had been given for the following two weeks. The patient relapsed after three months, although not to her former condition.

Case No 17.Stage of Disease, Activity, Class, and Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 3 weeks Sterile Water & Powder.	II	active	2	IV
After 3 & 4 weeks Aspirin & Adrenalin.	II	not active	1	I
After 7 weeks treatment, and on discharge.	II	not active	1	I

The patient did not return as an outpatient.

Summary : This patient was admitted in an acute phase of the disease. During the first three weeks, when she was confined to bed, and given sterile water injections and inactive powder, her condition deteriorated. After treatment with aspirin and adrenalin was started, there was a rapid remission of signs and symptoms, and within three weeks there were no signs of active disease present.

Case No 18.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	IV	active	4	-
After 3 weeks Aspirin & St. Water	IV	active	4	III
After 3 weeks Aspirin & Adrenalin	IV	active	2	III
After 6 weeks Aspirin & Adrenalin	IV	active	2	III
After 9 weeks Treatment and on discharge.	IV	active	2	III
<u>Out-patient.</u>				
One month after discharge.	IV	active	2	III.
One year after discharge.	IV	active	2	III.

Summary : This patient was in an advanced stage of the disease and completely incapacitated on admission. The progress made during the two phases of treatment with aspirin and aspirin and adrenalin respectively is shown on the cinematographic film. There was more improvement during the second phase with aspirin and adrenalin than during aspirin alone, especially with regard to the range of

movement. This improvement is reflected more in the Class change than in the Grading, because although progress was substantial, the disease remained active, and thus only Grade III could be given.

The patient maintained, to a large extent, this improvement, and a year after discharge from hospital he had been doing light work for a few months - a surprising state of affairs when one remembers his condition on admission.

Case No 19.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On Admission	II	active	2	-
After 3 & 4 weeks Aspirin & Adrenalin and on discharge.	II	not active	1	I
<u>Out-patient.</u>				
One month after discharge.	II	not active	1	I
3 months after discharge.	II	active	2	IV
4 months after discharge- Aspirin & Adrenalin as O.P.	II	active	2	III

Summary: This was a mild case of rheumatoid arthritis whose condition settled completely during treatment with aspirin and adrenalin. The remission lasted about five weeks after discharge from hospital. A further course of aspirin and adrenalin was given as an outpatient, but only Grade III improvement occurred.

Case No 20.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission .	II	active	2	-
After 2 weeks St. Water & Powder.	II	active	2	IV
After 2 weeks Aspirin & Adrenalin .	II	active	2	III
After 3 & 4 weeks Aspirin & Adrenalin.	II	active	2	III
After 6 weeks treatment and on discharge.	II	active	2	III
<u>Out-patient.</u>				
One month after discharge.	II	active	2	III
3 months after discharge	II	active	2	III
One year after discharge.	II	active	2	III

Summary : This was a case of moderate severity who was given sterile water injections and powder during the first two weeks with negligible benefit. She was then given aspirin and adrenalin for the following four weeks; the improvement at the end of three weeks of this treatment is shown on the cinematographic film. Although there was obvious functional improvement, she was still incapacitated, and thus no change in class could be given, and only Grade III improvement in activity was merited. This improvement was maintained for approximately six months after discharge, but thereafter there was a relapse, although not to her former state of incapacity.

Case No 21.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 3 weeks Aspirin & Adrenalin, and on discharge.	II	only BSR raised.	1	II
<u>Out-patient.</u>				
One month after discharge.	II	only BSR raised.	1	III.
2 months later	II	active	2	III
One year after discharge	II	active	1	III

Summary : This was a mild case of rheumatoid arthritis with only three joints involved. After three weeks treatment with aspirin and adrenalin there was no evidence of disease apart from an elevated sedimentation rate. One month after discharge from hospital, the left ankle was again tender, and there was some disability from this two months later. He was given a course of aspirin and adrenalin as an outpatient, and two months after this the disability had gone.

Case No.22.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
Rest in bed only for ten days.	II	active	2	IV
Aspirin & Adrenalin for ten days, and for 3 weeks.	II	only BSR raised.	1	II
After 4 weeks treatment and on discharge	II	only BSR raised	1	II
<u>Out-patient</u>				
One month after discharge.	II	active	1	III

Out-patient (contd).

	Stage	Activity	Class	Grade
4 months after discharge.	II	active	1	III
One year after discharge.	II	active	1	III

Summary : Although this case was a fairly recent origin, ^{of} there had been rapid progression of functional disability, and she was in an acute phase when admitted. There was no improvement in her condition during rest in bed for the first ten days. After ten days aspirin and adrenalin there was marked improvement in function and activity, and when she was discharged the only sign of activity was elevation of the sedimentation rate. The fact that the disease was still active was shown by recurrence of slight swelling of the finger joints one month after discharge, with the result that the improvement in activity had reverted from Grade II to Grade III.

Although during the course of her surveillance as an outpatient she continued to show slight signs of activity, there was negligible functional impairment with the result that her original gain in class was maintained.

Case No 23.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After rest only for 1 week.	II	active	2	IV
After Adrenalin & Powder for 1 week.	II	active	2	III
After Adrenalin & Powder for 3 weeks.	II	only BSR raised.	1	II
After treatment for 4 weeks, and on Discharge.	II	only BSR raised	1	II
<u>Out-patient.</u>				
1 month & 3 months after discharge.	II	only BSR raised	1	II
6 months after discharge.	II	active	2	IV
<u>Re- admission.</u>				
On re-admission	II	active	2	-
After St. water & Powder for 3 weeks and on discharge.	II	active	2	IV

Summary : This case was very mild, and not least of her disabilities was a mild anxiety state. There appeared to be no improvement with rest in bed for one week, so she was given adrenalin injections and powder for three weeks. There was improvement during this phase, and indeed she had a remission which merited Grade II improvement being given.

This remission lasted six months when once again she began to have pain in a few joints. She was re-admitted, more because of the fact that she lived alone and was extremely depressed, than because her arthritis required further treatment. She was treated with sterile water injections and powder for three weeks, and immediately began to feel better when the injections commenced. There was some functional improvement, and there was no need to give her any further therapy.

Case No 24

(over)

Case No 24.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	I	active	2	-
After 2 weeks Adrenalin & Powder.	I	active	2	IV
After 2 weeks Aspirin & Adrenalin	I	active	2	IV
After 4 weeks Aspirin & Adrenalin.	I	active	2	IV
After 6 weeks treatment.	I	active	2	IV
On discharge	I	active	2	IV
<u>Out-patient.</u>				
One month after discharge.	I	active	2	IV
Six months after discharge.	II	active	2	IV

Summary : This patient was in a very early stage of the disease, and her disability was very slight. She was very neurotic, however, and the pain was a great burden to her. On admission the diagnosis was doubted, but subsequent events proved it to be correct. All

treatment, including cortisone latterly, proved to be ineffective, and at the time of her discharge from hospital, she was still complaining of pain and stiffness of the joints especially in the morning.

During the surveillance as an outpatient it was apparent that the disease was slowly advancing.

Case No 25.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	3	-
After one week rest in bed only	III	active	3	IV
After one week Aspirin & Adrenalin	III	active	2	III
After 3 & 4 weeks Aspirin & Adrenalin	III	only BSR raised	1	II
After 4 & 5 weeks treatment & on discharge.	III	only BSR raised	1	II
<u>Outpatient</u>				
One month after discharge.	III	active	2	III

Summary : This patient, on admission, was in an advanced stage of the disease, and had considerable functional disability. There was no improvement in his condition following rest in bed for one week, but during the next week, when he was given aspirin and adrenalin, there was measurable improvement both in function and activity. At the end of three weeks treatment with aspirin and adrenalin major improvement had occurred. The marked improvement in function is well illustrated in the cinematographic film. It was considered that the impairment in joint mobility which remained was due to minimal residual activity, and as the other criteria were fulfilled, he was given Grade II improvement in activity.

The patient relapsed within a month of discharge from hospital, although his condition was still much better than when he was admitted.

Case No 26.

(see over)

Case No 26.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 2 weeks sterile water & Powder.	II	active	2	IV
After 2 weeks Adrenalin & Powder.	II	active	1	III
After 2 weeks Aspirin & Adrenalin	II	active	1	III
After 6 weeks treatment & on discharge.	II	active	1	III
<u>Outpatient.</u>				
One month after discharge.	II	active	2	IV

Summary : This was a mild case of the disease in whom the possibility of gout was considered and excluded. Although she was able to carry out all the performance tests on admission, she found her disability a handicap in her household tasks and thus was considered to be in Class 2. During the first phase of treatment with sterile water and powder there was negligible improvement. When adrenalin and powder was given for the following two weeks, there

was some improvement in the grip and the finger mobility, and this was continued during the next two weeks with aspirin and adrenalin. The benefit to the patient was that she could then knit and do other things with her hands which had formerly been impossible. This benefit did not remain unfortunately, and when she returned as an out-patient, her condition was much the same as on admission.

Case No 27.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 2 weeks Sterile water and Powder.	II	active	2	IV
After 2 weeks Adrenalin & Powder.	II	active	2	IV
After 2 weeks Aspirin & St. Water	II	active	2	III
After 2 weeks Aspirin & Adrenalin	II	active	1	III
After 8 weeks treatment and on discharge	II	active	1	III
<u>Out-patient.</u>				
One month after discharge.	II	active	1	III
2 mths. after discharge.	II	active	2	IV

Summary : This was a moderate case of rheumatoid arthritis, in whom the main disability was the swelling and stiffness of the fingers. During treatment with sterile water and inactive powder, adrenalin and powder, and aspirin and sterile water, for periods of two weeks, there was no remission of this disability, although with the latter treatment Grade III improvement in activity occurred. During the last phase of treatment, when aspirin and adrenalin was given, the stiffness and swelling of the fingers became less marked, and she was able to approximate the fingers of both hands to the palms. This resulted in her being able to wash, comb her hair, and dress without difficulty, and in giving Class 1 function.

The patient relapsed within two months of discharge from hospital.

Case 28

(Over)

Case No 28Stage of Disease, Activity, Class, & Function.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 2 weeks St. Water & Powder.	III	active	3	IV
After 2 weeks Aspirin & St. water.	III	active	3	III
After 2 weeks Aspirin & Adrenalin.	III	active	3	III
After 7 weeks Aspirin & Adrenalin. and on discharge.	III	active	2	III
The patient attended as an outpatient nine months later, and was re-admitted for further treatment.				
On re-admission.	IV	active	4	-
After 2 weeks Adrenalin & Powder.	IV	active	4	IV
After 2 & 3 weeks Aspirin & Adrenalin.	IV	active	3	III

Summary : This case was atypical in that there was splenic enlargement, and the hip joints were most affected by the disease. The differential diagnosis included

Felty's syndrome and ankylosing spondylitis, but there were no other features of the former condition present, and the x-rays of the spine and sacro-iliac joints were negative. During treatment with sterile water and powder in the first two weeks phase, there was some diminution of tenderness, but there was no real improvement in function or activity. When the patient was given aspirin and sterile water for the next two weeks the function remained the same, but there was slight (Grade III) improvement in activity. During the third phase of treatment with aspirin and adrenalin there was slight progressive improvement in function and activity, but not sufficient to alter Class or Grade. Five more weeks of aspirin and adrenalin were given, and at the end of that time there was considerable improvement in the function (Class 2), although the disease was still active (Grade III).

When the patient was re-admitted nine months later, there was marked deterioration in her condition, and the disease had progressed to Stage IV; she was totally incapacitated. On this occasion, there was no improvement during the first two weeks with adrenalin and powder, but after two and three weeks aspirin and adrenalin which followed there was slight improvement in function and activity. The disease was still active, and she remained gravely incapacitated.

Case No 29.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission .	I	active	2	-
After 3 weeks Aspirin & St.water.	I	active	2	IV
After 2 weeks Aspirin & Adrenalin.	I	not active.	1	I
After 5 weeks treatment and on discharge.	I	not active	1	I
	<u>Out-patient.</u>			
One month after discharge, and one year after discharge.	Finger joints slightly swollen, otherwise no sign of disease. Not considered active.			Cl.1 Gd. I.

Summary: This was a mild case of rheumatoid arthritis, in whom the symptoms had never been acute. During the first three weeks of treatment with aspirin and sterile water, there was no improvement in function and activity. A complete remission occurred during the next two weeks when he was treated with aspirin and adrenalin. There was no evidence of relapse during the year's surveillance as an outpatient.

Case No 30.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & Adrenalin	II	only BSR raised	1	II
Treatment ceased for one week.	II	only BSR raised	1	II
After four weeks and on discharge	II	only BSR raised	1	II
	<u>Out-patient.</u>			
One month after discharge.	II	only BSR raised	1	II
3 months after discharge.	II	active	2	III
One year after discharge.	II	active	2	III

Summary : This was a moderate case of the disease of fairly recent onset. After three weeks aspirin and adrenalin, it was apparent that a remission had occurred, and the only sign of activity was the elevation of the sedimentation rate. The diminution of finger joint swelling was notable. There was no relapse when treatment was discontinued for one week. The disease showed signs of

reactivation three months after discharge, but had not returned to its former activity by the end of a year.

Case No 31

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & St. water	II	active	2	III
After 3 weeks Aspirin & Adrenalin	II	active	1	III
After 6 weeks treatment and on discharge.	II	active	1	III
	<u>Out-Patient.</u>			
2 mths. after dischge.	II	active (she was re-admitted).	2	IV
On readmission.	II	active	2	-
After 2 weeks Aspirin & St. Water.	II	active	2	IV
Aspirin and Adrenalin commenced, but the patient left against advice after a few days.				
	<u>Out-patient.</u>			
Six months after discharge.	II	active	2	- III

Summary : This was a mild case of the disease, in whom a neurotic disposition contributed to her disability.

Any doubts regarding the diagnosis were settled on her second admission, when the nature of the disease was obvious.

On the first admission, after three weeks treatment with aspirin and sterile water, there was slight improvement in activity, but the functional impairment remained the same. After a further three weeks with aspirin and adrenalin there was no functional impairment. There had been more improvement in movement range than during the first phase of treatment, but as there were still signs of activity only Grade III could be given.

It is interesting to note that a severe mental shock (her son was killed in a works accident) precipitated the acute reactivation of the disease which occasioned her second admission to hospital. Then, two weeks treatment with aspirin and sterile water had no effect on her condition. Treatment with aspirin and adrenalin was started, but she complained bitterly of her reaction to the injections, and left the hospital against advice.

When she returned as an outpatient, there had been some remission, although the disease was still active.

Case No 32.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	2	-
After 3 weeks Aspirin & Adrenalin.	III	active	2	III
After 6 weeks Aspirin & Adrenalin and on discharge.	III	active	2	III
<u>Out-patient.</u>				
One month after discharge.	III	active	2	III
One year after discharge.	III	active	2	IV

Summary : This was an advanced chronic case of rheumatoid arthritis not in an acute phase of the disease. Although there was some improvement in activity with three and six weeks treatment with aspirin and adrenalin, this was not sufficient to alter the Class. Despite the fact that the sedimentation rate was normal after treatment there were signs of activity present, and only Grade III could be given.

The patient had relapsed to her former state after a year from discharge.

Case No 33.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission .	IV	active	4	-
Aspirin & Sterile Water for 3 weeks.	IV	active	4	III
After 3 weeks Aspirin & Adrenalin .	IV	active	3	III
After six weeks Aspirin & Adrenalin.	IV	active	3	III
After 9 weeks treatment and on discharge.	IV	active	3	III
	<u>Out-patient.</u>			
One month after discharge.	IV	active	3	III
Six months after discharge.	IV	active	3	III

Summary : This was a patient in the terminal stage of rheumatoid arthritis, who had bony ankylosis and was severely crippled. The improvement in his condition was progressive both during treatment with aspirin and sterile water, and during the following phase with aspirin and

adrenalin. At the end of all treatment there was considerable diminution of his incapacity, although in the strict sense he could only be given Class 3 functional impairment. This improvement was maintained during the six months when he was observed as an outpatient.

Case No 34.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 3 weeks St. Water & Powder.	III	active	3	IV
After 6 weeks St. Water & Powder, and on discharge.	III	active	2	III
	<u>Out-patient.</u>			
One month after discharge.	III	active	2	III
6 months after discharge.	III	active	2	III

Summary : This case proved to be most interesting from the therapeutic point of view. She was not admitted for treatment of rheumatoid arthritis, but for investigation

of convulsive seizures which were most probably hysterical. She had active rheumatoid arthritis on admission in a late stage, but the activity was minimal. She was given sterile water and powder to begin with, and the intention was to give aspirin and adrenalin after a control period. However, she claimed great benefit from the "injections", and as the disease was not particularly troublesome at the time, it was decided to continue with this "treatment".

At the end of six weeks sterile water and powder there was some improvement in function and some diminution in activity, although it must be remembered that the activity was not great at any time. When she returned as an outpatient she was full of praise for the treatment, and there was certainly some indication of slight benefit.

Case No 35.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	IV	active	4	-
After 3 & 4 weeks Aspirin & Adrenalin	IV	active	4	III
After 3 & 4 weeks Aspirin & St. water	IV	active	4	IV

(over)

Case No 35 (contd).

	Stage	Activity	Class	Grade
After 8 weeks treatment and on Discharge.	IV	active	4	IV.

The patient was discharged to the Orthopaedic Unit.

Summary : This was a case in the terminal stage of the disease, who was suffering from an acute exacerbation. During the first three and four weeks when she was receiving aspirin and adrenalin, there was some improvement in the activity of the disease, with a marked fall in tenderness and considerable diminution of the finger swelling. When the adrenalin was discontinued, but the aspirin still given, there was a relapse in her condition.

During all forms of treatment she remained totally incapacitated, and at the end of all treatment although there had been some improvement in the objective tests, there was not sufficient justification to give even Grade III improvement in activity.

Case No 36.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 3 weeks St.water & powder.	III	active	3	III
After 4 weeks St.water & powder.	III	active	3	III
After 3 weeks Aspirin & Adrenalin.	III	active	2	III
After 4 weeks Aspirin & Adrenalin.	III	active	2	III
After all treatment for eight weeks and on discharge.	III	active	2	III
<u>Outpatient.</u>				
One month after discharge.	III	active	2	III
6 months after discharge		active	2	III
One year after discharge.	III	active	3	IV.

Summary : This patient's response to "treatment" with sterile water and powder was interesting. He was a

case of rheumatoid arthritis of advanced type in whom the disease was very active on admission. During the first three weeks with sterile water and powder, there was considerable diminution of tenderness and swelling of the fingers, although the range of movement did not alter much. The control experiment was continued, but by the end of another week, there had been a relapse, and the patient became restive.

Treatment with aspirin and adrenalin was then started, and during the four weeks for which this treatment was given there was some lessening of activity, and the function improved. The disease was still active however, and thus only Grade III improvement could be given despite the notable functional improvement.

There was some deterioration in his condition during the first six months of outpatient surveillance, but he was still improved from his state on admission. At the end of a year, however, he had relapsed completely.

Case No. 37.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 3 weeks Aspirin & St. Water.	II	slight	1	II
On discharge after 3 weeks treatment.	II	slight	1	II
	<u>Out-patient.</u>			
One month after discharge.	II	slight	1	II
Two months after discharge.	II	active	3	IV

This patient was readmitted for treatment.

Case No 37 Readmission.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade.
On readmission	II	active	3	-
After 3 weeks St. Water & Powder.	II	active	3	IV
After 3 weeks Aspirin & Adrenalin.	II	only BSR raised.	1	II
After 6 weeks treatment & on discharge.	II	only BSR raised	1	II
	<u>Out-patient.</u>			
One month after discharge	II	active	2	III
2 months after discharge.	II	active	2	III

Summary : This was a moderate case of rheumatoid arthritis admitted in an acute phase of the disease. On the first admission she was given aspirin and sterile water injections. During this treatment there was considerable improvement in function and in the activity of

the disease. Within two months of discharge from hospital she had relapsed, and on the second admission her condition was worse than that of the first admission.

During the first three weeks of her second admission, she was given sterile water and powder, and there was no improvement whatsoever. Aspirin and adrenalin was then given for a further three weeks, and by the end of this time, there had been marked diminution of activity, and the only sign of active disease was an elevation of the sedimentation rate. There was no impairment of functional capacity at the end of three weeks treatment with aspirin and adrenalin.

This remission lasted only a few weeks after discharge from hospital, although at the end of two months, the disease was not so active, nor the functional impairment so great, as when the patient was first seen.

Case No 38

(over)

Case No 38.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 3 & 4 weeks Aspirin & St.water.	III	active	3	III
After 3 & 4 weeks Aspirin & Adrenalin.	III	active	2	III
After 8 weeks treatment and on discharge.	III	active	2	III
<u>Out-patient.</u>				
5 months after discharge	III	active	2	III
One year & 4 mths. after discharge.	IV	active	4	IV

Summary : This was an advanced case of rheumatoid arthritis in a fairly active state on admission. She was treated with aspirin and sterile water injections for the first four weeks of admission. During the first three weeks of this treatment there was some improvement in function and activity. The diminution of the swelling of the finger joints is noteworthy. This treatment was

used for another week, but during that time there was a slight relapse. Treatment with aspirin and adrenalin was then started, and there was further improvement. The improvement in movement range was greater with this treatment than with the aspirin and sterile water, and there was a decrease in functional impairment. At the end of four weeks treatment with aspirin and adrenalin there had been marked improvement in all, but as there were still signs that the disease was active, only Grade III could be given.

When the patient reported as an outpatient five months after discharge from hospital, this improvement had been maintained, but a year later there had been complete relapse.

Case No 39.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	4	
After 3 weeks Aspirin & St.water.	III	active	4	IV
After 3 weeks Aspirin & Adrenalin	III	active	4	IV

(over)

Case No 39 (Contd).

	Stage	Activity	Class	Grade
After 8 weeks Aspirin & Adrenalin	III	slight	2	II
After 11 weeks treatment.	III	slight	2	II
Treatment ceased for 3 weeks	III	active	2	III
Aspirin & adrenalin for further 2 weeks then discharged.	III	slight	2	II
One month after discharge. 3 months after discharge.	<u>Out-patient.</u>			
	III	slight	2	II
	III	slight	2	II.

Summary : This patient was in an advanced stage of the disease and was admitted in an acute phase. During the first period of treatment with aspirin and adrenalin there was slight deterioration in her condition, and this deterioration continued during the next three weeks when aspirin and adrenalin was given. At the end of this time her condition began to improve, and when she had been given aspirin and adrenalin for five weeks, there was marked

improvement in both function and activity of the disease. Although there was slight residual activity, it was considered justified to give Grade II improvement.

For the purpose of this survey treatment is considered only up to this time, but in fact the patient was kept in hospital for a few more weeks. Treatment was discontinued for the following three weeks when there was a slight relapse sufficient to put the patient back to Grade III improvement in activity. A further two weeks treatment with aspirin and adrenalin was given, and she improved once again.

The remission achieved in hospital continued during the three months of outpatient observation.

Case No 40

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	2	-
After 2 weeks rest.	III	active	2	IV
After 2 weeks Aspirin & Adrenalin	III	active	2	IV
After 4 weeks Aspirin & Adrenalin	III	active	2	III

(over)

Case No.40 (contd).

	Stage	Activity	Class	Grade
After 6 weeks treatment and on discharge.	III	active	2	III
5 months after discharge.	<u>Out-patient</u>			
	III	active	2	IV

Summary : This was a chronic case of rheumatoid arthritis in an advanced stage. During the first two weeks after admission, she was treated with rest in bed only, and there was no improvement in her condition. Treatment with aspirin and adrenalin was then started, and for the first two weeks there was slight deterioration. However, at the end of four weeks of this treatment she was much better. The disease was still active with the result that only Grade III could be given as regards the improvement in activity, and although there was considerable improvement in function, there was still slight impairment - thus there was no change in Class, and she remained in Class 2.

When the patient was seen five months after discharge from hospital she had relapsed to her former state.

Case No 41.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 3 weeks Aspirin & Adrenalin.	II	only BSR raised	1	II
After 4 weeks Aspirin & Adrenalin and on discharge.	II	only BSR raised.	1	II
	<u>Out-patient.</u>			
One month after discharge.	II	only BSR raised	1	II
3 months after discharge.	II	not active.	1	I

Summary : This was a very mild case of rheumatoid arthritis referred by the Orthopaedic Surgeon for treatment. After three weeks treatment with aspirin and adrenalin there were no signs of activity of the disease apart from slight elevation of the sedimentation rate.

There had been further improvement in the movement range after three months of outpatient surveillance, and indeed no evidence of rheumatoid arthritis by that time, was noted.

Case No 42.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 3 weeks Aspirin & Adrenalin.	III	slightly active	2	II
After 4 weeks Aspirin & Adrenalin and on discharge.	III	only BSR raised	2	II

This patient did not return as an outpatient.

Summary : This was a case of rheumatoid arthritis in a fairly advanced stage. The disease was in a chronic phase and only moderately active on admission. Aspirin and adrenalin was given for three weeks with notable improvement in function and activity.

Case No 43

(over)

Case No 43.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	III	active	4	-
After 3 weeks Aspirin & Sterile water.	III	active	4	IV.
After 3 weeks Aspirin & Adrenalin.	III	active	3	III
After 9 weeks Aspirin & Adrenalin	III	slightly active	2	II
After 12 weeks treatment and on discharge.	III	slightly active	2	II
	<u>Out-patient.</u>			
One month after discharge.	III	slightly active	? 2	II

Summary : This patient was in an advanced stage of the disease which was moderately active on admission. She was a depressed and melancholy woman, and to begin with there was some difficulty in estimating her functional capacity because of her apathy. There was no improvement in her condition during the first three weeks, when she

was treated with aspirin and injections of sterile water. During the following three weeks she was given aspirin and adrenalin and there was improvement in function and activity. These phases of treatment are well illustrated in the cinematographic film which also shows the depressed aspect of the patient. It is worth commenting that within a week of starting adrenalin, the patient began for the first time to take an interest in herself and her surroundings, and thereafter the improvement in outlook was progressive.

At the end of nine weeks treatment with aspirin and adrenalin there had been considerable improvement, and this was more or less maintained as an outpatient during the first month. Again, at this time it was difficult to assess the functional impairment because the patient had obviously resigned herself to the life of an invalid despite the fact that her function was much improved from her former state.

Case 44

(over)

Case No 44.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & Adrenalin	II	active	1	III
After 6 weeks Aspirin & Adrenalin and on discharge.	II	active	1	III
One month after discharge.	<u>Out-patient.</u>			
	II	active	2	III

Summary : This was a chronic case in whom the disease had not progressed to an advanced stage, and in whom the disease was moderately active at the time of admission. Treatment with aspirin and adrenalin was given for six weeks in all, and during that time there was progressive improvement. This improvement is seen in the cinematographic film where, for example, the increased mobility of the wrists is demonstrated. There was also a notable diminution of finger swelling. Despite these improvements, however, only Grade III improvement in activity could be

given. On discharge, there was no functional impairment, but in this case also, the patient was reconciled, if not pleased, to live as an invalid, and there seemed little doubt that she would not live as a patient in Class 1 functional impairment at home.

When she returned as an outpatient six weeks later she had relapsed.

Case No 45.

Stage of Disease, Activity, Class & Grade.

	Stage	Activity	Class	Grade
On admission .	III	active	2	-
After 3 weeks Aspirin and Adrenalin.	III	active	2	III
After 4 weeks Aspirin & Adrenalin. and on discharge.	III	active	2	III
One month after discharge.	<u>Out-patient.</u>			
	III	active	2	III

Summary : This was a chronic case of rheumatoid arthritis in whom the disease was moderately active. He was

treated for four weeks with aspirin and adrenalin and there was some improvement in his condition. By the end of three and four weeks of this treatment he was able to perform all the tests, but not with normal ease with the result that he was only given Class 2 functional impairment (i.e. functional impairment unchanged), although there was indeed some improvement in his capacity.

There had been no relapse when he reported as an outpatient at the end of one month. Unfortunately, he did not return again despite requests.

Case No 46.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	III	active	3	-
After 3 weeks Adrenalin & Powder.	III	active	3	III
After 3 weeks Aspirin & Adrenalin.	III	active	2	III
After 6 weeks Aspirin & Adrenalin	III	slightly active	2	II
After 9 weeks treatment and on discharge.	III	slightly active	2	II

Case No 46 (contd).

	Stage	Activity	Class	Grade
One month after discharge.	III	active	2	III
9 months after discharge.	III	active	3	III

Summary : This was a patient with advanced chronic rheumatoid arthritis in whom the condition was moderately active on admission. There was slight improvement in function and activity during the first three weeks of treatment with adrenalin and powder. This improvement was progressive and continued during the next six weeks when she was treated with aspirin and adrenalin, and at the end of this period of treatment functional impairment was diminished, and there was only evidence of minimal residual activity.

There was a slight relapse during the first month after discharge, although it is interesting to note that at that time she volunteered the information that she thought she was much better than she was in America when she was receiving cortisone. Unfortunately, her condition continued to deteriorate, and when she was seen nine months later, she had relapsed almost to her former state.

Case No 47.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & St.water.	II	active	2	IV
Aspirin & Adrenalin for 3 weeks.	II	active	2	III
Aspirin & Adrenalin & wax baths for further 2 weeks.	II	active	2	III
After 8 weeks treatment and on discharge.	II	active	2	III

The patient did not return as an outpatient.

Summary : This was an early case of rheumatoid arthritis admitted in an acute phase. Treatment with aspirin and sterile water injections was given for three weeks, and there was no improvement in her condition. She was then treated with aspirin and adrenalin for three weeks, and although the tests indicate that there was quite marked improvement in movement range, finger swelling etc., the patient did not feel any better, and there was ample evidence

of continued activity. It is noteworthy that there was no improvement in the functional capacity. A further two weeks of aspirin and adrenalin combined with wax baths given to the hands did nothing to improve the position, and the patient requested to be allowed home.

Case No 48.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade.
On admission.	III	active	3	-
After 3 weeks St. water & Powder.	III	active	3	IV
After 3 & 4 weeks Aspirin & Adrenalin	III	active	3	IV
After 7 weeks treat- ment, and on discharge.	III	active	3	IV

The patient did not return as an outpatient.

Summary : This was a chronic case of rheumatoid arthritis in an advanced stage in whom the disease was moderately active. The results of the periods of treatment are shown on the cinematographic film. There was no improvement during the first three weeks when she was given sterile water and powder, nor during the following four weeks when she was treated with aspirin and adrenalin.

Case No 49.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	IV	active	3	-
After 3 weeks Aspirin & St. water.	IV	active	3	IV
After 3 & 5 weeks Aspirin & Adrenalin.	IV	active	3	IV
After 8 weeks treatment and on discharge.	IV	active	3	IV

The patient did not return as an outpatient.

Summary : This was an advanced chronic case of rheumatoid arthritis, in whom the disease was moderately active on admission. The results of the periods of treatment are seen on the cinematographic film. The only improvement recorded was some diminution of the finger joint swelling during the second phase of treatment when she was given aspirin and adrenalin. It was not considered that this warranted Grade III improvement in activity.

Case No 50.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 2 weeks Adrenalin & Powder.	II	active	2	III
After 2 weeks Aspirin & Adrenalin.	II	active	2	III
After 3 weeks Aspirin & Adrenalin, or after 5 weeks treatment & on discharge.	II	active	2	III
<u>Out-patient.</u>				
One month after discharge.	II	active	2	III
1 year after discharge.	III	active	2	IV

Summary : This was a moderate case of rheumatoid arthritis who was in an acute phase on admission. She was treated with adrenalin and powder for the first two weeks during which time there was slight improvement in activity. This improvement continued during the following three weeks when she was given aspirin and adrenalin. Reference to the performance tests will show that there was considerable improvement in function,

but because there was slight difficulty in walking, it was decided that she could not be classed as Class 1.

The improvement was maintained as an outpatient during the first month of surveillance, and also during the next three months, but by the end of a year there had been a complete relapse.

Case No 51.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 3 weeks Adrenalin & Powder.	II	active	2	III
After 3 weeks Aspirin & Adrenalin.	II	only BSR raised	1	II
After 6 weeks treatment and on discharge.	II	only BSR raised.	1	II.
<u>Out-patient.</u>				
One month after discharge	II	slightly active	2	III
4 months after discharge	III	active	2	IV

Summary: This was a moderately advanced case of rheumatoid arthritis in whom the disease was moderately

active on admission. During the first two and a half weeks she was treated with adrenalin and powder, and there was some improvement. This improvement was maintained and increased during the following three weeks when she was given aspirin and adrenalin. At the time of discharge, apart from elevation of the sedimentation rate, there was no evidence of activity.

The patient relapsed within a week of discharge from hospital, and thereafter there was rapid deterioration in her condition. It is interesting to note that she must have been one month pregnant when under treatment, and when pregnancy advanced, her condition did not improve, but rather, deteriorated rapidly.

Case No 52.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade.
On admission.	II	active	2	-
After 3 weeks Adrenalin & Powder.	II	active	2	IV
After 3 weeks Aspirin & Adrenalin.	II	active	2	III
After 6 weeks treat- ment & on discharge.	II	active	2	III.

Case No 52.(contd)Out-patient

	Stage	Activity	Class	Grade
One month after discharge.	II	active	2	III

Summary : This patient was a chronic case of rheumatoid arthritis in whom the disease was moderately active. She was placed in Stage II although it is possible that Stage III would have been more appropriate. She was treated for the first three weeks after admission with adrenalin and inactive powder, and during that time there was slight deterioration in her condition. She was then given three weeks treatment with aspirin and adrenalin. There was some improvement in the activity of the disease, and more marked improvement in function. However, although at the end of treatment she was able to carry out all the performance tests, she was still slightly handicapped with the result that no change could be made in functional classification.

When she returned as an outpatient in one month's time, there had been a slight relapse, but her condition was still improved from that on admission.

Case No 53.

Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	3	
After 3 weeks Adrenalin & Powder.	II	active	3	III
After three weeks Aspirin & Adrenalin.	II	active	2	III
After 6 weeks Aspirin & Adrenalin.	II	minimal	2	II
After 9 weeks treatment & on discharge.	II	minimal	2	II
4 months after discharge.	<u>Out-patient.</u>			
	II	active	2	III

Summary : Radiology of the affected joints in this case showed muscular calcification and calcinosis of the subcutaneous fat, and the radiologist suggested the possibility of Calcinosis. However, the case was accepted in the series with reservation, because clinically he gave the exact picture of a true rheumatoid arthritis in an acute phase, and of moderate severity.

The patient was treated with adrenalin and powder during the first three weeks after admission, and there was slight improvement in the activity of the disease, but little change in function. This improvement in activity was more marked during the following three weeks treatment with aspirin and adrenalin, but not sufficient to change the Grade of Activity, although the Class improved. At the end of six weeks treatment with aspirin and adrenalin, there was only minimal residual activity present. Although he could perform all the functional tests, one had the impression that he would still be handicapped at his work, and thus only Class 2 impairment of function could be given.

When he reported as an outpatient in four months time, he had relapsed, but not to his former state. Radiology at that time showed the calcification of the muscles and subcutaneous tissues to be less prominent - a feature difficult to understand, but worthy of comment here.

Case No 54.Stage of Disease, Activity, Class & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & St.water.	II	active	2	III
After 3 weeks Aspirin & Adrenalin	II	active	2	III
After 6 weeks treatment and on discharge.	II	active	2	III

The patient did not return as an outpatient.

Summary : This was a mild case of rheumatoid arthritis in whom the disease was moderately active on admission. Treatment with aspirin and sterile water injections was given for the first three weeks after admission, and there was slight diminution of activity and considerable improvement in functional impairment. There was little further improvement during treatment with aspirin and adrenalin for the following three weeks. Unfortunately, although the patient could perform all the function tests, there was a definite psychological barrier to full functional recovery, and at the end of all treatment he was still considered to be in Class 2.

Case No 55.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission.	II	active	2	-
After 3 & 4 weeks Aspirin & St.water.	II	active	2	III
After 3 & 4 weeks Aspirin & adrenalin.	II	only BSR raised	2	II
After 8 weeks treatment and on discharge.	II	only BSR raised.	2	II

The patient did not return as an outpatient.

Summary : This was a mild case of rheumatoid arthritis with only a few joints affected. The disease was moderately active. After three and four weeks treatment with aspirin and sterile water there was slight improvement in activity and function. Aspirin and adrenalin were given for the following three and four weeks, and there was further improvement. At the end of all treatment the only indication of activity was the elevation of the sedimentation rate. The diminution of the finger joint swelling which occurred with aspirin and adrenalin is noteworthy.

Case No 56.Stage of Disease, Activity, Class, & Grade.

	Stage	Activity	Class	Grade
On admission	II	active	2	-
After 3 weeks Aspirin & St. water.	II	active	2	III
After 3 weeks Aspirin & Adrenalin	II	minimal	1	II
After 6 weeks treat- ment & on discharge.	II	minimal	1	II
<u>Out-patient.</u>				
One month after discharge.	II	minimal	1	II
3 months after discharge.	II	active	2	IV

Summary : This was a moderate case of rheumatoid arthritis. During the first three weeks she was treated with aspirin and sterile water, and there was improvement in function and activity. This improvement continued during the following three weeks when she was given aspirin and adrenalin. When she was discharged there was slight residual activity in the wrists, but she had completely relapsed within three months of discharge.

Data of General Interest.TABLE 4.Distribution of Cases according to Sex.

SEX	NO. OF CASES.
Male.	16 (28.6%).
Female	40 (71.4%).
TOTAL	56.

Thus of the 56 cases studied in this series 71 % were female and 29 % were male.

TABLE 5Distribution of Female Cases according to Menstrual State.

MENSTRUAL STATE	NO. OF CASES.
Before Menopause.	16
At Menopause.	6
After Menopause	16
Abnormal Menstruation	2
TOTAL	40

TABLE 6.

The Incidence of Rheumatoid Arthritis, Rheumatic Fever, and Allergic Disease in the Blood Relations of Cases .

TYPE OF DISEASE	NO. OF CASES
Rheumatoid Arthritis	7 } 17.9%
Rheumatic Fever	
Allergic Disease.	3 5%

Thus, rheumatism in these two forms occurred in blood relations of 18% of cases of this series, and allergic disease in the form of asthma in 5%.

TABLE 7.

The Incidence of Stress of Various Types occurring in Cases of this Series just prior to the Onset of Rheumatoid Arthritis.

TYPE OF STRESS	NO. OF CASES
Mental Stress	8
Physical Stress	2
Severe Infection	1
TOTAL	11

It is interesting to note that over twenty of the cases in the series endeavoured to relate the onset of their disease to various stresses and strains, but many of these were not acceptable, because the stresses were no more than would be encountered in everyday life, or they occurred several years before the onset of arthritis. In addition to the eight cases who had considerable mental stress before the onset of the disease, three cases deserve mention. The striking deterioration which occurred in Case 31 within a few weeks of discharge from hospital, was associated with the violent death of her son in a rather horrible works accident. In Case 40, the mental deterioration and drinking habits of her father, which occurred suddenly, was associated with marked deterioration in her own condition. Case 42 stated that the recent death of his wife resulted in a flare-up of his arthritis.

TABLE 8.

The Incidence of Poor Housing Conditions and Financial Distress in the Cases.

Poor Housing.	5 cases.
Financial Distress.	2 cases.

TABLE 9.

Distribution of Cases according to the Stage of the Disease at the Time of Admission and the Duration of the Disease.

DURATION	STAGE				TOTAL
	Stage I	StageII	StageIII	StageIV	
3 - 6 months.	0	4	0	0	4
6 - 12 months.	1	4	0	0	5
1 - 3 years.	0	11	2	0	13
3 - 6 years.	1	6	5	0	12
6 - 10 years.	0	4	4	2	10
10 years & over.	0	2	8	2	12
TOTAL	2	31	19	4	56.

It will be seen from this table that of the 56 cases studied, 33 cases were considered to be early or moderate cases of the disease, and 23 cases were severe or terminal cases. Because the total number of cases studied is small, it has been found necessary to group Stages I & II together and Stages III and IV together in the tables which follow, and in the master tables in the Appendix, in order to have sufficient numbers to permit adequate study of the results of treatment. In any case, the great majority are either in the moderate stage (Stage II), or the severe

stage (Stage III).

Table 9 shows that the severity of the disease in this series was not always proportionate to its duration. This is especially true of Stage II. Although roughly 30% of cases in this stage had a duration of 1 to 3 years, the remainder were scattered throughout the other duration groups, and indeed two cases, judging from their history, had suffered from rheumatoid arthritis for over ten years.

TABLE 10.

Distribution of Cases according to Previous Treatment.

TYPE OF TREATMENT	NO. OF CASES.
Hospital.	15.
Gold.	14
Aspirin as a course.	4
Physiotherapy.	21
Butazolidine.	14
Cortisone	1
TOTAL	78.

Thus, a number of cases had more than one of these specified treatments before admission to the present series. Only 9 cases had not received previous treatment.

TABLE 11.

Cases distributed according to Stage of Disease and Grade of Improvement in Activity after All Treatment (Re-admissions excluded.)

STAGE	GRADE			TOTAL
	I	II	III and IV	
Stages I & II	5 (15.2%)	17 (51.5%)	11 (33.3%)	33
Stages III & IV	0 (0.0%)	8 (34.8%)	15 (65.2%)	23
ALL STAGES	5 (9%)	25 (45%)	26 (46%)	56.

It will be observed that in this and many of the subsequent tables Grades III and IV have been grouped together.

This practice is in accordance with Steinbrocker's dictum (1949) that Grade III improvement in activity should not be considered significant in any series under treatment.

Thus, in my series, of the 33 cases in Stages I or II, only 33% showed only minor improvement or failed to show improvement at all (Grades III or IV), whereas 52.% showed marked improvement (Grade II), and 15.% showed complete remission, (Grade I).

Of the 23 cases in Stages III or IV, 65% showed only no, or

minor improvement in activity, 35% showed marked improvement, and there were no cases in whom complete remission occurred.

TABLE 12.

Cases distributed according to Stage of Disease and Grade of Improvement in Activity after all Treatment (excluding Re-admissions, Mild Cases, and Cases in whom the Diagnosis might be queried).

STAGE	GRADE			TOTAL
	I	II	III and IV	
Stages I & II	3 (14.3%)	11 (52.4%)	7 (33.3%)	21
Stages III & IV	0 (0.0%)	8 (38.1%)	13 (61.9%)	21
ALL STAGES	3	19	20	42

(The following cases were excluded in this table :

Stages I & II : Cases 4, 19, 21, 23, 24, 26, 29, 31,
41, 53, 54, 55.

Stages III & IV Cases 28, 34.).

The Case Summaries above showed that there was some initial doubt about the diagnosis in Cases 28 and 53, although both cases were accepted latterly into the series. Case 34

was given only sterile water injections and inactive powder during her stay in hospital, and for that reason has been excluded in Table 12.

The remaining cases who have been excluded were all cases in whom the disease was very mild and relatively less active.

It will be noted that the exclusion of these cases makes no appreciable difference to the percentage improvements expressed in Table 11.

TABLE 13.

Cases distributed according to Class of Functional Capacity Before and After all Treatment (Re-admissions excluded).

(a) STAGES I & II.

		CLASS AFTER TREATMENT				
CLASS BEFORE TREATMENT		1	2	3	4	TOTAL.
	1	-	-	-	-	-
	2	22 (75.9%)	7 (24.1%)	-	-	29
	3	3 (75.0%)	1 (25.0%)	-	-	4
	4	-	-	-	-	-
TOTAL		25	8	-	-	33

Thus, of the 33 cases in Stages I & II, 29 cases were in Class 2 Functional Capacity before treatment, and 4 cases were in Class 3 Functional Capacity before treatment. Of the 29 cases in Class 2 Functional Capacity, 22 cases (or 76%) had progressed to Class 1 after all treatment. Of the 4 cases in Class 3 Functional capacity, 3 cases (or 75%) had progressed to Class 1.

(b) STAGES III & IV

CLASS BEFORE TREATMENT	CLASS AFTER TREATMENT					
		1	2	3	4	TOTAL
	1	-	-	-	-	-
	2	1 (25%)	3 (75%)	-	-	4
	3	1 (8.3%)	8 (66.7%)	3 (25%)	-	12
	4	- (0%)	3 (42.9%)	2 (28.6%)	2 (28.6%)	7
TOTAL		2	14	5	2	23

Thus, of the 23 cases in Stages III & IV, 4 cases were in Class 2 Functional Capacity, 12 cases were in Class 3 Functional Capacity, and 7 cases were in Class 4 Functional Capacity.

Capacity. Of the 4 cases in Class 2. Functional Capacity, 1 case (or 25%) had progressed to Class 1. after all treatment. Of the 12 cases in Class 3. Functional Capacity, 8 cases (or 67%) had progressed to Class 2, and 1 case (or 8%) had progressed to Class 1. Of the 7 cases in Class 4. Functional Capacity, 2 cases (or 29%) had progressed to Class 3, and 3 cases (or 43%) had progressed to Class 2.

(c) ALL STAGES

CLASS BEFORE TREATMENT	CLASS AFTER TREATMENT				
		1	2	3	4 TOTAL
	1	-	-	-	-
	2	23 (69.7%)	10 (30.3%)	-	- 33
	3	4 (25%)	9 (56.2%)	3 (18.8%)	- 16
	4	-	3 (42.9%)	2 (28.6%)	2 (28.6%) 7
TOTAL		27	22	5	2 56

Thus, when the 56 cases of the series are considered

together, of the 33 cases in Class 2, Functional Capacity before treatment, 23 cases (or 70%) had progressed to Class 1. after all treatment. Of the 16 cases in Class 3, Functional Capacity, 9 cases (or 56%) had progressed to Class 2, and 4 cases (or 25%) had progressed to Class 1. Of the 7 cases in Class 4, Functional Capacity, 2 cases (or 29%) had progressed to Class 3, and 3 cases (or 43%) had progressed to Class 2.

Table 13 allows a detailed study of the improvement in function which occurred with treatment. In the following table the results have been condensed to allow statistical analysis, but it will be appreciated that the grouping together of Classes 1. & 2. and Classes 3. & 4. conceals the improvement especially in Stages I & II where greatest improvement was a movement from Class 2 to Class 1.

TABLE 14

(over)

TABLE 14

The Percentage Distribution of cases according to Stage,
and Class of Functional Capacity Before and After All
Treatment.

CLASSES	STAGES I & II		STAGES III & IV	
	Before	After	Before	After
Classes 1 & 2	87.9	100	17.4	69.6
Classes 3 & 4	12.1	0.0	82.6	30.4.
	100	100	100	100
NO. OF PATIENTS	33	33	23	23
χ^2 (P 0.05) = 3.841	2.4		10.7	

The methods of estimating χ^2 and the use of the χ^2 tables are given by Bradford Hill (1950). In this thesis Yates's correction of the χ^2 test has been used because of the small numbers involved.

It will be seen from Table 14 that when the cases are grouped in this manner, there is a significant improvement in functional capacity in the cases of Stages

III & IV, but not in Stages I & II. On the other hand, as has been pointed out, Table 13 shows that there is a significant improvement in functional capacity in the cases belonging to Stages I & II.

TABLE 15.

Cases of All Stages distributed according to Class of Functional Capacity Before Treatment and the Improvement in Class of Functional Capacity and the Grade of Improvement in Activity After All Treatment. (Re-admissions excluded).

(a) CLASS 4 BEFORE TREATMENT.

IMPROVEMENT IN CLASS AFTER ALL TREATMENT	GRADE				
	I	II	III	IV	TOTAL
0	-	-	-	2	2
+ 1	-	-	2	-	2
+ 2	-	2	1	-	3
+ 3	-	-	-	-	-
TOTAL	-	2	3	2	7

(b) CLASS 3 BEFORE TREATMENT.

IMPROVEMENT IN CLASS AFTER ALL TREATMENT	GRADE				
	I	II	III	IV	TOTAL
0	-	-	1	2	3
+ 1	-	5	4	-	9
+ 2	1	3	-	-	4
TOTAL	1	8	5	2	16

(c) CLASS 2 BEFORE TREATMENT.

IMPROVEMENT IN CLASS AFTER ALL TREATMENT	GRADE				
	I	II	III	IV	TOTAL
0	-	1	8	1	10
+ 1	4	14	5	-	23
TOTAL	4	15	13	1	33

In Table 15, the cases are subdivided according to the Class of Functional Capacity before treatment, because the importance of a gain of one class (+ 1) varies with this factor. Thus, a gain of + 1 in a patient of Class 4 before treatment is not so important to the patient, or so dramatic to the observer as a gain of + 1 in a patient of Class 3 or Class 2 before treatment.

It will be seen from Table 15 that the improvement in functional capacity is clearly associated with the diminution of activity of the disease in this series. (in Class 2 the numbers are sufficient to apply the χ^2 test, and for this table the association is significant - $\chi^2 = 10.7$ i.e. $P < 0.05$ for one degree of freedom when Grades I & II and Grades III & IV are grouped together).

39 cases showed noticeable functional improvement (i.e. moving from Class 4 to Class 2 or Class 1 ; from Class 3 to Class 2 or Class 1; from Class 2 to Class 1). The distribution of these cases according to the Grade of Improvement in Activity is shown in the following table

TABLE 16

(over)

TABLE 16.

The Distribution of Cases who showed Noticeable Functional Improvement according to the Grade of Improvement in Activity of the Disease.

CLASS IMPROVEMENT	GRADE OF IMPROVEMENT				
	I	II	III	IV	TOTAL
Class 4 to 2	-	2	1	-	3
Class 4 to 1	-	-	-	-	-
Class 3 to 2	-	5	4	-	9
Class 3 to 1	1	3	-	-	4
Class 2 to 1	4	14	5	-	23
TOTAL	5	24	10	-	39.

Thus 29 cases of this group (or 74%) showed Grade I or II improvement in activity, but 10 cases (or 26%) showed only Grade III or IV improvement in activity. Despite the association between improvement in function and improvement in activity indicated by Table 15, obvious functional improvement does not always mean major improvement in activity.

In all the tables above, the seven cases who were re-admitted for further treatment, have been included with reference to their first admission only. It has not been necessary to include the second admissions in the series when considering the results of simple treatment in hospital on rheumatoid arthritis, although, because it is the relatively short term results which are the main interest, irrespective of previous admissions to hospital, such inclusion would not appear to invalidate those results.

Master Tables have been prepared in the Appendix (pp 474-488.) which give the Class of Functional Capacity before and after treatment, and the change in Class of Functional Capacity together with the Grade of Improvement in activity, and include the re-admissions.

In the tables which follow, the results of the first period of treatment, consisting of aspirin and adrenalin, aspirin with or without sterile water injections, adrenalin with or without inactive powder, sterile water injections and inactive powder, or rest in bed without other treatment, are given.

TABLE 17

(over)

TABLE 17.

Cases who received Aspirin and Adrenalin during the First Three Weeks in Hospital distributed according to the Grade of Improvement in Activity of the Disease.

STAGES	GRADE				
	I	II	III	IV	TOTAL
Stages I & II	1	4	3(4)	-	8(9)
Stages III & IV	-	1	7(9)	-	8(10)
ALL STAGES	1	5	10(13)	-	16(19)

Thus, of the 16 cases treated during the first three weeks in hospital with aspirin and adrenalin, 5 cases in Stages I & II, and 1 case in Stages III & IV showed major improvement (grade I or II) at the end of that time.

The figures in brackets include second admissions, and when these are considered in addition, it will be noted that of 19 cases the number of cases showing major improvement is still the same.

TABLE 18.

Cases who received Aspirin and Adrenalin during the First Three Weeks in Hospital distributed according to Stage, and Class of Functional Capacity before and after this treatment.

CLASS	STAGES I & II		STAGES III & IV		ALL STAGES	
	before	after	before	after	before	after
1.	-	7	-	1	-	8
2.	7 (8)	1 (2)	3 (4)	4 (5)	10 (12)	5 (1)
3.	1	-	3	1 (2)	4	1(2)
4.	-	-	2 (3)	2	2(3)	2
TOTAL	8 (9)	8 (9)	8 (10)	8 (10)	16 (19)	16(19).

Thus, In Stages I & II there was considerable improvement in Functional Capacity, but this improvement was not so marked in Stages III & IV. The second admissions are shown inclusive in brackets. This table does not reveal cases which improved by two classes (eg from Class 3 to Class 1), but this is shown in the Master Table IIA of the Appendix. As in Table 17, the figures in brackets include second admissions.

TABLE 19.

Cases who received Aspirin and Sterile Water during the First Three Weeks in Hospital distributed according to Stage, and Grade of Improvement in Activity of the Disease.

STAGES	GRADE				
	I	II	III	IV	TOTAL
Stages I & II	-	1	4 (7)	2	7 (10)
Stages III & IV	-	-	3	3 (4)	6 (7)
ALL STAGES	-	1	7 (10)	5 (6)	13 (17)

Thus, one case out of 13, treated with aspirin and sterile water injections, showed major improvement in activity during the first three weeks in hospital, and that case belonged to Stage II. There were no second admissions who were given this treatment during the first period of three weeks. The figures in brackets include the 4 cases who were given aspirin alone, and in whom also, major improvement did not occur.

TABLE 20

Cases who received Aspirin and Sterile Water during the First Three Weeks in Hospital distributed according to Stage and Class of Functional Capacity before & after this treatment

CLASS	STAGES I & II		STAGES III & IV		ALL STAGES	
	before	after	before	after	before	after
1.	-	1	-	-	-	1
2.	7(9)	6(8)	-	-	7(9)	6(8)
3.	- (1)	-(1)	2	2	2(3)	2(3)
4.	-	-	4(5)	4(5)	4(5)	4(5)
TOTAL	7(10)	7(10)	6(7)	6(7)	13(17)	13(17)

Thus, only one case showed an improvement in Functional capacity out of the 13 cases treated with aspirin and sterile water injections, and that case belonged to Stage.II. (Here again the figures in brackets include the 4 cases who were given aspirin alone, and it will be observed that there was no functional improvement in these cases.) The Master Table IIIA of the Appendix shows that she is the same case who showed Grade II improvement, and an improvement of one class in functional capacity. (Case No. 37).

TABLE 21

Cases who received Adrenalin and Inactive Powder during the First Three Weeks in Hospital distributed according to Stage and Grade of Improvement in Activity of the Disease.

STAGES	GRADE				
	I	II	III	IV	TOTAL
Stages I & II	-	-	2(5)	1(3)	3(8)
Stages III & IV	-	-	1	-(1)	1(2)
ALL STAGES	-	-	3(6)	1(4)	4(10).

Thus, of the 4 cases treated with adrenalin and powder for three weeks, no case showed major improvement at the end of that time; 3 of these cases were in Stages I or II, and one case was in Stage III.

The figures in brackets include second admissions, cases treated with adrenalin, but without powder, and cases treated with adrenalin with or without powder for two weeks only. When these are included there are ten cases in all who were treated with adrenalin for a period of two or three weeks as a first treatment. Not one of these ten cases showed major improvement, but three showed minor improvement, which according to Steinbrocker should be disregarded.

TABLE 22

Cases who received Adrenalin and Inactive Powder during the First Three Weeks in Hospital distributed according to Stage and Class of Functional Capacity before and after this Treatment.

CLASS	STAGES I & II		STAGES III & IV		ALL STAGES	
	before	after	before	after	before	after
1.	-	- (1)	-	-	-	- (1)
2.	2(6)	2(5)	-	-	2(6)	2(5)
3.	1(2)	1(2)	1	1	2(3)	2(3)
4.	-	-	-(1)	-(1)	-(1)	-(1)
TOTAL	3(8)	3(8)	1(2)	1(2)	4(10)	4(10).

Thus, of the 4 cases treated with adrenalin and inactive powder for three weeks, no cases showed functional improvement

The figures in brackets include readmissions, cases treated with adrenalin without powder, and cases treated with adrenalin with or without powder for two or three weeks. It will be noted that one of these six additional cases showed an improvement in function (Case No 26 who received adrenalin and powder for 2 weeks during the first period).

The Master Tables VA of the Appendix the details of Class and Grade in these 10 cases treated with adrenalin.

TABLE 23.

Cases who received Sterile Water and Inactive Powder during the First Three Weeks in Hospital distributed according to Stage and Grade Of Improvement in Activity of the Disease after this Treatment.

STAGES	GRADE				
	I	II	III	IV	TOTAL
Stages I & II	-	-	-(1)	1(6)	1(7).
Stages III & IV	-	-	1(2)	2(4)	3(6).
ALL STAGES	-	-	1(3)	3(10)	4(13).

Thus, 4 cases were treated with sterile water injections and inactive powder - one case in Stage II, and 3 cases in Stage III - during the first three weeks in hospital. Major improvement did not occur in any of these cases, and minor improvement occurred in one case.

The figures in brackets include second admissions, cases treated with sterile water and powder for two or three weeks, and cases given rest only for two weeks. When these are included, there are 13 cases in all who were not given any specific therapy for two or three weeks. Not one of these 13 cases showed major improvement, but 3 showed minor improvement.

TABLE 24.

Cases who received Sterile Water and Inactive Powder during the First Three Weeks in Hospital distributed according to Stage, and Class of Functional Capacity before and after this Treatment.

CLASS	STAGES I & II		STAGES III & IV		ALL STAGES	
	Before	After	Before	After	Before	After
1.	-	-	-	-	-	-
2.	1(6)	1(6)	-(1)	-(1)	1(7)	1(7)
3.	-(1)	-(1)	3(5)	3(5)	3(6)	3(6)
4.	-	-	-	-	-	-
TOTAL	1(7)	1(7)	3(6)	3(6)	4(13)	4(13)

Thus, of the 4 cases treated with sterile water and inactive powder for the first three weeks in hospital, no case showed functional improvement.

The figures in brackets include second admissions, cases treated with sterile water and powder for two or three weeks, and 1 case given rest only for two weeks. It will be noted that not one of these additional cases showed improvement in functional capacity.

The Master Table VIIA of the Appendix shows the details of Class and Grade in the 13 cases given no specific therapy.

TABLE 25.

Comparison of the Improvement in Activity of the Disease in Cases treated with Aspirin and Adrenalin, Aspirin and Sterile Water, Adrenalin and Inactive Powder, or Sterile Water and Inactive Powder during the First Three Weeks.

TREATMENT	STAGES I & II		STAGES III & IV		ALL STAGES	
	GRADES		GRADES		GRADES	
	I & II	III & IV	I & II	III & IV	I & II	III & IV
Aspirin & Adrenalin	5	3(4)	1	7(9)	6	10(13)
Aspirin & Sterile Wat.	1	6(9)	0	6(7)	1	12(16)
Adrenalin & Powder	0	3(4)	0	1	0	4(5)
St. Water & Powder	0	1(3)	0	3	0	4(6)
TOTAL	6	13(20)	1	17(20)	7	30(40)

The figures in brackets include second admissions, cases who received aspirin without sterile water injections for three weeks, and cases who received adrenalin without powder for three weeks.

When testing the significance of these results, it is essential to consider Stages I & II and Stages III & IV as two separate groups. The numbers in the groups treated with adrenalin and powder and sterile water and powder are not sufficient to allow statistical analysis. It can only be observed that not one of the 8 cases in these groups showed major improvement, nor did major improvement occur in the 3 additional cases shown in brackets.

When the cases in Stages I & II who were treated with aspirin and adrenalin are compared with cases of similar severity who were treated with aspirin and sterile water there is no significant difference between the two groups ($\chi^2 = 2.81$. ($\chi^2 = 3.841$ when $P = 0.05$)). If the cases who were treated with aspirin, but not given sterile water, are added to the group of cases given aspirin and sterile water making 10 cases in all, there is still no significant difference ($\chi^2 = 2.7$). Nor is there any significant difference when the inclusive figures for the aspirin and adrenalin group, and the aspirin group, shown in Table 25 are compared.

When cases in Stages III & IV who were treated with aspirin and adrenalin are compared with cases of similar severity who were treated with aspirin and sterile water, it is obvious that there is no significant difference between the two groups. This also applies to the inclusive figures.

TABLE 26.

Comparison of the Improvement in Functional Capacity in Cases treated with Aspirin and Adrenalin, Aspirin and Sterile Water, Adrenalin and Inactive Powder, or Sterile Water and Inactive Powder during the First Three Weeks.

TREATMENT	STAGES I & II		STAGES III & IV		ALL STAGES	
	Class Improvement		Class Improvement		Class Improvement	
	marked	slight	marked	slight	marked	slight
Aspirin & Adrenalin	7	1(2)	3	5(7)	10	6(9)
Aspirin & Sterile Wat.	1	6(9)	0	6(7)	1	12(16)
Adrenalin & Powder	0(1)	3	0	1	0(1)	4.
St. Water & Powder	0	1(3)	0	3(3)	0	4(6)
TOTAL	8(9)	11(17)	3	15(18)	11(12)	26(35)

The figures in brackets include second admissions, cases who received aspirin without sterile water injections for three weeks, and cases who received adrenalin without powder for three weeks.

The cases considered to show marked improvement were those in whom there was a gain in class of functional capacity of one class, two classes, or three classes. The exception to this was cases of Class 4 who gained one class in functional capacity. These cases were considered to show only slight improvement and are grouped in Table 26 together with the cases which showed no class improvement in functional capacity, (vide also p.148) under heading "slight".

When cases of Stages I & II who were treated with aspirin and adrenalin are compared with similar cases treated with aspirin and sterile water $\chi^2 = 5.37$ (i.e. $P < 0.05$) which is significant.

When cases of Stages III & IV who were treated with aspirin and adrenalin are compared with similar cases treated with aspirin and sterile water $P > 0.05$, and thus there is no significant difference between these two groups.

The numbers in the groups treated with adrenalin and powder, and with sterile water and powder are not sufficient to allow statistical analysis, but it can be observed that none of the eight cases in these groups showed marked improvement in functional capacity.

TABLE 27.

Cases who showed Grade III or IV Improvement in Activity at the end of the First Period of Treatment, which lasted Two or Three Weeks, distributed according to the Grade of Improvement in Activity shown at the end of a Further Comparable Period of Treatment with Aspirin and Adrenalin.
 (Second Admissions not included).

FIRST PERIOD OF TREATMENT, DURATION - TWO OR THREE WEEKS.	SECOND PERIOD OF TREATMENT DURATION COMPARABLE.	GRADES		
		I & II	III & IV	TOTAL
Aspirin & Adrenalin.	Aspirin & Adrenalin.	1	2	3
Aspirin with or without St. Water.	Aspirin & Adrenalin	3	11	14
Adrenalin with or without Inactive Powder.	Aspirin & Adrenalin	3	6	9
Sterile Water & Inactive Powder.	Aspirin & Adrenalin.	3	3	6
Rest Only.	Aspirin & Adrenalin	0	1	1
TOTAL		10	23	33.

It will be seen from this table that 33 cases who were given various treatment during the first two or three weeks in hospital, were treated with aspirin and adrenalin for an identical period immediately following the cessation of the first treatment, because they had shown only minor or no

improvement in the activity of the disease (Grades III or IV). 10 cases of this 33 proceeded to Grades I or II during this second comparable period of treatment with aspirin and adrenalin, whereas 23 cases still remained in Grades III or IV. It will be observed that there are nine cases in whom treatment was changed to aspirin and adrenalin who showed major improvement by the end of the second period of treatment, but it cannot be concluded that this improvement in activity was due to the change of treatment. Perusal of the individual case records of these nine cases shows that in six of them (Cases 4, 5, 13, 51, 55, & 56.) some improvement in the tests had occurred. Moreover, the unknown effect on activity of a further period of hospital treatment, irrespective of the type of treatment, would make any conclusions from this part of the study unreliable. This was not realised when this section of the work was planned.

It will be noted that twenty three cases of my series have not been included in Table 27. These cases are accounted for as follows :

Seven cases showed Grade I or II improvement in activity at the end of the first period of treatment (Cases 12, 19, 21, 30, 37, 41, & 42.)

Six cases received treatment other than aspirin and

adrenalin during the second period of treatment. (Cases 1, 26, 27, 28, 34, & 35.). For the reasons stated above, no conclusions can be made from the study of the second period of treatment in these cases.

Three cases received rest in bed only for the first period of treatment which lasted one week. In the light of later experience, it is considered that this period is not long enough to allow comparisons, and for this reason these cases have not been included in Table 27 or in the Master Table VII A of the Appendix.

Treatment was discontinued during the second period before an interval exactly comparable to the duration of the first period of treatment had occurred in Cases 11 & 45. These two cases are not included in Table 27.

Finally, in the remaining five cases not included, treatment was discontinued entirely for at least a week before the second period of treatment was commenced. Thus, in these cases (6, 8, 9, 10, & 14.) the periods of treatment were not consecutive.

Treatment was discontinued in ten cases who were receiving aspirin and adrenalin to see if relapse occurred with this manoeuvre. Full details of this procedure can be found in the relevant case records in the Appendix, but the following summary indicates the results :

Case No.2 Treatment was discontinued after six weeks, during the latter three weeks of which the patient had been receiving aspirin and adrenalin. The patient relapsed within two days, and when aspirin and adrenalin was recommenced after one week, rapid remission occurred.

Case No 3 Treatment was discontinued after four weeks, during the latter fortnight of which the patient had been receiving aspirin and adrenalin. There was a relapse within a few days of discontinuation, but she did not revert to her original state. When aspirin and adrenalin was recommenced remission occurred.

Case No 6. Treatment was discontinued after three weeks of aspirin and adrenalin, and the patient gradually relapsed over a period of three weeks to her state one week after admission. When treatment was recommenced, remission occurred.

Case No 7. Treatment was discontinued after six weeks

during the latter three weeks of which the patient had been receiving aspirin and adrenalin. There was a quick relapse, although by the end of two weeks, the patient had not reverted to his state on admission. Unfortunately, it was not possible to recommence treatment because the patient left against advice at this point.

Case No 8. Treatment was discontinued after three weeks of aspirin and adrenalin, and there was a relapse within two days, although the patient did not revert to her original state on admission by the end of a week. When treatment with aspirin and adrenalin was recommenced, remission occurred.

Case No 9. Treatment was discontinued after three weeks of aspirin and adrenalin, and a slow relapse occurred over the next fortnight. The patient did not revert to her original state on admission however. When treatment was recommenced improvement occurred once again.

Case No. 10 Treatment was discontinued after three weeks of aspirin and adrenalin, and the patient relapsed within two days. Treatment with aspirin and adrenalin was recommenced at the end of a week, and the patient gradually improved again.

Case No 30. Treatment was discontinued after three weeks

of aspirin and adrenalin. The patient was observed for another week, and no relapse occurred then or during the month following discharge from hospital.

Case No 39. Treatment was discontinued after eleven weeks, during the latter eight weeks of which aspirin and adrenalin had been given. During the three weeks when the patient was not receiving treatment relapse did not occur, but there was no progress. When aspirin and adrenalin was recommenced, there was further improvement in her condition.

It will be noted that in eight of the ten cases in whom aspirin and adrenalin was discontinued, relapse of varying degrees of severity occurred. In seven of these cases improvement occurred when aspirin and adrenalin was recommenced; the remaining case left the hospital before treatment could be recommenced.

The two cases who did not relapse when treatment with aspirin and adrenalin was discontinued appeared to have reached a quiescent phase, when this manoeuvre was carried out.

TABLE 28.

Cases distributed according to the Subjective Change and Grade of Improvement in Activity after All Treatment.

GRADE	SUBJECTIVE CHANGE						
	Worse	No Change	Sl. Better	Better	Much Better	No Disability	TOTAL
I	-	-	-	-	-	5	5
II	-	-	-	-	14	11	25
III	1	-	1	4	12	2	20
IV	2	1	2	1	-	-	6
TOTAL	3	1	3	5	26	18	56

It will be observed from this table that there is a very definite correlation between the subjective improvement and the Grade of Improvement in Activity in patients of this series who showed major improvement (Grades I & II). The 5 cases who showed Grade I improvement all stated that they had no disability at the end of treatment, and the 25 cases who showed Grade II improvement stated that they had no disability, or else they stated that they were much

improved. In cases who showed Grade III improvement, however, there was a wide scatter of observations ranging from worse to no disability, and it will be observed that in cases who showed Grade IV, 3 cases claimed to be better than prior to treatment.

TABLE 29.

Cases distributed according to the Subjective Change and the Improvement in Class of Functional Capacity after All Treatment.

CLASS CHANGE	SUBJECTIVE CHANGE						
	Worse	No Change	Sl. Better	Better	Much Better	No Disbil.	Total
+ 2	-	-	-	-	5	2	7
+ 1	-	-	1	3	15	15	34
0	3	1	2	2	6	1	15
TOTAL	3	1	3	5	26	18	56

Thus it will be seen that in cases who showed improvement in Functional Capacity there is some correlation with the subjective improvement. The 7 cases who showed very marked functional improvement either felt much better or

considered that they had no disability at the end of all treatment. The 34 cases who improved one class in functional capacity all considered that they had improved; the majority either thought that they were much better or considered that they had no disability. However, in the cases who showed no change in class of functional capacity, there was a wide scatter of observations, and it will be seen that 7 cases either considered themselves to be much better or to have no disability.

Investigation of Certain Tests used to Determine Improvement

The four main tests used to determine improvement in activity have been described in the Methods. It will be appreciated that the Grade of Improvement in Activity was not determined by any one of these tests individually, or even by the four tests collectively, but that they were considered with the other factors indicating activity of the disease when the assessment of Grade was made. Nevertheless, it is interesting to investigate the relationship between each individual test and the Grade of Improvement which was finally allocated.

In the graphs which follow, these four tests viz. the tenderness of joints, range of movement of joints, grip, and swelling of finger joints as determined by

Hart's rings, have been plotted individually against the Grade of Improvement.

The improvement or otherwise in these tests has been plotted after three weeks in the cases where all four tests were carried out, and after all treatment. In this way greater numbers are secured for the graphs, but the observation of the relationship between the improvement in the results of the four tests and the Grade of Improvement actually given, is not invalidated.

The results of the tests after three weeks and after all treatment are marked separately so that the actual gain at the end of all treatment can be seen in each individual case.

Figure 3

The Distribution of Cases after Three Weeks Treatment, and after All Treatment according to Grade Of Improvement in Activity, and the Results of the Grip Test.

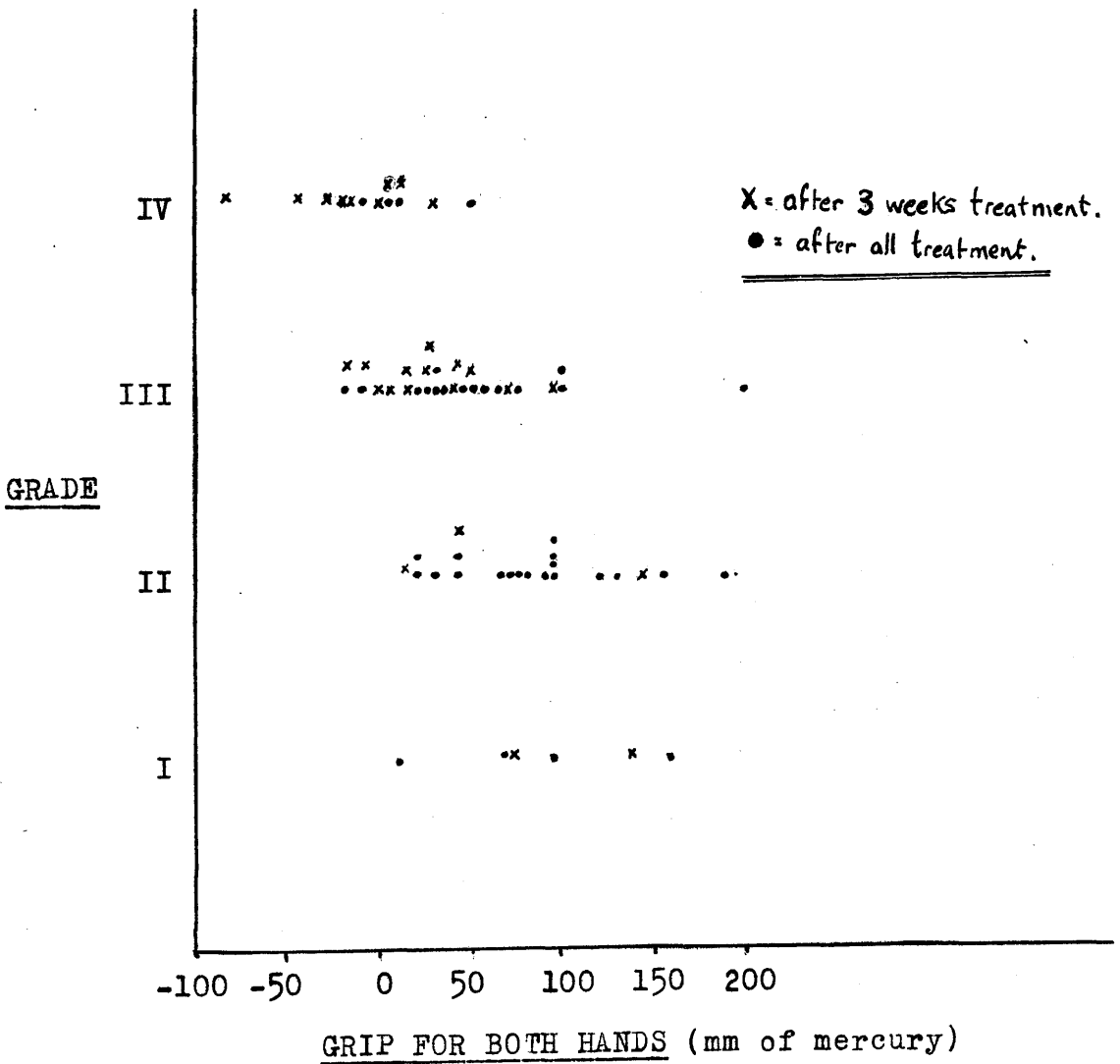


Figure 4

The Distribution of Cases after Three Weeks Treatment, and
after All Treatment according to the Grade of Improvement
in Activity, and the Results of the Rings Test.

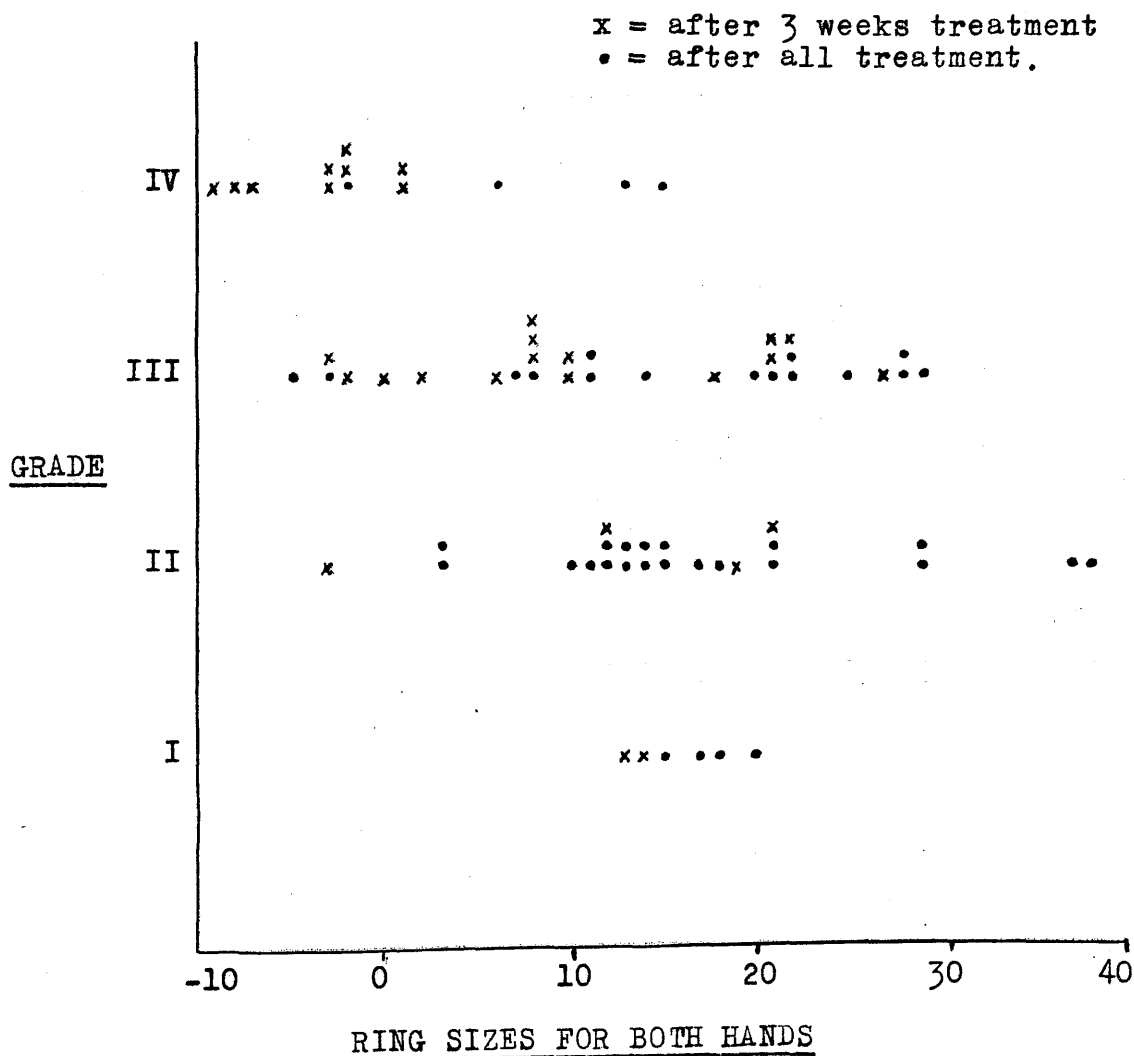


Figure 5.

The Distribution of Cases after Three Weeks Treatment, and after All Treatment according to the Grade of Improvement in Activity, and the Results of the Tests of Movement Range.

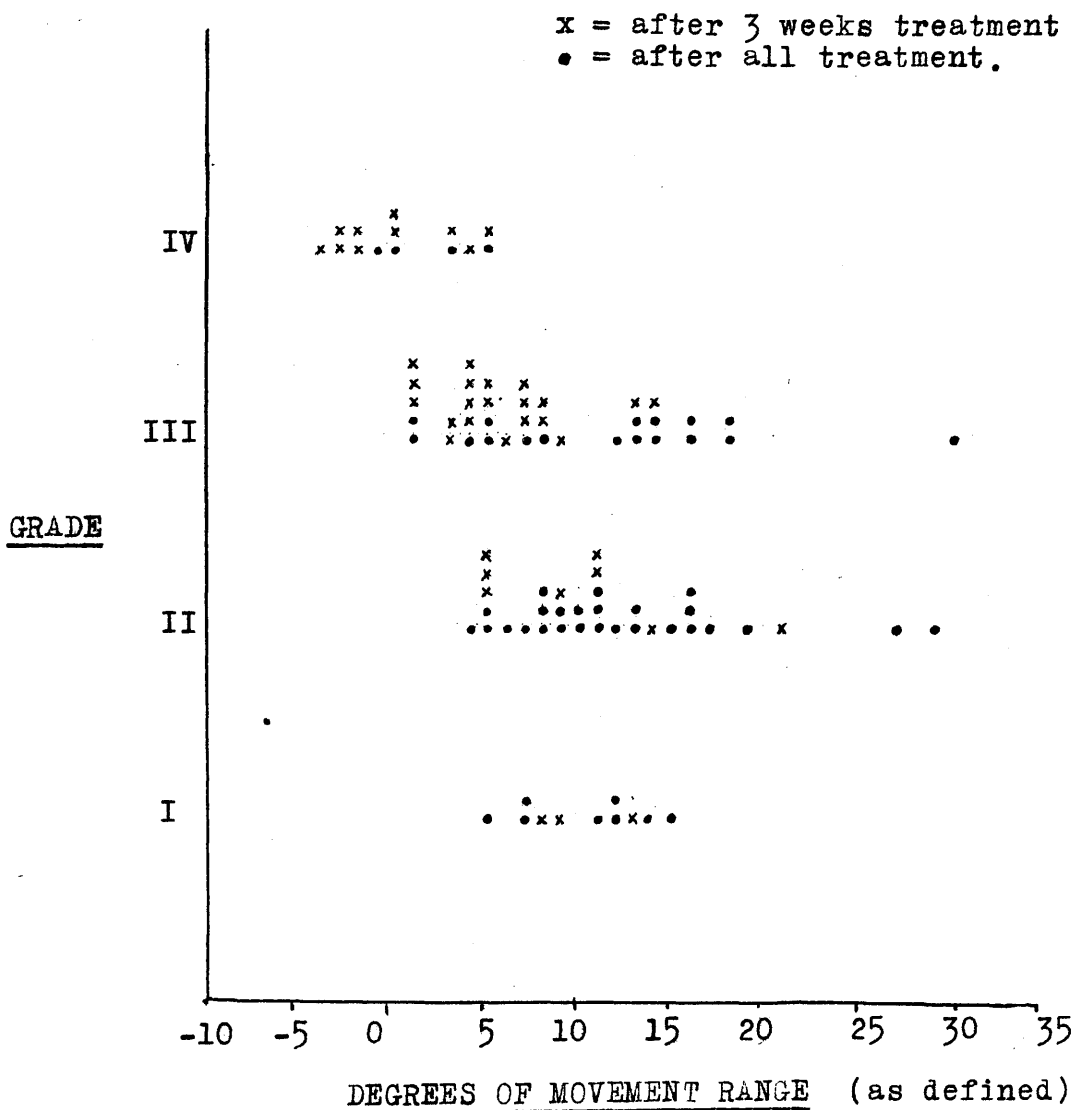
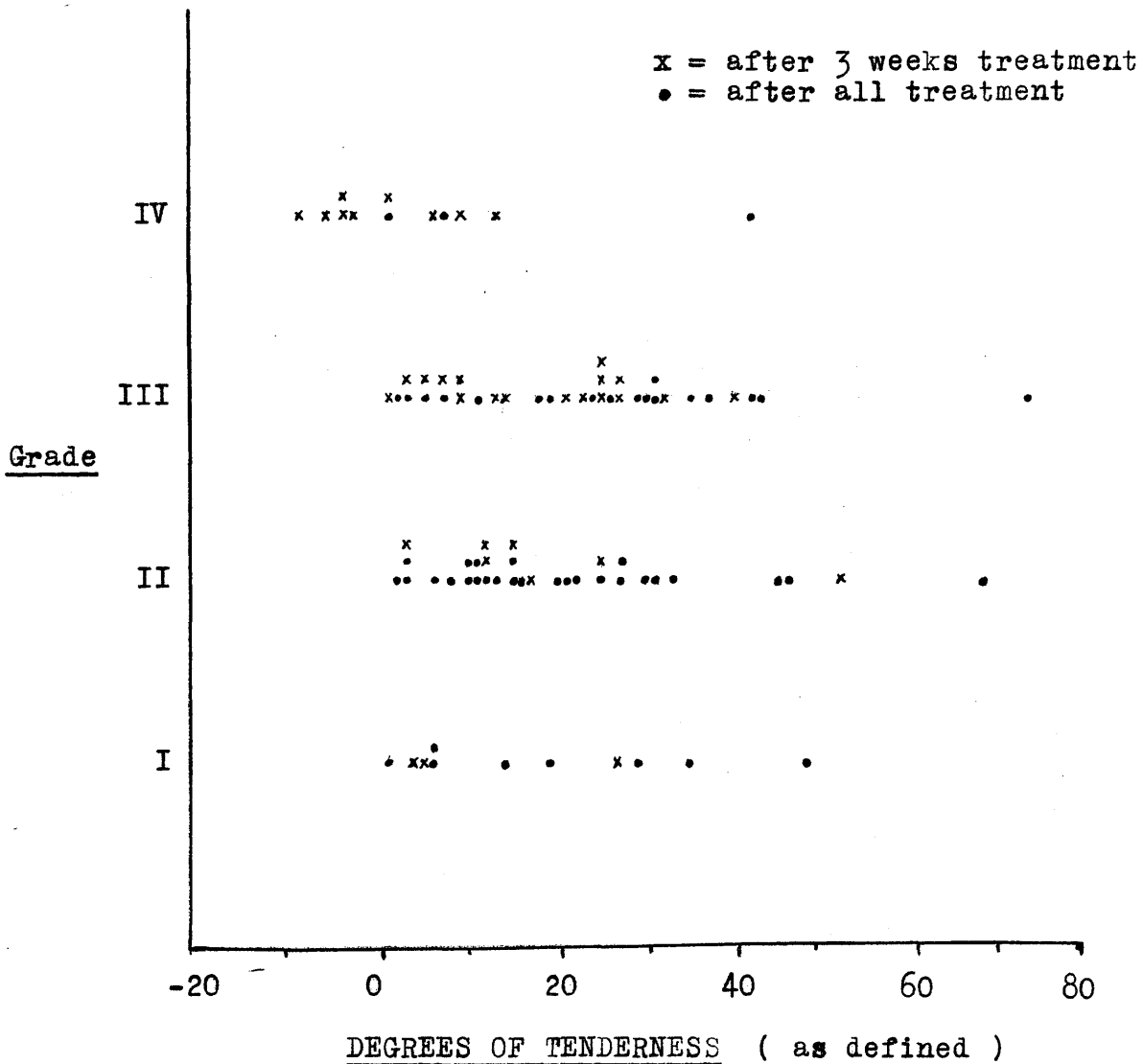


Figure 6

The Distribution of Cases after Three Weeks Treatment, and after All Treatment according to the Grade of Improvement in Activity, and the Results of the Tests used for Tenderness.



The graphs show that there is a correlation between the results of the individual tests used as aids in assessing improvement in activity, and the Grade of Improvement in activity actually given. Generally speaking, as the movement range increased, or the tenderness of joints diminished, or the grip improved, or the swelling of the finger joints decreased, the Grade of Improvement was better.

It must be observed, however, that the scatter of observations in each Grade in all four graphs is very wide, although the general trend is obvious. Thus, the result of any one test cannot be used to allocate Grade of Improvement.

The graphs show also the notable improvement in the tests which occurred in certain individual cases. Thus of the 43 cases in whom the Ring test was performed, 34 cases showed a diminution of ring sizes of over 10 sizes, and indeed 13 cases showed a diminution of over 20 sizes, at the end of all treatment.

Similarly of the 41 cases in whom the Grip test was performed, 24 cases showed a total increase in grip of over 50 millimeters of mercury, at the end of all treatment.

Of the 56 cases in whom the Tenderness test was performed, 25 cases showed a decrease in tenderness of over 20 degrees (as defined in Methods), and of the 56 cases in whom Movement Range was measured, 28 cases showed an increased movement range of over 10 degrees (as defined in Methods).

Results of Special Investigations.

The results on which the calculations in this section are based can be found in the individual case records in the Appendix. For convenience, some of these results have been grouped together in Tables VIIIA & IXA of the Appendix.

The Erythrocyte Sedimentation Rate.

(see over)

TABLE 30.

The Change in the Erythrocyte Sedimentation Rate after
Three Weeks Treatment

TREATMENT	NO. OF PATIENTS	MEAN DIFFERENCE Before - after.	t	REMARKS
Aspirin	15	+ 5.4	$t = 1.02$ $t_{0.05} = 2.145$	NOT significantly different from zero.
Aspirin & Adrenalin	14	+ 6.07	$t = 4.1$ $t_{0.05} = 2.16$	Significantly different from zero.
Adrenalin	5	- 13.8	$t = -2.29$ $t_{0.05} = 2.776$	NOT significantly different from zero.
St. Water & Powder.	4	- 4.00	$t = -0.54$ $t_{0.05} = 3.182$	NOT significantly different from zero.

After All Treatment

NO OF PATIENTS	MEAN DIFFERENCE Before - after.	t	Remarks
56	13.2143	$t = 5.02$ $t_{0.05} = 1.96$	Significantly different from zero.

Thus, in the groups of patients given different treatments for the first three weeks, in whom the erythrocyte sedimentation rate was observed before and after this period, only in the group treated with aspirin and adrenalin is there any significant difference from zero. However, it will be observed that the mean difference in this group is only 6.07 mm which, in view of the experimental error involved in this test, makes one regard the significance of this result with caution.

On the other hand in this series of fifty six cases, the mean difference in the readings before and after all treatment was 13.2 which is significantly different from zero. Such a fall in the erythrocyte sedimentation rate deserves comment.

Blood Uric Acid.

(see over)

TABLE 31.

The Change in the Blood Uric Acid after Three Weeks Treatment.

TREATMENT	NO OF PATIENTS	MEAN DIFFERENCE Before - after.	t	REMARKS
Aspirin	15	+ 0.44	$t = 3.05$ $t_{0.05} = 2.145$	Significantly different from zero.
Aspirin & Adrenalin	14	+ 0.34	$t = 2.3$ $t_{0.05} = 2.16$	Significantly different from zero.
Adrenalin	5	0.00	not required	NOT significantly different from zero.
St. Water & Powder.	4	+ 0.08.	$t = 0.21$ $t_{0.05} = 3.18$	NOT significantly different from zero

Thus, in the groups of patients given either aspirin and adrenalin or aspirin during the first three weeks of treatment the mean difference in the readings before and after treatment are significantly different from zero, whereas the groups given either sterile water and powder, of adrenalin show no significant difference from zero in these results. It should be noted that aspirin is the common factor in the first two groups.

Serum Potassium and Serum Sodium.

Examination of the results of these estimations showed that there was no consistent pattern in the cases treated for three weeks with aspirin alone, aspirin and adrenalin, adrenalin, or sterile water and powder. Any variation which occurred was irregular, and the figures in all groups remained within normal limits.

Urinary 17-Ketosteroids and 11 Oxy-corticoids.

Unfortunately, it was possible to have these estimations carried out in a small number of cases of the series only.

The 17-ketosteroid estimation was done in ten cases before treatment was started, and the excretion of these steroids in the urine was found to be low in eight patients (vide Appendix Cases 33, 36, 38, 39, 40, 41, 44, & 45.), and normal in two cases (vide Cases 42 & 37).

Further estimations were carried out in seven of the ten cases, but no definite pattern could be discerned. In two cases (No. 40 & 38) the excretion remained low following treatment with aspirin and adrenalin ; in one case (No. 37) there was little change from normal; in three cases (No. 33, 39, & 41.) the excretion rose following treatment with aspirin and adrenalin. The

results in the remaining case (No. 36) are most interesting. It will be observed that the pre-treatment level in this case is slightly low, but during "treatment" with sterile water and inactive powder a steady rise in the excretion of 17-ketosteroids occurred, until at the end of four weeks of this procedure the excretion was double that of the pre-treatment period.

The urinary corticoids were estimated before treatment in three cases (No. 33, 34, & 35), but it was only possible to carry out further estimations during treatment in two of these cases (No. 33 & 35). There was no alteration in the corticoid excretion during treatment with aspirin and adrenalin in these two cases.

Eosinophil Counts.

Daily eosinophil counts were carried out for varying periods in twenty two cases. In twenty one of these cases the effect of treatment with aspirin and adrenalin on the circulating eosinophils was observed, and in the remaining case the effect of adrenalin and powder. In four of the group of twenty one cases the effect of giving adrenalin without aspirin was observed. In five of the group of twenty one cases the effect of giving sterile water and powder was observed. In six of the

group of twenty one, the effect of giving aspirin without adrenalin was observed. The results are shown on a graph in the individual case records of the Appendix, (Cases No. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 25, 27.), but are summarised below.

Eosinophil Counts during treatment with Aspirin and Adrenalin

Cases showing over 50% fall	:	7.
Cases showing less than 50% fall	:	8
Cases showing no change.	:	6
Total.	:	<u>21</u>

Eosinophil Counts during treatment with Aspirin.

Cases showing over 50% fall	:	0
Cases showing less than 50% fall	:	0
Cases showing no change.	:	<u>6</u>
Total	:	<u>6</u>

Eosinophil Counts during treatment with Adrenalin

Cases showing over 50% fall	:	1
Cases showing less than 50% fall	:	2
Cases showing no change	:	<u>2</u>
Total	:	<u>5</u>

Eosinophil Counts during treatment with St. Water & Powder.

(over)

Cases showing over 50% fall	:	0
Cases showing less than 50% fall	:	0
Cases showing no change.	:	<u>5</u>
Total	:	<u>5</u>

Note : 50% fall means a fall in the circulating
eosinophils to half the lowest count observed
before the phase of treatment in question.

Blood Pressure.

Repeated estimations of the blood pressure showed that there was no substantial change during treatment with either adrenalin or aspirin and adrenalin. It is interesting to note that four cases of the series had hypertension. They showed no untoward effects with prolonged adrenalin administration, and no noteworthy alteration of blood pressure occurred.

Outpatient Record

An attempt was made to follow up the patients after discharge from hospital for at least a year. The numbers who returned were disappointing, although this may have been due in large measure to the relative isolation of the hospital and the difficulties in transport.

TABLE 33.

Cases who returned as Out-patients distributed according to Class of Functional Capacity on Discharge and Class of Functional Capacity on Return.

CLASS ON RETURN AS AN OUT PATIENT																	TOTAL			
1																4				
one month	3-6 months	6 months to one year	one month	3-6 months	6 months to one year	one month	3-6 months	6 months to one year	one month	3-6 months	6 months to one year	one month	3-6 months	6 months to one year	one month	3-6 months		6 months to one year		
CLASS AT TIME OF DISCHARGE	1.	Stages I and II	16	5	6	4	9	3	-	1	-	1	-	1	21	15	10			
		Stages III and IV	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-			
		Stages I and II	-	-	-	4	3	2	-	-	-	-	-	-	4	3	2			
		Stages III and IV	-	-	-	10	6	3	-	1	2	-	-	2	10	7	7			
	3.	Stages I and II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Stages III and IV	-	-	-	-	-	1	1	1	1	-	-	-	1	1	2			
		Stages I and II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	4.	Stages III and IV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Stages I and II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Stages III and IV	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-			1
	TOTAL	Stages I and II	16	5	6	8	12	5	-	1	-	1	-	1	25	18	12			
		Stages III and IV	-	-	1	11	6	4	1	2	3	-	-	2	12	8	10			

Grade of Improvement on Return as an Outpatient.

Stages I & II

Table 32 shows that 25 cases reported one month after discharge, 18 cases reported between three and six months after discharge, and 12 cases reported seven months to a year or more after discharge. The following is a summary of these results :

	Grades I & II	Grades III & IV	Total
On discharge	17	8	25
After 1 month	14	11	25
On discharge	15	3	18
After 3-6 months	4	14	18
On discharge	10	2	12
After 6 months - 1 year or over	4	8	12

Stages III & IV.

Table 32 shows that 12 cases reported one month after discharge 8 cases reported 3 to six months after discharge, and 10 cases reported seven months to a year or over after discharge. The following is a summary of these results:

	Grades I & II	Grades III & IV	Total
On discharge	6	6	12
After 1 month	3	9	12

	Grades I & II	Grades III & IV	total
On discharge	3	5	8
After 3-6 months.	1	7	8
On discharge	2	8	10
After 6 months -	1	9	10
1 year and over.			

Thus, in Stages I & II, 14 out of the 17 cases who returned after one month, and who had shown major improvement (Grades I or II) improvement in hospital, retained that improvement during the first month as outpatients. The remaining 3 cases relapsed (Grades III or IV).

Of the 15 cases who returned after 3 - 6 months, and who had shown major improvement in hospital, 4 retained that improvement after 3 - 6 months as outpatients. The remaining 11 cases relapsed.

Of the 10 cases who returned after six months, and who had shown major improvement in hospital, 4 cases retained that improvement after six months and in some cases over a year. The remaining 6 cases relapsed.

In Stages III & IV, of the 6 cases who returned after one month, and who showed major improvement in hospital, 3 retained that improvement after one month as outpatients.

The remaining three cases relapsed.

Of the 3 cases who returned after 3-6 months, and who showed major improvement in hospital, one case had retained that improvement after 3-6 months as an outpatient.

Of the 2 cases who returned after 6 months, and who showed major improvement in hospital, no case retained that improvement after 6 months. One case, however, who had shown Grade IV improvement in hospital, reported after a year, and was found to have no sign of rheumatoid arthritis. (This occurred in Case No.7, and is shown in Table 32, but not revealed in the above analysis).

Class of Functional Capacity on Return as an Outpatient.

The following is a summary of the results of Table 33 :

Stages I & II

	Cl. 1.	Cl. 2.	Cl.3.	Cl.4.	Total
On discharge	21	4	-	-	25
After 1 month	16	8	-	1	25.

	Cl. 1	Cl. 2	Cl. 3.	Cl. 4	Total
On discharge After 3-6 months.	15 5	3 12	0 1	- -	18 18
On discharge After 6 months - 1 year and over.	10 6	2 5	- -	- 1	12 12
<u>Stages III & IV</u>					
	Cl.1.	Cl.2.	Cl.3.	Cl.4.	Total
On discharge After 1 month.	1 -	10 11	1 1	- -	12 12
On discharge After 3-6 months	- -	7 6	1 2	- -	8 8
On discharge After 6 months - 1 year.	- 1	7 4	2 3	1 2	10 10

Thus, in Stages I & II, of the 21 cases who returned after on month, and who had attained Class 1 Functional Capacity in hospital, 16 cases maintained this class during the first month as outpatients.

Of the 15 cases who returned after 3-6 months, and

who had attained Class 1 Functional Capacity in hospital
5 cases maintained this class after 3-6 months as outpatients.

Of the 10 cases who returned after 6 months, and
who attained Class 1. Functional Capacity in hospital,
6 cases maintained this class after 6 months as outpatients.

In Stages III & IV only 1 case who returned as an out-
patient had attained Class 1 Functional Capacity in hospital,
and this case did not retain this class during the first
month as an outpatient.

No case who had attained Class 1. Functional
Capacity in hospital returned as an outpatient in 3-6
months, but of the 7 cases who had attained Class 2 in
hospital, 6 cases maintained this class during 3- 6 months
as outpatients.

No case who had attained Class 1. Functional
Capacity in hospital returned as an outpatient after 6
months, but here again Case No 7. who was Class 4 at the
time of discharge, had attained Class 1 when he reported
after 1 year. Of the 7 cases in Class 2 at the time
of discharge from hospital who reported as outpatients
after 6 months, 4 cases had maintained that class.

Thus, Table 32 shows that the majority of patients who returned as outpatients did not retain the improvement in activity of the disease which they had gained in hospital. However, the percentage of cases who relapsed during the first month as outpatients was lower than the percentage who relapsed after that time. (6 cases of the 23 cases (or 26%) who returned during the first month having shown Grade I or II improvement in hospital, relapsed to Grades III or IV. 13 cases of the 18 cases (or 72%) who returned after 3-6 months having shown Grade I or II improvement in hospital, relapsed to Grades III or IV.)

A feature which is not shown in this table, however, is that some of the cases who returned as outpatients showed progression of the disease in addition to relapse. Thus, during the course of the outpatient surveillance, 1 case in Stage I progressed to Stage II within 6 months, another progressed from Stage II to Stage III within one month, and 3 cases progressed from Stage II to Stage III after 6 months. Finally, one case in Stage III progressed to Stage IV after six months.

It must be observed that the defaulter rate in outpatient attendance is not so high as the grouping in time intervals of Table 32 makes it appear. Although only

thirty seven cases returned during the first month, ten more cases of the series of fifty six cases were seen either during the period 3-6 months, or after 6 months.

Thus the defaulter rate was actually nine cases out of fifty six.

DISCUSSION AND CONCLUSIONS.

The most remarkable feature of the literature which has accumulated on the subject of rheumatoid arthritis, apart from its volume, is the extraordinary confusion and contradiction of opinion about the efficacy of the various drugs which have been used in treatment. Although this diversity of opinion has existed since reports on the results of treatment were first published, the great increase of interest in the disease which followed the discovery of cortisone, has emphasised it.

Before 1949, chrysotherapy was the main form of treatment used, but Robinson et al. noted in 1953 that although the literature at that time contained reports of more than seven thousand cases treated with gold preparations, opinions remained diverse regarding the value of this treatment. During the years which followed, this pattern has been repeated both with cortisone and some of the other drugs which have been used recently. Probably the best example of all is to be found in the controversy which followed Lewin and Wassen's report that the administration of desoxycorticosterone acetate and Vitamin

C had some therapeutic value in the disease. There are few physicians today who think this form of treatment has any value, yet McKendry et al. (1951) reviewing a number of reports by other workers on the subject, found that twenty two favoured the original claim and eighteen did not support it.

A clear understanding of the reasons for this confusion is essential before original work on the subject of rheumatoid arthritis is attempted. I first began the study of this series of cases in an attempt to elucidate the problem, because it was obvious from the tangle of reports still being produced in 1951, that there were considerable difficulties in the assessment of treatment, of which I, in common with a number of physicians who had published work on the subject, was unaware. I hoped that in the course of studying a series of cases treated in hospital with simple treatment the reasons for the diversity of opinion on the subject of treatment would become apparent, and that I would be able to devise a system of assessing the results of treatment which would give full consideration to the errors which caused the confusion.

As a result of this study, I now believe that the

major sources of error in any therapeutic trial involving cases of rheumatoid arthritis fall under three main headings :

(1) Before treatment is started mistakes can be made because of the difficulties in diagnosis, and through failure to exclude certain types of case from the series, or to classify the remaining cases according to the severity of the disease.

(2) During treatment the difficulties inherent in the actual tests used to assess progress in individual patients provide a fruitful source of error, as does the failure to realise that it is necessary to consider separately improvement in function and improvement in activity of the disease.

(3) At the end of each phase of treatment, the difficulty which occurs in converting the results of these individual tests into terms which will allow comparative assessment between cases in any given series, and between one series and another can easily lead to errors in the presentation of these results.

Before the main purpose of this thesis can be discussed, namely the results of simple treatment in a series of cases, it must be considered if the methods used to

achieve these results have surmounted the major errors noted above.

Diagnosis, Selection, & Classification according to Severity.

The classification advocated by Copeman, and described under Methods in this thesis was found to be satisfactory in establishing the diagnosis. The most important single factor in making a diagnosis of rheumatoid arthritis was found to be the history and clinical examination of the patient. Radiology of the affected joints was more useful in the differentiation from other conditions such as gout or osteoarthritis, than as an actual test of diagnosis, especially in the early stages of the disease. The blood uric acid helped to exclude gout, and the erythrocyte sedimentation rate was used as a guide to, but not an index of, activity of the disease.

The most difficult diagnostic problem was found to be the differentiation between acute rheumatic fever and rheumatoid arthritis during an acute exacerbation. Despite the diagnostic criteria available, I was not always certain of the diagnosis in this type of case at the beginning of treatment, although in the doubtful cases subsequent events

proved the diagnosis of rheumatoid arthritis to have been correct.

The only form of selection practised was the exclusion from the series of any case who had suffered from the symptoms of the disease for less than three months, or of any case in the terminal stage of the disease in whom the disease was considered to be burned out. This follows the recommendations of Steinbrocker et al. (1949) which were afterwards adopted by the American Rheumatism Association, but it must be noted that some authors are more strict about the cases admitted to a series. For example, Fraser (1945) in a well controlled series of cases in whom the therapeutic effects of gold were investigated, in addition to excluding burned out cases, admitted to his series, only cases who had suffered from the disease for over two years. He considered that in this way he had eliminated the high rate of remissions which he believed to be common in the first two years of the illness. In addition, he imposed a critical age limit of admission for both sexes. However, such rigid selection is only possible in a rheumatic unit, and would have defeated

my requirements of a representative sample of cases suffering from the disease referred for hospital treatment. This was best fulfilled by admitting, within the limits defined, all consecutive admissions to the series.

The importance of classifying the cases according to their severity is clearly illustrated in Table 11. One of the commonest mistakes made by authors reporting on the results of treatment of this disease is the tendency to gather the records together in a confused mass in order to state a percentage of improvement in the number of cases considered. Such a procedure is wishful, and results in unjustified claims. Steinbrocker (1946) has indicated the fallacy in this type of presentation. He noted that it was very common to find workers claiming " 70% or more of this series responded to treatment" yet no cogniscance had been taken of the number of cases in whom the response was slight or merely subjective, and moreover, no indication had been given of the severity of the illness in the cases who responded.

Table 11 shows that the improvement in activity which occurred in my series was much more pronounced in the mild and moderate cases of the disease, than those in whom it was severe or terminal. When all stages of the

disease are considered together, the better results achieved in the former group have a favourable influence of the series as a whole. Thus, the group of cases in Stages I or II showed 67% major improvement, whereas the group of cases in Stages III and IV showed only 34% major improvement. When the fifty six cases of all stages were considered together, 54% showed major improvement.

Another method of subdividing the series on admission was considered. The grouping of cases according to the duration of disease is common practice in some diseases, and has been used by several workers on rheumatoid arthritis. However, this disease which has torpid, fluctuating, and fulminating forms, and which is subject to sudden spontaneous remission lasting months or years, is not suitable for this type of classification. The rate of advance of the disease varies from case to case, and it is not uncommon to find a patient with advanced disease after a relatively short illness, and vice-versa. Table 9. shows that although in general terms there is a relationship between the stage of the disease, as defined, and the duration of the disease, there are too many exceptions to allow duration of illness to be taken as

measure of the severity of the disease.

No great difficulty was experienced in placing the cases of this series in the correct stage. The really important point of differentiation was the separation of the moderate cases from the advanced cases (Stage II from Stage III). This distinction was made largely on clinical grounds, although occasionally, in the case of a doubtful joint, radiology was helpful in revealing the advanced destructive changes of Stage III. Sometimes the presence of osteoarthritis in the knee joints raised the question as to whether this was merely associated with rheumatoid arthritis, or had occurred as the result of it. Case 20 is an example of this dilemma. This case was placed, finally in Stage II because I felt that a good result occurring in this stage, would give a less optimistic view of the treatment than a good result in Stage III, where major improvement is more difficult to achieve. This principle in doubtful cases, of placing the patient in the less advanced of the two stages considered, is recommended.

The Tests used to determine the Functional Capacity and the Activity of the Disease in the Individual Patient.

Reference has already been made in the chapter on Methods to the great difficulty which is experienced by all workers in determining improvement in activity. It is not easy to devise tests for something which manifests itself in so many different ways, some of which cannot be measured at all. Moreover, the tests for those features of activity which can be measured, are of necessity crude, and subject to error.

One of the reasons why so much stress is laid on the dangers of assessing cases by functional improvement alone, is the undoubted influence exerted by psychological factors on performance. Such an influence, of course, is not limited to any particular disease, as Wolf (1950) noted when he showed that conditioning and suggestion have a very definite influence on the action of chemical agents given in treatment. For some reason, however, this influence is particularly active in cases of rheumatoid arthritis, and Quin et al, (1950) go so far as to say that any substance given as treatment by injection in this disease, will produce transient subjective improvement in two thirds of cases.

There are few tests available to the general physician without special equipment which are wholly objective. Indeed, the measurement of joint swelling is the only test, which one can say with certainty, is of this type. The remainder are linked in varying degree with function, and pain is their common denominator. Pain influences the patient's subjective sensation of wellbeing, and also affects the tests which involve the movement of a painful joint, or pressure on that joint. Thus, the movement range, the tenderness, and the grip tests are to a certain extent tests of function as well as activity, and function, in turn, may be favourably influenced by the patient's desire for improvement.

As far as possible in this work, I tried to separate function from activity. Entirely different criteria were used for the assessment of improvement of these two factors. Table 13 and 14. show that the improvement in function which occurred in the series is more marked than the improvement in activity, yet a definite association has resulted as is shown by Table 15. Although this association is strong, it is doubtful if it is statistically significant, because Table 16 indicates that obvious functional improvement is reflected by major improvement in

activity in only 74% of cases in whom it occurred. It would appear then, that there is a sound foundation for the recommendation by the New York Rheumatism Association that functional improvement and improvement in activity should be considered separately.

Finally, the recording of the various tests in the individual case reports of some of the authors on this subject tends to be a cumbersome affair. Reference to my case records in the Appendix of this work, will, I think, show that the method of presentation which I have devised are simple and easy to interpret.

The Presentation of Results to Allow Comparison.

The assessment of improvement in functional capacity, and the conversion of the results of the tests and other criteria used to ascertain functional improvement into terms which allowed comparison, was found to be much easier than the corresponding conversion of the results of tests and criteria used to determine improvement in activity. The classes of functional capacity as defined are clear cut, and combining the patient's own report with the nursing report, personal observation of the patient's activities, and the various performance tests used, I had no difficulty

in placing any of the cases of my series in the correct class at the end of each phase of treatment. On the other hand the difficulties associated with the criteria of activity and the various tests used which have been described above make the grading of improvement in activity a more formidable task.

The most important differentiation to be made, of course, is between Grade II and Grade III improvement in activity. There is no difficulty in deciding when a case has undergone complete remission (Grade I) and has no signs of activity whatsoever, and the recognition of that fact that the activity of the disease is undiminished (Grade IV) is equally easy. The definitions of Grade II and Grade III, however, are a little ambiguous, and could be misinterpreted. It will be observed that the erythrocyte sedimentation rate may be elevated in both grades, and that the main difference between the two grades is that whereas "minimal joint swelling" and "minimal residual activity" may be present in Grade II, "joint inflammation only partly resolved", "decreased but not minimal joint swelling" and "residual inflammation" are the main features which distinguish Grade III.

Thus, for example, the placing of a patient in Grade

II or Grade III could depend on the decision whether residual joint swelling is "minimal" or "decreased but not minimal". Clark (1951) has criticised also the criteria used by Steinbrocker et al. to determine rheumatoid activity. He stated that where systemic signs of the disease are minimal, objective signs may be few, that joint swelling may be slight, and not always easily measured, and that the elimination of restriction of joint mobility other than associated with irreversible change is not easily assessed and joint movement may be influenced by placebo measures.

I found, at the beginning, that there was a definite tendency for me to place patients at the end of each phase of treatment in a better grade than careful analysis of the criteria indicated. In retrospect, I think that the reason for this was that considerations of function often obtruded and in some cases created an erroneous first impression. As a result, I tried to be as severe as possible in the decision to place a patient in Grade II rather than Grade III. Any indication that the signs of joint inflammation were only partly resolved automatically placed a patient in Grade III, and if any doubt existed, that patient was placed in Grade III, not Grade II, to avoid

over optimistic assessment.

The difference between the assessment of functional improvement, and the improvement in activity of the disease in some cases, is well shown by the cinematographic records. Thus, for example, dramatic improvement in functional capacity occurred in Case 8, after three weeks treatment with aspirin and adrenalin. During this time, she improved from Class 3 to Class 1. yet there were indications still present that joint inflammation was only partly resolved, and she was given Grade III improvement in activity. Similar functional improvement without corresponding improvement in activity was also observed in Case 15 after three weeks treatment with aspirin and adrenalin, in Case 18 after six weeks treatment, in Case 43 after six weeks treatment, and in Case 44 after six weeks treatment with aspirin and adrenalin.

Case 12 provides a good example of the point made above about the difference between minimal joint swelling and decreased joint swelling. At the end of three weeks treatment with aspirin and adrenalin, this patient apparently showed no residual inflammation of the affected joints, and was considered to have shown Grade II improvement, yet it will be seen that after a further three

weeks treatment with aspirin and adrenalin, the ring sizes fell by a further eighteen sizes. This finding casts some doubt on the assumption that the joint swelling was minimal when Grade II was allocated. On the other hand, justification for the strictness in grading is seen in Case 2 (first admission). In this case, at the end of ten weeks treatment, the only indication of residual activity, apart from moderate elevation of the erythrocyte sedimentation rate, was slight tenderness and limitation of movement of the left ankle. On this evidence she was considered to have shown Grade III improvement in activity. The rapid deterioration in her condition which occurred within a week of discharge from hospital indicates that this pessimism was justified.

The scatter diagrams in Figures 3 - 6 (pp. 173 - 176) throw some light on the effectiveness of the individual tests in establishing the grade of improvement. The correlation which is shown for the series between the results of the individual tests and the grade allocated to the patient is evident, but the scatter of observations is wider than one would have wished. This is in part accounted for by the fact that the initial readings for

each test varied from case to case, with the result that some cases had, for example, to lose more tenderness, or gain more movement range than others in order to attain the same grade of improvement in activity. These differences, of course, are to a certain extent linked with the stage of the disease, but this is not the complete explanation of the wide scatter of observations. Probably a more important factor is the fact that there were other criteria, in addition to the four tests, which influenced the decisions regarding grade of improvement. Such factors as the erythrocyte sedimentation rate, vaso motor imbalance, extra articular activity, and the occurrence of new rheumatoid processes, were also considered in assessing the grade of improvement in activity. There is no way of measuring some of these criteria, and to a certain extent clinical judgement had to be used in the final allocation of grade.

One of the conclusions I have drawn from the study of this series is that clinical judgement should be relied on as little as possible in assessing the results of treatment in rheumatoid arthritis. This is especially true in the case of physicians untutored in the numerous

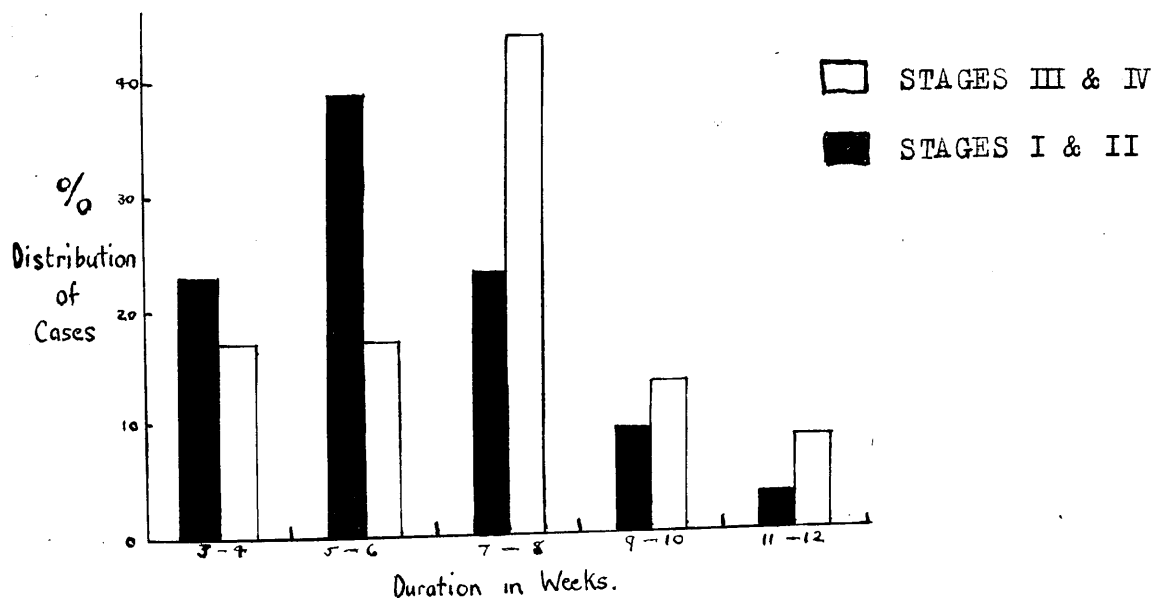
pitfalls which have been described in some detail. It is indeed unfortunate that so few really objective tests of improvement in this disease exist, and that results can vary so much according to the personal interpretation of these tests which are less objective. The greatest source of error is, I think, in the confusion of function and disease activity, and it is in this respect that clinical judgement can play false. The cinematographic record is in a way a record of the visual clinical impression of progress at the time. It is however, much more a record of functional capacity than activity of disease, and has already been shown in the film, such functional capacity does not always reflect the activity of the disease.

Improvement in functional capacity will give temporary benefit to the patient, but does not mean that the disease is alleviated or cured. This lesson was emphasised recently and in dramatic fashion in the case of cortisone. It may be of significance that the improvement seen in a few cases of my cinematographic record are reminiscent of all the cases seen in Hench's original film.

The Results of Treatment in Hospital for a period ranging from Three to Twelve Weeks.

I have already referred to the improvement in activity of the disease which occurred in this series, and which is shown in Table 11. The general belief that such improvement is more easily obtained in the earlier stages of the disease has been confirmed. A corollary to this conclusion, namely that patients in the later stages of the disease, require longer in hospital before improvement occurs, and even then the improvement is not so marked, is noted.

Table 2. shows that the mean duration of treatment in the less severe stages was 6.2 weeks and in the later stages 7.3, but the fact that treatment was more prolonged in the later stages is best shown in the following histogram in which the percentage distribution of cases according to the duration of treatment is recorded :



In Table 12, the strictest possible analysis of the results in the series has been made. Two cases in whom the diagnosis might be queried, and another case who received only sterile water injections and inactive powder have been excluded from this table. In addition, another eleven cases, in whom the disease was mild and probably less active, are omitted. Despite these exclusions, the results are practically identical, which indicates that the results in the series as a whole have not been influenced by the inclusion of these cases.

The possibility also occurred to me that cases in whom there had been a recent acute exacerbation of arthritis before admission, might show more rapid and complete improvement in activity, than those in whom the disease was subacute or chronic. In the following table thirteen cases in whom the disease was more or less acute on admission have been excluded from the series.

STAGE	GRADE		TOTAL
	I & II	III & IV	
Stages I & II	16 (64%)	9 (36%)	25
Stages III & IV	6 (33%)	12 (67%)	18
ALL STAGES	22	21	43

Here again, it would appear that the inclusion of cases admitted during an acute exacerbation has made little difference to the results of this series. This study suggests that the state of activity of the disease whether acute, subacute, or chronic on admission, has little or no influence on the results of treatment, remembering, of course, that all cases had active disease before they were admitted to my series. On the other hand, as has been stated, the stage of the disease has a considerable influence on the results of treatment.

Fifty three of the fifty six cases of my series were given aspirin and adrenalin for at least one phase of their treatment, during the period of observation. If the other three cases, one of whom received aspirin and sterile water only, one adrenalin and powder only, and the other sterile water and powder only, are excluded from the series, there is no material difference in the results, viz:

STAGE	GRADE		TOTAL
	I & II	III & IV	
Stages I & II	20 (63%)	11 (37%)	31.
Stages III & IV	8 (36%)	14 (64%)	22
ALL STAGES	28	14	52.

Some confirmation of the substantial reduction in activity of the disease which is shown in the results of all treatment in this series, is found in the reduction of the erythrocyte sedimentation rates which occurred, and which is illustrated in Table 30.

The improvement in functional capacity which occurred during the period of observation was even more marked than the improvement in activity. This is seen in Tables 13 and 14, which also show that improved function occurred more readily in the mild and moderate stages of the disease, than in the severe and terminal stages.

Comparison with the Results of Other Workers.

A melancholy comment on the disorder which exists in the literature on this subject, is that, because of the differences in diagnostic criteria, because of failure to classify cases according to their severity, and because of indefinite expression of improvement and in many instances lack of proper controls, it is impossible in the great majority of cases to compare one series with another.

One of the most important pieces of information, which one must have before any conclusions are drawn, or comparisons made, is that concerning the natural course

of the disease. Unfortunately, very few studies exist which provide this information. Short and Bauer (1948) who have studied this aspect of the problem stated that they found only twelve such investigations, and only a few of those gave sufficient information to allow comparison. Moreover, the difficulty is increased, as Cecil and Archer (1926) observed, by the fact that it is impossible to collect a true control series, because nearly every patient in any series of cases has had some form of treatment, (Table 10, shows that only 9 cases of my series had not received previous treatment, and in some cases of the remainder several forms of treatment had been given).

Short and Bauer reported two hundred and fifty patients who had been observed for an average time of 9.6 years, and who had been treated with simple measures such as rest, analgesics, diet, physiotherapy, and orthopaedic measures where indicated. When the thirty eight cases of ankylosing spondylitis (which is considered by most physicians in this country as a different disease from rheumatoid arthritis) are omitted, their results were 54.6% improved, 11.8% stationary, and 33.6% worse.

Ragan (1949) has followed up a series of three hundred and seventy four cases, who received varying forms of therapy - in some cases little or no treatment - for

a period of five years and over, and found at the end of that time that 26% had no evidence of arthritis, and 22% had minimal complaints.

Coss (1953) has stated that any statement regarding the value of a method of treatment in rheumatoid arthritis must only be tentative, unless a large number of cases are studied, and followed up for several years. He illustrated this point with a table in which the results at the end of treatment in two hospitals were compared. In one hospital treatment consisted of conservative, orthopaedic, and medical measures such as Short and Bauer described; in the other hospital many so-called specific remedies were given. In the former hospital 53.2% of cases were improved at the end of treatment (15.2% in remission, and 38% moderate or slight), whereas in the latter hospital 48% of cases were improved (26% in remission and 22% with occasional joint pains).

These are startling figures, and make one hesitate to make any claims for a form of treatment, unless the results are completely unequivocal. They indicate, also, the need for further studies of a similar nature. The series which is presented in this thesis, granted that no specific claims are made for the combination of aspirin

and hyperduri~~c~~ adrenalin as a form of treatment, could be regarded as a study of this type. If one considers that the combination of aspirin, acting as an analgesic, and rest in hospital are the effective agents in producing the improvement in function and activity which has been demonstrated, then this study may be regarded as an investigation of the effect of simple non-specific treatment in hospital for a short term on a series of unselected active cases of rheumatoid arthritis of all stages. The results from this viewpoint are not without importance.

In 1950, Hench et al. published a full account of the results of treatment on their original series. Twenty one cases with active rheumatoid arthritis, who were considerably disabled were treated with cortisone. Within a week considerable improvement had occurred, and these authors considered that " marked ", or " very marked " improvement had occurred in twenty cases (or 95%). In addition six cases were treated with A.C.T.H., and all of those cases showed similar improvement. Unfortunately, they did not separate improvement in function from improvement in activity, although from the details given improvement of both types occurred. These results were relatively short term, and based on courses of treatment

ranging from fourteen to sixty days. Boland and Headley (1950) confirmed these dramatic short term results in a larger series of one hundred and seventy eight patients, although their figures were not quite so optimistic. They found that marked or very marked improvement occurred in 78.5% of cases, but observed that this figure varied with the severity of the disease. Thus, in severe cases only 50% showed this type of improvement, whereas it occurred in 100% of mild cases.

Levin et al. (1953) in a more prolonged study of cortisone therapy confirmed this observation, and the variation of response according to the severity of the disease was more marked in their series of fifty cases. The patients were divided into stages, and the response classified in grades, according to the recommendations of the New York Rheumatism Association (as used in my series). Of the six patients in Stage I of the disease, five showed Grade I or II improvement in activity, and one showed Grade III; of the nine cases in Stage IV, one showed Grade I or II improvement, and eight showed Grade III. These findings would suggest that improvement in function carried too much weight in the original classification used by Hench et al.

A recent series of cases reported by Margolis and

Caplam (1951) is of particular interest for comparison with my work. They treated fifty six cases (including one case of ankylosing spondylitis) with A.C.T.H. for periods ranging between seven days and two hundred and twenty five days. They used the New York Classification of severity and improvement used in this series. Twenty three cases of their series were given gold in addition to A.C.T.H. The following is a summary of their results compared with the results of this series :

Improvement in Functional Capacity.

Stages I & II

FUNCTIONAL CAPACITY	MARGOLIS RESULTS		MY RESULTS	
	Cases Before Treatment	Cases After Treatment	Cases Before Treatment	Cases After Treatment
Class 1.	0	16	0	25
Class 2.	17	11	29	8
Class 3.	13	4	4	0
Class 4.	2	1	0	0
Total	32	32	33	33
<u>Stages III & IV</u>				
Class 1	0	3	0	2
Class 2.	5	13	4	14
Class 3.	12	7	12	5
Class 4.	7	1	7	2
Total	24	24	23	23

Improvement in Activity of Disease.All Stages

	MARGOLIS RESULTS	MY RESULTS.
Grade I	20	5
Grade II	20	25
Grade III & IV	16	26
Total	56	56

It will be seen that the two series are strictly comparable as regards the distribution according to severity of disease is concerned having practically the same number of cases in Stages I & II and Stages III & IV. The Margolis series shows greater functional incapacity in Stages I & II before treatment, but in stages III & IV the functional incapacity before treatment is very similar. The improvement in functional capacity is similar in both series, although it might be said that the patients of the Margolis series in Stages I & II derived greater benefit in function from treatment than those in my series, by virtue of the fact that their original incapacity was greater.

Forty of the cases of the Margolis series derived Grade I or II improvement in activity of disease from treatment, whereas thirty of my series derived similar

benefit.

In one respect, however, the two series are not strictly comparable, and it is a feature which makes complete and accurate comparison of most recorded series impossible. I refer to the difference in the duration of treatment. The Margolis series was treated for periods varying between one week and thirty two weeks, whereas my series was treated for periods varying between three and twelve weeks. The work of Short and Bauer, Ragan, Coss, and others quoted previously suggests that the time factor in treatment has an important influence on the results of treatment, and this must certainly be true in the consideration of short term results.

Comparison of my results with the results achieved by other workers using gold is more difficult because in many instances longer terms of treatment are considered in these series. In others, different methods of classifying improvement, and the inclusion of the results of outpatient treatment in addition to hospital treatment makes comparison of little value. Ragan and Tyson (1946) reported the short term results in a series of one hundred and forty two cases treated with gold. They found that 50% of cases showed marked improvement at the end of a course of 0.5 gm. or more, and that 39% of cases showed

moderate or mild improvement with 11% of cases unimproved. Short et al. (1946) found that although improvement occurred in 60% of a series of thirty two cases within a relatively short time, relapse occurred in thirteen of these cases at a later date. They claimed, indeed, that more ultimate benefit resulted in a series of two hundred and seventy four cases treated by general measures.

Finally, Butazolidine is the latest example of a drug used in the treatment of rheumatoid arthritis, the efficacy of which has been the subject of some controversy. Currie (1952), who was the first to conduct a clinical trial with this drug, treated eighty one cases for three weeks. He stated ~~that~~ twenty four of these cases showed objective improvement, and seventy seven claimed that their symptoms were relieved. Unfortunately, the cases were not graded according to the severity of the disease, or the degree of objective improvement, which would allow direct comparison with my series, but the results of the ring test which he used for finger swelling are interesting. He stated that improvement in ring sizes of 11 - 15 sizes occurred in nine cases, and improvement of over 15 sizes occurred in two cases. The improvement in ring sizes which occurred in my series compares favourably with this result, viz thirty four cases showed an improvement of

over 10 sizes, and thirteen of these cases improved by over 20 sizes (see Figure 4 , p. 174).

No conclusion can be reached about the long term effects of the treatment given in hospital to my series, because of the high defaulter rate in the outpatient attendance. The fact that so many cases failed to return at the times requested suggests in itself that a high percentage of relapses had occurred, or that a number of patients were dissatisfied with the treatment, although the relative inaccessibility of the hospital must be considered.

The majority of cases who did return showed some degree of relapse after six months or before that. Of the eighteen cases returning between three and six months who had shown major improvement in hospital, only five cases retained that improvement. Of the twenty two cases of all stages, irrespective of the improvement shown in hospital, who returned after six months, only five cases, or 23% showed major improvement. This is certainly no more than one would expect in the way of a natural remission.

Analysis of Treatment.

In view of the apparent success of treatment in this series, an analysis of the effect of the agents used is of some interest. Injections of hyperdureic adrenalin were given to my cases in addition to large doses of aspirin on the theory that adrenalin, acting as a stressor agent would act on the anterior pituitary to produce adrenocorticotrophic hormone, which in turn would produce additional endogenous glucocorticoid material from the adrenal glands. If such action did indeed occur, it was reasonable to assume that the effects would be evident within a short time. Thus, three weeks was the duration chosen for the experiment designed within the main framework of this thesis. A certain amount of selection of cases was required in this experiment to ensure an equal distribution of cases in Stages I & II and Stages III & IV, with the result that the numbers are of necessity small.

Forty five cases were chosen for the experiment, and divided into four groups which were given, aspirin and adrenalin, aspirin and sterile water injections, adrenalin and inactive powder, and sterile water and inactive powder respectively. During the course of the experiment

it was found necessary to abandon the control study after two weeks in two of the cases treated with adrenalin and powder, and six of the cases treated with sterile water and powder (see Appendix Tables VA & VIIA) because I was not satisfied with the progress, or in some cases, the patients were becoming restive and unhappy. The results of the comparative study in the thirty seven cases who remained is shown in Tables 17 - 26 inclusive.

It has been shown that, as regards improvement in activity of the disease, there is no statistical difference between the group treated with aspirin and adrenalin, and the group treated with aspirin and sterile water, although the results appear to be better in the aspirin and adrenalin group. The admission into the two groups of second admissions and a few cases who were given aspirin without sterile water does not alter the statistical analysis.

The control groups are too small to allow analysis, and it can only be said that treatment deemed to be inactive in four cases gave no major improvement within three weeks. It is interesting to note that when second admissions, cases treated for only two weeks with sterile water and powder, and one case treated with rest only for two weeks, are admitted to this group (Table 23), no major improvement occurred in thirteen cases, although

in terms of strict comparison such cases are inadmissible. Similarly, in four cases given adrenalin and inactive powder no major improvement occurred within three weeks, and when second admissions, cases treated with adrenalin without powder, and cases treated for only two weeks are admitted to the group, no major improvement occurred in ten cases (Table 21).

When improvement in functional capacity between the four groups is compared, it is seen that this assumes the pattern previously described when the results of all treatment in the series was described. The improvement in functional capacity in the group who were given aspirin and adrenalin is more pronounced than in the activity of the disease. Statistical analysis of this aspect in cases of Stages I & II who were given aspirin and adrenalin, and similar cases who were given aspirin and sterile water shows that there was significant improvement in the former group, but when cases of Stages III & IV are compared, there is no significant difference. Marked improvement in functional capacity did not occur in either the group treated with adrenalin and powder, or that treated with sterile water and powder.

Thus, there is a suggestion that aspirin and adrenalin was more effective as a treatment during the first three

weeks, especially as regards functional capacity, than aspirin and sterile water injections. When one remembers all the snares which may trap the unwary observer, and which have been studied in this work, such a suggestion can only be tentative in view of the evidence available.

A positive answer to the question of superiority of aspirin and adrenalin as a treatment over aspirin alone, would only have been possible in a small series if the group treated with aspirin and adrenalin had shown a much higher percentage of cases achieving Grade I or II improvement than the cases receiving aspirin alone, or alternatively if both groups had shown equal improvement. With the present results as a guide, a much larger series would be required to answer the question, and preferably with larger numbers in the control groups. Such a work is outwith the scope and purpose of this thesis.

In certain cases it appeared at the time that changing the treatment to aspirin and adrenalin gave much additional benefit, and perusal of the individual case records gives this impression. In Case 18 for example, as can be seen on the cinematographic record, the change coincided with marked improvement. Similarly, in Cases 1, 2, 3, 5, 7, 16, 17, and 14 this was the impression. However, as has been pointed out in the analysis of Table 27

the passage of time is an unknown factor, which may influence the results, and which certainly makes conclusions from this type of evidence impossible. Moreover, there is always the possibility of spontaneous remission or improvement, occurring during the course of treatment deemed to be inactive, to be considered. The need for careful control of any series is illustrated in Case 36 in whom considerable improvement occurred during "treatment" with sterile water injections and inactive powder for four weeks, and in Case 34 who claimed considerable subjective improvement, and indeed showed some objective improvement with similar "treatment".

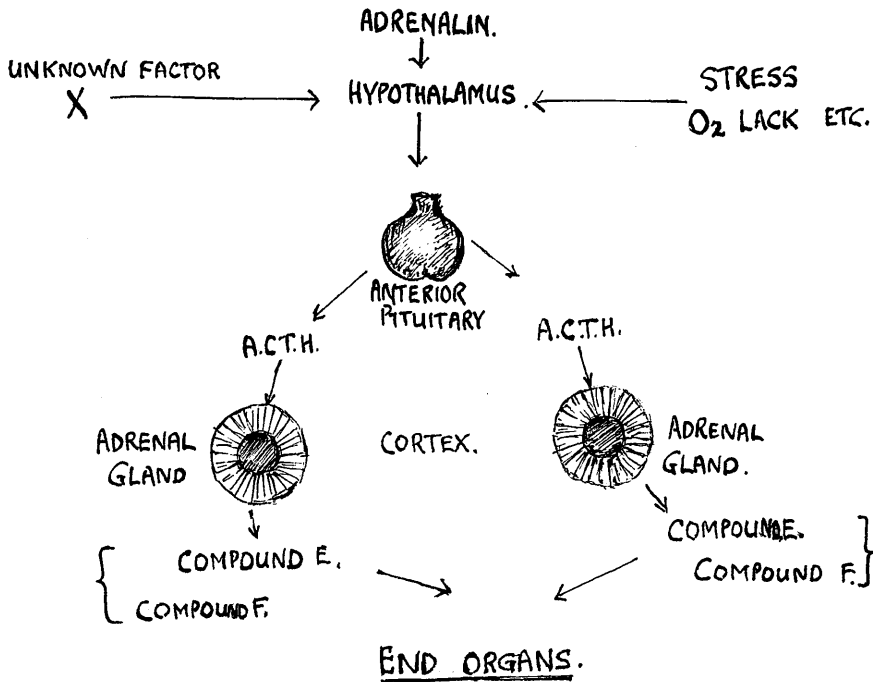
Comparison between the results of treatment with adrenalin (Tables 21 & VA) and treatment deemed to be inactive (Tables 23 & VIIA) shows that, although major improvement did not occur in any of the cases in those groups, minor improvement (Grade III) occurred more frequently in the group given adrenalin. This suggests the possibility of some synergistic action between aspirin and adrenalin when the two drugs are used together. However, synergism between therapeutic agents is a very vexed subject in medicine, requiring unequivocal evidence before proved, and will not be pursued in this discussion.

The relapse which occurred in eight cases out of ten, in whom treatment with aspirin and adrenalin was

discontinued, offers some proof that this treatment was bestowing therapeutic benefit. It remains to discuss more fully the rationale for the use of adrenalin, and some of the findings of other workers who have used either aspirin or adrenalin in the treatment of rheumatoid arthritis.

Thorn et al.(1950) have discussed the theoretical relationship between pituitary adrenal function, and rheumatic disease. They found that adrenocortical function was normal in sixteen of twenty one cases with rheumatoid arthritis whom they investigated, and alleged that there was a wide variation in the state of this function from patient to patient without apparent correlation to the severity of the disease. They investigated the effect of the injection of 0.3 mgm of adrenalin in normal subjects on the circulating eosinophils, and finding a fall of over 50% which they accepted as evidence of adrenocortical stimulation, they concluded that adrenalin acted as shown in the following diagram :

Figure 7 (over)

Figure 7.

These workers then treated a small series of cases with rheumatoid arthritis with stimulating doses of adrenalin given every six hours during the night and day. They stated that slight, but definite improvement occurred in two patients, although the maximum improvement was less than achieved using A.C.T.H.

The adrenalin test designed to discover if the relationship between the pituitary and the adrenal glands was intact, which was later described by Recant et al.(1950) was based on this work by Thorn et al.

Vogt has long been prominent in the research field dealing with the adrenal gland. In the years 1943 and 1944, she published accounts of the output of cortical hormone by the mammalian suprarenal, and this was followed in 1947 by a further study with a bearing on clinical medicine. She demonstrated that in several different species of animal the amount of active cortical material released from the suprarenal vein in one minute was considerably greater than could be extracted by known methods at that time. She also showed that the administration of adrenalin increased the amount of cortical material which could be recovered by many hundred per cent. Her interpretation of these results was that adrenalin administered in doses approaching the amounts which might be liberated normally within the body, stimulated the adrenal cortex directly, and she suggested that this might have some clinical importance.

Long (1947) substantiated the view that adrenalin produced increased adrenocortical secretion, but like Thorn et al. believed that this stimulation was indirect, and mediated by the pituitary.

In view of this and other evidence previously quoted and especially in the light of work of Selye on

stress, it is surprising how few studies exist in which the treatment of rheumatoid arthritis with adrenalin is investigated. There has been no general agreement, however, concerning Selye's subsequent publications on the theory of stress (1949, 1950, & 1954) in which he elaborated his conception of maladaptation to stress. According to this theory, many diseases, among which is rheumatoid arthritis, are largely due to non specific stress and to pathogenic situations resulting from inappropriate responses to such stress, and have no single cause or specific pathogenic agent. In the light of this conception, it is interesting to note that eleven cases (20%) of the present series gave a history of non specific stress before the onset of their disease (Table 7), and that seven cases (12%) were subject to some stress in their domestic life. Case 31. in whom there occurred a severe exacerbation of arthritis immediately following a distressing mental shock, is of particular interest, although of course coincidence cannot be ruled out in this case.

In contrast, the results of an investigation done by the Scientific Advisory Committee of the Empire Rheumatism Council (1950) show that infection or psychological disturbance did not precede rheumatoid arthritis

any more than they preceded any other disease in a control group of patients. Nevertheless, anyone who has heard Selye's brilliant exposition of his theories, based on ingenious and well controlled experiments cannot easily dismiss the concept completely. If one accepts the later work, in which he showed that the effects of comparatively small quantities of corticoids could be enhanced by stressor agents - an effect which he calls the anti-inflammatory corticoid conditioning (or A-CC) effect - then there are reasonable grounds for assuming that the administration of adrenalin, acting as a stressor agent, will enhance the action of the endogenous corticoid normally produced in the body. On searching the literature, only a few papers have been found, in which this theoretical conception has been tested, and fewer still in which it has been tested adequately.

Godlowski (1948) experimented with intravenous infusion of adrenalin in the human subject, and claimed that this procedure increased the output of cortical hormone, and caused an eosinopenia. The same author reported (1949) that one case of advanced rheumatoid arthritis, and two cases of non articular rheumatism benefited from the intravenous infusion of /
adrenalin

adrenalin, but stated that aqueous adrenalin solution administered subcutaneously gave no benefit in cases of rheumatoid arthritis. The evidence for his conclusions was scant.

Guest et al. (1950) treated twelve patient suffering from rheumatoid arthritis with 0.5 mgm adrenalin in saline solution given every six hours for periods ranging from seven to sixty five days. They stated that subjective and objective improvement occurred in one case, and that there was no relapse after treatment was discontinued. However, this was a case of Reiter's disease, which properly should not have been admitted to the series, and in which natural remission is common. Acute exacerbation of the disease occurred in three cases during this treatment, and a significant eosinopenia occurred in only three cases.

Parr et al. (1951) investigated the adrenalin test for pituitary- adrenal function in fifty one cases. They reported a significant fall of over 50% in the circulating eosinophils in forty four cases who were given 0.5 mgm adrenalin subcutaneously. This result encouraged the authors to use the drug as treatment in rheumatoid arthritis, and they claimed great benefit in "febrile rheumatoid arthritis", and chronic vaso-spastic varieties of the

disease". However, the validity of their conclusions must be questioned because details of the histories of the cases concerned are not given, the dose of adrenalin given in each case is not detailed, there are no satisfactory controls, and the criteria of improvement are not described in the paper.

Dresner et al (1950) treated an advanced case with 2.0 mgm adrenalin in oil daily for a fortnight, and recorded that although the eosinophils fell by 50% at the start of treatment, they rose again quickly and then remained high. The case did not receive clinical benefit, and on the basis of this one case they suggest that the adrenal cortex is stimulated less by adrenalin than by A.C.T.H. by which the case had been previously treated.

Bliss et al. (1951) studied the excretion of the urinary 17-ketosteroids and 11-oxysteroids in twelve normal males given 2 mgm adrenalin in oil four times daily, and found a 46% mean increase in the 17-ketosteroids and a 48% increase in the 11-oxysteroids, which they suggested indicated adrenocortical stimulation.

The special investigations which I carried out in the present series gave no definite indication of adrenocortical stimulation. A fall of over 50% in the

circulating eosinophils, which is reported by others as being significant of adrenocortical stimulation, occurred in eight cases of the twenty two on whom this observation was made. Opinions vary regarding the efficacy of this test as an index of stimulation. This is in part accounted for by the fact that there are several different methods used for counting eosinophils, and obviously the results will depend to a certain extent on the skill and experience of the person who does the counts. More important, perhaps, is the fact that there is a wide normal range of circulating eosinophils in the normal subject. Jennings (1952) quotes the results of Rud (1947) who, after an extensive survey of the subject concluded that the normal range was 30 - 250 cells per c.mm, with a mean of 126 cells. Best and Samter (1951) confirmed these results, and noted that, although there were appreciable short term and diurnal fluctuations, the general level of eosinophils was maintained within broad limits in normal individuals.

Prunty (1950) and Sayers (1950) reviewed the subject, and concluded that the eosinophil response was a satisfactory index of adrenocortical function. If this view is accepted, it would then appear that in the sample which I selected, adrenalin could not be relied upon

to stimulate the pituitary adrenal mechanism. This also is the opinion of Robinson et al. (1953) expressed in the tenth rheumatism review of the American College of Physicians.

The other investigations carried out to assess adrenocortical stimulation were negative apart from the blood uric acid results. There was no alteration in the blood pressure in any of the cases to suggest a glucocorticoid effect, the serum sodium and potassium results followed no recognisable pattern, and the results of the urinary 17-ketosteroid and 11-oxysteroid estimations which were carried out in a few cases, varied.

Table 31 shows that in the groups of cases treated with aspirin and adrenalin, and with aspirin alone, a significant fall in the blood uric acid occurred. Marson (1953) observed that increase in excretion of uric acid is an effect of both salicylate therapy in large dosage, and treatment with A.C.T.H. or cortisone, but that salicylate was more efficient in this respect. It was inevitable that attempts should be made to relate the action of cortisone and salicylates in this way.

Sayers and Sayers (1948) noted that the adrenocortical hormones reduced the amount of ascorbic acid in the

adrenal glands while other workers such as Blanchard et al. (1950) claimed that salicylates produced the same effect. Thorn et al. stated that cortisone and A.C.T.H increased the excretion of uric acid from the body in much the same way as salicylates. Seifter et al. (1950), and Forman et al. (1949) claimed that adrenocortical hormone has an inhibiting effect on hyaluronidase, and Meyer (1947) stated that salicylates in vivo have also this effect. Cochran et al. (1950) noted features suggesting Cushing's syndrome in a case receiving large doses of aspirin, and suggested that there was some similarity of action between cortisone and aspirin. Van Cauwenberge (1951) investigated the effect of aspirin on the urinary excretion of 17-ketosteroids and the reducing steroids, and on the basis of a constantly raised reducing steroid excretion in patients receiving aspirin, suggested a relationship between aspirin and cortisone.

Marson (1953) has reviewed some of the literature dealing with the question of similarity of action between the salicylates and cortisone or A.C.T.H., and has concluded that the hypothesis is incorrect. Copeman (1955) expressed the opinion of most observers when he stated that this hypothesis was more than optimistic.

In conclusion, one fact concerning the treatment of rheumatoid arthritis about which there is no dispute, emerges clearly from the welter of literature on this controversial subject. The value of salicylates in the treatment of all forms of rheumatism is universally recognised, and many physicians believe that there is no drug at present available which gives more useful service in rheumatoid arthritis than aspirin. Hollander et al. (1951) stated that for more than seventy five years salicylates have been the drugs of choice in the treatment of rheumatism, and that although many attempts have been made to discover the manner of their action, their use in the rheumatic diseases remains empirical.

Duthie (1954) has discussed in some detail the drugs used at present in the treatment of rheumatoid arthritis, and concluded that aspirin was the most valuable single remedy available. He stated that it is safer than cortisone which has no clear advantage over it. In this respect the work of the Joint Committee of the Medical Research Council and the Nuffield Foundation recently published (1954) is of some interest. This committee studied the treatment of early cases of rheumatoid arthritis for one year. There were sixty one cases in

the series, thirty of whom were given cortisone and thirty aspirin during that time. At the end of the year, it was found that 75% of cases in both groups were inactive or slightly active, and that 40% of cases of both groups had resumed normal activity, or had returned to work. The investigation was adequately controlled, and the conclusion of the observers that there was surprisingly little difference between cortisone and aspirin in the results achieved with either drug over the course of a year's treatment, appears to be justified.

If, in the consideration of the results of this present study, the possible therapeutic action of adrenalin is disregarded - no definite proof of its therapeutic value has been offered - then it would appear that a similar experiment, in which two series of cases of rheumatoid arthritis would be treated, one with cortisone, the other with aspirin, for a relatively short period in hospital, would be justified in order to compare the short term effects of these two drugs. On the other hand, there appears to be sufficient evidence in my work to suggest that a further study of the effects of aspirin and adrenalin in combination in a larger series would be of considerable interest, both from the therapeutic point of view, and also to widen our clinical knowledge of adrenalin, a drug

which several authors, including Selye, think may be one of the keys in the solution of the fascinating problem of stress and its effects on the human body .

SUMMARY

1. A series of fifty six cases suffering from active rheumatoid arthritis has been studied. This series contained samples representing all stages of severity of the disease.
2. The results of simple, inexpensive, treatment given in hospital for a short term (mean duration 6.6 weeks) are presented. Treatment consisted, for the most part, of daily administration of large doses of aspirin, and injections of hyperdural adrenalin given three times a day. Aspirin was given to relieve the pain in the affected joints, and the rationale for the administration of adrenalin was based on the alleged action of this drug on the pituitary adrenal mechanism, and its resultant adreno-cortical stimulation.
3. The difficulties which exist in assessing the results of any treatment of rheumatoid arthritis, and the errors which may occur in the assessment of improvement, have been discussed in full. A system has been devised by means of which the results of the individual tests used to assess improvement in functional capacity and in activity of the disease are clearly presented in the individual case

records. The classification of improvement recommended by the New York Rheumatism Association has been used to translate the results of these tests into terms which permit comparison between individual cases of the series, and between other series. It is thought that these methods overcome, as far as possible, the errors which may arise in assessment of progress.

4. The relationship between improvement in functional capacity and improvement in activity of the disease in the cases of this series has been studied. In this present work it has been shown that, although these two factors are related, improvement in functional capacity can often occur without commensurate improvement in activity of the disease. The serial cinematographic record which was made in fourteen cases of the series illustrates this point, and shows in addition the marked improvement in functional capacity which occurred in many cases.

5. Considerable improvement in the activity of the disease also occurred in this series. Fifty four per cent of all cases showed major improvement in activity of the disease at the end of all treatment. The importance of grouping the cases of any series according to the severity of the disease before treatment, because severe cases of the disease are, as a general rule, less responsive

to treatment, has been confirmed. Sixty seven per cent of the cases of this series in the mild or moderate stages of the disease showed major improvement in activity of the disease at the end of all treatment, whereas only thirty five per cent of the cases in the severe and terminal stages of the disease showed similar improvement.

6. An attempt has been made to discover if the administration of hyperdureic adrenalin, in addition to the giving of large doses of aspirin, secures additional therapeutic benefit. This has not been proved in a statistical sense, although the results in some individual cases, appeared to indicate that adrenalin gave some added benefit.

7. Biochemical and other studies were carried out in an attempt to ascertain if the administration of adrenalin resulted in adrenocortical stimulation. There was no biochemical evidence to support this concept, but the results of serial eosinophil counts in some cases support the possibility.

8. The difficulties which exist in the comparison of the results of one series of cases of rheumatoid arthritis given a certain form of treatment and the results of another series given the same or different treatment, have been explained. As far as possible the results in this

series have been compared with the results of some of the other workers on this subject, who used different forms of treatment.

9. A follow-up record of each case was kept when possible. The number of cases who did not return as outpatients makes any conclusion regarding the long term effects of this treatment impossible. In those cases who did return, it would appear that treatment in hospital by the method used gave no lasting benefit.

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APPENDIX

VOLUME II - CASE RECORDS 1 - 28 incl.

CASE NO: 1

NAME: Mrs. Margaret McNamee.

ADDRESS: 56 Hillhead Drive, Airdrie..

AGE: 42.

OCCUPATION: Housewife.

Admitted: 4th December, 1951.

Discharged: 3rd March, 1952.

History: The patient developed slight pain and stiffness of the middle finger of the right hand four months prior to admission. A few weeks later the right wrist became affected, and then the ring finger of the left hand. In addition to being stiff and painful, the affected joints became swollen, and her symptoms were most marked in the morning. A fortnight prior to admission she awoke one morning and was unable to get out of bed because of pain and stiffness in most of the joints of her body.

Her general health was good at the onset of her illness, and remained so until the condition became generalised. During the fortnight prior to admission she felt some general malaise, perspired considerably, and was very tired. Appetite had been poor and the bowels constipated. Prior to admission she had no treatment except aspirin for the pain.

Previous History: There have been no serious previous illnesses. She has no domestic worries, and has never been under severe mental stress. She has never been subject to any severe physical stresses or severe infections.

Family History: Her father and mother are both alive and well and over eighty years of age. One sister suffers from "rheumatics" and another died of rheumatic heart disease.

Social History: Housing conditions are satisfactory, and there are no financial worries.

Obstetric and Menstrual History: She has had six pregnancies, all of which were normal. Menstruation has always been regular lasting five days and occurring every three weeks.

Daily Analgesics: During the past fortnight she has been taking six or more aspirins daily, and is unable to sleep because of pain.

Standard Examination: T. 98.0 P. 88 R. 20 B.P. 134/84

General Examination: The patient is a plump, middle-aged woman who appears to be in considerable pain whenever she moves in bed. She is pallid, but there is no cyanosis, jaundice or oedema. There is no enlargement of the lymph glands. Her fingers are not clubbed. She is alert and co-operative.

Locomotor System: Both shoulder joints are painful on pressure and there is some restriction of movement.

The right wrist is swollen and tender, and there is some restriction of movement. The three ulnar fingers of her right hand are swollen, stiff and painful.

The proximal interphalangeal joint of the index finger of the left hand is swollen, stiff and painful, and the ring and little fingers are similarly affected.

Both knees are swollen and painful, with restricted movement.

Both ankles are swollen, painful and are restricted in their movement.

The patient is unable to walk without support, and is in considerable pain when she attempts it. She cannot get in and out of a bath without assistance, but is able to wash her hands and face, and to use a knife and fork. She cannot dress unaided, and is unable to comb the back of her hair.

Cardio-Vascular System: The pulse is regular in rate and rhythm, and is of moderate force, volume and tension. The vessel wall is not palpable. B.P. 130/84. There are no thrills over the praecordium, and the cardiac size is within normal limits. The heart sounds are of good quality at all areas, and a soft systolic murmur is heard at the apex.

Other Systems: Examination is negative.

X-Ray Reports: Hands - negative.

Cervical, Dorsal and Lumbar Spine - there is marked osteo-arthritis of several of the vertebral bodies of the lower lumbar spine. There is lumbarisation of the first sacral segment. The sacro-iliac joints are negative.

The detailed examination of the affected joints and the response to treatment is charted on the following page.

TREATMENT		Aspirin			Aspirin and Adrenalin	
DURATION OF TREATMENT		6 weeks			6 weeks	
WEEKS AFTER ADMISSION		0	3	6	9	12
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 1	2 1	1 1	0 1	0 0
	Tenderness	2 2	1 2	2 1	1 1	0 0
<u>WRIST</u>	Flexion	2 0	2 0	1 0	0 0	0 0
	Extension	1 0	1 0	1 0	0 0	0 0
	Tenderness	3 0	2 0	2 0	1 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 2	0 1	0 1	0 0	0 0
<u>JOINT</u>	III	3 2	2 1	2 1	1 0	0 0
<u>TENDERNESS</u>	IV	2 1	2 1	1 1	1 0	0 0
	V	3 0	2 0	1 1	0 1	0 0
<u>FINGER TO PALM CLOSURE</u>		2 1	2 1	2 1	1 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	1 1	1 1	1 0	0 0	0 0
	Tenderness	3 2	2 2	2 1	1 0	0 0
<u>ANKLE</u>	P. Flexion	1 1	1 0	1 0	0 0	0 0
	D. Flexion	2 1	1 1	1 1	0 1	0 0
	Tenderness	3 2	2 2	1 1	1 0	0 0
<u>TOTAL</u>	Tenderness	30	22	18	8	0
	Movement Range	15	14	11	3	0

Dose of Adrenalin.

The patient commenced with 3 minims adrenalin t.i.d. and this was increased over a few days to a total dose of 8 minims t.i.d. when she began to have a slight reaction. Thereafter the dose was maintained at that level.

Dose of Aspirin.

She received 60 gr. of aspirin daily in divided dosage.

The patient was confined to bed during the first six weeks of treatment.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Aspirin			Aspirin and Adrenalin		
DURATION OF TREATMENT	6 weeks			6 weeks		Final Result 12 weeks
WEEKS AFTER ADMISSION	0	3	6	9	12	
Tenderness	-	8	12	10	18	30
Range of Movement	-	1	4	8	11	15

The patient received treatment with aspirin alone for six weeks and during that time there was a moderate improvement in the relief of pain. She lost 12 degrees of tenderness. There was only slight improvement in the range of movement - she gained 4 degrees in the range of movement.

Treatment with aspirin and adrenalin followed immediately, and after three weeks of this treatment she had lost a further 10 degrees of tenderness and gained a further 8 degrees in range of movement. At the end of six weeks of aspirin and adrenalin she had lost 18 degrees of tenderness and gained 11 degrees in range of movement.

Thus, twelve weeks after admission the patient had lost in all 30 degrees of tenderness, and gained 15 degrees in movement range. At the end of this time there were no signs of rheumatoid arthritis present.

PERFORMANCE CHART.

TREATMENT	Aspirin			Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	3	6	9	12
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	Yes	Yes	Yes	Yes
<u>Dress hair</u>	Yes	Yes	Yes	Yes	Yes
<u>Use Knife and Fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT.

TREATMENT	Aspirin			Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	3	6	9	12
	-	Slightly better	Better	Much better	No symptoms

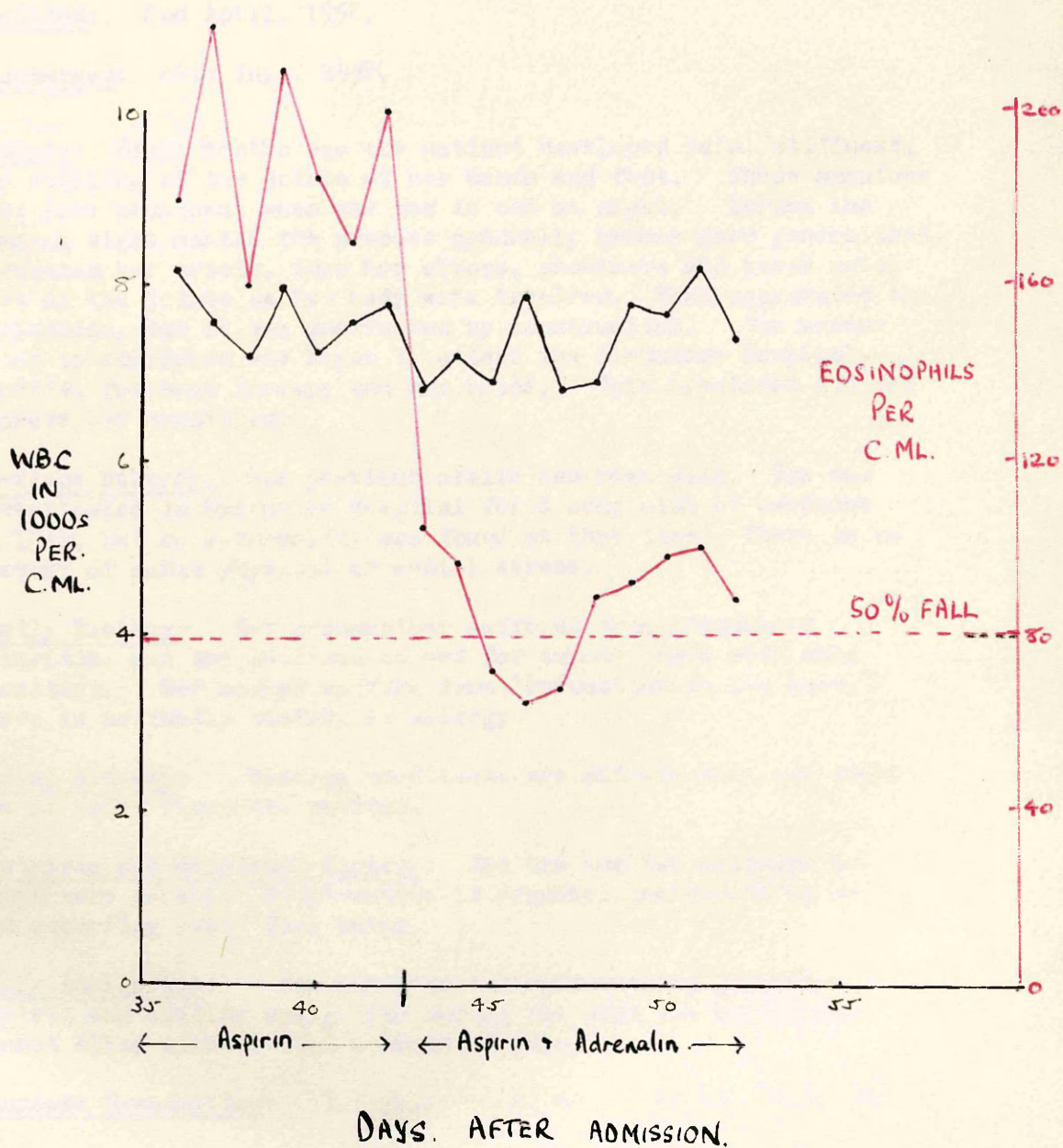
SPECIAL INVESTIGATIONS.

TREATMENT	Aspirin			Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	3	6	9	12
Blood Uric Acid Mgm/100 ml	3.1	2.7	2.8		2.8
B.S.R. mm in 1st hour	58	76	45	35	12
Haemoglobin	85%				90%
R.B.C. cells/c.mm	4.3M				4.5M
Blood pressure	134/84				130/80

OUT-PATIENT RECORD.

- 19.3.52. Two weeks after discharge from hospital there was no relapse. She had continued to take 40 gr. of aspirin daily at home, but no adrenalin was given. She was able to do her own housework and only had slight stiffness after a period of immobility.
- 20.8.52. Six months after discharge from hospital there was no evidence of relapse. On examination there was no tenderness of the joints or curtailment in her range of movement. She was able to do all her own housework, and stated that "her hands were never out of water."
- 24.3.54. Two years after discharge from hospital she remains symptom free. She has never had any trouble with her joints since she was discharged from hospital on 3.3.52.

Eosinophil and White Cell Counts.



CASE NO. 2

NAME: Mrs. Mary Donrachie.

ADDRESS: 20 Douglas Street, Airdrie.

AGE: 37. OCCUPATION: Housewife.

Admitted: 2nd April, 1952.

Discharged: 26th July, 1952.

History: Eight months ago the patient developed pain, stiffness, and swelling of the joints of her hands and feet. These symptoms were more prominent when she was in bed at night. During the ensuing eight months the process gradually became more generalised, affecting her wrists, then her elbows, shoulders and knees until most of the joints in her body were involved. Work aggravated the affliction, but it was unaffected by menstruation. Two months prior to admission she began to attend the Alexander Hospital, Airdrie, for heat therapy and wax baths. This treatment did not improve her condition.

Previous History: Her previous health has been good. She was investigated in Hairmyres Hospital for a complaint of backache in 1949, but no abnormality was found at that time. There is no history of undue physical or mental stress.

Family History: Her grandmother suffered from rheumatoid arthritis, and was confined to bed for twenty years with this condition. Her mother suffers from "rheumatics in the knee." There is no family history of allergy.

Social History: Housing conditions are satisfactory and there are no undue financial worries.

Obstetric and Menstrual History: She has had two pregnancies, which were normal. Menstruation is regular, lasting three days and occurring every four weeks.

Daily Analgesics: She has been taking a varying quantity of aspirin and similar analgesics during the past few months and cannot sleep without them because of pain.

Standard Examination: T. 98.4 P. 88 R. 22 B.P. 145/90.

General Examination: The patient is a pale woman of average build, who is in considerable pain when she moves. There is no cyanosis, jaundice, or oedema. The lymph glands are not enlarged

and the fingers are not clubbed. She is slightly below average intelligence.

Locomotor System: Both wrists are swollen, tender, and show limited movement.

There is swelling and limitation of movement of the fingers of both hands, and considerable tenderness of the affected joints.

The left knee is slightly swollen, is tender and shows diminished range of movement. The right knee is also painful, but has full range of movement.

The left ankle is swollen, painful, and movement is restricted.

There is pain in the neck on flexion and some limitation of this movement.

Other Systems: Examination is negative.

X-Ray Report: Sacro-iliac joints: negative.

The detailed examination of the affected joints and the response to treatment is charted on the following page.

TREATMENT		Aspirin			Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks			3 weeks	
WEEKS AFTER ADMISSION		0	2	3	5	6
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	1 2	1 2	1 1	1 0	0 0
	Extension	1 2	1 1	1 1	0 1	0 0
	Tenderness	2 3	2 2	2 1	1 1	0 0
<u>METACARPAL</u>	I	1 1	1 1	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	2 3	1 2	1 2	0 1	0 0
<u>JOINT</u>	III	3 2	2 2	2 1	1 1	0 0
<u>TENDERNESS</u>	IV	2 3	2 2	1 2	0 1	0 0
	V	1 1	1 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	3 3	2 1	0 1	0 0	0 0
<u>JOINT</u>	III	2 3	1 2	1 2	0 1	0 0
<u>TENDERNESS</u>	IV	3 2	2 1	1 2	1 1	0 0
	V	1 2	1 0	0 0	0 1	0 0
<u>FINGER TO PALM CLOSURE</u>		3 2	2 2	2 2	2 1	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	0 2	0 2	0 2	0 1	0 0
	Tenderness	1 1	0 1	0 1	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 2	0 2	0 2	0 1	0 1
	D. Flexion	0 2	0 1	0 1	0 0	0 1
	Tenderness	1 2	0 1	0 1	0 1	0 1
<u>TOTAL</u>	Tenderness	48	30	22	11	1
	Movement Range	17	14	13	7	2

Dose of Adrenalin.

The patient commenced with hyperdurec adrenalin minims 3 t.i.d. and the dose was raised 1 minim t.i.d. She showed reaction at 7 minims t.i.d. and was maintained on this dose. There was no alteration in the blood pressure during treatment.

Dose of Aspirin - 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin			Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks			3 weeks		
WEEKS AFTER ADMISSION	0	2	3	5	6	6 weeks result
Tenderness	-	18	26	11	21	47
Range of Movement	-	3	4	6	11	15

The patient was confined to bed during the first three weeks. The patient received treatment with aspirin alone for three weeks, and during that time there was considerable relief of pain - she lost a total of 26 degrees of tenderness. There was only slight improvement in the range of movement - she gained 4 degrees in range of movement.

Treatment with aspirin and adrenalin followed immediately and after three weeks of this treatment she had lost a further 21 degrees of tenderness. The improvement in movement range was more marked than with treatment by aspirin alone, and after three weeks she had gained a further 11 degrees in range of movement.

Thus, six weeks after admission the patient had lost in all 47 degrees of tenderness and had gained 15 degrees in movement range. At the end of this time only the left ankle was affected, being slightly tender and with slight restriction in movement range.

RELAPSE WITH SUBSEQUENT IMPROVEMENT.

TREATMENT	No treatment	Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	7	8	10
Tenderness	29	12	1
Movement Range	11	4	1

Treatment was discontinued for one week and there was a relapse. She gained 28 degrees of tenderness and lost 9 degrees in range of movement during that week. Treatment with aspirin and adrenalin was recommenced for a further three weeks, and at the end of that time she had lost 28 degrees of tenderness and gained 10 degrees in movement range.

She was discharged at the end of this time with slight tenderness and slight diminution in movement range of the left ankle.

PERFORMANCE CHART.

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6	7	10
<u>Dress</u>	With difficulty	With difficulty	Yes	With difficulty	Yes
<u>Wash hands and face</u>	With difficulty	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes	Yes
<u>Use Knife and Fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	With difficulty	Yes

SUBJECTIVE IMPROVEMENT.

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6	7	10
	-	Better	Much better	Worse	Much Better

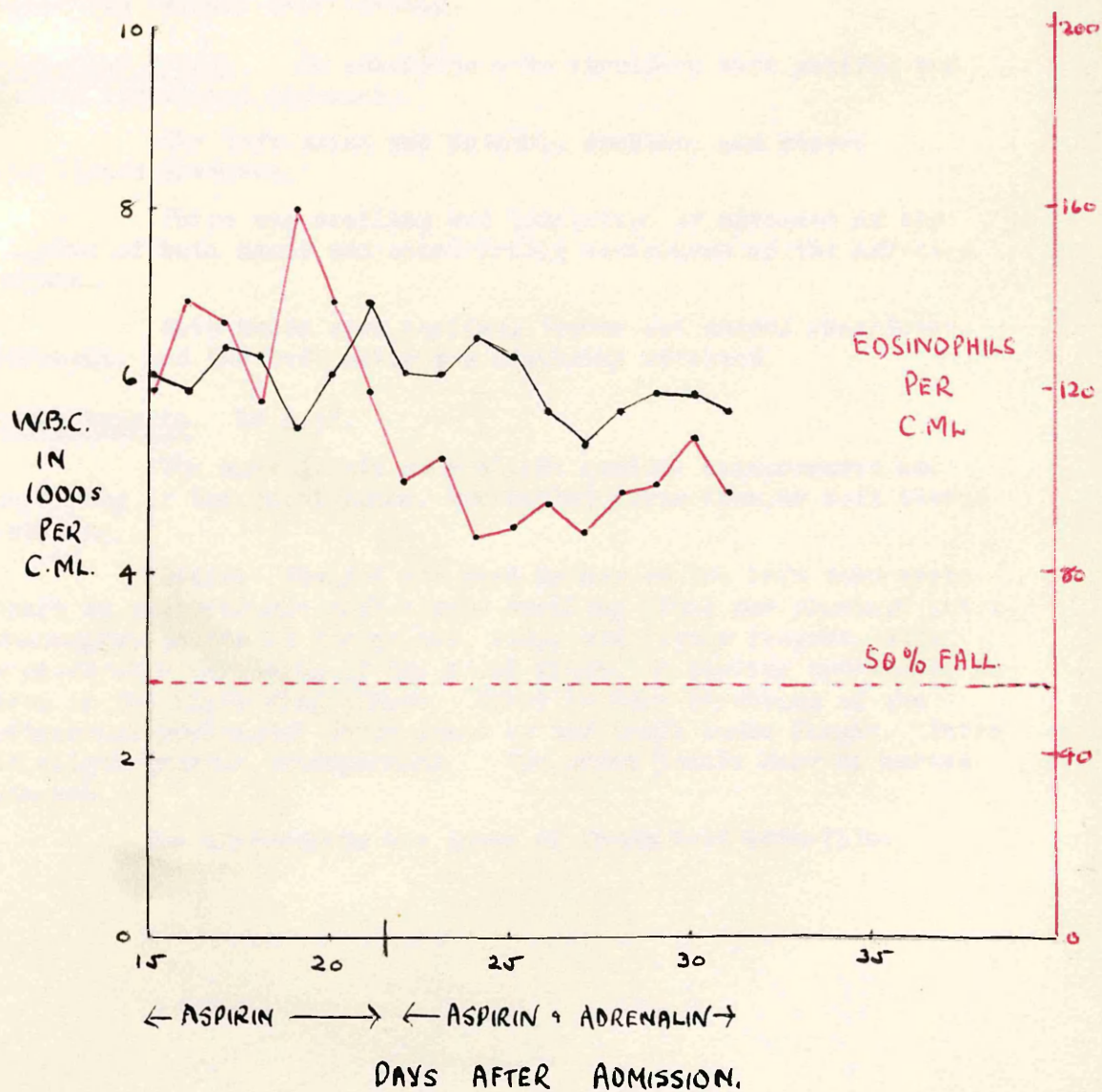
SPECIAL INVESTIGATIONS.

TREATMENT	Aspirin		Aspirin and Adrenalin	No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6	7	10
Blood Uric Acid Mgm/100 ml	3.1	3.0	2		2.8
B.S.R. mm in 1st hour	50	55	32	38	22
Haemoglobin	70%				85%
R.B.C. cells/c.mm	5.2M				4.0M
W.B.C. cells/c.mm	6,500	5,500			6,000
Blood pressure	145/90	135/90	140/85		135/85

OUT-PATIENT RECORD.

20.8.52. Patient reported. Her condition had deteriorated considerably, and she was re-admitted. Detailed record of her second admission is given below.

Eosinophil and White Cell Counts.



NAME: Mrs. Mary Donnachie.

Re-admitted: 22nd August 1952.

Discharged: 21st February 1953.

The patient began to have a recurrence of her symptoms about a week after discharge from hospital on 26.7.52, and her condition rapidly deteriorated.

Locomotor System: On admission both shoulders were painful and showed restricted movement.

The left wrist was painful, swollen, and showed restricted movement.

There was swelling and limitation of movement of the fingers of both hands and considerable tenderness of the affected joints.

Both knees were swollen, tender and showed restricted movement, and the left ankle was similarly affected.

X-Ray Reports: 28.8.52.

The knee joints show slight general osteoporosis and narrowing of the joint space, and marked periarticular soft tissue swelling.

Hands: Changes are most marked in the left hand where there is considerable soft tissue swelling round the proximal interphalangeal joints of the middle, ring, and little fingers, with considerable narrowing of the joint space. A similar appearance is seen in the right ring finger. There is some narrowing of the metacarpal phalangeal joint space of the right index finger. There is slight general osteoporosis. The wrist joints show no marked changes.

The appearances are those of rheumatoid arthritis.

TREATMENT		Aspirin and Adrenalin					
DURATION OF TREATMENT		9 weeks					
WEEKS AFTER ADMISSION		0	1	3	4	6	9
		R.L.	R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 3	2 1	0 1	0 1	0 1	0 0
	Tenderness	1 3	0 2	0 1	0 0	0 1	0 1
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 1	0 1	0 1	0 1
	Tenderness	0 0	0 0	0 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	0 3	0 2	0 0	0 0	0 0	0 0
	Extension	0 3	0 1	0 0	0 0	0 0	0 0
	Tenderness	0 2	0 3	0 2	0 2	0 0	0 0
<u>METACARPAL</u>	I	2 0	1 1	0 1	0 1	0 1	0 1
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 1	0 0	0 0	0 0	0 0
	V	0 0	1 0	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	1 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 2	0 1	0 0	0 0	0 0	0 1
<u>TENDERNESS</u>	IV	3 3	2 1	1 0	1 0	1 0	0 0
	V	0 0	0 0	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u>							
<u>CLOSURE</u>		2 3	1 1	0 0	0 0	0 0	0 0
<u>KNEE</u>	Extension	2 2	2 1	0 1	0 1	1 1	0 1
	Flexion	1 1	1 2	1 1	0 2	0 2	0 2
	Tenderness	3 3	3 3	2 1	1 1	2 2	0 2
<u>ANKLE</u>	P. Flexion	0 1	0 1	0 0	0 0	0 0	0 0
	D. Flexion	0 2	0 1	0 0	0 0	0 0	0 0
	Tenderness	0 3	0 2	0 1	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	25	22	9	6	7	5
	Movement Range	25	16	5	5	6	4

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin				
WEEKS AFTER ADMISSION	0	3	4	6	9
Ring Sizes	R. SUTAK	R. RUSXK	R. OSQTG	R. ORQTF	R. NQSF
	L. RTAVO	L. PSXVO	L. ORTSK	L. ORURK	L. NPTQJ
Grip	R. 135	R. 130	R. 130	R. 140	R. 115
	L. 75	L. 90	L. 90	L. 120	L. 110

TREATMENT

The patient was treated with aspirin and adrenalin for nine weeks. Treatment consisted of injections of hyperduric adrenalin 3 minims t.i.d, and the dose was raised by 1 minim t.i.d until she was getting 9 minims t.i.d. The dose of aspirin was gr. 15 four times a day.

Thereafter attempts were made to determine whether aspirin alone, adrenalin alone, or a combination of both was most effective, but in this case no definite conclusion could be reached.

This patient had a severe reaction to the adrenalin on 25.12.52. Ten minutes after her injection of 9 minims of hyperduric adrenalin she collapsed and became pulseless. She recovered within five minutes from this reaction, although it was very alarming at the time.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin						
DURATION OF TREATMENT	9 weeks						
WEEKS AFTER ADMISSION	0	1	3	4	6	9	Final result 9 weeks
Tenderness	-	3	16	19	18	20	20
Movement Range	-	9	20	20	19	21	21
Ring Sizes)	-		5	33	35	43	43
Grip) Both) hands	-		10	10	50	15	15

The patient received treatment with aspirin and adrenalin for nine weeks. During that time there was considerable improvement in her condition.

At the end of four weeks she had lost 19 degrees of tenderness and had gained 20 degrees in movement range. The ring sizes had diminished by 33 sizes and the grip had improved by 10 millimetres.

At the end of nine weeks after her re-admission to hospital, she had lost in all 20 degrees of tenderness and had gained 21 degrees in movement range. The ring sizes had diminished by a total of 43 ring sizes for both hands and there had been an improvement in the grip of 15 millimetres.

At this time the patient had still considerable disability in the left knee, in which there was a flexion contracture of 20 degrees and there was also a slight flexion contracture of the left elbow. She was kept in hospital because the condition was still obviously active. The erythrocyte sedimentation rate was still grossly elevated, and there was considerable disability in walking. She was finally discharged on 21.2.53.

CONDITION ON DISCHARGE FROM HOSPITAL

LEFT ELBOW Tenderness - 0.
 Range of
 Movement - Grade 1.

LEFT KNEE Tenderness - 0.
 Range of
 Movement - Grade 1.

GRIP - R. 135
 L. 155 (total gain since admission - 80)

RINGS - R. NPQPE
 L. NMQNG (total loss since admission - 59)

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin				
DURATION OF TREATMENT	9 weeks				
WEEKS AFTER ADMISSION	0	3 & 4	6	9	26
<u>Dress</u>	No	No	Yes	Yes	Yes
<u>Wash hands and face</u>	No	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	No	No	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes	Yes
<u>Use Knife and Fork</u>	No	Yes	Yes	Yes	Yes
<u>Walking</u>	No	With diffi- culty	With diffi- culty	10 yds. with pain	Not without pain

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin					
DURATION OF TREATMENT	9 weeks					
WEEKS AFTER ADMISSION	0	3	4	6	9	26
	-	Better	Better	Better	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin					
DURATION OF TREATMENT	9 weeks					
WEEKS AFTER ADMISSION	0	3	6	9		26
Blood Uric Acid Mgm/100 ml	3.0	3.1	2.6	2.4		2.1
B.S.R. Mm in 1st hour	122	90	80	62		23
Haemoglobin	90%			80%		90%
Blood pressure	120/70	125/80	130/75	130/80		125/75
R.B.C. cells/c.mm	4.3M			4.1M		4.4M

OUT-PATIENT RECORD.

Date Reported	Month	Condition	Rings	Tender-ness	Move-ment
18.3.53	1	No deterioration. There has been a further fall in ring sizes of 8. The left knee and left elbow are the only joints now affected. She has been taking 60 gr. aspirin daily.	NNPME NMFMG	1	3
13.5.53	3	There has been some deterioration. Pain has returned to her hands. The ring sizes have increased by 6 from 18.3.53. The left knee is still very troublesome. B.S.R. 46	MQRNE NMFMG	3	3
22.7.53	5	Condition has improved again. Referred to Orthopaedic Clinic for treatment of left knee. Both elbows, restricted movement.		2	9
3.3.54	12	For past six months she has been treated by the orthopaedic surgeon for the left knee by P.O.P. The knee is now fixed in full extension. She is managing her house-work satisfactorily. Only the left elbow gives her pain now, but both elbows show limited movement. There has been a fall in ring sizes of 11 since patient was discharged from hospital.	MPPMD LLPKE	0	14

CASE NO. 3

NAME: Mrs. Agnes Young.

ADDRESS: 7 McLellan Street, Glasgow.

AGE: 47.

Admitted: 16th April, 1952.

Discharged: 30th June, 1952.

History: The patient developed a painful swelling of the first interphalangeal joint of the left forefinger three months before admission. Within the next few weeks she developed a similar affliction of other joints of both hands, and then the disease spread to her knees, elbows, feet and wrists. The joints affected became both stiff and painful. They were also swollen, and these symptoms were worse in the morning or after resting, but improved with movement. Her general health has deteriorated since the onset of the illness, and latterly she had been tired and unfit for housework.

Previous History: She has had no serious illnesses. She has no domestic worries, and has never been under severe mental or physical stress.

Family History: There is no history in the family of rheumatism, or any allergic conditions.

Social History: Housing conditions are satisfactory, and there are no financial worries.

Obstetric and Menstrual History: She has had three pregnancies, one child being stillborn, the other two alive and well. The menopause occurred two years ago.

Daily Analgesics: Since the onset of her illness she has been taking six or more aspirins daily for the relief of pain and to allow her to sleep.

T. 97.6

P. 80

R. 20

B.P. 120/70.

General Examination: The patient is a well-nourished woman, who has an anxious expression. She is not pallid and there is no jaundice cyanosis, oedema or clubbing of the fingers. There is no enlargement of the lymph glands. She is alert and co-operative.

Locomotor System: There is slight restriction of movement of the left elbow, and it is painful on pressure. Both wrists are painful on pressure, but movement is unrestricted. Several of the joints of both hands are painful and swollen, and show restricted movement.

Both knees are tender on pressure, and there is slight restriction in movement of the right knee. The right ankle is tender, but movement is free.

Other Systems: Examination is negative.

X-Ray Report: The ankle joints show peri-articular soft tissue swelling, maximal in the right ankle with underlying osteoporosis of the adjacent bony structures of the joint. The articular surfaces of both joints are intact. The appearances are consistent with rheumatoid involvement of the right ankle.

TREATMENT		Adrenalin		Aspirin and Adrenalin	No treatment	Aspirin and Adrenalin
DURATION OF TREATMENT		2 weeks		2 weeks	1 week	3 weeks
WEEKS AFTER ADMISSION		0	2	4	5	8
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 0	0 1	0 0	0 0	0 0
	Tenderness	0 0	0 1	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	0 1	0 1	0 0	0 0	0 0
	Extension	0 1	0 2	0 0	0 0	0 0
	Tenderness	0 2	0 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	1 0	1 1	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0	0 0
	Tenderness	2 1	2 1	0 0	0 0	0 0
<u>METACARPAL</u>	I	1 0	1 1	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 2	3 2	0 0	0 1	0 0
<u>JOINT</u>	III	3 2	3 1	0 0	0 1	0 0
<u>TENDERNESS</u>	IV	3 1	3 1	0 0	0 0	0 0
	V	2 3	2 2	0 0	1 0	0 0
<u>FIRST</u>	I	1 0	1 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	3 1	2 1	0 1	1 2	0 0
<u>JOINT</u>	III	3 2	3 1	0 1	0 1	0 0
<u>TENDERNESS</u>	IV	2 3	3 2	0 0	0 0	0 0
	V	1 1	2 1	0 0	0 0	0 0
<u>FINGER TO PALM</u>		4 3	4 3	0 0	0 1	0 0
<u>CLOSURE</u>						
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	1 1	1 1	0 0	0 0	0 0
	Tenderness	3 2	2 2	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 0	1 0	1 0	2 1	0 0
	D. Flexion	0 0	1 0	1 0	1 0	0 0
	Tenderness	2 1	2 1	2 2	2 2	0 0
<u>TOTAL</u>	Tenderness	49	46	6	11	0
	Movement Range	12	17	2	5	0

TREATMENT

The patient commenced with hyperduralic adrenalin 3 minims t.i.d. The dose was raised 1 minim t.i.d. until the patient was receiving 7 minims t.i.d. She showed reaction at 7 minims t.i.d. and was maintained on this dose. When aspirin was commenced she received 15 gr. four times a day. The patient was confined to bed during the first two weeks of treatment and thereafter allowed up for a limited period each day. There was no substantial alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin	Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks	2 weeks	
WEEKS AFTER ADMISSION	0 2	4	4 weeks result
Tenderness	- 3	40	43
Range of Movement	- -5	15	10

The patient received treatment with adrenalin alone for two weeks. During that time there was little alteration in her condition. She lost 3 degrees of tenderness, but there was slight deterioration in the range of movement of her joints - she lost 5 degrees in range of movement.

Treatment with aspirin and adrenalin followed immediately, and after two weeks of this treatment she had lost a further 40 degrees of tenderness. There was a marked improvement in the range of movement and after a fortnight she had gained 15 degrees.

Thus, four weeks after admission the patient had lost in all 43 degrees of tenderness and had gained 10 degrees in range of movement. At the end of this time both ankles were tender, and there was restriction of movement of the right ankle.

RELAPSE WITH SUBSEQUENT IMPROVEMENT

TREATMENT	No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	5	8
Tenderness	11	0
Range of Movement	5	0

Treatment was discontinued for one week, and there was a relapse. She gained 5 degrees of tenderness and lost 3 degrees in range of movement during that week.

Treatment with aspirin and adrenalin was recommenced for a further three weeks and during these three weeks she lost 11 degrees of tenderness and gained 5 degrees in movement range.

She was discharged at the end of this time completely free from pain and tenderness and with a full range of movement of her joints.

PERFORMANCE CHART

TREATMENT	Adrenalin		Aspirin and Adrenalin	No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	2	4	5	8
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes	Yes
<u>Use Knife and fork</u>	With diffi- culty	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin		Aspirin and Adrenalin	No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	2	4	5	8
	-	Slightly better	Much better	Slightly worse	No disability

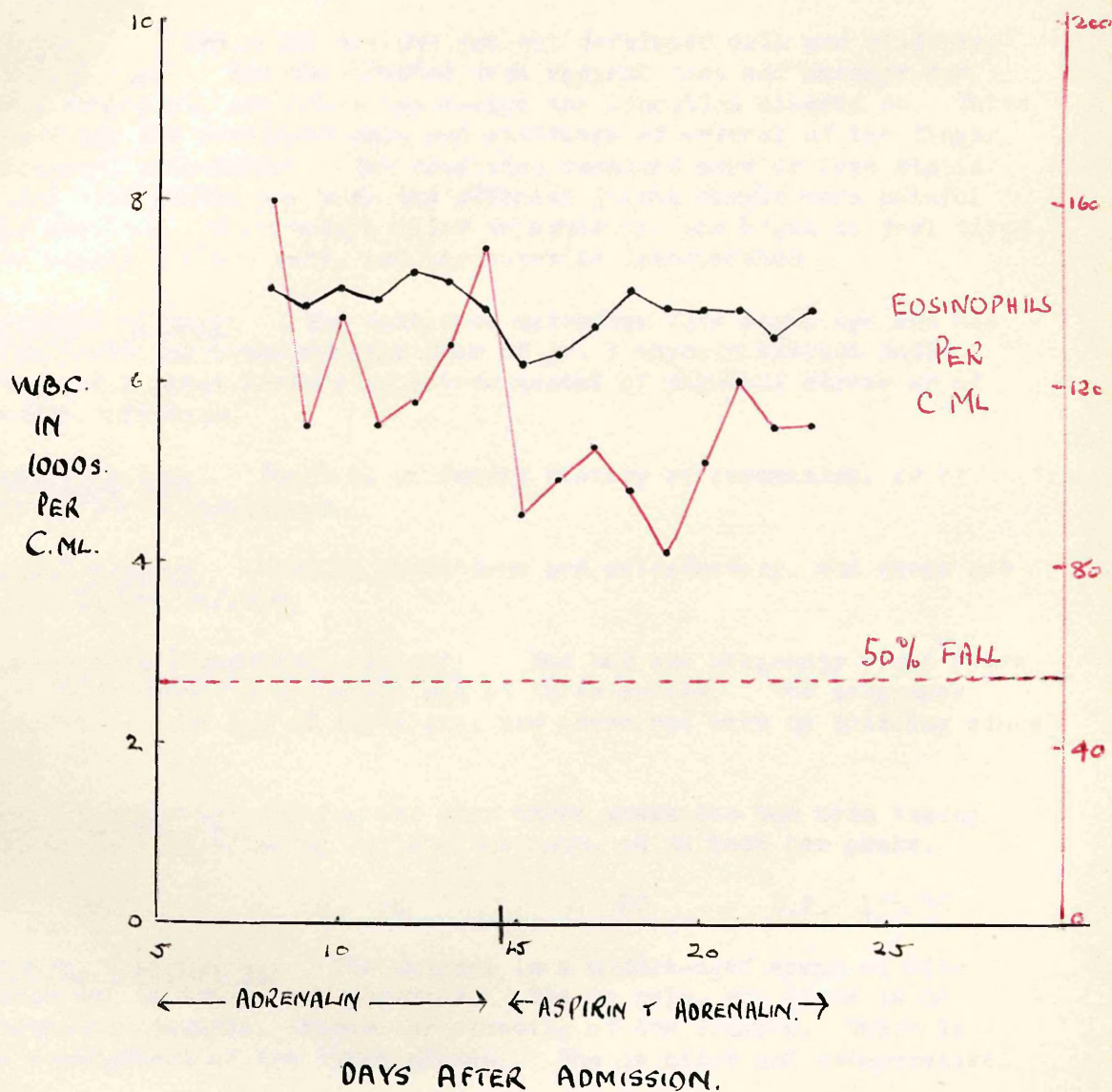
SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin		Aspirin and Adrenalin	No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	2	4	5	8
Blood Uric Acid Mgm/100 ml	2.9	2.8	2.2		2.1
B.S.R. mm in 1st Hour	30	14	12	30	5
Haemoglobin	85%				90%
R.B.C. cells/c.mm	4.1M				4.3M
Blood pressure	120/70				135/75

OUT-PATIENT RECORDMonths after
dischargeCondition

- 1 Condition is unchanged from that when discharged from hospital. There is no tenderness, swelling, or limitation of movement in any joints.
- 2 The patient complains of pain in shoulders and ankles when she discontinues aspirin. On examination there is grade 2 tenderness of the right ankle with slight limitation of movement. This patient had been taught to give her own adrenalin injections and a three weeks course is now prescribed.
- 3 There are now no complaints. Examination is negative.
- 5 Another course prescribed because of tenderness in ankles and shoulder.
- 6 There are no complaints. The rheumatoid deformity of the hands is now more evident than when she was discharged from hospital. She walked two miles to come here.
- 15 The patient is complaining of pain and stiffness of hands and right ankle. There is tenderness of several of the interphalangeal joints of the fingers of both hands, and tenderness with limitation of movement of the right ankle. Another course of aspirin and adrenalin is prescribed.
- 16 There are no complaints now. There is no tenderness or limitation of movement on examination. The hands now show typical rheumatoid deformity.

Eosinophil and White Cell Counts.



CASE NO. 4.

NAME: Mrs. Martha Hall.

ADDRESS: 61 Clincarthill Road, Rutherglen.

AGE: 43. OCCUPATION: Cinema Attendant.

Admitted: 9th May, 1952.

Discharged: 29th June, 1952.

History: Five years ago the patient developed pain and stiffness in both hips. She was treated with radiant heat and massage for this complaint, and after two months the condition cleared up. Three years ago she developed pain and stiffness of several of the finger joints of both hands. The condition remained more or less static until four months ago when the affected joints became more painful and swollen. A fortnight prior to admission she began to feel tired and unable for her work, and her appetite deteriorated.

Previous History: She developed myxoedema five years ago and has been receiving a maintenance dose of gr. 1 thyroid extract daily. There is no past history of severe mental or physical stress or of severe infection.

Family History: There is no family history of rheumatism, or of any allergic conditions.

Social History: Housing conditions are satisfactory, and there are no financial worries.

Obstetric and Menstrual History: She had one pregnancy eight years ago which ended in a miscarriage at three months. The menopause occurred at the age of forty-one, and there has been no bleeding since that time.

Daily Analgesics: During the past three weeks she has been taking six or more aspirins to relieve the pain, which kept her awake.

T. 98.2

P. 80

R. 20

B.P. 135/75

General Examination: The patient is a middle-aged woman of slim build who is not in any distress. She is pale, but there is no jaundice, cyanosis, oedema, or clubbing of the fingers. There is no enlargement of the lymph glands. She is alert and co-operative.

Locomotor System: The right elbow and wrist are tender on pressure, and there is slight restriction of movement. Several finger joints of both hands are swollen and painful, and show restricted movement.

Both knees are tender on pressure, and are slightly restricted in movement.

Other Systems: Examination is negative.

X-Ray Report: There is periarticular soft tissue swelling of several of the interphalangeal joints of both hands, and some osteoporosis. The appearances are consistent with early rheumatoid arthritis.

TREATMENT		Adrenalin			Aspirin and Adrenalin
DURATION OF TREATMENT		4 weeks			3 weeks
WEEKS AFTER ADMISSION		0	3	4	7
		R.L.	R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	1 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0
	Tenderness	1 1	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 2	1 0	1 0	0 1
<u>JOINT</u>	III	3 3	1 0	1 0	0 0
<u>TENDERNESS</u>	IV	2 1	1 1	1 1	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		2 2	1 1	1 1	0 1
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0
	Flexion	1 1	0 0	0 0	0 0
	Tenderness	1 2	1 0	1 0	0 0
<u>TOTAL</u>	Tenderness	18	5	5	1
	Movement Range	7	2	2	1

TREATMENT.

Treatment consisted initially of hyperduralic adrenalin alone commencing with a dose of 3 minims t.i.d. and raised to 6 minims t.i.d. when she showed a reaction to the drug. The dose of hyperduralic adrenalin was then maintained at 6 minims t.i.d. The dose of aspirin given was 15 gr. four times a day. The patient was allowed up during the course of treatment, and there was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			3 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	Final result 7 weeks
Tenderness	-	13	13	4	17
Range of Movement	-	5	5	1	6

The patient received treatment with adrenalin alone for four weeks. During the first three weeks there was considerable improvement - she lost 13 degrees of tenderness and gained 5 degrees in range of movement. During the fourth week her condition remained static. Treatment with aspirin and adrenalin was then commenced. There was further slight improvement at the end of three weeks of this combined therapy. She lost a further 4 degrees of tenderness and gained 1 degree in range of movement.

Thus, seven weeks after admission, the patient had lost in all 17 degrees of tenderness and had gained 6 degrees in range of movement.

At the end of this time only the index finger of the left hand was affected, being slightly tender with slight restriction in movement range.

PERFORMANCE CHART

TREATMENT	Adrenalin			Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
<u>Dress</u>	Yes	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes
<u>Use Knife and Fork</u>	With diffi- culty	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin		Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	7
	-	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin			Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
Blood Uric Acid Mgm/100 ml	2.8	2.6		2.4
B.S.R. mm in 1st hour	55	57	60	56
Haemoglobin	85%			90%
R.B.C. cells/c.mm	4.4M			4.3M
W.B.C. cells/c.mm	4,600			6,100
Blood pressure	135/75			130/70

Date	Month	Condition	Tender- ness	Move- ment
16.7.52	1	Patient was perfectly fit until a week ago, when she developed pain in the knees and hands. She states that she was "as bad as ever." To-day, however, this has disappeared, and she feels well and walks briskly. There are no objective signs of rheumatoid arthritis.	0	0
13.8.52	2	Patient has been back at work for the past month. There are no objective signs of rheumatoid arthritis.	0	0
15.10.52	4	Condition remains satisfactory.	0	0

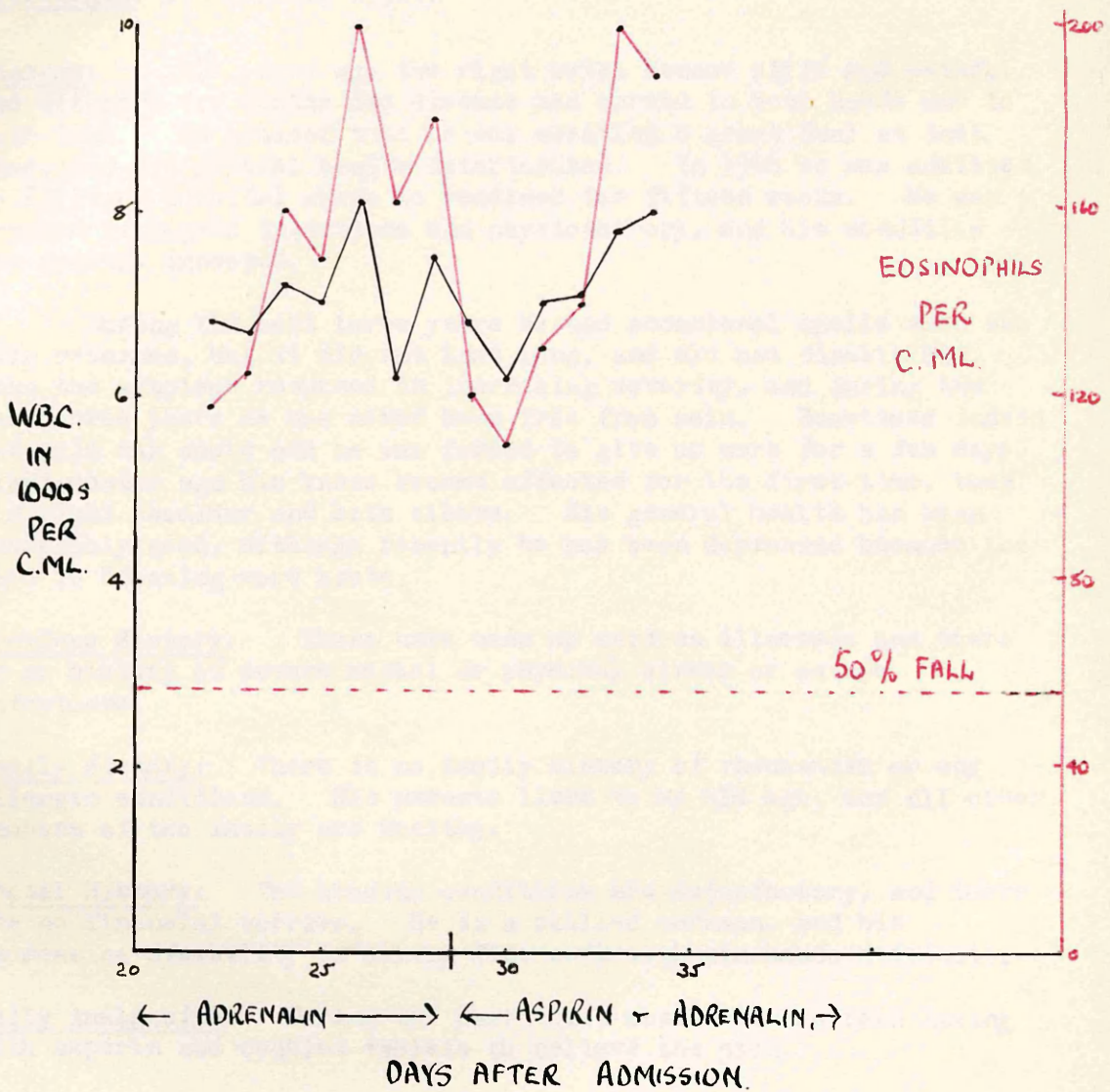
Mrs. Hall reported as an out-patient on 11.12.52 complaining of jaundice. She was admitted to the Medical Wards, and the jaundice was thought to be obstructive, probably due to gallstones.

She was transferred to the Surgical Unit on 19.1.53. Laparotomy was performed, and there was no evidence of obstruction. Liver biopsy revealed subacute hepatic necrosis.

After operation her condition slowly deteriorated. It is interesting to note that on 25.1.53 there was an acute flare-up of her rheumatoid arthritis. The finger joints became very swollen, stiff and painful. The wrists, knees and ankles were also involved. The process was more acute and widespread than ever before - this in spite of the fact that she was deeply jaundiced. Aspirin (60 gr. daily) gave some relief.

After a lingering illness, she died on 27.6.53.

Eosinophil and White Cell Counts.



CASE NO. 5

NAME: James Gilchrist.

ADDRESS: 24, Caird Drive, Glasgow.

AGE: 49. OCCUPATION: Master Joiner.

Admitted: 24th June, 1952.

Discharged: 9th August, 1952.

History: Six years ago the right wrist became stiff and painful, and within a few months the disease had spread to both hands and to both feet. He noticed that he was sweating a great deal at that time, and his general health deteriorated. In 1946 he was admitted to Killearn Hospital where he remained for fifteen weeks. He was treated with gold injections and physiotherapy, and his condition was greatly improved.

During the next three years he had occasional spells when the pain returned, but it did not last long, and did not disable him. Then the symptoms returned in increasing severity, and during the past three years he has never been free from pain. Sometimes indeed the pain was acute and he was forced to give up work for a few days. Eight months ago his knees became affected for the first time, then his right shoulder and both elbows. His general health has been reasonably good, although recently he has been depressed because the pain is becoming more acute.

Previous History: There have been no serious illnesses and there is no history of severe mental or physical stress or severe infections.

Family History: There is no family history of rheumatism or any allergic conditions. His parents lived to an old age, and all other members of the family are healthy.

Social History: The housing conditions are satisfactory, and there are no financial worries. He is a skilled workman, and his increasing disability is making fine work with his hands difficult.

Daily Analgesics: During the past three months he has been taking both aspirin and codeine tablets to relieve the pain.

T. 98.4

P. 80

R. 21

B.P. 145/90.

General Examination: The patient is a healthy-looking, middle-aged man who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlargement of the lymph glands. He is intelligent and co-operative.

Locomotor System: There is slight limitation of movement of the right shoulder, and this joint is painful on pressure.

The left wrist is painful on pressure, and there is slight limitation of movement. All the fingers of the hands are slightly deformed, and there is some atrophy of the small muscles. There is some swelling over several of the metacarpal phalangeal joints and interphalangeal joints of both hands, and they are painful on pressure.

There is slight limitation of movement in both knees, and there is some pain on pressure. There is marked valgus deformity of the toes of both feet, and there is tenderness over all the metatarsal phalangeal joints. The ankles are slightly tender with slight limitation of movement.

Other Systems: Examination is negative.

TREATMENT		Adrenalin		Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		2 weeks	
WEEKS AFTER ADMISSION		0	2	3	4
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 0	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	0 1	0 1	0 0	0 0
	Extension	0 1	0 0	0 0	0 0
	Tenderness	0 2	0 1	1 0	0 0
<u>METACARPAL</u>	I	2 2	1 1	0 1	0 1
<u>PHALANGEAL</u>	II	1 3	1 2	1 1	0 0
<u>JOINT</u>	III	3 2	2 1	1 1	1 0
<u>TENDERNESS</u>	IV	3 1	1 1	0 1	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		1 2	1 2	1 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0
	Flexion	1 1	1 0	0 0	0 0
	Tenderness	2 1	1 1	1 0	1 0
<u>ANKLE</u>	P. Flexion	1 1	1 1	0 1	0 0
	D. Flexion	1 1	1 1	1 0	0 0
	Tenderness	1 1	1 1	1 0	0 1
<u>METATARSAL</u>	I	1 2	1 1	1 0	0 0
<u>PHALANGEAL</u>	II	2 1	1 1	0 0	0 0
<u>JOINT</u>	III	3 1	2 1	1 0	0 0
<u>TENDERNESS</u>	IV	1 2	1 1	1 1	0 0
	V	1 1	1 0	0 0	0 0
<u>TOTAL</u>	Tenderness	40	25	13	4
	Movement Range	12	9	3	0

TREATMENT

The patient commenced with hyperdureic adrenalin 3 minims t.i.d. The dose was raised 1 minim t.i.d. until he showed reaction at 8 minims t.i.d. and was maintained at this dose. The dose of aspirin given was 15 gr. four times a day. The patient was not confined to bed during treatment and was allowed up for a limited period.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		2 weeks		
WEEKS AFTER ADMISSION	0	2	3	4	Final result 4 weeks
Tenderness	-	15	12	21	36
Range of movement	-	3	6	9	12

The patient received treatment with adrenalin alone for two weeks and during that time there was some relief of pain - he lost a total of 15 degrees of tenderness. There was also improvement in the range of movement - he gained 3 degrees in movement range.

Treatment with aspirin and adrenalin followed immediately, and after two weeks of this treatment there had been further considerable improvement. He lost a further 21 degrees of tenderness. The improvement in range of movement was more marked than with adrenalin alone. He gained in all 9 degrees in range of movement.

Thus, four weeks after admission, the patient had lost in all 36 degrees of tenderness and had gained 12 degrees in range of movement. At the end of this time he had only slight tenderness in two fingers and in the left ankle.

The patient had been complaining for a few days of epigastric pain and a peculiar empty sensation in the stomach, which he associated with the injections of adrenalin. On 21.7.52 he suddenly developed severe epigastric pain, and a diagnosis of a perforated ulcer was made.

He was transferred immediately to the surgical side of the hospital where suture of a perforated gastric ulcer was carried out. He made a good recovery and was discharged from the surgical side on 9.8.52.

During his stay as an in-patient there he had no trouble with his joints whatsoever, and on discharge from hospital there was no tenderness and no restriction of movement.

PERFORMANCE CHART.

TREATMENT	Adrenalin		Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	2	3	4
<u>Dress</u>	With difficulty	Yes	Yes	Yes
<u>Wash hands and face</u>	With difficulty	Yes	Yes	Yes
<u>Bathe</u>	With difficulty	Yes	Yes	Yes
<u>Dress Hair</u>	With difficulty	Yes	Yes	Yes
<u>Use Knife and Fork</u>	With difficulty	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin		Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	2	3	4
	-	Better	Much better	No disability

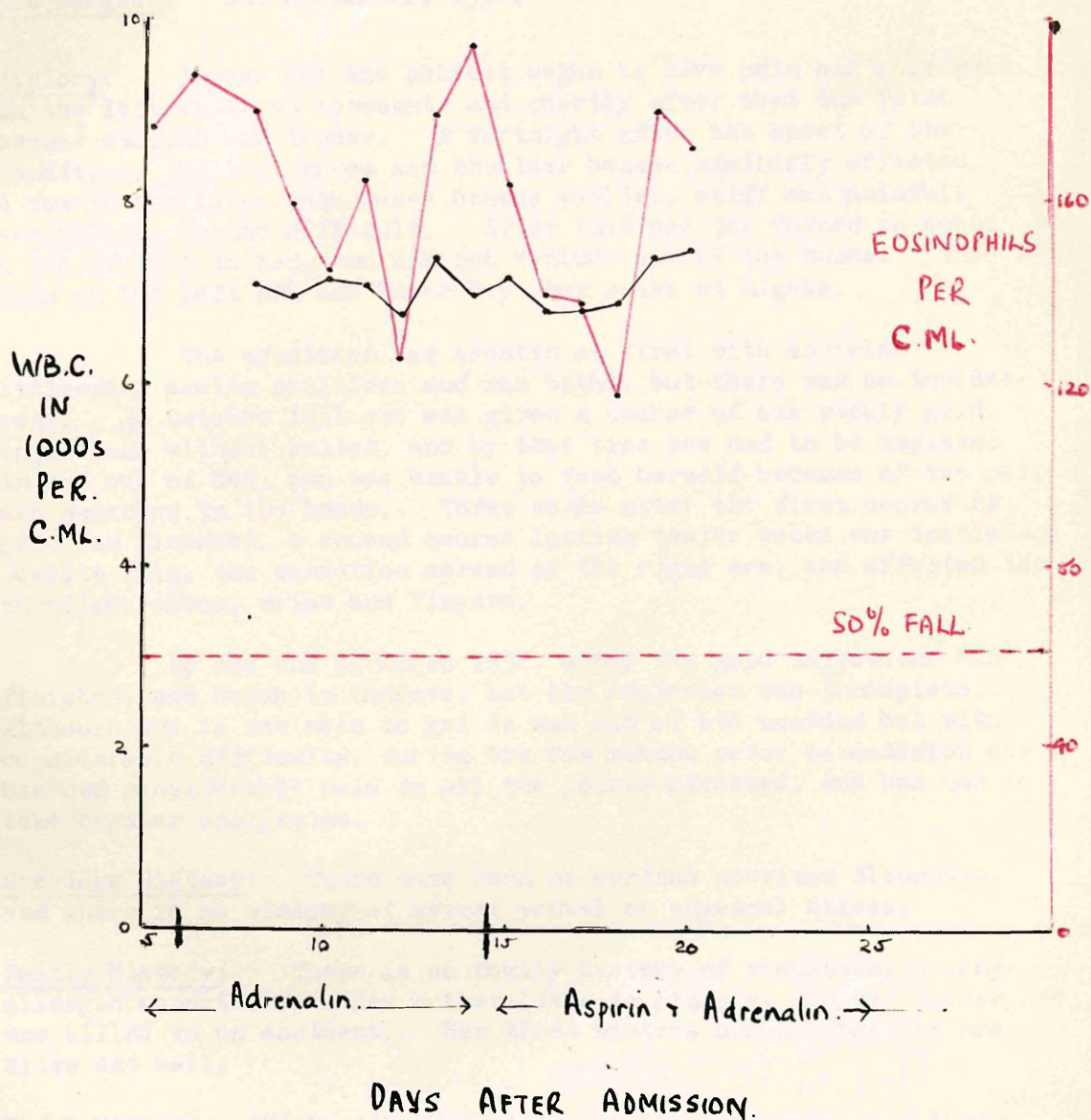
SPECIAL INVESTIGATIONS.

TREATMENT	Adrenalin		Aspirin and Adrenalin	
	0	2	3	4
WEEKS AFTER ADMISSION				
Blood Uric Acid Mgm/100 ml	2.7	2.4		2.6
B.S.R. mm in 1st hour	35	28	26	14
Haemoglobin	98%			100%
R.B.C. cells/c.mm	4.8M			4.9M
W.B.C. cells/c.mm	6,400			6,800
Blood pressure	145/90	130/90	130/85	135/90

OUT-PATIENT RECORD.

Month	Condition	Tender- ness	Move- ment
2	Patient has fully recovered from his operation. He has had no trouble with his joints.	4	0
4	The patient was re-admitted to the surgical wards on 24.11.52 for partial gastrectomy. Unfortunately he developed a deep abdominal abscess after the operation which necessitated further operation. He was discharged on 4.2.53. The rheumatoid arthritis remained quiescent while he was in hospital.	4	1
9	The patient has started to play golf again, which he has been unable to do for six years. He is back at work and feeling perfectly fit.	4	1
21	The patient has occasional slight pain in hands and feet. On examination, there is slight restriction in movement range of the right ankle and some tenderness in the 2nd metatarsal phalangeal joints of both feet. Three interphalangeal joints are slightly tender.	7	2

Eosinophil and White Cell Counts.



CASE NO. 6

NAME: Mrs. Barbara Terrett.

ADDRESS: 61 Hill Street, Burnbank.

AGE: 54. OCCUPATION: Housewife.

Admitted: 26th June, 1952.

Discharged: 6th September, 1952.

History: A year ago the patient began to have pain and stiffness in the left wrist on movement, and shortly after that the joint became swollen and tender. A fortnight after the onset of the condition, the left elbow and shoulder became similarly affected. A few months later both knees became swollen, stiff and painful, and walking became difficult. After this she was forced to spend a lot of time in bed, and did not venture out of the house. The pain in the left arm and knees kept her awake at nights.

The condition was treated at first with aspirin, liniments, kaolin poultices and wax baths, but there was no improvement. In October 1951 she was given a course of six weekly gold injections without relief, and by that time she had to be assisted in and out of bed, and was unable to feed herself because of the pain and weakness in the hands. Three weeks after the first course of gold had finished, a second course lasting twelve weeks was initiated. Despite this, the condition spread to the right arm, and affected the shoulder, elbow, wrist and fingers.

By the end of March 1952, after the gold injections had finished, she began to improve, but the remission was incomplete. Although she is now able to get in and out of bed unaided but with considerable difficulty, during the few months prior to admission she has had considerable pain in all the joints affected, and has had to take regular analgesics.

Previous History: There have been no serious previous illnesses, and there is no history of severe mental or physical stress.

Family History: There is no family history of rheumatism or any allergic conditions. Her mother lived to old age, and her father was killed in an accident. Her three sisters and one brother are alive and well.

Social History: The housing conditions are satisfactory, and there are no financial worries.

Obstetric and Menstrual History: One pregnancy - twins which were stillborn. Menstruation regular before menopause at 39. There has been no bleeding since that age.

Daily Analgesics: During the past three months she has been taking two to five "Askit" powders every day to relieve the pain and to allow her to sleep.

T. 97.8 P. 80 R. 20 B.P. 150/90.

General Examination: The patient is healthy-looking, middle-aged, and obese. She lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged glands. She is of average intelligence and co-operative.

Locomotor System; Both shoulders are tender and show restricted movement. The left elbow is slightly tender, with no limitation of movement, but the right elbow shows considerable limitation of movement and is tender on pressure.

Both wrists show restricted movement and are slightly swollen. There is no local tenderness. Both hands show typical rheumatoid deformity, and several of the metacarpal phalangeal joints are tender.

Both knees are swollen and tender and show slight limitation of movement.

Other Systems: Examination is negative.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		3 weeks		
WEEKS AFTER ADMISSION		0	2	3
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 3	1 2	1 1
	Tenderness	2 2	2 1	2 0
<u>ELBOW</u>	Flexion	2 0	1 0	0 0
	Extension	2 0	2 0	0 0
	Tenderness	1 1	1 0	0 0
<u>WRIST</u>	Flexion	1 1	0 1	0 0
	Extension	1 1	0 1	0 0
	Tenderness	0 0	0 0	0 0
<u>METACARPAL</u>	I	0 1	0 1	0 0
<u>PHALANGEAL</u>	II	3 2	2 1	0 0
<u>JOINT</u>	III	2 2	2 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FINGER TO PALM</u>				
	<u>CLOSURE</u>	2 1	1 1	0 0
<u>KNEE</u>	Extension	1 1	1 1	1 1
	Flexion	1 1	1 1	1 0
	Tenderness	3 2	2 0	1 0
<u>TOTAL</u>	Tenderness	21	12	3
	Movement Range	19	14	5

TREATMENT

The patient was allowed up during the course of treatment. She was given aspirin gr. 15 four times a day and hyperduric adrenalin 3 minims t.i.d. to begin with, the adrenalin being raised 1 minim t.i.d until she showed reaction at 8 minims t.i.d. Thereafter she was maintained on this dose. There was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks			
WEEKS AFTER ADMISSION	0	2	3	3 weeks result
Tenderness	-	9	18	18
Range of movement	-	5	14	14

The patient received treatment with aspirin and adrenalin for three weeks, and during that time there was considerable relief of pain and tenderness - she lost a total of 18 degrees of tenderness. There was also considerable improvement in the range of movement - she gained 14 degrees in range of movement.

RELAPSE WITH SUBSEQUENT IMPROVEMENT.

TREATMENT	No treatment	Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	6	7	9
Tenderness	16	3	0
Range of Movement	10	2	0

Treatment was discontinued for three weeks and there was a relapse. She gained 13 degrees of tenderness, and lost 5 degrees in range of movement. Treatment with aspirin and adrenalin was recommenced, and at the end of three weeks of this treatment she had lost 16 degrees of tenderness and gained 10 degrees in movement range. She was discharged at this time with no apparent disability.

Thus after nine weeks treatment she had lost 21 degrees of tenderness and gained 19 degrees in movement range.

PERFORMANCE CHART.

TREATMENT	Aspirin and Adrenalin		No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6	9
<u>Dress</u>	With diffi- culty	Yes	With diffi- culty	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes	Yes
<u>Bathe</u>	No	Yes	No	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	Yes
<u>Use Knife and Fork</u>	With diffi- culty	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Not without pain	Yes

SUBJECTIVE IMPROVEMENT.

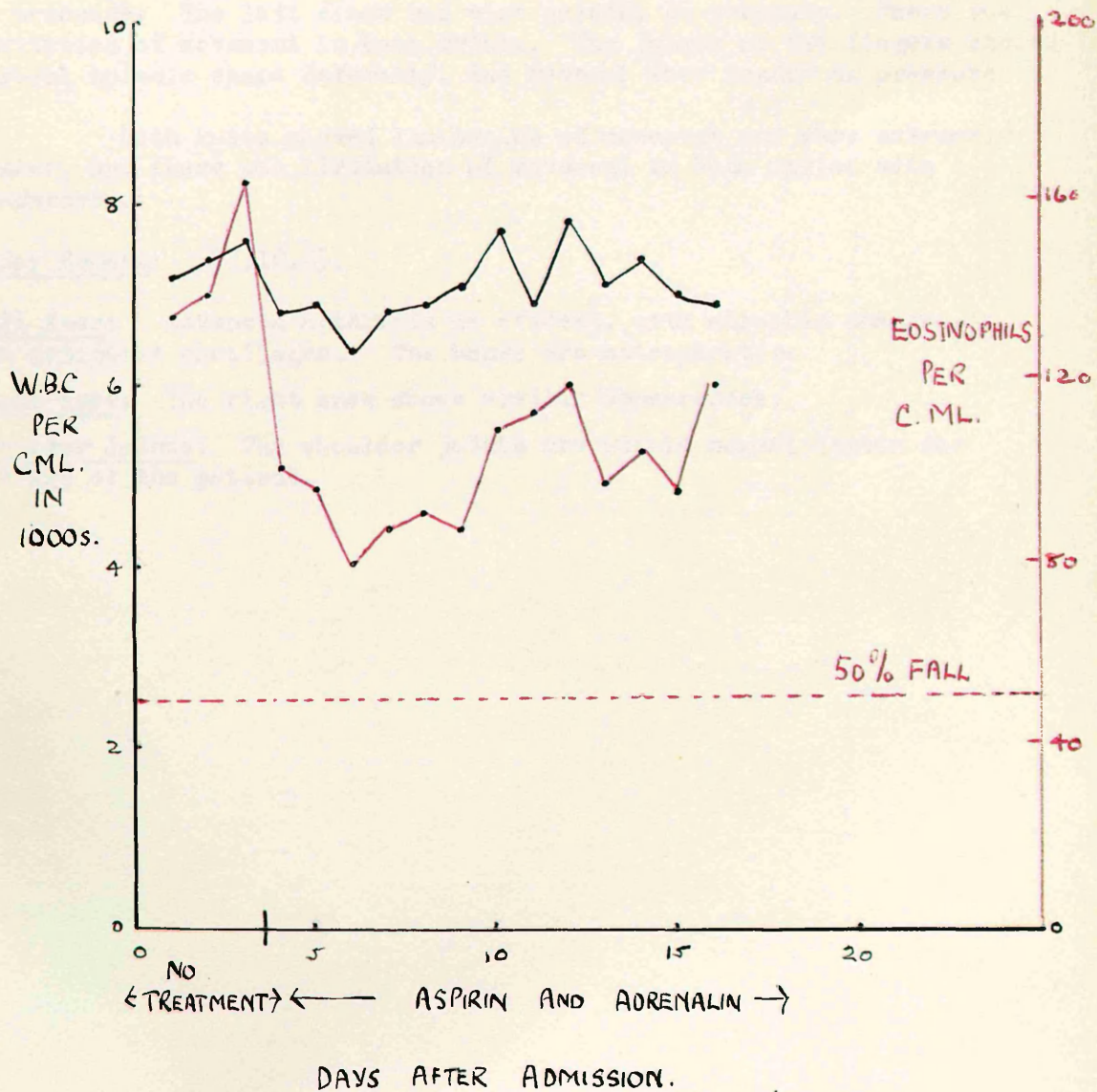
TREATMENT	Aspirin and Adrenalin		No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6	9
	-	Much better	Worse	No disability

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin		No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6	9
Blood Uric Acid Mgm/100 ml	2.8	2.6		2.7
B.S.R. mm in 1st hour	45	37	29	30
Haemoglobin	80%			85%
R.B.C. cells/c.mm	4.2M			4.3M
W.B.C. cells/c.mm	4,500	5,000		6,000
Blood pressure	140/90	135/90	135/95	135/85

Month	Condition	Tender- ness	Move- ment
1	There was slight deterioration in the patient's condition. The shoulders were again painful on movement, and showed some slight limitation. Her general health was good.	3	2
4	<p>The patient's general health remains good, and she suffers no severe disability from her rheumatoid arthritis.</p> <p>On examination there was some limitation of movement and pain in the shoulders, and the left knee showed slight limitation of movement with pain on pressure.</p>	5	3
12	The patient was complaining of considerable pain and disability, especially affecting the shoulders, elbows, wrists and knees. It was thought that she would benefit from a further course of treatment, and she was re-admitted to the Medical Unit on 28.9.53		

Eosinophil and White Cell Counts.



NAME: Mrs. Barbara Terrett.

Re-admitted: 28th September, 1953.

Discharged: 30th October, 1953.

Locomotor System: On admission there was pain and stiffness in both shoulder joints.

The right elbow showed limited movement and was very painful on pressure. The left elbow was also painful on pressure. There was limitation of movement in both wrists. The joints of the fingers showed typical spindle shape deformity, and several were tender on pressure.

Both knees showed limitation of movement and were extremely tender, and there was limitation of movement in both ankles with tenderness.

X-Ray Report: 27.10.53.

Left Knee: Advanced arthritis is evident, with atrophic changes in the articular cartilages. The bones are osteoporotic.

Right Knee; The right knee shows similar appearances.

Shoulder Joints: The shoulder joints are within normal limits for the age of the patient.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		3 weeks		
WEEKS AFTER ADMISSION		0	1	3
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	3 3	1 1	1 0
	Tenderness	1 3	1 2	0 2
<u>ELBOW</u>	Flexion	2 1	1 0	1 0
	Extension	2 0	2 0	2 0
	Tenderness	3 3	1 0	1 1
<u>WRIST</u>	Flexion	3 3	1 1	1 0
	Extension	3 1	2 1	1 1
	Tenderness	2 2	0 1	1 1
<u>METACARPAL</u>	I	1 1	0 1	0 1
<u>PHALANGEAL</u>	II	1 0	1 0	0 0
<u>JOINT</u>	III	2 1	1 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	1 0
	V	1 0	0 0	0 0
<u>FIRST</u>	I	1 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 1	0 0	0 0
<u>JOINT</u>	III	2 0	1 1	1 0
<u>TENDERNESS</u>	IV	0 1	0 0	0 0
	V	1 0	1 0	0 0
<u>FINGER TO PALM</u>				
<u>CLOSURE</u>		2 0	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	3 3	2 2	1 2
	Tenderness	3 3	1 1	1 1
<u>ANKLE</u>	P. Flexion	2 2	2 2	0 0
	D. Flexion	2 2	2 2	2 2
	Tenderness	3 3	1 2	1 1
<u>TOTAL</u>	Tenderness	40	16	13
	Movement Range	37	22	14

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	1	3
Ring Sizes	R. PMQMH L. OQNJF	R. OLOMH L. NOMIE	R. OLOMH L. NOMIE
Grip	R. 70 L. 75	R. 90 L. 65	R. 90 L. 95

TREATMENT

The patient was allowed up during treatment. Treatment consisted of hyperduric adrenalin minims 3 t.i.d. and the dose was raised 1 minim t.i.d. until she was getting 9 minims t.i.d. The dose of aspirin was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		
WEEKS AFTER ADMISSION	0	1	3
Tenderness	-	24	27
Range of Movement	-	15	23
Ring sizes	-	8	8
Grip	-	10	40

The patient received treatment with aspirin and adrenalin for three weeks. During that time there was considerable improvement both in tenderness and range of movement. She lost 27 degrees of tenderness and gained 23 degrees in movement range. There was also some improvement both in the grip and the ring sizes. She gained 40 millimetres in total grip, and the ring sizes diminished 8 in total.

On discharge from hospital there was still some tenderness in the left shoulder and some limitation in abduction of the right shoulder (125°). The right elbow was limited in movement (angle of flexion 50° - angle of extension 145°) and slightly tender, and both wrists were slightly tender and showed some limitation of movement.

The right knee was slightly tender and showed slight limitation of flexion (angle of flexion 70°). The left knee was slightly tender and had limitation of flexion (angle of flexion 80°).

Both ankles were slightly tender and there was limitation of dorsiflexion (5° in both).

PERFORMANCE CHART.

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	1	3
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes
<u>Use Knife and Fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT.

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	1	3
	-	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	1	3
Blood Uric Acid Mgm/100 ml	2.7		2.8
B.S.R. mm in 1st hour	35		3
Haemoglobin	75%		85%
R.B.C. Cells/c.mm	3.9M		4.2M
Blood pressure	130/80		125/75

OUT-PATIENT RECORD.

16.2.54. The patient ~~was~~ feeling very well. The only pain she had ~~was~~ in her shoulders and wrists. Examination gave the following results:

Tenderness - 19.
 Range of Movement - 17
 Rings - R. NLRNG (+2 since discharge)
 L. MPNIG
 Grip - R. 105
 L. 85

CASE NO. 7.

NAME: Mr. William Milliken.

ADDRESS: 490A Main Street, Bellshill.

AGE: 43 OCCUPATION: Excavator Driver.

Admitted: 16th July, 1952.

Discharged: 14th September, 1952.

History: Eleven years ago the patient began to have pain and swelling of both knees. Movement became progressively more difficult in these joints, and within a few months the process had spread to involve practically all the joints of the body. The following joints were affected: the shoulders, elbows, wrists, hands, knees, ankles, and the sterno-clavicular joints. He was treated in hospital for this condition for two months with rest, heat and salicylates.

Following his discharge from hospital, he remained very stiff, especially in the mornings, but this gradually disappeared, and for seven years he felt well apart from occasional pain in the knee joints.

Seven months prior to admission the pain and swelling of his knee joints and the small joints of the hands returned. At first these symptoms would last for a few days, and then subside for a week or so. During the past month, however, there has been no remission, and the shoulders, elbows, wrists, and ankles became involved once again. During this time he has been confined to bed.

Previous History: There have been no serious previous illnesses, and there is no history of severe mental or physical stress. He had tonsillitis in 1948.

Family History: There is no family history of rheumatism. His father died aged fifty nine of asthma. He has four brothers and five sisters alive and well.

Social History: The housing conditions are unsatisfactory - he lives with his wife in a room of a condemned house. There are no financial worries.

Daily Analgesics: He has been taking 2-4 Codeine tablets for the pain, which keeps him awake at nights.

T. 99.8

P. 88

R. 20

B.P. 140/90.

General Examination: The patient is a well-nourished man, who is lying in bed in considerable pain. He is pale and looks ill, but there is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged glands. He is of average intelligence, but unco-operative. There is slight swelling of the ankles.

Locomotor System: There is no disability of the shoulder joints.

The left elbow is extremely painful on pressure and movement, and there is limitation of movement. The right elbow is similarly affected.

The right wrist is painful on pressure, slightly swollen and shows limited movement. There is tenderness in varying degrees of all the metacarpal phalangeal joints and practically all the interphalangeal joints. These joints are swollen and show typical rheumatoid deformity. He is unable to make a fist with the fingers of either hand.

The right knee is swollen and tender and is painful on movement. There is marked limitation of movement. The left knee is similarly affected to a lesser degree. Several of the metatarsal phalangeal joints are tender.

Other Systems: Examination is negative.

X-Ray Report: (1) Hands and Wrists. The bony structures of both wrists and hands are osteoporotic. The changes are most marked in the left hand in relation to the proximal interphalangeal joints. Surrounding fullness of the soft tissues is noted. The appearances are consistent with rheumatoid arthritis.

(2) Elbows. No abnormality is detected.

TREATMENT		Aspirin		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		3 weeks
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	1 2	1 2	1 1
	Extension	1 1	0 1	0 0
	Tenderness	2 3	3 3	1 2
<u>WRIST</u>	Flexion	1 0	1 0	0 0
	Extension	1 0	1 0	0 0
	Tenderness	3 2	2 2	0 0
<u>METACARPAL</u>	I	2 3	2 2	0 1
<u>PHALANGEAL</u>	II	1 3	1 2	0 0
<u>JOINT</u>	III	3 1	3 1	1 0
<u>TENDERNESS</u>	IV	2 2	1 2	0 1
	V	1 2	1 1	0 0
<u>FIRST</u>	I	0 1	1 0	0 0
<u>INTERPHALANGEAL</u>	II	3 2	2 2	0 1
<u>JOINT</u>	III	2 3	1 3	0 1
<u>TENDERNESS</u>	IV	2 3	1 3	0 0
	V	1 0	1 0	0 0
<u>FINGER TO PALM CLOSURE</u>		3 4	3 3	0 0
<u>KNEE</u>	Extension	2 0	2 0	0 0
	Flexion	3 1	3 0	1 0
	Tenderness	3 2	3 1	1 0
<u>METATARSAL</u>	I	2 0	1 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 3	0 2	0 0
	V	0 2	0 2	0 0
<u>TOTAL</u>	Tenderness	59	49	9
	Movement Range	20	17	3

TREATMENT

The patient was treated with aspirin gr. 15 four times a day for the first week after admission. As there was no response the dose of aspirin was raised to gr. 20 four times a day. The patient was bed-ridden on admission.

At the end of three weeks he was given adrenalin 3 minims t.i.d. and this was raised 1 minim t.i.d. He showed marked reaction at 8 minims t.i.d. and was thereafter maintained on this dose. Aspirin gr. 15 four times a day was given along with this treatment. There was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	10	40	50
Range of Movement	-	3	14	17

The patient received treatment with aspirin alone for the first three weeks, and during that time there was very little alteration in his condition. He lost 10 degrees of tenderness, and gained 3 degrees in range of movement, but was still in considerable pain and confined to bed. During those three weeks he had an intermittent pyrexia varying from 99°F to 101°F.

Treatment with aspirin and adrenalin followed immediately, and his pyrexia immediately resolved. The day following commencement of this treatment the temperature was normal, and remained normal thereafter.

There was considerable improvement in the condition of his joints. He lost a further 40 degrees of tenderness and gained a further 14 degrees in movement range. Thus, six weeks after admission, the patient had lost in all 50 degrees of tenderness, and had gained 17 degrees in range of movement.

At the end of this time, only the right elbow, the right knee and several of the fingers were affected.

RELAPSE ON CESSATION OF TREATMENT

NO TREATMENT		
WEEKS AFTER ADMISSION	7	8
Tenderness	19	23
Range of Movement	11	13

Treatment was discontinued for a fortnight and there was a relapse. He gained 14 degrees of tenderness and lost 10 degrees in range of movement.

I wished to give the patient another course of aspirin and adrenalin, but he refused. He had complained bitterly during the first course of the tremor and gastric discomfort which the injections of adrenalin gave him. He discharged himself irregularly from hospital on 14.9.52.

PERFORMANCE CHART

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment
WEEKS AFTER ADMISSION	0	3	6	8
<u>Dress</u>	No	No	No	No
<u>Wash hands and face</u>	No	No	Yes	No
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	No	No	Yes	No
<u>Use knife and fork</u>	With difficulty	With difficulty	Yes	With difficulty
<u>Walking</u>	No	No	No	No

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment
WEEKS AFTER ADMISSION	0	3	6	8
	-	Slightly better	Much better	Worse

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment
WEEKS AFTER ADMISSION	0	3	6	8
Blood Uric Acid Mgm/100 ml	2.8	2.7	2.6	
B.S.R. mm in 1st hour	80	124	91	83
Haemoglobin	90%			85%
R.B.C. cells/c.mm	4.6M			4.4M
Blood pressure	140/90	135/85	135/85	130/85

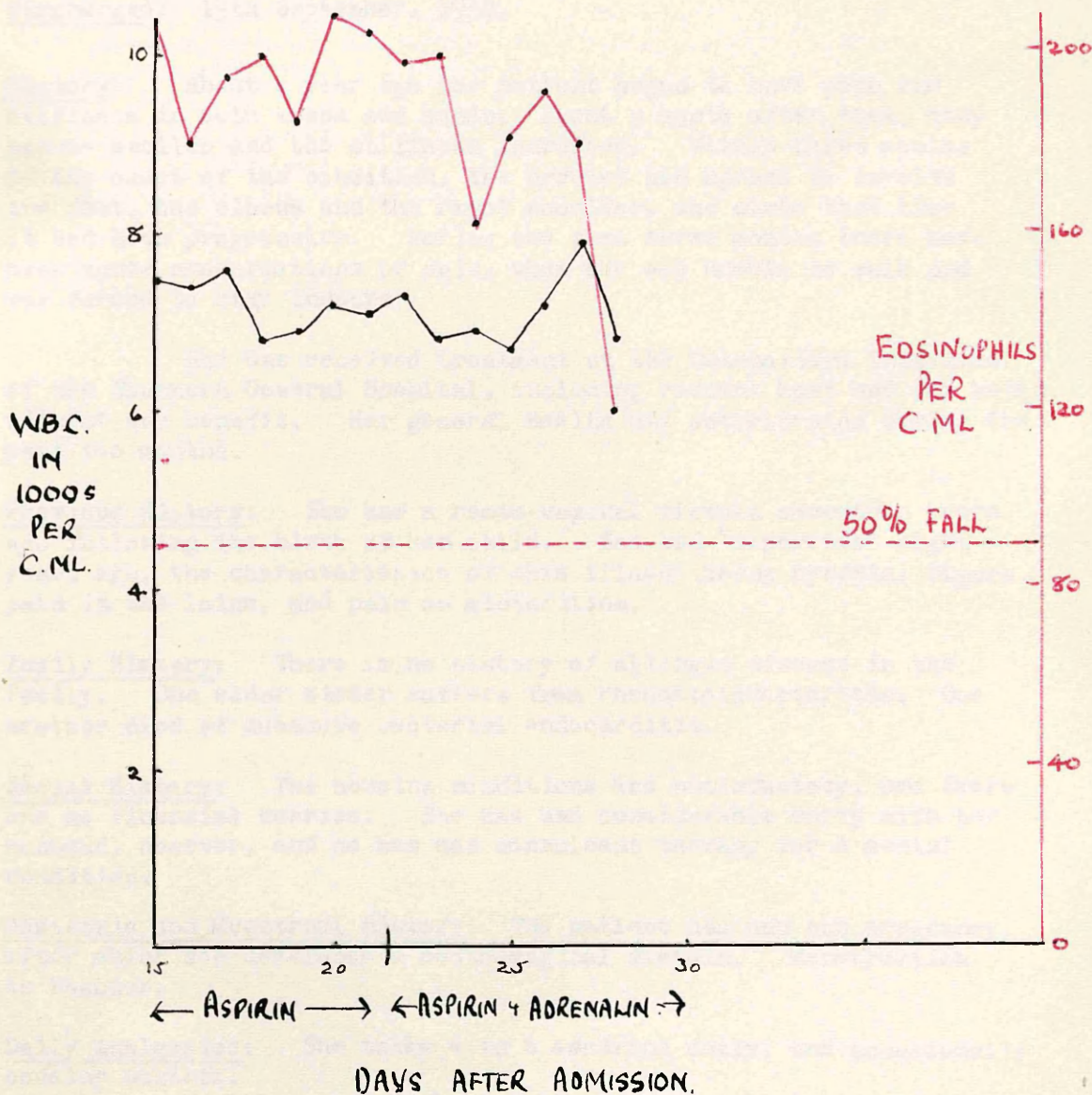
OUT-PATIENT RECORD

14.3.54. The patient reported by special request one and a half years after discharge.

Apparently after he returned home he began to improve steadily. By 16.1.53 he had started work as a taxi driver, although his feet and ankles still troubled him and he had a poor grip. He continued to improve, however, and when he reported as an out-patient, it would have been impossible to tell that he had

once suffered from rheumatoid arthritis. He looked fit and well and had gained weight. There was no disability of his joints, and the only residual sign was slight swelling of the interphalangeal joint of the middle finger of the left hand.

Eosinophil And White Cell Counts.



CASE NO. 8.

NAME: Mrs. Elizabeth Ann Kay.

ADDRESS: 10 Lanton Drive, Glasgow.

AGE: 45.

OCCUPATION: Housewife.

Admitted: 28th July, 1952.

Discharged: 19th September, 1952.

History: About a year ago the patient began to have pain and stiffness in both knees and hands. About a month after that, they became swollen and the stiffness increased. Within three months of the onset of the condition, the process had spread to involve the feet, the elbows and the right shoulder, and since that time it had been progressive. During the past three months there have been acute exacerbations of pain, when she was unable to walk and was forced to stay indoors.

She has received treatment at the Out-patient Department of the Southern General Hospital, including radiant heat and wax baths, without any benefit. Her general health has deteriorated during the past two months.

Previous History: She had a recto-vaginal fistula seventeen years ago following the birth of her child. She had "nephritis" eight years ago, the characteristics of this illness being pyrexia, rigors, pain in the loins, and pain on micturition.

Family History: There is no history of allergic disease in the family. One elder sister suffers from rheumatoid arthritis. One brother died of subacute bacterial endocarditis.

Social History: The housing conditions are satisfactory, and there are no financial worries. She has had considerable worry with her husband, however, and he has had convulsant therapy for a mental condition.

Obstetric and Menstrual History: The patient has had one pregnancy, after which she developed a recto-vaginal fistula. Menstruation is regular.

Daily Analgesics: She takes 4 to 6 aspirins daily, and occasionally codeine tablets.

T. 97.2

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R. 20

B.P. 145/90.

General Examination: The patient is a well-nourished woman, who is rather pale, and has a strained expression. There is no cyanosis,

jaundice, oedema, clubbing of the fingers or enlarged glands. She is of average intelligence and co-operative. She has well marked varicosities of the veins of both legs.

Locomotor System: There is pain and limitation of movement in both shoulders.

There is slight limitation of movement in both elbows with marked tenderness, and limitation of movement in both wrists with marked tenderness. There is slight swelling of the left wrist. The metacarpal phalangeal joints and the first interphalangeal joints are tender, with typical rheumatoid deformity of the joints.

The knees are both swollen and markedly tender. There is limitation of movement. The ankles are tender, with some limitation of movement, and the metatarsal phalangeal joints are all tender in varying degrees.

Other Systems: Examination is negative.

X-Ray Reports: (1) Arms and Hands: The bones of the forearms, hands and wrists are osteoporotic. There is a slight fullness of the peri-articular soft tissues in relation to the wrist joints, metacarpal phalangeal joints, and proximal interphalangeal joints.

The appearances are in favour of an arthritis of the rheumatoid type, but so far the articular bony changes are not marked.

(2) Feet: These show bilateral hallux valgus deformity, maximal in the left foot. Cystic changes are defined in the metatarsal heads.

(3) Shoulders: Ostoarthritis of the acromioclavicular joints.

(4) Ankle joints: Negative.

TREATMENT		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		1 week	3 weeks
WEEKS AFTER ADMISSION		0 3		4	7
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 1	0 1	1 1	0 0
	Tenderness	3 2	0 2	1 2	0 0
<u>ELBOW</u>	Flexion	1 1	0 1	0 1	0 0
	Extension	1 1	0 1	1 1	0 0
	Tenderness	3 2	1 1	2 1	0 0
<u>WRIST</u>	Flexion	1 2	0 1	1 1	0 0
	Extension	1 1	0 1	1 1	0 0
	Tenderness	2 3	0 2	1 2	0 0
<u>METACARPAL</u>	I	2 1	0 1	1 1	0 0
<u>PHALANGEAL</u>	II	3 2	1 1	1 1	0 0
<u>JOINT</u>	III	3 2	2 1	2 2	0 0
<u>TENDERNESS</u>	IV	1 2	0 0	0 0	0 0
	V	2 2	0 0	0 1	0 0
<u>FIRST</u>	I	0 1	0 0	0 1	0 0
<u>INTERPHALANGEAL</u>	II	1 0	0 0	0 0	0 0
<u>JOINT</u>	III	3 2	0 0	1 0	0 0
<u>TENDERNESS</u>	IV	1 1	0 0	1 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		3 4	1 1	1 2	0 0
<u>KNEE</u>	Extension	1 1	0 0	0 1	0 0
	Flexion	2 2	0 1	1 1	0 0
	Tenderness	3 3	1 2	1 3	0 0
<u>ANKLE</u>	P. Flexion	1 1	0 0	0 0	0 0
	D. Flexion	1 1	0 0	0 1	0 0
	Tenderness	2 1	0 1	2 2	0 0
<u>METATARSAL</u>	I	2 3	0 0	0 1	0 0
<u>PHALANGEAL</u>	II	2 2	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	0 0	1 0	0 0
<u>TENDERNESS</u>	IV	2 1	0 0	0 0	0 0
	V	1 2	0 0	0 1	0 0

TREATMENT	Aspirin and Adrenalin		No treatment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		1 week	3 weeks
WEEKS AFTER ADMISSION	0	3	4	7
<u>TOTAL</u> Tenderness	69	16	32	0
Movement Range	29	8	16	0

TREATMENT

The patient was confined to bed during the first three weeks of treatment. Aspirin gr. 15 four times a day was given, and hyperdureic adrenalin commencing with 3 minims t.i.d. and rising 1 minim t.i.d. until she was receiving 8 minims t.i.d. There was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	3 weeks result
Tenderness	-	53
Range of Movement	-	21

The patient received treatment with aspirin and adrenalin for three weeks, and during that time there was considerable improvement. She lost in all 53 degrees of tenderness and gained 21 degrees in range of movement.

RELAPSE WITH SUBSEQUENT IMPROVEMENT.

TREATMENT	No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	4	7
Tenderness	32	0
Range of Movement	16	0

Treatment was discontinued for one week, and there was a relapse. She gained 16 degrees of tenderness and lost 8 degrees in range of movement.

Treatment with aspirin and adrenalin was recommenced for a

further three weeks, and at the end of that time she had lost 32 degrees of tenderness and had gained 16 degrees in movement range.

Thus, seven weeks after admission to hospital the patient had lost a total of 69 degrees of tenderness and had gained a total of 29 degrees in range of movement. She was discharged at the end of this time with no disability.

PERFORMANCE CHART.

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
<u>Dress</u>	With diffi- culty	Yes	No	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	Yes	No	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	No	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
	-	Better	Worse	No disability

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
Blood Uric Acid Mgm/100 ml	2.8	2.6		2.4
B.S.R. mm in 1st Hour	25	14	20	24
Haemoglobin	80%			80%
R.B.C. cells/c.mm	4.0M			4.0M
Blood pressure	145/90	130/90	135/85	135/85

Out-Patient Record.

The patient reported two months after discharge from hospital. She was complaining of pain in the shoulders, hands, knees and feet. Examination showed tenderness to be 14 degrees and range of movement 6 degrees.

The patient reported again four months after discharge. Further deterioration had taken place. She was re-admitted to hospital on 25.2.53.

NAME: Mrs. Elizabeth Ann Kay.

Re-admitted: 25th February, 1953.

Discharged: 13th April 1953.

Locomotor System: On admission both shoulders were painful and showed restricted movement.

The right elbow was painful and there was slight restriction of movement. The left elbow was moderately painful. The wrists were painful and showed restricted movement, and the hands showed typical rheumatoid deformity with limitation of movement.

The knees were swollen and tender and were restricted in movement and both ankles were affected.

One of the patient's main complaints was of a painful bunion associated with a marked hallux valgus deformity of the left foot.

X-Ray Report: Little change compared with the previous examination of 15.8.52. Marked hallux valgus deformity of the left foot noted. General osteoporosis, but no evidence of destruction of articular cartilage.

TREATMENT		Aspirin and Adrenalin				
DURATION OF TREATMENT		6 weeks				
WEEKS AFTER ADMISSION		0	1	3	4	6
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 2	1 2	1 1	0 1	0 0
	Tenderness	3 1	2 0	0 1	0 0	0 0
<u>ELBOW</u>	Flexion	1 0	1 0	1 0	0 0	0 0
	Extension	1 0	0 0	0 0	0 0	0 0
	Tenderness	3 2	2 1	0 0	0 0	0 0
<u>WRIST</u>	Flexion	0 1	0 1	0 0	0 0	0 0
	Extension	1 2	0 1	0 0	0 0	0 0
	Tenderness	3 3	1 2	1 1	0 1	0 0
<u>METACARPAL</u>	I	1 2	0 1	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	1 3	0 2	1 0	1 0	0 0
<u>JOINT</u>	III	3 2	2 1	0 0	0 1	0 0
<u>TENDERNESS</u>	IV	1 1	0 1	0 1	0 0	0 0
	V	1 1	0 1	1 0	0 0	0 0
<u>FIRST</u>	I	0 1	0 0	1 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	3 2	3 1	0 2	0 0	0 0
<u>TENDERNESS</u>	IV	2 1	0 2	0 1	0 0	0 0
	V	0 1	0 0	0 0	1 0	0 0
<u>FINGER TO PALM</u>		2 4	2 3	1 1	1 0	0 0
<u>CLOSURE</u>						
<u>KNEE</u>	Extension	0 1	0 0	0 0	0 0	0 0
	Flexion	1 2	0 1	0 0	0 0	0 0
	Tenderness	1 3	0 2	1 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	1 1	0 0	0 0	0 0	0 0
	D. Flexion	0 1	1 0	1 0	0 0	0 0
	Tenderness	1 3	0 2	1 0	0 0	0 0
<u>META TARSAL</u>	I	1 2	1 1	0 1	0 1	0 0
<u>PHALANGEAL</u>	II	2 1	1 0	0 0	0 0	0 0
<u>JOINT</u>	III	3 0	2 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 1	0 0	0 0	0 0	0 0
	V	1 2	1 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	65	33	13	5	0
	Movement Range	22	13	6	2	0

TREATMENT

Treatment consisted of hyperdureic adrenalin, 7 minims t.i.d. and aspirin gr. 15 four times a day for a period of six weeks.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin					
DURATION OF TREATMENT	6 weeks					
WEEKS AFTER ADMISSION	0	1	3	4	6	Final Result 6 weeks
Tenderness	-	32	52	60	65	65
Range of Movement	-	9	16	20	22	22

The patient showed dramatic improvement with treatment. During the first three weeks she lost 52 degrees of tenderness, and gained 16 degrees in movement range.

She was considered fit for operation at that time, and the Orthopaedic Surgeon operated on the hallux valgus of the left foot. Two days after operation, the treatment with aspirin and adrenalin was recommenced and carried on for a further three weeks.

At the end of the six weeks period of treatment, she had lost in all 65 degrees of tenderness and had gained 22 degrees in range of movement. She was discharged from hospital free from pain and stiffness. There was still slight swelling of several of the interphalangeal joints of both hands.

After three weeks of treatment the patient suddenly collapsed following an injection of adrenalin. She became very pale and shocked and the pulse was imperceptible. Stimulants were administered and she recovered in five minutes. She was receiving 9 minims of adrenalin at that time and the dose was subsequently reduced to 7 minims

TREATMENT	Aspirin and Adrenalin			
WEEKS AFTER ADMISSION	0	3	4	6
<u>Dress</u>	With diffi- culty	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin			
WEEKS AFTER ADMISSION	0	3	4	6
	-	Better	Much better	No disability

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin			
	0	3	4	6
WEEKS AFTER ADMISSION				
B.S.R. mm in 1st hour	34	22		16
Haemoglobin	95%			
R.B.C. cells/c.mm	4.9M			
Blood pressure	130/80			135/80

OUT-PATIENT RECORD.

The patient reported one month after discharge from hospital. The patient was feeling perfectly fit, and there was no abnormality of the joints whatsoever. She was able to walk freely for several miles without pain. The patient had lost her worried, anxious expression, and looked years younger.

Examination of the joints showed no abnormality except slight swelling of the 2nd and 3rd metacarpal phalangeal joints of both hands.

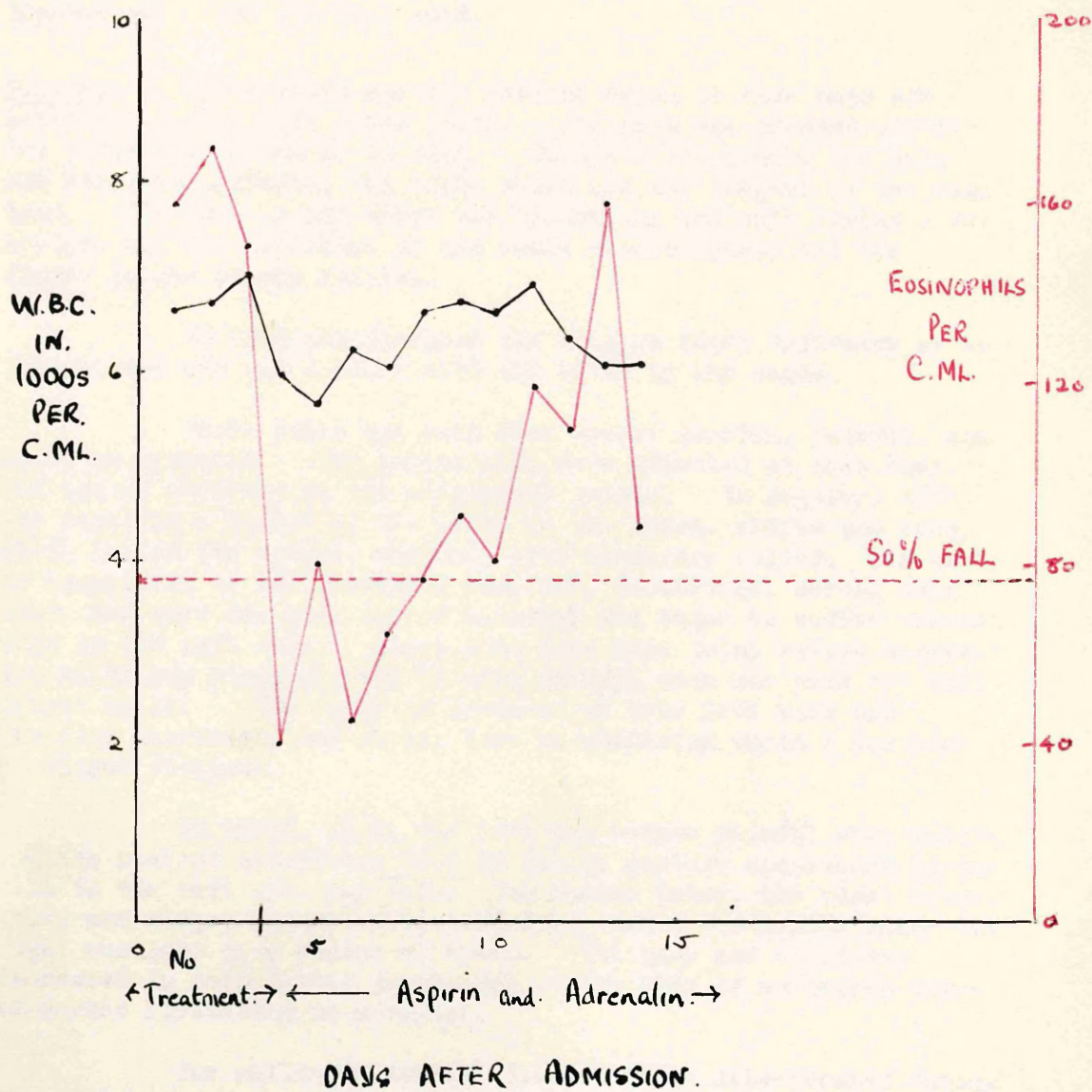
The patient reported again one year later. Her condition had deteriorated, although the condition was not so severe as on the previous occasions when she was admitted to hospital. Evidently she had a streptococcal throat in July 1953 which was not properly treated, and this caused a flare-up of the joint condition. Since that time there had been a gradual increase in the pain in her left shoulder, hands and feet. She has been taking 40-50 gr. aspirin daily for relief of this pain.

Examination gave the following results.

		R.	L.
<u>SHOULDER</u>	Abduction	1	2
	Tenderness	0	2
<u>WRIST</u>	Flexion	2	0
	Extension	2	2
	Tenderness	1	2
<u>METACARPAL</u>	I	1	0
<u>PHALANGEAL</u>	II	0	1
<u>JOINT</u>	I II	1	2
<u>TENDERNESS</u>	IV	3	1
	V	0	0
<u>FINGER TO PALM</u>		2	4
<u>CLOSURE</u>			
<u>METATARSAL</u>	I	0	0
<u>PHALANGEAL</u>	II	0	0
<u>JOINT</u>	III	1	2
<u>TENDERNESS</u>	IV	0	0
	V	0	0
<u>TOTAL</u>	Tenderness	17	
	Movement Range	15	

There is now ulnar deviation of the fingers of both hands. It is notable that her knees and ankles have given her no further trouble, and she is able to get about without much difficulty. Arrangements have been made to admit her for a further period of treatment in July, 1954.

Eosinophil and White Cell Counts.



CASE NO. 9

NAME: Mrs. Annie Russell.

ADDRESS: 44 Waddell Avenue, Glenmavis, nr Airdrie.

AGE: 52

OCCUPATION: Housewife.

Admitted: 31st July, 1952. .

Discharged: 8th October, 1952.

History: Five years ago the patient began to have pain and stiffness in the left elbow joint. The pain was present whether the joint was in use or at rest. Within a few months the pain and stiffness affected the right wrist and the fingers of the right hand. The pain in the wrist was transitory and only lasted a few months, but the condition of the hands deteriorated, and the finger joints became swollen.

In 1949 she attended the Glasgow Royal Infirmary as an out-patient and was treated with wax baths to the hands.

Three years ago both feet became swollen, painful, and stiff on movement. The ankles also were affected at this time, but not so severely as the metatarsal joints. In January, 1950, she received a course of wax baths to the knees, elbows and feet, which lasted two months, and this gave temporary relief. She was an in-patient in the Alexander Hospital, Coatbridge, during this time, and when she came out of hospital she began to suffer constant pain in the left knee. Since that time this joint swells whenever she walks any distance, and is very painful when she puts her full weight on it. The range of movement of this left knee had steadily decreased, and at the time of admission was in a position of slight flexion.

In April, 1950, the left hip became painful when walking and the patient attributes this to faulty posture occasioned by the pain in the left knee and foot. Two months later, the right elbow, wrist and finger joints became affected, and a few months later the right shoulder also became affected. The pain and stiffness increased in this latter joint, and at the time of admission there was marked limitation of movement.

The patient's general condition has deteriorated during the past two years. She complains of marked lassitude, and this has prevented her from doing much housework. For the past year she has been unable to walk properly, but has not been confined to bed,

believing that if she did not keep moving her joints would stiffen still further. For the past six months her sleep has been much disturbed.

Previous History: There have been no serious previous illnesses, and there is no history of severe mental or physical stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are satisfactory, and there are no financial or domestic worries.

Obstetric and Menstrual History: She has had three children. Each was a normal delivery, and there was no trouble in the pregnancy or the puerperium. Menstruation ceased at the age of 48, and there was no further bleeding. Prior to that, her periods had been regular.

Daily Analgesics: She has been taking aspirin and codeine in varying quantities for several years. She does not know the quantity accurately, but takes analgesics every day.

T. 98 P. 80 R. 22 B.P. 150/90.

General Examination: The patient is an obese, middle-aged woman, who is comfortable when lying at rest. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative. She is pallid and looks ill.

Locomotor System: The right shoulder showed marked limitation of movement and was extremely tender on pressure.

Both elbow joints were limited in movement, slightly swollen, and markedly tender on pressure. Both wrists showed limited movement and were tender on pressure. The hands were swollen and many of the metacarpal phalangeal joints and first interphalangeal joints were tender on pressure in varying degree.

The left knee showed marked limitation of movement and severe tenderness.

Other Systems: Examination is negative.

X-Ray Reports: (1) Hands: The hands show the changes of a rheumatoid arthritis of some standing. There is destruction of the articular bony surfaces of the left carpus, which is partially ankylosed. The bony structures are generally osteoporotic, and cystic changes are defined in the proximal phalanges and metacarpal heads.

X-Ray Reports: (2) Knees. These show osteo-arthritic changes. The left knee is somewhat osteoporotic and a cyst is defined over the lateral tibial condyle.

(3) Shoulders. The left shoulder appears normal but the glenoid fossa of the right shoulder shows some decalcification, and irregularity of its margin.

TREATMENT		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		2 weeks	3 weeks
WEEKS AFTER ADMISSION		0	3	5	8
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	3 0	3 0	3 0	3 0
	Tenderness	3 0	1 0	2 0	1 0
<u>ELBOW</u>	Flexion	2 2	1 0	1 1	1 1
	Extension	1 1	1 0	1 1	1 1
	Tenderness	3 2	0 0	0 1	0 0
<u>WRIST</u>	Flexion	3 3	0 3	0 3	0 3
	Extension	2 3	0 3	0 3	0 3
	Tenderness	3 3	0 0	0 2	0 0
<u>METACARPAL</u>	I	1 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	3 2	0 0	0 0	0 0
<u>JOINT</u>	III	3 3	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 1	0 0	0 0	0 0
	V	1 0	0 0	1 0	0 0
<u>FIRST</u>	I	0 1	0 0	0 1	0 0
<u>INTERPHALANGEAL</u>	II	2 1	1 0	1 1	0 0
<u>JOINT</u>	III	3 3	1 1	1 2	0 1
<u>TENDERNESS</u>	IV	0 2	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		2 2	1 1	1 2	0 0
<u>KNEE</u>	Extension	0 2	0 1	0 1	0 1
	Flexion	0 3	0 2	0 2	0 2
	Tenderness	1 3	0 1	0 1	0 1
<u>TOTAL</u>	Tenderness	46	5	13	3
	Movement Range	29	16	19	16

TREATMENT

The patient was confined to bed during the first five weeks of treatment. She was given aspirin gr. 15 four times a day, and hyperduralic adrenalin 3 minims t.i.d. to begin with, the dose being raised 1 minim t.i.d. until she showed reaction at 8 minims t.i.d. Thereafter she was maintained on this dose. There was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	3 weeks result
Tenderness	- 41	41
Range of Movement	- 13	13

The patient received treatment with aspirin and adrenalin for three weeks, and during that time there was considerable relief of pain and tenderness. She lost 41 degrees of tenderness. There was a moderate improvement in the range of movement. She gained 13 degrees in range of movement.

RELAPSE WITH SUBSEQUENT IMPROVEMENT

TREATMENT	No treatment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	5	8
Tenderness	13	3
Movement Range	19	16

Treatment was discontinued for a fortnight, and there was a relapse. She gained 8 degrees of tenderness and lost 3 degrees in range of movement. Treatment with aspirin and adrenalin was recommenced, and at the end of a further three weeks of this treatment she had lost another 10 degrees of tenderness and had gained 3 degrees in range of movement.

Thus, after a period of eight weeks, she had lost in all 43 degrees of tenderness and had gained 13 degrees in range of movement.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	5	8
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	No	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Walking</u>	No	No	No	Not without pain

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	5	8
	-	Slightly better	Worse	Better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	5	8
Blood Uric Acid Mgm/100 ml	2.9	2.6		2.7
B.S.R. mm in 1st hour	97	100	98	105
Haemoglobin	80%			85%
R.B.C. cells/c.mm	3.9M			4.1M
Blood pressure	150/90	145/85	140/85	140/85

OUT-PATIENT RECORD

This patient, despite instructions, did not report back as an out-patient. However, she attended by special request on 3rd March, 1954, that is, one and a half years after her discharge from hospital.

She reported that, after returning home, she felt weak, breathless and suffered severely from attacks of palpitation. There was no alteration in her joint condition, however. She stayed in bed for a period of two months, and then was gradually rehabilitated.

On examination the right shoulder showed limited abduction and was slightly tender on pressure.

Both elbows were slightly limited in both flexion and extension, but were not tender. The left wrist showed marked limitation of both flexion and extension. There was slight tenderness in the 3rd interphalangeal joints of both hands.

The left knee showed moderate limitation of movement, but was not tender. The right ankle showed some limitation of movement but was not tender.

OUT-PATIENT RECORD

		R.	L.
<u>SHOULDER</u>	Abduction	2	0
	Tenderness	1	0
<u>ELBOW</u>	Flexion	1	1
	Extension	1	1
	Tenderness	0	0
<u>WRIST</u>	Flexion	0	3
	Extension	1	2
	Tenderness	0	0
<u>FIRST</u>	I	0	0
<u>INTERPHALANGEAL</u>	II	0	0
<u>JOINT</u>	III	1	2
<u>TENDERNESS</u>	IV	0	0
	V	0	0
<u>FINGER TO PALM</u>			
<u>CLOSURE</u>		1	0
<u>KNEE</u>	Extension	0	0
	Flexion	0	2
	Tenderness	0	0
<u>ANKLE</u>	P. Flexion	2	0
	D. Flexion	1	0
	Tenderness	0	0
<u>TOTAL</u>	Tenderness	4	
	Movement Range	18	

CASE NO. 10

NAME: Mr. Peter Cowan.

ADDRESS: 21 Park Street, New Stevenston.

AGE: 43.

OCCUPATION: Basket Maker.

Admitted: 2nd September, 1952.

Discharged: 26th October, 1952.

History: Fourteen years ago the patient began to experience pain and stiffness in his hands, wrists, and left shoulder. The affected joints became swollen and red and remained so for several months. The following year (1939) these joints again became affected, and in addition the feet and ankles were involved in the disease. He had difficulty in walking at this time, and was off work for three months. About this time also, his left knee became stiff and swollen.

For the next few years the process settled down to a considerable extent, although the joints involved remained stiff in the mornings. During the years 1940-44 he was never off work for more than a few days at a time. In December 1944 he developed septic fingers followed by an attack of bronchitis, and after this his left knee and hip became stiff and painful. This settled down after a few months, and he remained relatively well until 1948, when he had a "nervous breakdown" and stopped working. In May 1948 he was admitted to Glasgow Royal Infirmary, where a course of gold injections was commenced, but was abandoned after the first injection because of a reaction.

There was a slow deterioration in his joint condition until about four months prior to admission, and the right elbow was especially troublesome. During the past four months, the arthritis has flared up, and the joints of the right arm have been swollen, stiff and painful. His general condition has remained fair, but recently he has suffered from headaches.

Previous History: He has been blind since the age of ten, when he suffered from "corneal ulcers". He has been deaf in the left ear since boyhood, and in the right ear since 1939. As a result of these disabilities he has been under some mental stress.

Family History: His mother died of cardiac failure, but the precipitating cause is unknown. An elder brother suffers from asthma. One sister is troubled with "rheumatics."

Social History: The housing conditions are satisfactory, and he is not unduly worried about his financial state.

Daily Analgesics: He has been taking codeine tablets at night to relieve the pain and allow him to sleep.

T. 97.8

P. 84

R. 22

B.P. 160/80

General Examination: The patient is an intelligent, middle-aged man, who is both blind and deaf. His complexion is fresh, and he lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is afebrile.

Locomotor System: There is slight limitation of abduction of the left shoulder and some tenderness.

The right elbow is fixed in a position of flexion, with only 5° range of movement possible. The right wrist is extremely tender and there is gross limitation of movement. The left wrist is tender with limitation of movement. The hands show typical rheumatoid deformity and most of the metacarpal phalangeal and first interphalangeal joints are tender.

The right ankle is tender, and there is slight limitation of movement.

Other Systems: The patient is totally blind and is able to hear only with the use of a hearing aid.

X-Ray Report: Hands, wrists and elbows.

The small joints of the hands show advanced changes due to rheumatoid arthritis. In the proximal interphalangeal joints and in the metacarpal phalangeal joints there is varying destruction of their articular cartilage. Ankylosis is probably present in several joints. There are marginal bone erosions. The wrist joints show no marked changes. The right elbow is severely affected with obliteration of the joint space. The left elbow appears normal.

TREATMENT		Aspirin and Adrenalin	No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks	1 week	3 weeks
WEEKS AFTER ADMISSION		0 3	4	7
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 1	0 0	0 0
	Tenderness	0 2	0 2	0 0
<u>ELBOW</u>	Flexion	3 0	3 0	3 0
	Extension	3 0	3 0	3 0
	Tenderness	3 0	2 0	1 0
<u>WRIST</u>	Flexion	3 2	2 1	1 0
	Extension	3 2	3 1	2 0
	Tenderness	2 2	0 0	0 0
<u>METACARPAL</u>	I	3 2	1 0	1 1
<u>PHALANGEAL</u>	II	3 3	2 1	3 1
<u>JOINT</u>	III	1 2	0 0	1 1
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FIRST</u>	I	1 2	0 1	0 1
<u>INTERPHALANGEAL</u>	II	0 3	0 1	0 2
<u>JOINT</u>	III	3 3	2 1	1 2
<u>TENDERNESS</u>	IV	2 1	0 0	0 1
	V	2 0	1 0	1 1
<u>FINGER TO PALM CLOSURE</u>		3 3	1 2	2 2
<u>ANKLE</u>	P. Flexion.	1 0	1 0	1 0
	D. Flexion	1 0	1 0	0 0
	Tenderness	2 0	2 0	3 0
<u>TOTAL</u>	Tenderness	42	14	27
	Movement Range	25	18	19

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		1 week	3 weeks
WEEKS AFTER ADMISSION	0	3	4	7
Ring Sizes	R. XWZ+Z++S L. XYZZ+P	R. UWYYP L. UUXZ+O	R. UVYZP L. UTXZ+O	R. UVYZP L. UTXZO
Grip	R. 60 L. 50	R. 100 L. 80	R. 80 L. 70	R. 120 L. 90

TREATMENT

The patient was confined to bed during the first three weeks of treatment. Treatment consisted of hyperduric adrenalin 3 minims t.i.d. and the dose was raised 1 minim t.i.d. until he was getting 7 minims t.i.d. The dose of aspirin was gr. 15 four times a day. There was no alteration in his blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	3	3 weeks result
Tenderness	-	28	28
Movement Range	-	7	7
Grip)	Both hands	70	70
Ring Sizes)		21	21

The patient received treatment with aspirin and adrenalin for three weeks. During that time there was considerable relief of pain and tenderness, and improvement in the range of movement. He lost 28 degrees of tenderness, and gained 7 degrees in movement range. The swelling of the fingers diminished considerably. He

lost a total of 21 ring sizes for the fingers of both hands. There was some improvement in the grip - he gained a total of 70 millimetres for both hands.

RELAPSE WITH SUBSEQUENT IMPROVEMENT

TREATMENT	No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	4	7
Tenderness	27	4
Range of Movement	19	9
Ring Sizes	R. UVYZP L. UTXZ+0	R. UVYZP L. UTXZO
Grip	R. 80 L. 70	R. 120 L. 90

Treatment was discontinued for a week and there was a relapse as regards tenderness and grip. The patient gained 13 degrees of tenderness and lost 30 millimetres in total grip. The finger ring sizes remained the same, and there was only 1 degree lost in range of movement.

Treatment with aspirin and adrenalin was recommenced, and at the end of a further three weeks of this treatment, he had lost a further 23 degrees of tenderness and had gained 10 degrees in range of movement. He gained a total of 60 millimetres in grip for both hands, but the ring sizes were the same.

Thus, at the end of a period of seven weeks, he had lost in all 38 degrees of tenderness, had gained 16 degrees in range of movement and had gained a total of 100 millimetres in grip for both hands. The swelling of the fingers had diminished - he had lost a total of 23 ring sizes for both hands.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes	Yes
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	Yes
<u>Use knife and fork</u>	With diffi- culty	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
	-	Better	No change	No change

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	4	7
Blood Uric Acid Mgm/100 ml	2.3	2.1		2.4
B.S.R. mm in 1st hour	22	27		15
Haemoglobin	100%			
R.B.C. cells/c.mm	4.8M			
Blood pressure	160/80	150/80	155/80	150/80

OUT-PATIENT RECORD

This patient was unable to return routinely as an out-patient for examination because of his blindness and deafness. However, he came by special request on 1st March 1954, that is, eighteen months after discharge. He stated that his joints still gave him trouble from time to time, although since his spell in hospital they had not been so severe.

On examination:-

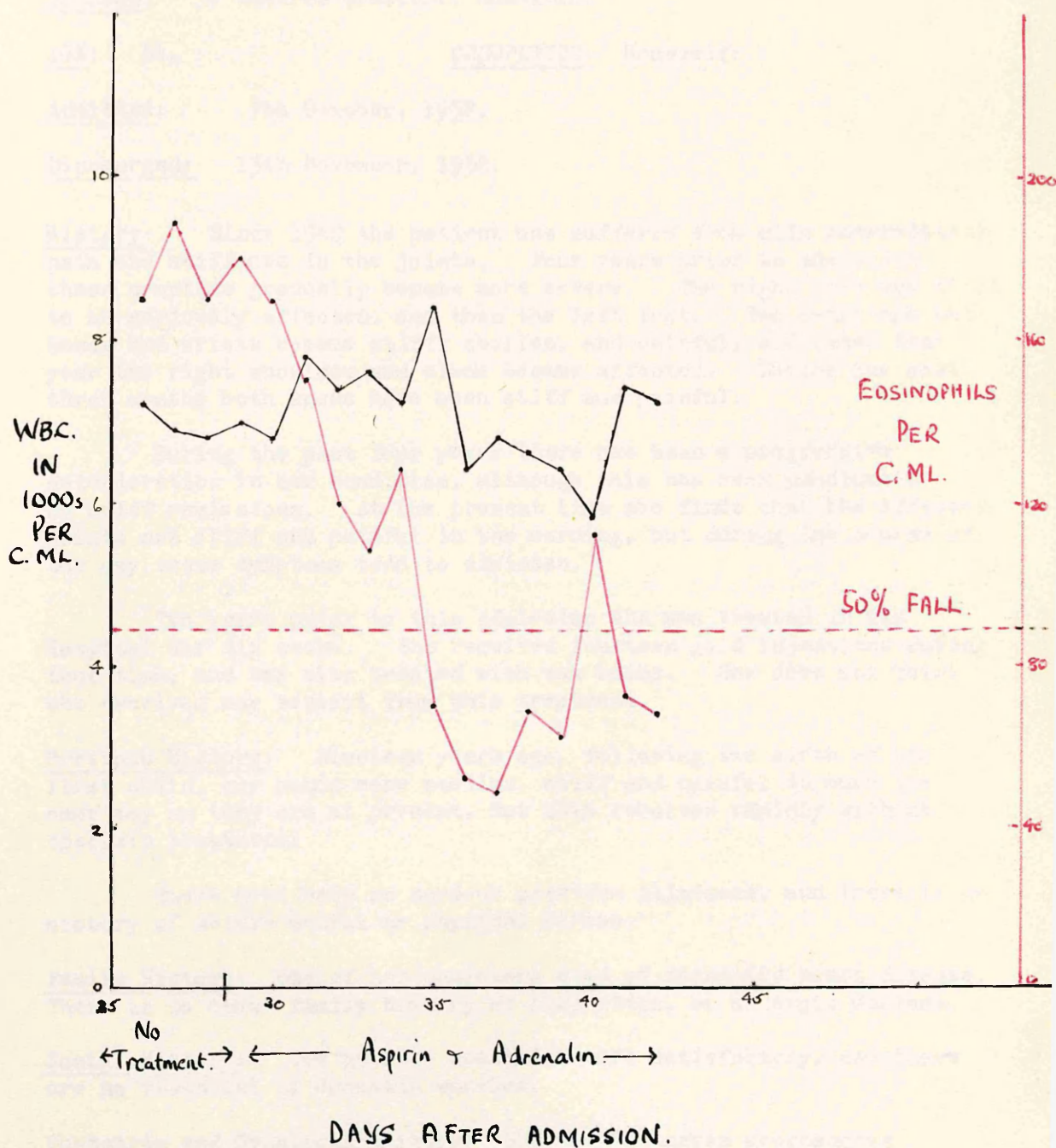
Tenderness - 5

Movement Range - 12

Ring Sizes - +12.

Thus his condition has deteriorated, but not to the levels before treatment.

Eosinophil and White Cell Counts.



CASE NO. 11.

NAME: Mrs. Martha Archibald.

ADDRESS: 37 Cameron Crescent, Hamilton.

AGE: 54.

OCCUPATION: Housewife.

Admitted: 7th October, 1952.

Discharged: 15th November, 1952.

History: Since 1940 the patient has suffered from mild intermittent pain and stiffness in the joints. Four years prior to admission these symptoms gradually became more severe. The right foot was first to be seriously affected, and then the left foot. Two years ago both hands and wrists became stiff, swollen, and painful, and later that year the right shoulder and elbow became affected. During the past three months both knees have been stiff and painful.

During the past four years there has been a progressive deterioration in her condition, although this has been punctuated by brief remissions. At the present time she finds that the affected joints are stiff and painful in the morning, but during the course of the day these symptoms tend to diminish.

Two years prior to this admission she was treated in Law Hospital for six weeks. She received fourteen gold injections during that time, and was also treated with wax baths. She does not think she received any benefit from this treatment.

Previous History: Nineteen years ago, following the birth of her first child, her hands were swollen, stiff and painful in much the same way as they are at present, but this resolved rapidly without specific treatment.

There have been no serious previous illnesses, and there is no history of severe mental or physical stress.

Family History: One of her daughters died of rheumatic heart disease. There is no other family history of rheumatism, or allergic disease.

Social History: The housing conditions are satisfactory, and there are no financial or domestic worries.

Obstetric and Menstrual History: She has had seven pregnancies including twins. Her second pregnancy resulted in some pelvic damage, and since that time she has had stress incontinence. Menstruation was regular until the menopause which occurred six years ago.

Daily Analgesics: She states that she takes on an average twenty aspirins daily, and always takes aspirin to allow her to sleep.

T. 97.6

P. 78

R. 20

B.P. 135/75

General Examination: The patient is an obese, middle-aged woman who is comfortable when lying at rest. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence, but tends to be nervous and introspective.

Locomotor System: She has no limitation of movement or tenderness in the right shoulder, but she complains of some pain on active movement.

There is tenderness of both wrist joints, and they are slightly swollen. There is marked swelling of several of the metacarpal phalangeal joints, which are tender on pressure.

The left knee is slightly tender. Both ankles are tender and slightly swollen. The first metatarsal phalangeal joint of the right foot is tender.

Other Systems: Examination is negative.

X-Ray Reports: (1) Hands: These show the changes of rheumatoid arthritis of some standing. Articular changes are observed in the first and fifth metacarpal phalangeal joints, the carpo-metacarpal joints, the carpal, and the radial-carpal joints.

(2) Knees: These show minor osteo-arthritis without any other abnormality.

(3) Ankles: These show some diminution of the joint space anteriorly. Articular changes, however, are observed in both talo-calcaneal joints.

(4) Shoulders and Elbows: These show no abnormality.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		4 weeks		
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	1 1	0 0	0 0
	Extension	0 0	0 0	0 0
	Tenderness	2 2	0 0	0 0
<u>METACARPAL</u>	I	1 1	0 0	0 0
<u>PHALANGEAL</u>	II	2 2	0 2	0 0
<u>JOINT</u>	III	3 0	2 0	0 0
<u>TENDERNESSE</u>	IV	1 0	0 0	0 0
	V	0 1	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 0	0 0	0 0
<u>JOINT</u>	III	3 0	2 0	1 0
<u>TENDERNESSE</u>	IV	0 0	0 0	0 0
	V	2 1	0 1	0 0
<u>FINGER TO PALM CLOSURE</u>		0 0	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	1 1	0 0	0 0
	Tenderness	0 1	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0
	D. Flexion	0 0	0 0	0 0
	Tenderness	1 2	0 0	0 0
<u>METATARSAL</u>	I	2 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESSE</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	29	7	1
	Movement Range	4	0	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
Ring Sizes	R. QUIPP L. PQBMN	R. PFUON L. OMNKK	R. ONTNL L. OLKMJ
Grip	R. 55 L. 105	R. 105 L. 105	R. 120 L. 110

TREATMENT

The patient was allowed up during treatment. Treatment consisted of hyperduralic adrenalin 3 minims t.i.d. The dose was raised 1 minim t.i.d. until she was getting 7 minims t.i.d. She showed reaction to the drug at this dose and she was maintained on 7 minims t.i.d. The dose of aspirin given was 15 gr. four times a day. There was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			Final result
WEEKS AFTER ADMISSION	0	3	4	4 weeks
Tenderness	-	22	28	28
Movement Range	-	4	4	4
Ring Sizes	-	27	38	38
Grip	-	50	70	70

The patient received treatment with aspirin and adrenalin for four weeks. During that time there was considerable improvement in the tenderness. She lost in all 28 degrees of tenderness. There was slight improvement in the range of movement - she gained 4 degrees in range of movement. There was marked diminution in the swelling of the fingers and considerable improvement in the grip. The ring sizes diminished 38 in total for both hands and she gained 70 millimetres total grip for both hands. On discharge from hospital, she still had some tenderness in the first interphalangeal joint of the third finger of the right hand, though this was slight.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	3	4
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	3	4
	-	Better	Much better

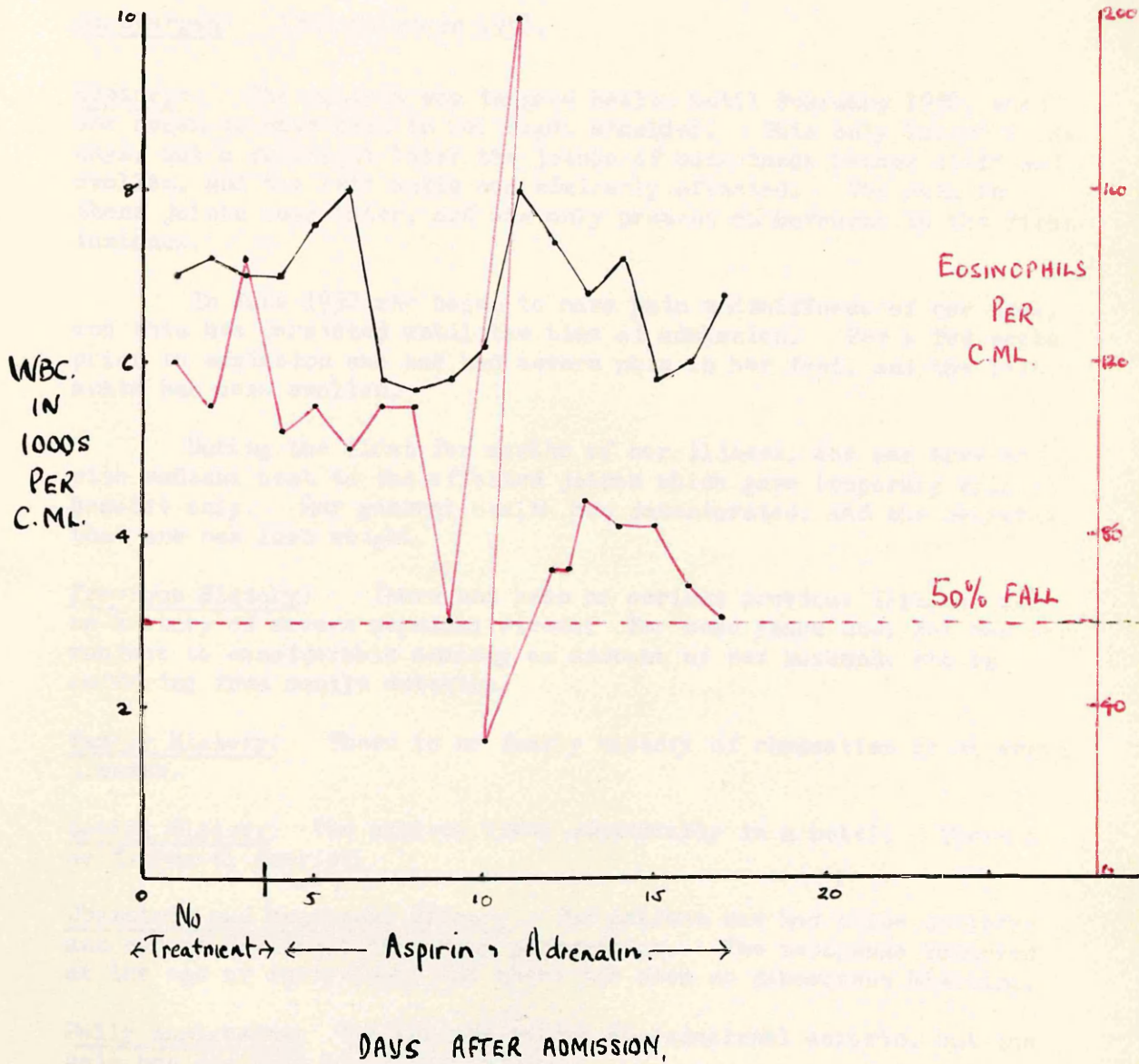
SPECIAL INVESTIGATIONS.BIOCHEMISTRY, etc.

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	1	4
Sodium Mgm.‰.	331.2	336.5	325
Potassium Mgm.‰	19.55	19.9	19
Chloride Mgm.‰	631.8	620	630.3
Serum Uric Acid Mgm.‰	1.79	2.13	2.17
B.S.R. Mm in 1st Hour	35	37	24
Blood Pressure	135/75	130/70	135/75
Haemoglobin	80%	85%	85%
R.B.C. Mill/c.mm.	4.6	4.8	4.8

OUT-PATIENT RECORD.

Despite repeated requests the patient did not return as an out-patient. The physician, Law Hospital, communicated with me in November 1953, as she had been admitted to that hospital. It was apparent from the record that her condition had advanced.

Eosinophil and White Cell Counts.



CASE NO. 12

NAME: Mrs. Catherine Macdonald.

ADDRESS: c/o Commercial Bank, Hope Street, Glasgow.

AGE: 74.

OCCUPATION: None.

Admitted: 7th October 1952.

Discharged: 17th November 1952.

History: The patient was in good health until February 1952, when she began to have pain in her right shoulder. This only lasted a few days, but a fortnight later the joints of both hands became stiff and swollen, and the left ankle was similarly affected. The pain in these joints came later, and was only present on movement in the first instance.

In June 1952 she began to have pain and stiffness of her neck, and this has persisted until the time of admission. For a few weeks prior to admission she has had severe pain in her feet, and the left ankle has been swollen.

During the first few months of her illness, she was treated with radiant heat to the affected joints which gave temporary slight benefit only. Her general health has deteriorated, and she believes that she has lost weight.

Previous History: There has been no serious previous illness, and no history of severe physical stress. For some years now, she has been subject to considerable anxiety on account of her husband, who is suffering from senile dementia.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The patient lives comfortably in a hotel. There are no financial worries.

Obstetric and Menstrual History: The patient has had three children, and had no difficulties during parturition. The menopause occurred at the age of forty-four, and there has been no subsequent bleeding.

Daily Analgesics: She has been taking an occasional aspirin, but the pain has not kept her from sleeping.

T. 97.5

P. 84

R. 22

B.P. 130/80.

General Examination: The patient is an old woman who lies comfortably

in bed. Her complexion is healthy, and there is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. Her intelligence is above average, and she is co-operative.

Locomotor System: There is some tenderness of the joints of the hands. There is characteristic rheumatoid swelling of several of the first interphalangeal joints.

The left ankle shows considerable swelling and is tender. There is slight swelling of the right ankle.

Other Systems: Examination is negative.

X-Ray Reports: (1) Hands. These show generalised osteoporotic change with degenerative cartilage change in some of the interphalangeal joints, and in the thumb metacarpo-phalangeal joint.

(2) Feet. The feet show similar osteoporosis of the bone, and changes in the interphalangeal joints.

The appearances of both hands and feet are consistent with arthritis of the rheumatoid type.

TREATMENT		Aspirin and Adrenalin					
DURATION OF TREATMENT		6 weeks					
WEEKS AFTER ADMISSION		0		3		6	
		R.	L.	R.	L.	R.	L.
<u>METACARPAL</u>	I	1	0	0	0	0	0
<u>PHALANGEAL</u>	II	0	0	0	0	0	0
<u>JOINT TENDERNESS</u>	III	0	0	0	0	0	0
	IV	0	0	0	0	0	0
	V	0	0	0	0	0	0
<u>FIRST</u>	I	0	0	0	0	0	0
<u>INTERPHALANGEAL</u>	II	2	2	0	0	0	0
<u>JOINT</u>	III	0	2	0	0	0	0
<u>TENDERNESS</u>	IV	2	2	0	0	0	0
	V	1	0	0	0	0	0
<u>FINGER TO PALM</u>		0	3	0	0	0	0
<u>CLOSURE</u>							
<u>ANKLE</u>	P. Flexion	0	3	0	0	0	0
	D. Flexion	0	3	0	0	0	0
	Tenderness	0	2	0	1	0	0
<u>ANKLE DIAMETER</u>		10 $\frac{3}{4}$ "	9 $\frac{3}{4}$ "	10"	9 $\frac{1}{2}$ "	9 $\frac{1}{2}$ "	8 $\frac{1}{2}$ "
<u>TOTAL</u>	Tenderness	14		1		0	
	Movement Range	9		0		0	

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT		Aspirin and Adrenalin					
DURATION OF TREATMENT		6 weeks					
WEEKS AFTER ADMISSION		0		3		6	
Ring sizes		R. UZRYP		R. SWSVN		R. SVRTL	
		L. TXZVL		L. SVXSK		L. QSWOI	
Grip		R. 85		R. 95		R. 95	
		L. 90		L. 90		L. 100	

TREATMENT

The patient was confined to bed during the first week of treatment. Treatment consisted of hyperduralic adrenalin 3 minims t.i.d. The dose was raised 1 minim t.i.d. until she was receiving 8 minims t.i.d. The dose of aspirin given was 15 gr. four times a day. There was no alteration in the blood pressure during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	13	14	14
Range of Movement	-	9	9	9
Ring sizes) Both	-	19	37	37
Grip) hands		10	20	20

The patient received treatment with aspirin and adrenalin for six weeks. During that time there was considerable relief of pain, tenderness, and swelling in the affected joints. She lost in all 14 degrees of tenderness and gained 9 degrees in range of movement. The swelling of the fingers diminished. She lost a total of 37 ring sizes for the fingers of both hands. There was some improvement in the grip. She gained a total of 20 millimetres grip for both hands.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	3	6
	-	Better	No disability

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin		
WEEKS AFTER ADMISSION	0	3	6
Blood Uric Acid mgm/100 ml	2.5	2.4	2.2
B.S.R. mm in 1st hour	30	18	14
Haemoglobin	90%		
R.B.C. cells/c.mm	4.6M		
W.B.C. cells/c.mm	6,500	6,000	5,500
Blood pressure	130/80	135/80	130/75

This patient went to live in England after her course of treatment, and I have been unable to keep in touch with her.

CASE NO. 13

NAME: Mrs. Elizabeth Paterson.

ADDRESS: 82F Portland Street, Coatbridge.

AGE: 42

OCCUPATION: Housewife.

Admitted: 9th October, 1952.

Discharged: 15th November, 1952.

History: Nine years ago the patient first began to have pain and stiffness in the joints of the hands, and in the wrist joints. At first the symptoms were not severe, and there would be remissions lasting several months, but during the past two years there have been very few remissions, and the disability has been slowly progressive. A few years ago the knees became affected, and then the ankles, but not so severely as the hands.

The pain, stiffness and swelling are always more marked in the morning and tend to improve with movement during the course of the day. During the past six months the patient has had severe pain in the feet, and this has made walking very difficult.

Her general health has been poor for a few months prior to admission, when she has been suffering from lassitude and slight breathlessness.

Previous History: The patient was treated in Hairmyres Hospital in 1950 for a complaint of breathlessness, and swelling of the ankles. A diagnosis of congenital heart disease was made (patent interventricular septum). She was suffering from rheumatoid arthritis at that time.

There have been no other serious previous illnesses. She has never had any serious worries in her life, although she states that she has a worrying temperament. She states that she had to work excessively between the ages of sixteen and twenty-seven, when she was engaged on a farm.

Family History: She is one of a family of eight, all of whom are alive and well, although one sister had rheumatic fever in childhood. Her father died of asthma.

Social History: The housing conditions are reasonably satisfactory, and there are no financial or domestic worries.

Obstetric and Menstrual History: She has one son, and there were no difficulties during pregnancy. Menstruation has been irregular since 1949.

Daily Analgesics: She has been taking three aspirins daily for the relief of pain, which interferes with sleep.

T. 97.5

P. 68

R. 20

B.P. 140/80

General Examination: The patient is a slightly built, anxious-looking woman, who appears older than her actual age. She has a malar flush, but there is no jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence, and co-operative.

Locomotor System: There is tenderness in both wrists and marked limitation of movement. The hands show typical rheumatoid deformity and swelling of the metacarpal phalangeal and interphalangeal joints.

There is some tenderness of the left knee, and both ankles are tender, though the range of movement in these joints is unimpaired.

Cardiovascular System: The pulse is regular in rate and rhythm, and is of average force, volume and tension; the vessel wall is not palpable.

The apex beat is in the sixth left interspace in the anterior axillary line. At all areas the first sound is replaced by a loud systolic murmur, but this is best heard in the third left interspace, where a systolic thrill is palpable.

Other Systems: Examination is negative.

X-Ray Reports: BOTH HANDS AND WRISTS: The appearance of the hands and wrists is that of an advanced rheumatoid arthritis involving the wrists and the metacarpo-phalangeal joints more than the interphalangeal joints. Articular cartilage destruction is noted especially in the wrists. Juxta-articular bone erosions are marked in the heads of the metacarpals. The left hand shows an ulnar deviation of the fingers.

TREATMENT		Sterile Water and Inactive Powder			Aspirin and Adrenalin		
DURATION OF TREATMENT		2 weeks			3 weeks		
WEEKS AFTER ADMISSION		0	1	2	3	4	5
		R.L.	R.L.	R.L.	R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	3 3	3 3	3 3	2 1	1 1	1 1
	Extension	3 3	3 3	3 3	1 2	1 1	1 1
	Tenderness	2 1	0 1	0 1	0 1	0 0	0 0
<u>METACARPAL</u>	I	2 0	0 1	0 1	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 2	1 1	1 1	1 0	0 0	0 0
<u>JOINT</u>	III	3 2	0 1	1 1	1 1	0 0	0 0
<u>TENDERNESS</u>	IV	2 2	0 1	0 1	0 0	0 0	0 0
	V	3 2	0 2	0 1	0 1	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 0	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	2 0	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 0	0 0	0 0	0 0	0 0	0 0
	V	2 0	0 0	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u>							
<u>CLOSURE</u>		0 2	0 2	0 2	0 1	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0	0 0	0 0	0 0
	Tenderness	0 2	0 0	0 0	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0	0 0	0 0	0 0
	D. Flexion	0 0	0 0	0 0	0 0	0 0	0 0
	Tenderness	1 2	0 0	0 0	0 0	0 0	0 0
<u>METATARSAL</u>	I	2 1	0 0	0 1	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	3 3	1 2	0 2	1 0	0 0	0 0
<u>JOINT</u>	III	3 2	0 1	1 1	1 1	0 0	0 0
<u>TENDERNESS</u>	IV	3 2	1 2	0 2	0 1	0 0	0 0
	V	3 2	0 0	1 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	60	15	16	10	0	0
	Movement Range	14	14	14	7	4	4

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks			3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4	5
Ring Sizes	R. PTVPL L. LPONG	R. OSTPK L. LNNMF	R. ORTOK L. LNNLF	R. NQSNJ L. LNNLF	R. NQRMJ L. KNNLF	R. NQRMJ L. KMMKF
Grip	R. 80 L. 90	R. 90 L. 90	R. 90 L. 90	R. 120 L. 120	R. 145 L. 125	R. 150 L. 120

TREATMENT

This patient was treated as a control subject during the first two weeks, when she received sterile water injections and inactive powder. Thereafter she was given hyperdureic adrenalin 3 minims t.i.d, the dose being increased by 1 minim t.i.d, until she was receiving 8 minims t.i.d. The dose of aspirin was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2	4	5	Final result 5 weeks
Tenderness	-	44	16	16	60
Movement Range	-	0	10	10	10
Ring Sizes)	-	13	8	11	24
Grip) Both hands	-	10	90	90	100

The patient was treated with injections of sterile water three times a day and an inactive powder four times day for the first fortnight. There was a response during this phase. She lost 44 degrees of tenderness, the ring sizes diminished by 1½ sizes and the grip improved by 10 millimetres, but there was no change in the movement range.

Injections of adrenalin were then started, and she was also given aspirin. There was further improvement during the three weeks she received this treatment. After three weeks she had lost a further 16 degrees of tenderness, and no tenderness was demonstrable. She gained 10 degrees in movement range. The ring sizes diminished by a further 11 sizes and the grip improved by a further 90 Millimetres.

Thus, at the end of all treatment, she had lost 60 degrees of tenderness and had gained 10 degrees in range of movement. The ring sizes had diminished by 24 sizes and the grip improved by 100 millimetres.

PERFORMANCE CHART.

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	Yes
<u>Use knife and fork</u>	With diffi- culty	Yes	Yes	Yes
<u>Walking</u>	Yes	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
	-	Better	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks			3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4	5
Sodium Mgm %	341			336		338
Potassium Mgm %	19.3			19.6		19.7
Serum Uric Acid Mgm %	2.8		2.4	1.77		1.8
B.S.R Mm in 1st hour	39	36	28	24	22	20
Blood pressure	140/80		135/80			130/80
Haemoglobin	80%		78%			85%
R.B.C Mill/c.mm	4.2		4.2			4.3

OUT-PATIENT RECORD.Months after
dischargeCondition

1

There is no change in her condition since discharge.

3

Two months ago (i.e two months after her discharge from hospital) her joints began to trouble her again. She states that she is as bad as ever, but on examination:-

Tenderness - 3 (-3)

Movement Range - 8 (-4)

Rings - +8

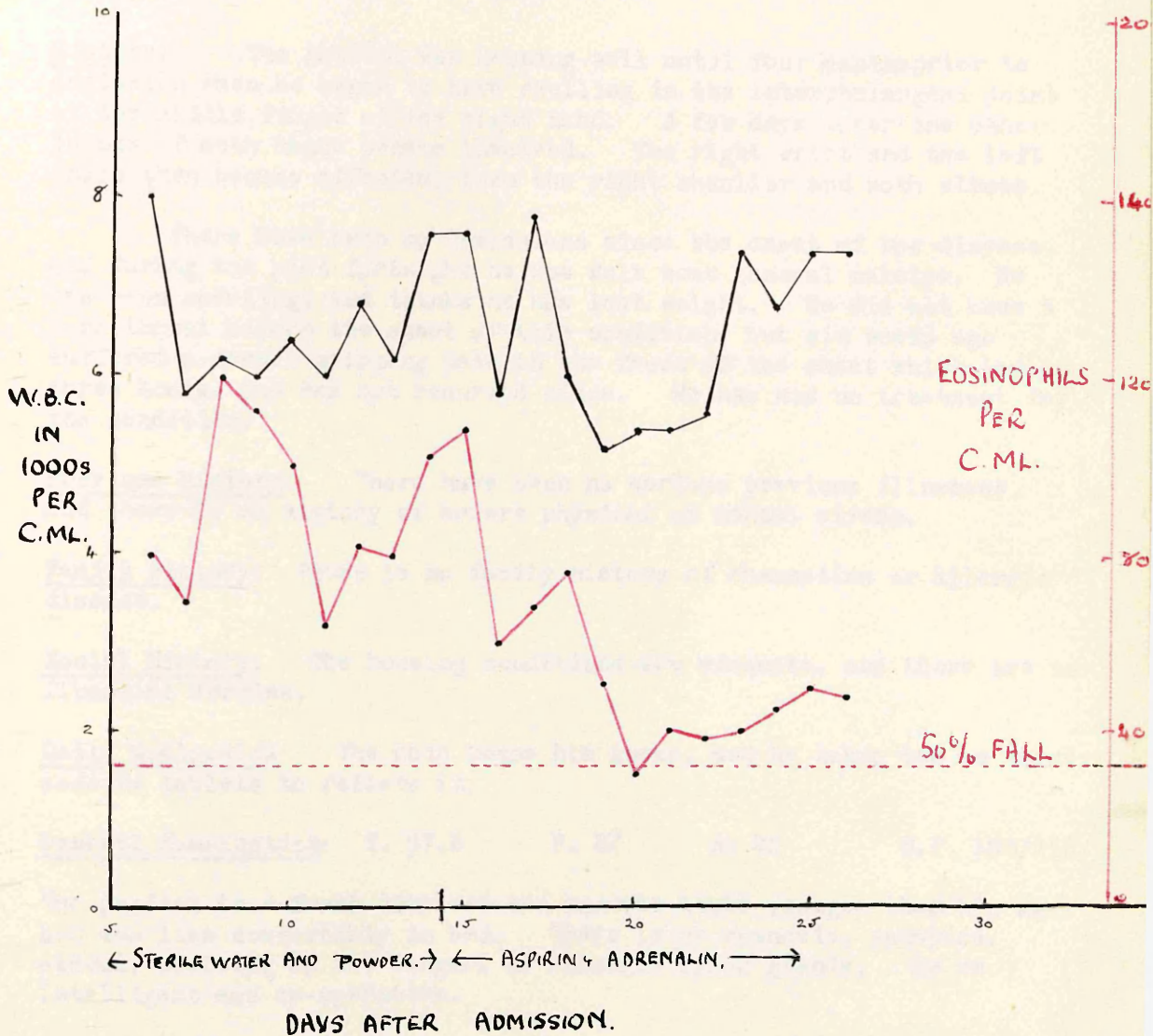
Grip - -40

Thus there has been some deterioration, but not as much as she claimed.

12

Condition has varied since treatment. She finds that aspirin gives considerable relief. On examination, her condition has relapsed to the former state.

Eosinophil and White Cell Counts.



CASE NO. 14

NAME: Mr. John Nisbet.

ADDRESS: 58 Tuphall Road, Hamilton.

AGE: 63 OCCUPATION: Stableman.

Admitted: 21st October, 1952.

Discharged: 20th December, 1952.

History: The patient was keeping well until four months prior to admission when he began to have swelling in the interphalangeal joint of the middle finger of the right hand. A few days later the other joints of both hands became involved. The right wrist and the left ankle then became affected, then the right shoulder and both elbows.

There have been no remissions since the onset of the disease, and during the past fortnight he has felt some general malaise. He has been sweating, and thinks he has lost weight. He did not have a sore throat before the onset of this condition, but six weeks ago suffered a severe gripping pain in the front of the chest which lasted three hours, and has not recurred since. He has had no treatment for the condition.

Previous History: There have been no serious previous illnesses, and there is no history of severe physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Daily Analgesics: The pain keeps him awake, and he takes two to three codeine tablets to relieve it.

General Examination: T. 97.8 P. 82 R. 22 B.P. 180/110

The patient is a fresh complexioned man who looks younger than his age, and who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. He is intelligent and co-operative.

Locomotor System: There is slight tenderness and limitation of movement in the right shoulder. Both elbows and both wrists are tender and show slight limitation of movement. The hands are swollen, especially in the metacarpal phalangeal and interphalangeal joints, and there is marked tenderness.

The right knee is slightly tender and shows slight limitation of movement. Both ankles are slightly tender.

Cardiovascular System: The pulse is regular in rate and rhythm, and the force, volume and tension are greater than normal. The vessel wall is palpable.

The apex beat is in the fifth left interspace five inches from the mid-line of the sternum. The heart sounds are well heard at all areas, and at the aortic area there is accentuation of the second sound. There are no murmurs.

Other Systems: Examination is negative.

X-ray Reports: (1) Hands: There is periarticular soft tissue swelling surrounding the proximal I.P. joints of both hands. The bony structures show generalised osteoporosis especially localised in the small joints of the phalanges. Cystic changes are defined in the right scaphoid.

(2) Feet and Ankles: There is fullness of the soft tissues round the left ankle. The appearances of hands are those of a poly-arthritis, most probably of rheumatic or rheumatoid type.

TREATMENT		Aspirin		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		1 week
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 0	0 0	0 0
	Tenderness	1 0	0 1	0 0
<u>ELBOW</u>	Flexion	1 1	1 1	0 0
	Extension	1 1	1 1	0 0
	Tenderness	3 2	0 2	0 0
<u>WRIST</u>	Flexion	1 1	1 1	0 0
	Extension	1 1	1 1	0 0
	Tenderness	3 2	0 1	0 0
<u>METACARPAL</u>	I	2 2	2 2	0 0
<u>PHALANGEAL</u>	II	3 1	0 0	0 0
<u>JOINT</u>	III	0 2	0 1	0 0
<u>TENDERNESS</u>	IV	0 3	0 1	0 0
	V	0 0	1 3	0 0
<u>FIRST</u>	I	1 1	2 1	0 0
<u>INTERPHALANGEAL</u>	II	3 2	1 3	1 2
<u>JOINT</u>	III	3 1	1 2	0 0
<u>TENDERNESS</u>	IV	3 2	2 2	0 0
	V	1 3	1 3	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		5 5	5 5	0 0
<u>KNEE</u>	Extension	1 0	0 0	0 0
	Flexion	1 0	0 0	0 0
	Tenderness	1 0	3 0	0 0
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0
	D. Flexion	0 0	0 0	0 0
	Tenderness	1 1	2 0	0 0
<u>TOTAL</u>	Tenderness	47	37	3
	Movement Range	21	18	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		1 week
WEEKS AFTER ADMISSION	0	3	4
Ring Sizes	R. Z++Z++Z++Z+W L. Z++Z+Z+Z+S	R. Z++Z++Z+ZR L. ZZ+Z+YR	R. ZZZWP L. XYYVO
Grip	R. 45 L. 40	R. 70 L. 40	R. 105 L. 100

TREATMENT

The patient was confined to bed during the first three weeks of treatment, and thereafter was allowed up for a limited period. Treatment consisted of hyperdureic adrenalin 3 minims t.i.d. and this dose was raised 1 minim t.i.d. until the patient was receiving 9 minims t.i.d. The dose of aspirin given was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		1 week	
WEEKS AFTER ADMISSION	0	3	4	4 weeks result
Tenderness	-	10	34	44
Movement Range	-	3	18	21
Ring Sizes) Both	-	8	22	30
Grip) hands	-	25	95	120

The patient received treatment with aspirin alone for the first three weeks, and there was very little response to this treatment. There was slight improvement in the tenderness and range of movement. He lost 10 degrees of tenderness and gained 3 degrees in movement range. The swelling of the fingers diminished only slightly - 8 ring sizes. There was slight improvement in the grip - he gained 25 millimetres in grip.

Injections of adrenalin were then started, and these were given in addition to the aspirin. There was marked improvement within a few days, and at the end of a week of this treatment, he had lost a further 34 degrees of tenderness. The mobility of the affected joints was increased considerably - he gained a further 18 degrees in range of movement. The diminution in the swelling of the fingers was remarkable. At the end of a week of aspirin and adrenalin therapy, there was a further improvement by 22 ring sizes. The grip was greatly improved - he gained a further 95 millimetres in total grip.

Thus at the end of four weeks he had lost in all 44 degrees of tenderness and had gained 21 degrees in range of movement. There was improvement in the swelling of the fingers by 30 ring sizes, and the total improvement in grip was 120 millimetres.

RELAPSE WITH SUBSEQUENT IMPROVEMENT

TREATMENT	No treatment	Aspirin and Adrenalin
DURATION OF TREATMENT	1 week	3 weeks
WEEKS AFTER ADMISSION	5	8
Tenderness	15	0
Range of Movement	5	0
Ring Sizes	R. Z+Z+Z+WP L. YZZWO (-7)	R. YYYUO L. XXXVN (+17)
Grip	R. 110 L. 120	R. 125 L. 115

Treatment was discontinued for a week and there was a relapse. He gained 12 degrees of tenderness and lost 5 degrees in range of movement. The swelling of the fingers recurred - the ring sizes

increased by 7. There was little alteration in the grip.

Treatment with aspirin and adrenalin was recommenced, and at the end of a further three weeks of this treatment, the patient had lost 15 degrees of tenderness and had gained 5 degrees in range of movement. The ring sizes had diminished by 17 and he had gained 10 millimetres in grip. He was discharged at the end of this time with no apparent disability.

The total improvement for the eight weeks, during which he was treated in hospital, was 47 degrees of tenderness and 21 degrees in range of movement. The ring sizes had diminished by 40, and the grip had increased by 155 millimetres.

PERFORMANCE CHART

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		1 week	1 week	3 weeks
WEEKS AFTER ADMISSION	0	3	4	5	8
<u>Dress</u>	With difficulty	With difficulty	Yes	Yes	Yes
<u>Wash hands and face</u>	With difficulty	With difficulty	Yes	With difficulty	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes	Yes
<u>Dress Hair</u>	With difficulty	With difficulty	Yes	Yes	Yes
<u>Use knife and fork</u>	With difficulty	With difficulty	Yes	With difficulty	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin		Aspirin and Adrenalin	No treatment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		1 week	1 week	3 weeks
WEEKS AFTER ADMISSION	0	3	4	5	8
	-	Slightly better	Much better	Worse	No disability

SPECIAL INVESTIGATIONS.

TREATMENT	Aspirin		Aspirin and Adrenalin
WEEKS AFTER ADMISSION	0	3	6
Serum Uric Acid Mgm. %	2.8	2.4	2.0
B.S.R. Mm in 1st hour	40	28	4
Haemoglobin	85%	90%	90%
R.B.C. Mill/c.mm	4.8	4.7	4.8
Blood Pressure	180/110	175/105	170/105

OUT PATIENT RECORD

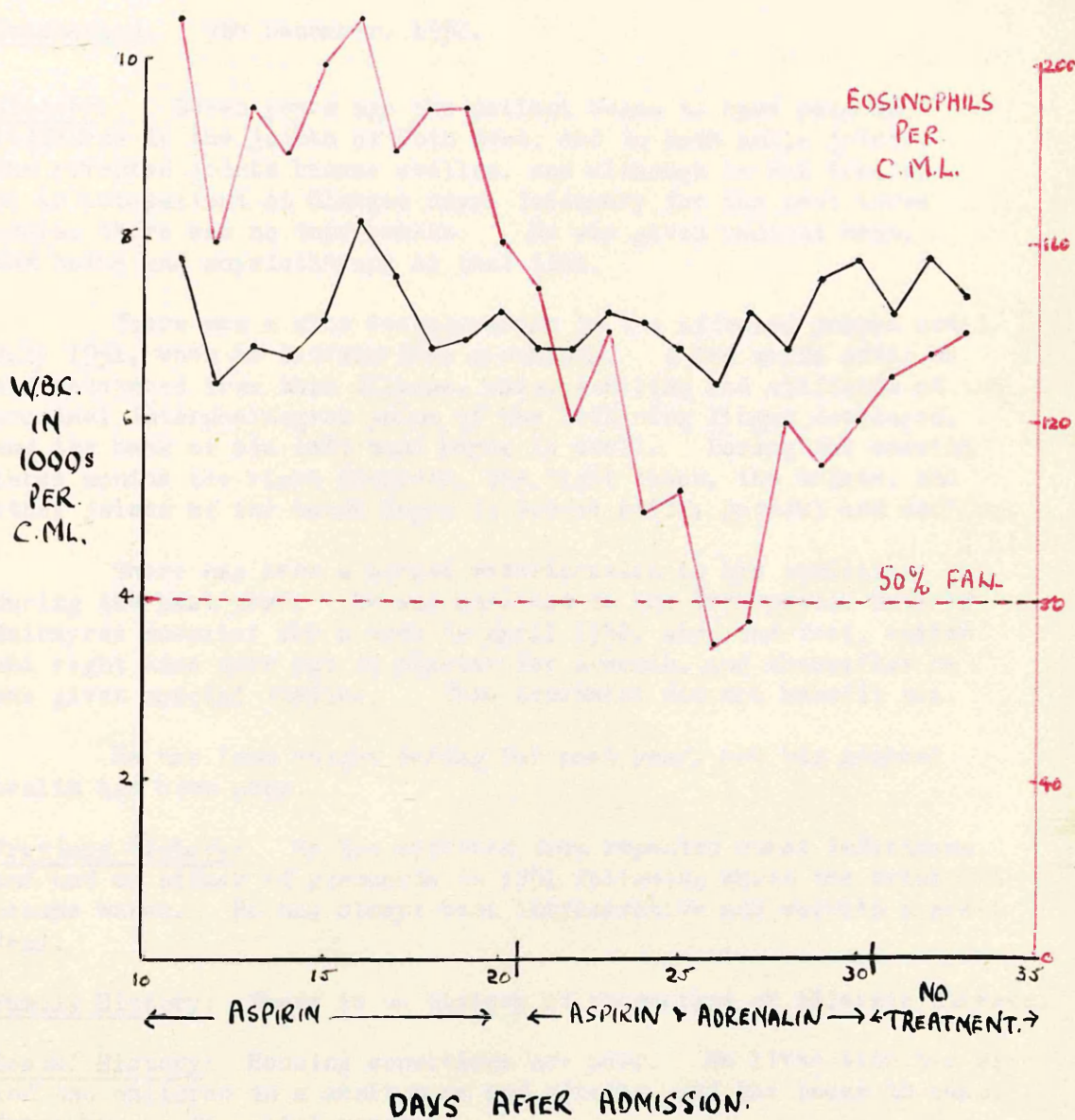
The patient reported back one month after discharge from hospital.

There had been no recurrence of the joint swellings, although he has had slight twinges of pain in the hands. There was no tenderness or limitation of movement in any of the joints. There had been very slight increase in the ring sizes - 6 sizes in all. The grip was stronger than on discharge from hospital - the total grip was 290 millimetres.

The patient reported again fourteen months after discharge from hospital.

On examination there was no pain or limitation of movement in any joints. The ring sizes had diminished by 6 from what they were on his discharge from hospital. The grip was the same.

Eosinophil and White Cell Counts.



CASE NO. 15

NAME: John Gardiner

ADDRESS: 1 Quarry Road, Airdrie.

AGE: 37.

OCCUPATION: Shunter.

Admitted: 10th October, 1952.

Discharged: 9th December, 1952.

History: Seven years ago the patient began to have pain and stiffness in the joints of both feet, and in both ankle joints. The affected joints became swollen, and although he was treated as an out-patient at Glasgow Royal Infirmary for the next three years, there was no improvement. He was given radiant heat, wax baths and physiotherapy at that time.

There was a slow deterioration in the affected joints until July 1951, when he suffered from pneumonia. A few weeks after he had recovered from this illness, pain, swelling and stiffness of the proximal interphalangeal joint of the left ring finger developed, and the back of his left hand began to swell. During the ensuing three months the right shoulder, the right elbow, the wrists, and other joints of the hands began to become stiff, painful and swollen.

There has been a marked deterioration in his condition during the past year. He was admitted to the Orthopaedic Unit of Hairmyres Hospital for a week in April 1952, when the feet, ankles and right knee were put in plaster for a month, and thereafter he was given special insoles. This treatment did not benefit him.

He has lost weight during the past year, and his general health has been poor.

Previous History: He has suffered from repeated chest infections, and had an attack of pneumonia in 1951 following which the arthritis became worse. He has always been introspective and worries a great deal.

Family History: There is no history of rheumatism or allergic disease.

Social History: Housing conditions are poor. He lives with his wife and two children in a small room and kitchen, and the house is damp. There are no financial worries.

Daily Analgesics: He takes two to three aspirins daily for the relief of pain. The pain keeps him awake at night.

General Examination: T. 98 P. 84 R. 22 B.P. 130/80.

The patient is a thin, unhealthy-looking man, who appears very worried. He is pale, but there is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is intelligent but introspective, with many complaints not related to his joints or to any physical abnormality.

Locomotor System: There is slight limitation of movement and pain in the right shoulder.

The right elbow shows slightly limited movement and is moderately tender. Both wrists are tender. The hands show some swelling of the metacarpal phalangeal and interphalangeal joints, and several of the joints of both hands are tender.

The left knee is slightly tender. Both ankles show limitation of movement and are moderately tender. Several of the metatarsal phalangeal joints of both feet are tender.

Respiratory System: The chest is barrel shaped, and there is a slight Harrison's sulcus. Expansion is poor, and the percussion note is hyper-resonant. The respiratory murmur is vesicular, and there are scattered medium rales and sonorous rhonchi heard posteriorly.

Other Systems: Examination is negative.

X-Ray Reports: (1) Wrists and Hands. The wrists and hands show peri-articular soft tissue swelling surrounding the proximal interphalangeal joints of the right second and third finger, and the left fifth finger. The bones are osteoporotic, and there is appreciable diminution of the joint space of the right fourth and the left fifth proximal interphalangeal joints.

(2) Feet. The feet show osteoporosis with bilateral hallux valgus deformity, and articular changes at the level of the proximal interphalangeal joints. The appearances of the hands and feet are consistent with arthritis of the rheumatoid type.

(3) Shoulders, ankles, elbows, knees. Radiological examination is negative.

TREATMENT		Aspirin and Adrenalin			
DURATION OF TREATMENT		8 weeks			
WEEKS AFTER ADMISSION		0	3	6	8
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 0	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	1 0	1 0	1 0	1 0
	Extension	1 0	1 0	1 0	1 0
	Tenderness	2 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0
	Tenderness	2 2	0 0	0 1	0 1
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 1	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 1	0 0	0 0	0 0
	V	1 1	0 0	0 0	0 0
<u>FIRST</u>	I	1 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 2	0 0	0 1	0 1
<u>JOINT</u>	III	0 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 2	0 0	0 0	0 0
	V	2 1	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		2 2	0 0	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0	0 0
	Tenderness	0 1	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	1 1	0 0	0 0	0 0
	D. Flexion	1 1	0 0	0 0	0 0
	Tenderness	2 2	0 0	0 0	0 0
<u>METATARSAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 1	0 0	0 0	0 0
<u>JOINT</u>	III	1 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	33	0	2	2
	Movement Range	11	2	2	2

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	8 weeks			
WEEKS AFTER ADMISSION	0	3	6	8
Ring Sizes	R. VRTQQ L. UXRVJ	R. RRQ00 L. RUQUI	R. TRRON L. SUQRI	R. TRRON L. SUQRI
Grip	R. 115 L. 140	R. 200 L. 150	R. 190 L. 165	R. 190 L. 160

TREATMENT

The patient was allowed up for a limited period during the course of treatment. Treatment consisted of hyperdureic adrenalin 3 minims t.i.d. to begin with, and this dose was raised 1 minim t.i.d. until the patient was receiving 9 minims t.i.d. The dose of aspirin given was gr. 15 four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin				
DURATION OF TREATMENT	8 weeks				
WEEKS AFTER ADMISSION	0	3	6	8	8 weeks result
Tenderness	-	33	31	31	31
Movement Range	-	9	9	9	9
Ring Sizes)	-	20	21	21	21
Grip) Both hands		95	100	95	95

The patient received treatment with aspirin and adrenalin for a period of eight weeks. During the first three weeks of treatment there was considerable improvement. He lost 33 degrees of tenderness and gained 9 degrees in range of movement. The swelling of the fingers diminished considerably - there was a total fall of 20 ring sizes. There was marked improvement in the grip - he gained a total of 95 millimetres in grip for both hands.

During the five weeks of subsequent treatment there was very little alteration in the objective observations, although the patient felt very much better and was obviously stronger. 131

At the end of eight weeks he had lost in all 31 degrees of tenderness and had gained 9 degrees in range of movement. The ring sizes had diminished by 21 and the total grip had increased by 95 millimetres.

However, cinematography reveals that there was in fact a definite improvement during these subsequent five weeks, although this was not recorded by objective observations. There was a notable gain in weight, and rounding of the face is clearly seen in the films.

PERFORMANCE CHART.

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	8 weeks			
WEEKS AFTER ADMISSION	0	3	6	8
<u>Dress</u>	With diffi- culty	Yes	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	Yes
<u>Use knife and fork</u>	With diffi- culty	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	8 weeks			
WEEKS AFTER ADMISSION	0	3	6	8
	-	Better	Much better	Much better

SPECIAL INVESTIGATIONS
BIOCHEMISTRY, etc.

TREATMENT	Aspirin and Adrenalin						
WEEKS AFTER ADMISSION	0	1	3	4	6	7	8
Sodium Mgm. %	346	319		349			
Potassium Mgm. %	19.46	20		20			
Chloride Mgm. %	585	608		582			
Serum Uric Acid Mgm. %	2.8	2.1		1.9			2.1
B.S.R. Mm in 1st Hour	22	10	15	20	28	24	32
Blood pressure	130/80	130/80		135/85			125/80
Haemoglobin	75%	80%		80%			80%
R.B.C. Mill/c.mm	4.5	4.2		4.1			4.4

OUT-PATIENT RECORD

The patient reported back one month after discharge.

He was well for about ten days after leaving hospital, but thereafter his condition relapsed. Evidently his neck became painful and stiff, then the shoulders and the sterno-clavicular joints were affected. On examination there was some deterioration in his condition from discharge.

Tenderness	-	15
Range of Movement	-	6
Ring Sizes	-	R. URRPO L. TVQRJ
Grip	-	R. 160 L. 140

The patient reported again four months after discharge.

His condition was very much the same as that recorded when he reported one month after discharge from hospital. This patient is a very difficult to assess and objectively he is better than when he was first admitted to hospital, but there has undoubtedly been a deterioration after his discharge. He complains bitterly of "flare-ups" of the rheumatoid state, but his general health has remained good and the gain in weight has been sustained. He is still able to lift a chair from the floor with the same ease as he did at the end of treatment (reference films).

The patient reported again nine months after discharge.

His own doctor tried him on Butazolidin shortly after he last reported, and he states that he has received considerable relief from this treatment. The relief has been mainly from pain. Objectively the tenderness and movement range is much the same.

Tenderness	-	18
Range of Movement	-	9
Ring Sizes	-	R. URRPO L. TVQRJ
Grip	-	R. 160 L. 140

OUT-PATIENT RECORD (continued).

The patient reported again twelve months after discharge.

The patient has been working at a light job. He is still taking Butazolidin. Objective observation reveals that there has been some improvement in his condition. He has not lost any weight, and states that the Butazolidin helps the pain more than anything else.

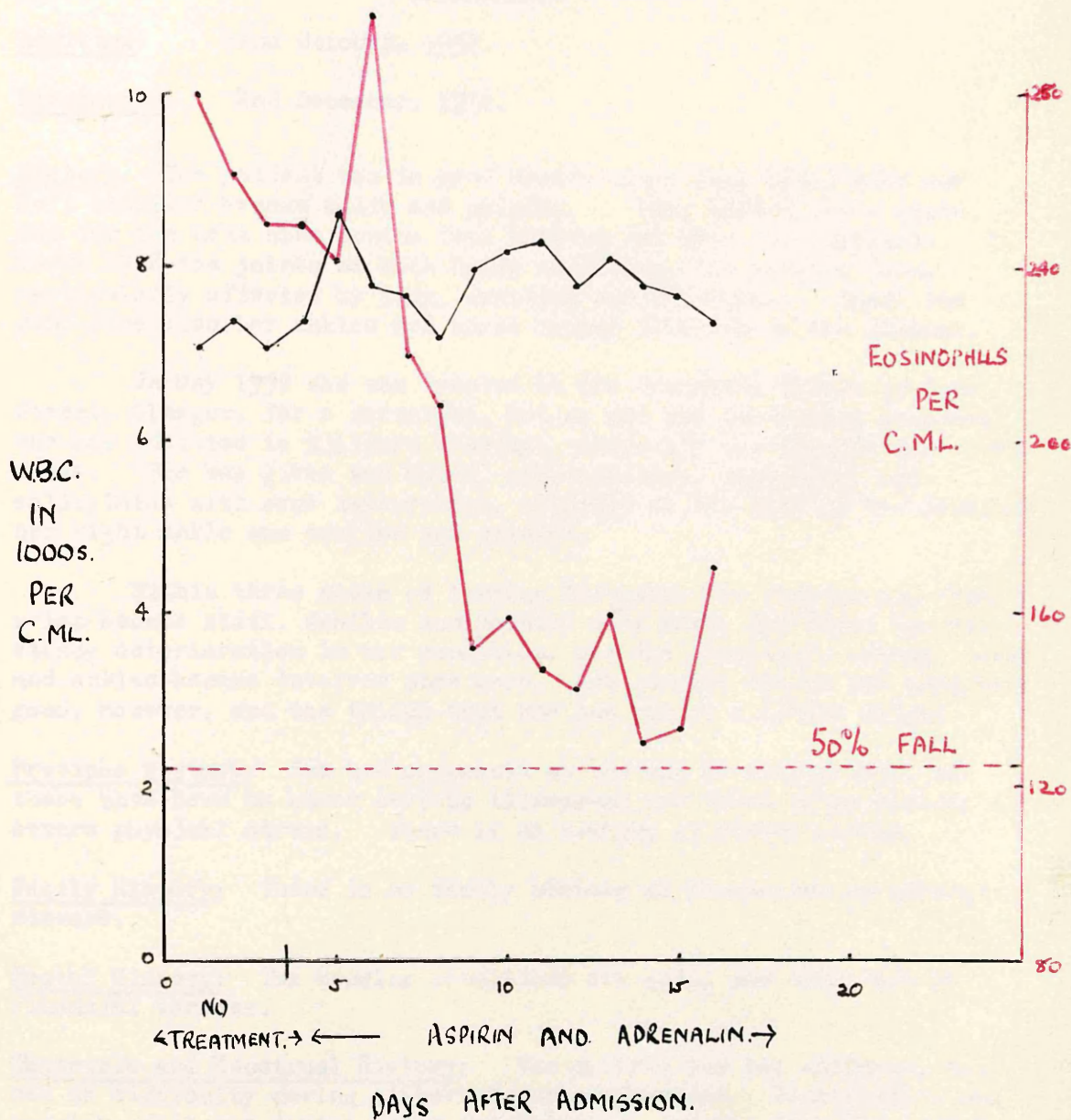
Tenderness - 5

Range of Movement - 9

Ring Sizes - R. SRTOK
L. RQPOI

Grip - R. 185
L. 155

Eosinophil and White Cell Counts.



CASE NO. 16

NAME: Mrs. Jane Glen.

ADDRESS: 9 Belmont Street, Coatbridge.

AGE: 44.

OCCUPATION: Housewife.

Admitted: 22nd October, 1952.

Discharged: 2nd December, 1952.

History: The patient was in good health until July 1951, when her left shoulder became stiff and painful. This lasted for a month, and for the next nine months that patient was free from symptoms. In March 1952 the joints of both hands stiffened, the fingers being particularly affected by pain, swelling and stiffness. About the same time also her ankles and knees became involved in the disease.

In May 1952 she was treated at the Rheumatic Clinic in Bath Street, Glasgow, for a fortnight, but as she was not making progress, she was admitted to Killearn Hospital, where she was treated for seven weeks. She was given wax baths, physiotherapy, diathermy, and salicylates with some improvement, although at the time of her dismissal her right ankle was swollen and painful.

Within three weeks of leaving Killearn, her fingers and right wrist became stiff, swollen and painful once more, and there has been steady deterioration in her condition, and the shoulders, wrists, knees, and ankles became involved once more. Her general health has remained good, however, and she thinks that she has gained a little weight.

Previous History: She had pneumonia at the age of twenty-five, but there have been no other serious illnesses, and there is no history of severe physical stress. There is no history of mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are good, and there are no financial worries.

Obstetric and Menstrual History: The patient has two children, and had no difficulty during either of her pregnancies. Menstruation was regular until six months prior to admission. Since then the periods have been irregular, and the loss has been slighter.

Daily Analgesics: She has been taking three to four codeine tablets prior to admission.

General Examination: T. 97.6 P. 68 R. 20 B.P. 135/85.

The patient is a healthy-looking woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative.

Locomotor System: The right elbow and right wrist are slightly tender. The first metacarpal phalangeal joint of the right hand is tender, and the first interphalangeal joints of the 2nd and 4th fingers of the right hand are also tender.

The right ankle is markedly tender and shows considerable limitation of movement.

Other Systems: Examination is negative.

X-Ray Reports;

CERVICAL SPINE: Negative.

WRISTS AND HANDS: Show generalised osteoporosis, maximal in the carpi with loss of normal cortical outline of the bone. Peri-articular soft tissue swelling is defined in relation to the proximal interphalangeal joints. No bony articular changes are observed. The appearances are consistent with a rheumatoid arthritis.

SHOULDERS: Negative.

ELBOWS: Negative.

ANKLES: Marked osteoporotic changes are defined involving the right ankle and tarsus. There is loss of the ankle joint space, similarly the small joints of the tarsus.

KNEES: The right knee joint shows slight osteoporotic change. No articular changes are otherwise observed.

TREATMENT		Sterile water and Inactive powder		Aspirin and Adrenalin		
DURATION OF TREATMENT		2 weeks		3 weeks		
WEEKS AFTER ADMISSION		0	2	3	4	5
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	0 0	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0	0 0	0 0
<u>METACARPAL</u>	I	2 0	2 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 0	2 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 0	2 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		1 1	1 1	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	3 0	3 0	1 0	1 0	0 0
	D. Flexion	2 0	2 0	1 0	1 0	0 0
	Tenderness	3 2	2 2	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	12	10	0	0	0
	Movement Range	7	7	2	2	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2	3	4	5
Ring Sizes	R. QRPPL L. OSORJ	R. PRPPK L. NSORJ	R. ONLMI L. NPMOH	R. ONMI L. NMPH	R. NMMLI L. NOMOH
Grip	R. 80 L. 100	R. 90 L. 120	R. 125 L. 145	R. 150 L. 160	R. 160 L. 175

TREATMENT

The patient was kept in bed during the first fortnight of treatment and was allowed up subsequently. During the first fortnight she was a control subject. She was given injections of sterile water and an innocuous powder by mouth, in amount comparable to the aspirin she received later.

At the end of a fortnight hyperdureic adrenalin 3 minims t.i.d. and aspirin gr. 15 four times a day was commenced. The dose of hyperdureic adrenalin was raised 1 minim t.i.d. until she was receiving 8 minims t.i.d. She showed reactions then, and the dose was maintained at that level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin			
DURATION OF TREATMENT	2 weeks		3 weeks			
WEEKS AFTER ADMISSION	0	2	3	4	5	Final result 5 weeks
Tenderness	-	2	10	10	10	12
Movement Range	-	0	5	5	7	7
Ring Sizes)	-	3	24	22	26	29
Grip) Both hands	-	30	60	100	125	155

The patient received an inactive powder and injections of sterile water for the first fortnight, and there was very little response to this treatment. She lost 2 degrees of tenderness, and the range of movement remained the same. The ring sizes diminished by 3, and she gained 30 millimetres in grip.

Treatment with aspirin and adrenalin was then started, and there was marked improvement within a week. She lost a further 10 degrees of tenderness and gained 5 degrees in range of movement. The ring sizes diminished by a further 24 and she gained a further 60 Millimetres in grip. This improvement was maintained during the subsequent week.

Thus during a fortnight on treatment with aspirin and adrenalin (a comparable period to that of control observations) she had lost 10 degrees of tenderness, gained 5 degrees in range of movement, the ring sizes had diminished by 22, and the grip had improved by 100 millimetres.

On discharge from hospital she had no disability, and during the total period in hospital of five weeks she had lost 12 degrees of tenderness, gained 7 degrees in range of movement, the ring sizes had diminished by 29 and the grip had improved by 155 millimetres. During treatment with aspirin and adrenalin she gained 5 lbs. in weight, and her face showed slight "moonning."

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2	3	4	5
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2	3	4	5
	-	Slightly better	Much better	Much better	No disab- ility

SPECIAL INVESTIGATIONS
BIOCHEMISTRY, etc.

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TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks			3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4	5
Sodium Mgm. %	318		331.2			343.8
Potassium Mgm. %	18		18.1			20
Chloride Mgm. %	590.9		596.7			602.6
Serum Uric Acid Mgm. %	3		2.3			1.84
B.S.R. Mm in 1st hour	36	27	26	20	24	30
Blood pressure	135/85		130/80			125/75
Haemoglobin	80%		83%			82%
R.B.C. Mill/c.mm	4		4			4.2

OUT-PATIENT RECORD

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The patient reported one month after discharge from hospital.

She states that for the first few days after discharge from hospital she felt weak and her joints became very stiff and painful once more. This, however, wore off within a week and the improvement noted during her stay in hospital has been maintained.

Tenderness - 0

Movement Range - 0

Ring Sizes - R. NNNMI

L. NNMNH

Grip - R. 170

L. 170

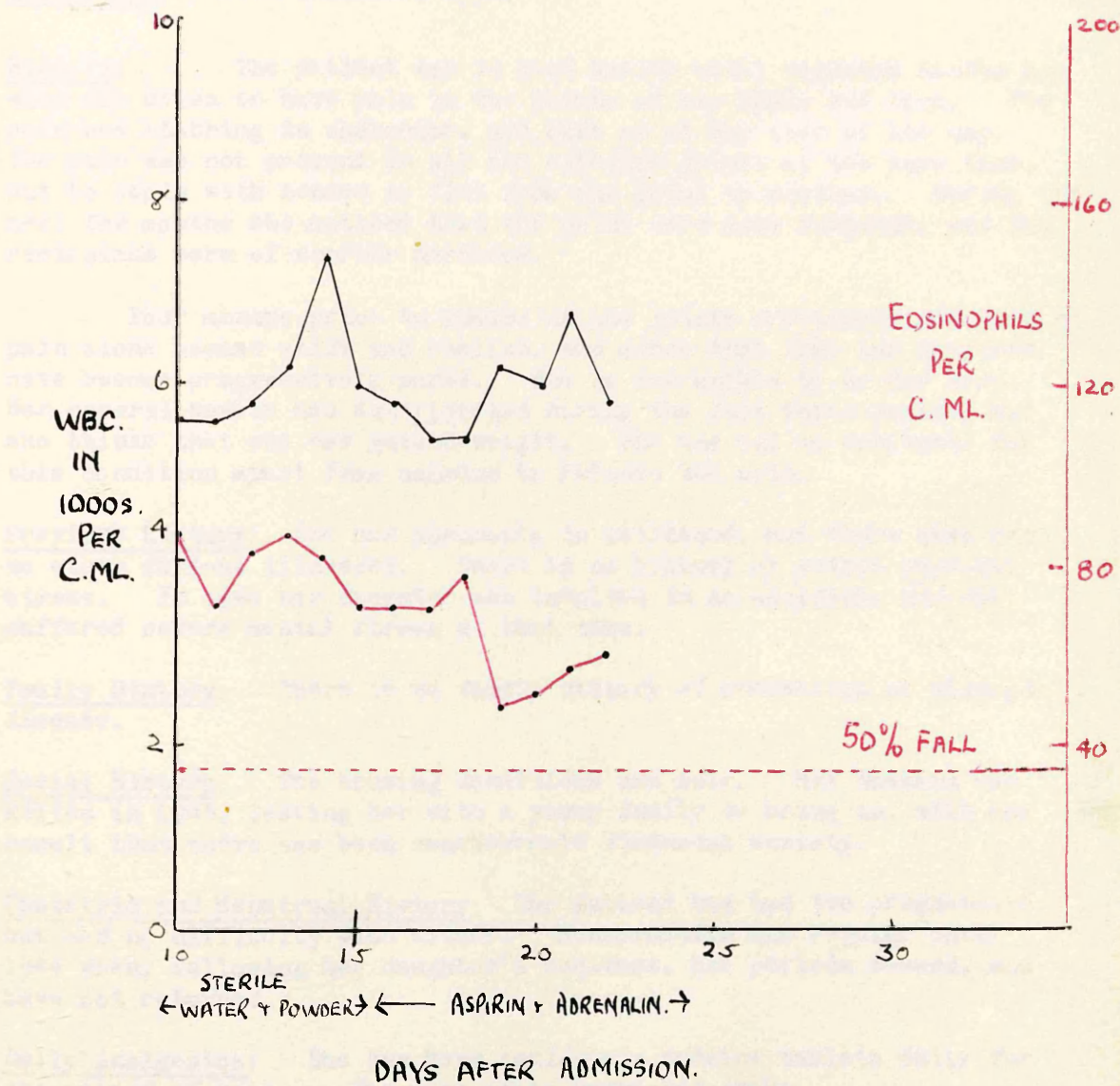
The patient reported again three months after discharge.

There has been slight recurrence of pain and stiffness in the right ankle. Otherwise her improvement has been maintained.

On examination there is Grade I tenderness in the right ankle and Grade I limitation in both dorsi-flexion and plantar flexion.

The patient did not report again as an out-patient despite repeated requests.

Eosinophil and White Cell Counts.



CASE NO. 17.

NAME: Mrs. Isabella Cook.

ADDRESS: 25 Stonehall Road, Hamilton.

AGE: 37.

OCCUPATION: Ward Maid.

Admitted: 5th November, 1952.

Discharged: 24th December, 1952.

History: The patient was in good health until eighteen months ago when she began to have pain in the joints of her hands and feet. The pain was stabbing in character, and came on at any time of the day. The pain was not present in all the affected joints at the same time, but to begin with tended to flit from one joint to another. During the next few months she noticed that the pains were more frequent, and the remissions were of shorter duration.

Four months prior to admission the joints previously affected by pain alone became stiff and swollen, and since that time the symptoms have become progressively worse. She is now unable to do her work. Her general health has deteriorated during the past three months, but she thinks that she has gained weight. She has had no treatment for this condition apart from codeine to relieve the pain.

Previous History: She had pneumonia in childhood, but there have been no other serious illnesses. There is no history of severe physical stress. In 1944 her daughter was involved in an accident, and she suffered severe mental stress at that time.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are fair. Her husband was killed in 1945, leaving her with a young family to bring up, with the result that there has been considerable financial anxiety.

Obstetric and Menstrual History: The patient has had two pregnancies, but had no difficulty with either. Menstruation was regular until 1944 when, following her daughter's accident, her periods ceased, and have not returned.

Daily Analgesics: She has been taking six codeine tablets daily for the relief of pain. The pain often keeps her awake.

General Examination: T. 97.5 P. 80 R. 20 B.P. 110/70.

The patient is a slightly obese young woman who lies comfortably in bed,

and does not appear to be in pain. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is below average intelligence, but is co-operative.

Locomotor System: The right wrist is slightly tender and shows slight limitation of movement. Several of the interphalangeal joints of both hands are tender and swollen.

The left ankle is swollen, tender, and shows slight limitation of movement. Several of the metatarsal phalangeal joints are swollen and tender.

Other Systems: Examination is negative.

X-Ray Report: (1) Hands and wrists: Show peri-articular soft tissue swelling surrounding the proximal metacarpo-phalangeal joints. Osteoporotic changes are defined mainly in the left carpus. No articular bony changes are otherwise noted. Appearances favour an early poly-arthritis of the rheumatoid type.

(2) Shoulders: Negative.

(3) Elbows: Negative.

(4) Knees: Negative.

(5) Ankles: No articular bony changes observed. There is relative osteoporosis of the bony structures of the left ankle.

(6) Feet: Bilateral hallux valgus deformity with bunion formation of the left foot. There is slight relative osteoporosis of the left foot.

TREATMENT		Sterile Water and Inactive Powder		Adrenalin and Aspirin.		
DURATION OF TREATMENT		5 weeks		4 weeks		
WEEKS AFTER ADMISSION		0	3	4	5	6&7
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 0	0 0	0 0	0 0	0 0
	Tenderness	0 0	2 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	1 0	1 0	0 0	1 0	0 0
	Extension	1 0	1 0	0 0	1 0	0 0
	Tenderness	0 0	1 0	0 0	1 0	0 0
<u>METACARPAL</u>	I	0 0	0 1	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 2	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	0 0
	V	0 0	0 1	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 0	2 1	1 0	2 0	0 0
<u>JOINT</u>	III	0 1	0 2	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 1	2 0	0 0	0 0	0 0
	V	2 2	2 3	0 1	2 2	0 0
<u>FINGER TO PALM CLOSURE</u>		3 3	3 4	2 0	2 2	0 0
<u>ANKLE</u>	P. Flexion	0 1	1 1	0 0	0 0	0 0
	D. Flexion	0 2	1 2	0 0	0 0	0 0
	Tenderness	0 0	0 0	0 0	0 0	0 0
<u>METATARSAL</u>	I	0 0	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	3 2	2 2	1 0	2 0	0 0
<u>JOINT</u>	III	2 2	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	0 2	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	20	25	4	9	0
	Movement Range	11	14	2	6	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Aspirin.		
DURATION OF TREATMENT	3 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	3	4	5	6 & 7
Ring Sizes	R. RXQPO L. PQSNN	R. SYQPQ L. RQTMQ	R. QWPQQ L. PORLM	R. RXQOQ L. PPSMN	R. PUPNN L. OOQLL
Grip	R. 135 L. 135	R. 125 L. 115	R. 140 L. 130	R. 115 L. 135	R. 220 L. 210

TREATMENT

The patient was kept in bed for the first three weeks of treatment and was allowed up for a limited time subsequently. Treatment consisted of a three weeks' control period, when an inactive powder and injections of sterile water were used. For the following four weeks hyperduric adrenalin was substituted for the sterile water. Initially she received 3 minims t.i.d. of the adrenalin, and this dose was increased 1 minim t.i.d. until she was getting 9 minims t.i.d. Aspirin gr. 15 four times a day was given in place of the inactive powder.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Aspirin.			
DURATION OF TREATMENT	3 weeks		4 weeks			
WEEKS AFTER ADMISSION	0	3	4	5	6 & 7	Final result 7 weeks
Tenderness	-	-5	21	16	25	20
Movement Range	-	-3	12	8	14	11
Ring Sizes)) Both Grip) hands	-	-7	17	9	25	18
	-	-30	30	10	190	160

The patient was a control subject for three weeks. During that time there was some deterioration in her condition. The tenderness increased by 5 degrees and the movement range decreased by 3 degrees. The ring sizes increased by 7 sizes and the grip diminished by 30 millimetres.

Adrenalin injections were then substituted for the sterile water, and aspirin instead of inactive powder. During the first week of this treatment, there was considerable improvement. The tenderness diminished by 21 degrees from that recorded after the three weeks control period. The movement range similarly increased by 12 degrees, while the ring sizes diminished by 17 sizes and the grip increased by 30 millimetres.

During the second week of this treatment the patient had a slight relapse, during which time she gained 5 degrees of tenderness and lost 4 degrees of movement range. The ring sizes increased by 8 sizes and the grip decreased by 20 millimetres.

By the time the third week of treatment had been reached, however, her condition had again improved considerably, and by the end of the sixth week after admission, there was no abnormality either in tenderness or movement range.

Thus the total improvement during the spell in hospital of six (and seven) weeks was 20 degrees of tenderness, 11 degrees of movement range, 18 ring sizes and 160 millimetres in grip.

During the spell of treatment of three (and four) weeks with adrenalin and with aspirin, the tenderness decreased by 25 degrees, the movement range increased by 14 degrees, the ring sizes diminished by 25 sizes, and the grip increased by 190 millimetres.

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Aspirin.		
DURATION OF TREATMENT	3 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	3	4	5	6 & 7
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	With diffi- culty	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Aspirin.		
WEEKS AFTER ADMISSION	0	3	4	5	6 & 7
	-	No Change	Much better	Slightly worse	No disa- bility

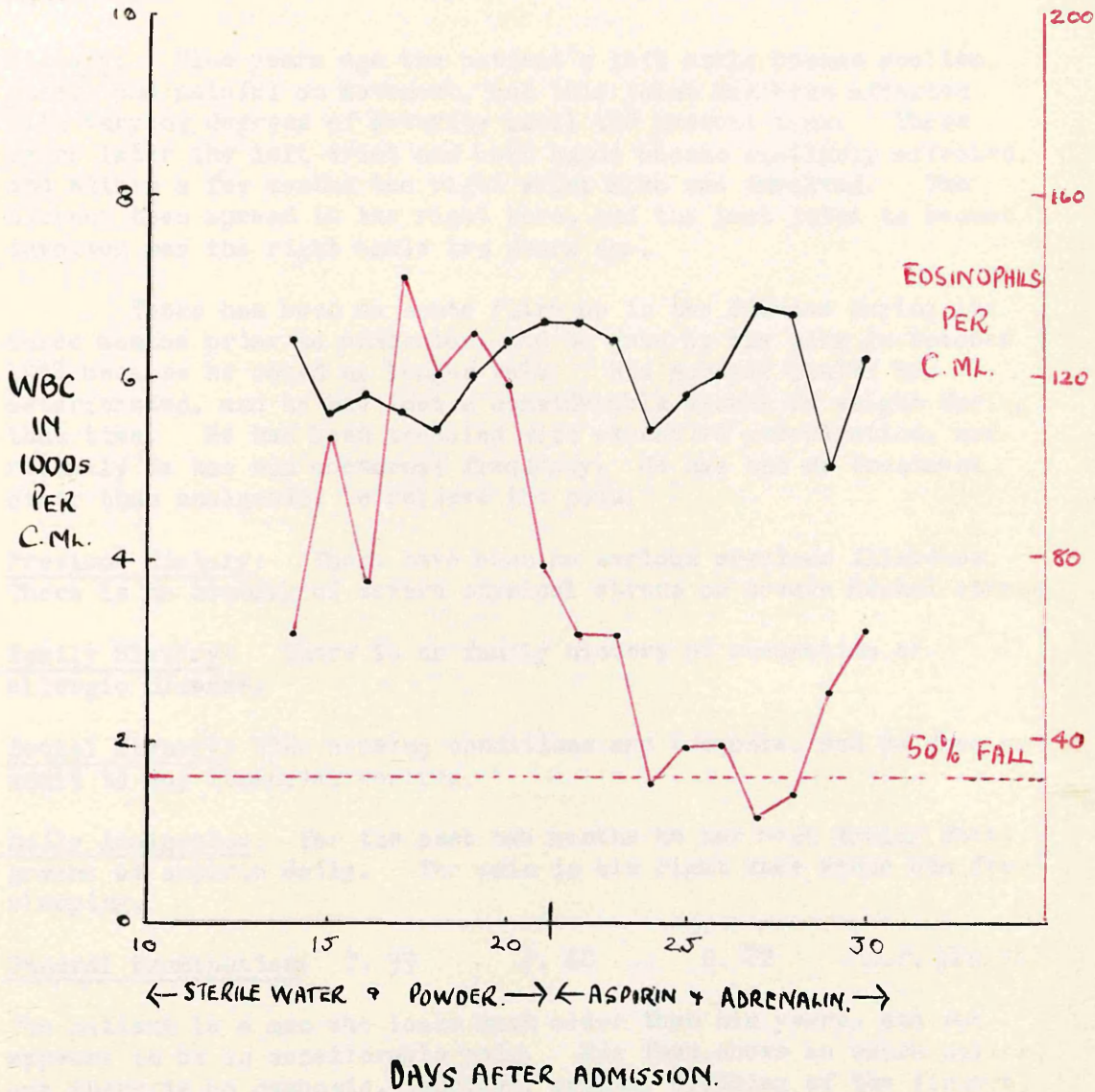
SPECIAL INVESTIGATIONS.
BIOCHEMISTRY, etc.

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Aspirin.
DURATION OF TREATMENT	3 weeks		4 weeks
WEEKS AFTER ADMISSION	0	3	7
Sodium Mgm. %	330	316	346.9
Potassium Mgm. %	19.8		19.4
Chloride Mgm. %	626	614.3	643.5
Serum Uric Acid Mgm. %	2.56	2.68	1.75
B.S.R. Mm in 1st hour	22	19	10
Blood Pressure	110/70	115/75	110/70
Haemoglobin	80%	85%	85%
R.B.C. Mill/c.mm	4.5	4.6	4.6

OUT-PATIENT RECORD

This patient did not return as an out-patient despite repeated requests. It was reported to me by a neighbour that her condition deteriorated a few weeks after her discharge from hospital.

Eosinophil and White Cell Counts.



CASE NO. 18

NAME: Thomas McLaughlin.

ADDRESS: 152 Calder Street, Coatbridge.

AGE: 53.

OCCUPATION: Labourer.

Admitted: 6th November, 1952.

Discharged: 31st January, 1953.

History: Nine years ago the patient's left ankle became swollen, stiff, and painful on movement, and this joint has been affected with varying degrees of severity until the present time. Three years later the left wrist and both hands became similarly affected, and within a few months the right wrist also was involved. The disease then spread to the right knee, and the last joint to become involved was the right ankle two years ago.

There has been an acute flare up in the disease during the three months prior to admission, and he gave up his work in October 1952 because he could no longer walk. His general health has deteriorated, and he has lost a considerable amount of weight during that time. He has been troubled with excessive perspiration, and recently he has had nocturnal frequency. He has had no treatment other than analgesics to relieve the pain.

Previous History: There have been no serious previous illnesses. There is no history of severe physical stress or severe mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and he does not admit to any financial worries.

Daily Analgesics: For the past two months he has been taking forty grains of aspirin daily. The pain in his right knee keeps him from sleeping.

General Examination: T. 99 P. 80 R. 22 B.P. 120/70.

The patient is a man who looks much older than his years, and who appears to be in considerable pain. His face shows an ashen pallor, but there is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is of average intelligence, and co-operative.

Locomotor System: The patient is an advanced case of rheumatoid arthritis, and all of the joints of the body, with the exception of the hips and the spine, are involved in the process.

Both shoulders are slightly restricted in movement and are tender. Both elbows are extremely tender and show limitation of movement. There is gross limitation of movement of both wrists, with moderate tenderness. The hands show typical rheumatoid deformity, and several of the metacarpal phalangeal and first interphalangeal joints of both hands are tender.

The right knee is fixed and is extremely tender. There is moderate limitation of movement in the left knee with extreme tenderness. Both ankles show gross limitation of movement and are extremely tender. Several of the metatarsal phalangeal joints are tender.

Other Systems: Examination is negative.

X-Ray Reports: (1) Hands and Wrists: These show the changes of advanced rheumatoid arthritis. Articular changes are observed at the level of the proximal interphalangeal and metacarpo-phalangeal joints, while advanced changes are present in the carpus and radio-carpal joints. There is subluxation of some of the metacarpo-phalangeal joints and interphalangeal joints. Appearances favour commencing bony ankylosis at the wrists.

(2) Knees: The right knee shows advanced changes with considerable cartilage degeneration and surrounding synovial soft tissue swelling. The left knee shows similar swelling, but the articular surfaces are reasonably intact.

(3) Ankles: The left ankle joint space is greatly diminished, and the right ankle shows similar diminution in its lateral aspect.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks		6 weeks	
WEEKS AFTER ADMISSION		0	3	6	9
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction Tenderness	1 1 0 1	0 0 0 0	0 0 0 0	0 0 0 0
<u>ELBOW</u>	Flexion Extension Tenderness	1 1 1 1 3 3	2 1 1 1 1 3	2 1 1 1 0 1	1 0 1 0 0 0
<u>WRIST</u>	Flexion Extension Tenderness	3 3 3 3 2 2	3 3 3 3 2 3	3 2 3 2 1 0	3 2 2 2 0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	1 0	1 0	0 0
<u>JOINT</u>	III	2 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	2 1	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	3 0	0 0	0 0
	V	0 0	0 1	0 0	0 0
<u>FINGER TO PALM</u>		5 5	5 5	2 2	0 2
<u>CLOSURE</u>					
<u>KNEE</u>	Extension Flexion Tenderness	3 1 3 2 3 3	2 0 2 0 2 2	0 0 1 0 0 0	0 0 0 0 0 0
<u>ANKLE</u>	P. Flexion D. Flexion Tenderness	3 3 3 3 3 3	2 3 2 3 1 0	2 2 1 2 0 0	2 2 1 1 0 0
<u>METATARSAL</u>	I	0 2	0 2	0 0	0 0
<u>PHALANGEAL</u>	II	2 0	2 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 1	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	32	26	3	0
	Movement Range	49	41	27	19

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
Ring Sizes	R. Z+WZ+WM L. Z+ZX+TM	R. Z+VZ+VL L. Z+XX+SM	R. Z+UY+UK L. XUV+QK	R. Z+TX+UJ L. XTU+QK
Grip	R. 110 L. 75	R. 95 L. 90	R. 115 L. 85	R. 120 L. 95

TREATMENT

The patient was allowed up for a very limited time during the course of treatment, enough to allow him to try and walk each day, so that the film record would give a standard result.

Treatment for the first three weeks consisted of aspirin gr. 15 four times a day and injections of sterile water three times a day. For the next six weeks he received aspirin gr. 15 four times a day and hyperduric adrenalin, commencing with a dose of 3 minims t.i.d. and rising 1 minim t.i.d. until he was receiving 10 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		6 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	Final Result 9 weeks
Tenderness	-	6	23	26	32
Movement Range	-	8	14	22	30
Ring Sizes)	Both hands	6	17	22	28
Grip)		0	15	30	30

The patient received treatment with aspirin and sterile water for the first three weeks, and there was a slight response to this treatment. The tenderness diminished by 6 degrees, and the movement range increased by 8 degrees. The ring sizes diminished by 6 sizes, and there was no change in the grip.

Injecti~~ons~~of adrenalin were then started, and these were given in addition to the aspirin. There was marked improvement within a week, and at the end of three weeks of this treatment, he had lost a further 23 degrees of tenderness and had gained a further 14 degrees in movement range; the ring sizes had diminished by a further 17 sizes and the grip had improved by 15 millimetres. At the end of six weeks treatment on aspirin and adrenalin, he had lost on this treatment 26 degrees of tenderness and had gained 22 degrees in movement range; the ring sizes had diminished by 22, and the grip had increased by 30 millimetres.

Thus, the final result for nine weeks after admission to hospital was that he had lost 32 degrees of tenderness and had gained 30 degrees in range of movement; the ring sizes had diminished by 28 sizes, and the grip had increased by 30 millimetres.

The patient was kept in hospital for a further three weeks, during which time aspirin and adrenalin was stopped for ten days, but there was no relapse. The improvement in this man's general condition was remarkable. As can be seen from the film record he gained weight - in all 8 lbs. during his stay in hospital, but more striking than this was the change in his general appearance. He lost his strained, anxious

expression, and he actually appears to have gained more weight than was recorded. This could be due to some rounding of the face associated with treatment.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Bathe</u>	No	No	With diffi- culty	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Walking</u>	No	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
	-	Slightly better	Better	Much better

SPECIAL INVESTIGATIONS.
BIOCHEMISTRY etc.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
Sodium Mgm.%	309.6	338.5	342.2	
Potassium Mgm.%	19.3	19	20.1	
Chloride Mgm.%	544	585	596.7	
Serum Uric Acid Mgm.%	2.11	1.84	1.85	
B.S.R. Mm in 1st hour	75	52	25	22
Blood Pressure	120/70	125/65	115/65	
Haemoglobin	75%	85%	85%	
R.B.C. Mill/c.mm	3.9	4.2	4.3	

OUT-PATIENT RECORD

The patient reported back one month after discharge.

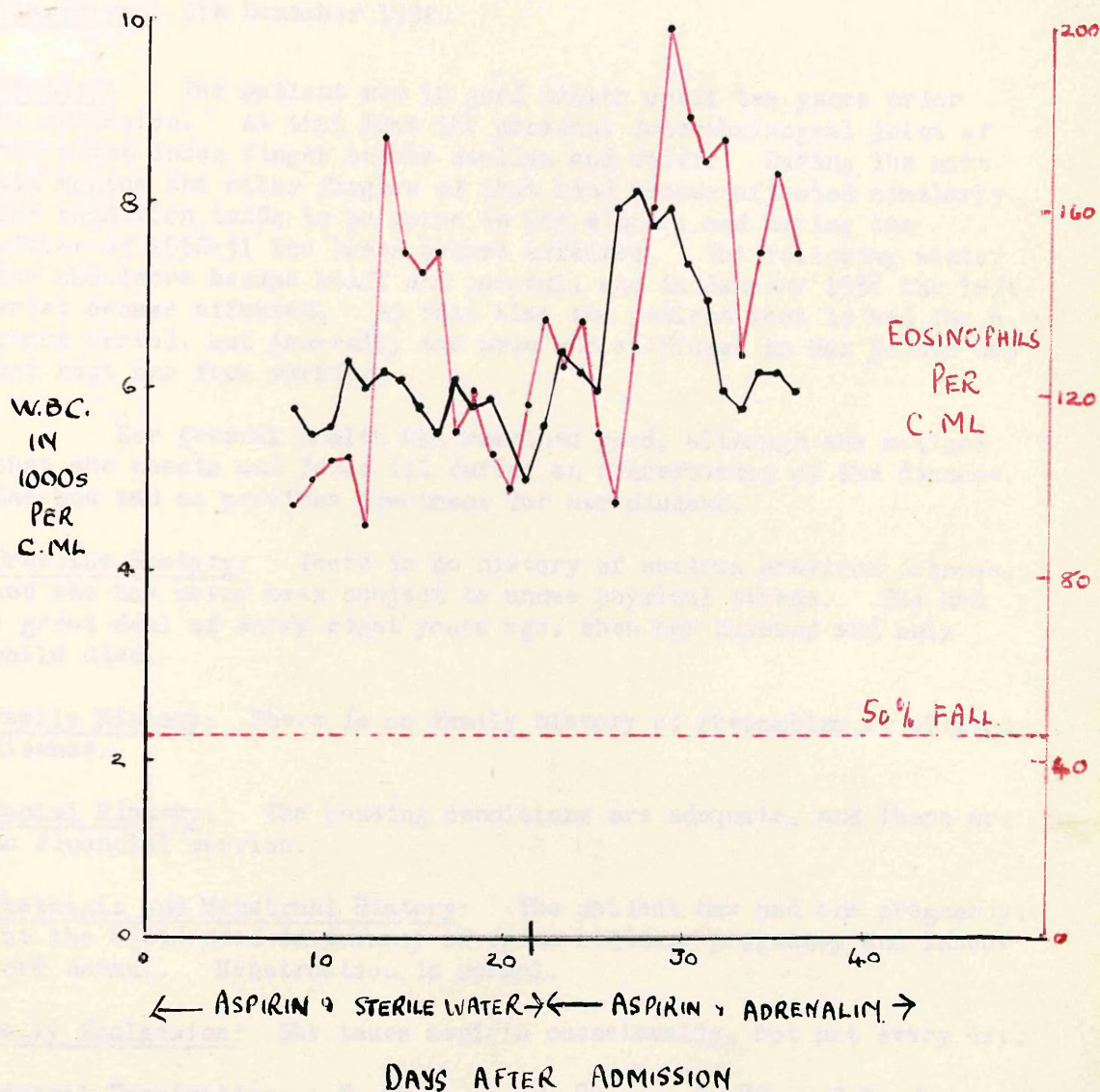
The patient's condition has deteriorated slightly since his discharge from the wards. He complained of weakness lasting for a week after his discharge, and there was some recurrence of the pain and stiffness.

The patient reported back again twelve months after discharge.

The patient has been doing light work since August 1953. The condition has not varied much since he was seen three months after discharge from hospital. He says elbows and knees trouble him most, but he is undoubtedly much better than before treatment.

MONTHS AFTER DISCHARGE FROM HOSPITAL		1 month		12 months	
		R.	L.	R.	L.
<u>ELBOW</u>	Flexion	2	2	2	1
	Extension	1	1	1	1
	Tenderness	0	0	0	0
<u>WRIST</u>	Flexion	3	2	2	2
	Extension	3	3	3	3
	Tenderness	0	0	0	0
<u>FINGER TO PALM CLOSURE</u>		2	2	4	5
<u>KNEE</u>	Flexion	1	1	2	0
	Extension	1	0	1	0
	Tenderness	2	0	0	0
<u>ANKLE</u>	P. Flexion	1	2	1	2
	D. Flexion	1	2	1	2
	Tenderness	0	0	0	0
<u>TOTAL</u>	Tenderness	2 (-2)		0 (0)	
	Movement Range	30 (-11)		33 (-14)	
<u>RING SIZES</u>		R. Z+TXUJ L. XTUQK (0)		R. Z++VXUL L. ZVWQK (-11)	
<u>GRIP</u>		R. 140 (+30) L. 105		R. 140 (+50) L. 125	

Eosinophil and White Cell Counts.



CASE NO. 19

NAME: Mrs. Agnes Stewart.

ADDRESS: 15 Craighead Street, Airdrie.

AGE: 30.

OCCUPATION: Housewife.

Admitted: 6th November 1952.

Discharged: 9th December 1952.

History: The patient was in good health until two years prior to admission. At that time the proximal interphalangeal joint of the right index finger became swollen and stiff. During the next six months the other fingers of that hand became affected similarly. The condition tends to be worse in the winter, and during the winter of 1950-51 the knees became affected. The following winter the shoulders became stiff and painful, and in January 1952 the left wrist became affected. At this time the patient went to bed for a short period, but generally the pain and stiffness in her joints has not kept her from working.

Her general health has remained good, although she notices that she sweats and feels ill during an exacerbation of the disease. She has had no previous treatment for her disease.

Previous History: There is no history of serious previous illness, and she has never been subject to undue physical stress. She had a great deal of worry eight years ago, when her husband and only child died.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: The patient has had one pregnancy, but the child died in infancy of spina bifida; pregnancy and labour were normal. Menstruation is normal.

Daily Analgesics: She takes aspirin occasionally, but not every day.

General Examination: T. 98 P. 92 R. 20 B.P. 140/80.

The patient is a young woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative.

Locomotor System: There is marked limitation of movement of the left wrist and moderate tenderness. There is slight tenderness of the second metacarpal phalangeal joint of the right hand and the first interphalangeal joint of the third finger of the right hand. The hands show the typical swelling of the small joints associated with rheumatoid arthritis.

There is moderate tenderness of the second metatarsal phalangeal joint of the right foot.

Other Systems: Examination is negative.

X-Ray Report: Hands: The bone density is normal. There is a suggestion of some tissue thickening, especially around the proximal interphalangeal joints of the middle finger. One or two of the metacarpal phalangeal joints, e.g. the right index fingers in both hands show slight narrowing of the joint space, and there is fairly marked soft tissue swelling around the metacarpo-phalangeal joint of the right index finger.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		4 weeks		
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	0 3	0 0	0 0
	Extension	0 3	0 0	0 0
	Tenderness	0 2	0 0	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	1 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FINGER TO PALM</u>		3 4	0 0	0 0
<u>CLOSURE</u>				
<u>METATARSAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	6	0	0
	Movement Range	13	0	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
Ring Sizes	R. SQVQK L. NPSNG	R. ROSNJ L. NNRMG	R. ROSNJ L. NNRMG
Grip	R. 90 L. 90	R. 115 L. 135	R. 115 L. 135

TREATMENT

The patient was allowed up for a limited period during treatment. Treatment consisted of hyperdureic adrenalin 3 minims t.i.d. the dose being raised 1 minim t.i.d. until the patient was receiving 10 minims t.i.d. The dose of aspirin given was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	4 weeks			
WEEKS AFTER ADMISSION	0	3	4	Final result 4 weeks
Tenderness	-	6	6	6
Movement Range	-	13	13	13
Ring Sizes) Both	-	14	14	14
Grip) hands	-	70	70	70

The patient received treatment with aspirin and adrenalin for four weeks in all, and showed considerable response to this treatment. At the end of the three (and four) weeks period she had no tenderness, and there was no disability as regards her range of movement. The

swelling of the fingers diminished considerably, and there was improvement in the grip. In all she lost 6 degrees of tenderness, and gained 13 degrees in range of movement; the ring sizes diminished by 14 sizes and the grip improved by 70 millimetres.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
<u>Dress</u>	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
DURATION, OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
	-	No disability	No disability

SPECIAL INVESTIGATIONS
BIOCHEMISTRY, etc.

TREATMENT	Aspirin and Adrenalin				
DURATION OF TREATMENT	4 weeks				
WEEKS AFTER ADMISSION	0	1	2	3	4
Sodium Mgm. %	345	346		324.5	
Potassium Mgm. %	20.5	19.4		20	
Chloride Mgm. %	596.7			608.4	
Serum Uric Acid Mgm. %	2.7	2.24		2.33	
B.S.R. Mm in 1st hour	17	7		8	7
Blood pressure	140/80	130/85		130/80	
Haemoglobin	80%	82%		80%	
R.B.C. Mill/c.mm	3.9	4.1		4.1	

OUT-PATIENT RECORD

The patient reported back one month after discharge from hospital.

The improvement in her condition has been maintained, and there are no complaints. Examination gave the same results as on her discharge from hospital.

The patient reported again three months after her discharge from hospital.

Shortly after she last reported as an out-patient, her fingers began to give her trouble again. Examination gave the following results:-

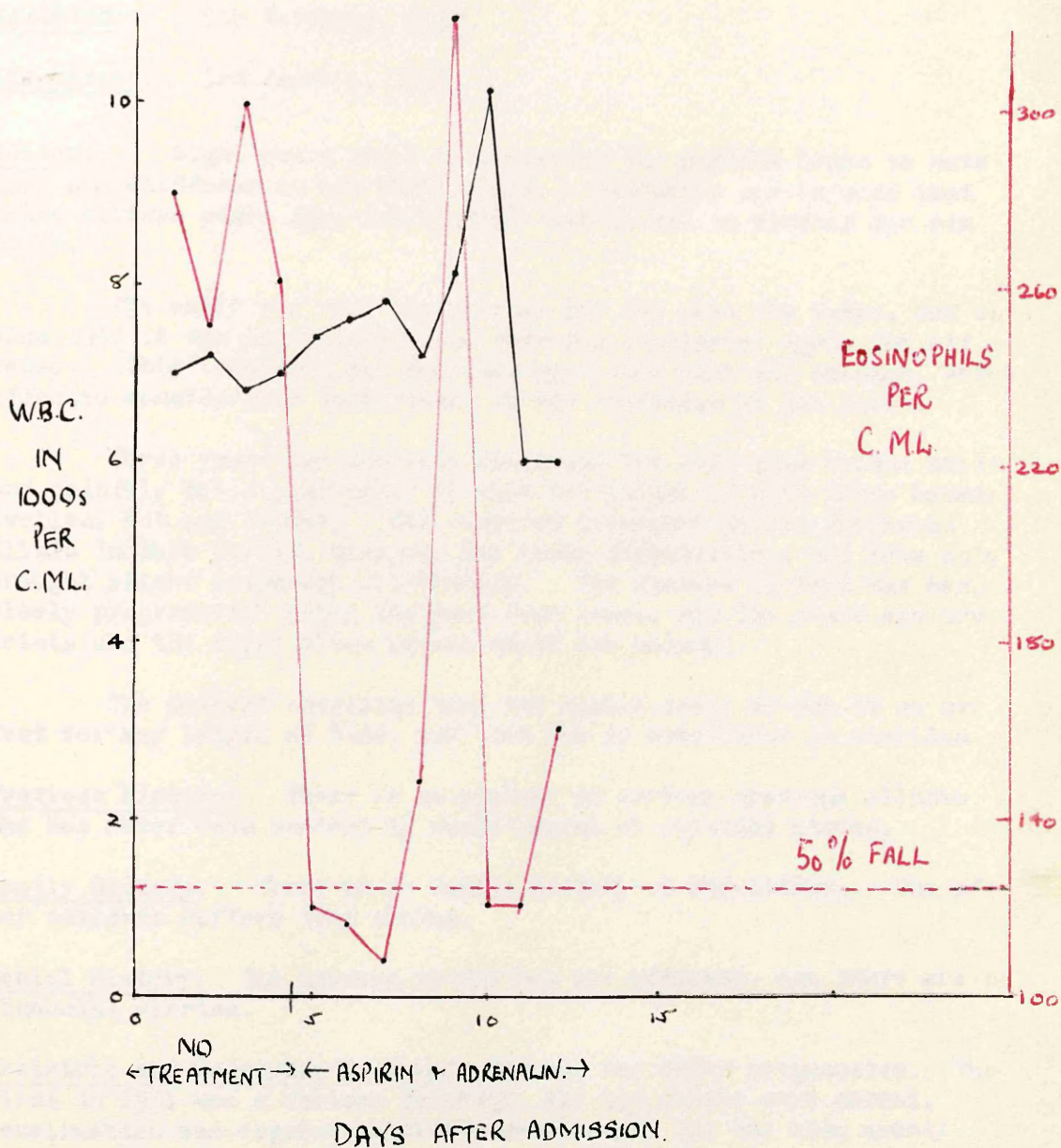
		<u>Right</u>	<u>Left</u>
<u>METACARPAL</u>	I	-	-
<u>PHALANGEAL</u>	II	Grade II	-
<u>JOINT</u>	III	-	-
<u>TENDERNESS</u>	IV	-	-
	V	-	-
<u>FIRST</u>	I	Grade I	-
<u>INTERPHALANGEAL</u>	II	-	Grade I
<u>JOINT</u>	III	Grade I	-
<u>TENDERNESS</u>	IV	-	-
	V	-	-
<u>FINGER TO PALM</u>		2	2
<u>CLOSURE</u>			
<u>RING SIZES</u>		VQVOJ	ONUMG

(-16)

The patient had been taught to give her own injections of adrenalin in hospital, and she was instructed to give herself a three weeks course of aspirin and adrenalin in her own home and report back. There was a definite improvement in her condition when she returned. The tenderness of the finger joints had disappeared. She was able to close her fingers again, and the ring sizes had diminished considerably. The ring sizes for the right hand were SOWOI and for the left hand NNTMG, which represents a fall of 8 ring sizes as compared with three weeks previously.

The patient was requested to return for review one year after her discharge from hospital, but did not do so.

Eosinophil and White Cell Counts.



CASE NO. 20

NAME: Mrs. Margaret Weir.

ADDRESS: 47, C Burnbank Street, Coatbridge.

AGE: 48. OCCUPATION: Housewife.

Admitted: 19th November, 1952.

Discharged: 3rd January, 1953.

History: Eight years prior to admission the patient began to have pain and stiffness in her right ankle. Evidently she injured that ankle sixteen years ago, and at that time it was in plaster for six weeks.

The ankle was very troublesome for the next few years, but in June 1947 it was manipulated, and then put in plaster again for six weeks. This treatment was followed by radian heat and massage, which effected considerable improvement in the condition of the joint.

Three years ago the left ankle and the left knee became stiff and painful, but a year prior to this the joints of both hands became swollen, hot and tender. She received treatment at the Rheumatic Clinic in Bath Street, Glasgow, for these disabilities, but this only brought slight temporary alleviation. The disease in fact has been slowly progressive during the past four years, and two years ago the wrists and the right elbow became stiff and painful.

The patient complains that her ankles swell if she is on her feet for any length of time, and that she is breathless on exertion.

Previous History: There is no history of serious previous illness. She has never been subject to undue mental or physical stress.

Family History: There is no family history of rheumatism. One of her children suffers from asthma.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: She has had three pregnancies. The first in 1931 was a forceps delivery, but the others were normal. Menstruation was regular until six months ago, but has been scanty and irregular since then.

Daily Analgesics: She takes two to four aspirins every day. The pain in her joints sometimes keeps her awake.

General Examination: T. 97.4

P. 68

R. 20

B.P. 160/80.

The patient is an obese, middle-aged woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative.

Locomotor System: The right elbow shows moderate restriction of movement and moderate tenderness. The left elbow is slightly tender. The right wrist shows moderate restriction of movement and is markedly tender. Several of the first interphalangeal joints of both hands are tender.

The left knee is moderately restricted in movement and acutely tender. The right knee is slightly tender. The right ankle shows moderate restriction of movement and is acutely tender. The left ankle is acutely tender. Several of the metatarsal phalangeal joints are tender.

Other Systems: Examination is negative.

X-Ray Reports: Knees.

"Both knees show osteoarthritic changes. In addition, in the left knee there is diminution of the joint space together with synovial thickening and small marginal erosions of the articular surfaces. Appearances are consistent with an associated atrophic arthritis."

TREATMENT		Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		4 weeks	
WEEKS AFTER ADMISSION		0	2	4	6
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 0	0 0	0 0	0 0
	Tenderness	1 1	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	2 0	2 0	0 0	0 0
	Extension	1 0	1 0	0 0	0 0
	Tenderness	2 1	3 0	0 0	0 0
<u>WRIST</u>	Flexion	0 2	0 2	0 0	0 0
	Extension	0 2	0 2	0 0	0 0
	Tenderness	0 3	0 2	0 0	0 0
<u>FIRST</u>	I	1 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 1	1 1	0 0	0 0
<u>JOINT</u>	III	1 1	1 1	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 1	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		1 1	0 0	0 0	0 0
<u>KNEE</u>	Extension	0 1	0 1	0 1	0 1
	Flexion	0 2	0 2	0 1	0 1
	Tenderness	1 3	0 3	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 0	2 0	0 0	0 0
	D. Flexion	2 0	2 0	0 0	0 0
	Tenderness	3 3	3 3	0 0	0 0
<u>METATARSAL</u>	I	0 1	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	1 1	0 0	0 0	0 0
<u>JOINT</u>	III	1 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	30	19	0	0
	Movement Range	16	14	2	2

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	2	4	6
Ring Sizes	R. UUVOJ L. QQSKI	R. TUUNJ L. PPSKI	R. RTUMJ L. OPRJI	R. RSSLH L. NOQJG
Grip	R. 95 L. 85	R. 100 L. 105	R. 120 L. 100	R. 145 L. 110

TREATMENT

The patient was allowed up for a limited period during the course of treatment. For the first fortnight she received an inactive powder four times a day and injections of sterile water three times a day. For the next four weeks treatment consisted of hyperdureic adrenalin, starting with a dose of 3 minims t.i.d. and this dose was raised by 1 minim t.i.d. until she was receiving 8 minims t.i.d. at which dose she began to show reaction. The dose of aspirin given was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	2	4	6	Final result 6 weeks
Tenderness	-	11	19	19	30
Movement Range	-	2	12	12	14
Ring) Sizes) Both	-	5	7	17	22
Grip) hands	-	25	15	50	75

The patient was used as a control subject for two weeks. During that time there was some improvement in tenderness, but little alteration in the range of movement or in the pain on movement. She lost 11 degrees of tenderness and gained 2 degrees in range of movement. The swelling of the fingers diminished only slightly, 5 ring sizes in all, and there was slight improvement in the grip - she gained 25 millimetres.

Treatment with aspirin and adrenalin was then commenced, and there was marked improvement, not so much in the tenderness, although in fact at the end of a fortnight's treatment she had no tenderness whatsoever, as in the range of movement. At the end of a fortnight she had lost a further 19 degrees of tenderness and had gained a further 12 degrees in range of movement, and the position was the same at the end of four weeks. As regards the ring sizes, there was an improvement of a further 7 ring sizes at the end of a fortnight and 17 ring sizes at the end of four weeks. The grip had improved by a further 15 millimetres at the end of a fortnight and 50 millimetres at the end of four weeks. The improvement in her condition is best shown by the serial cinematography.

Thus the total improvement at the end of six weeks in hospital was a loss of 30 degrees of tenderness, a gain of 14 degrees in range of movement, a fall of 22 ring sizes and an increase of 75 millimetres in grip.

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	2	4	6
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
WEEKS AFTER ADMISSION	0	2	4	6
	-	Slightly better	Much better	Much better

SPECIAL INVESTIGATIONS.
BIOCHEMISTRY, etc.

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	2	3	5	6
Sodium Mgm. %	342.9	319.6		312	
Potassium Mgm. %	21.2	19.6		20.6	
Chloride Mgm. %	579	585		590	
Serum Uric Acid Mgm. %	3.3	2.25		2.37	
B.S.R. Mm in 1st Hour	40	40		45	
Blood pressure	160/80	140/80		140/75	
Haemoglobin	85%	85%		90%	
R.B.C. Mill/c.mm	4.3	4.2		4.4	

OUT-PATIENT RECORD

The patient reported one month after discharge from hospital.

She is still feeling very well and there has been no relapse. Examination gives the following results:-

Tenderness - 0

Movement Range - 2

Ring Sizes - R. SSTMH
L. OPRJH (-7)

Grip - R. 160
L. 135 (+40)

The patient reported again three months after discharge from hospital. Her condition was the same as when she reported one month after discharge.

The patient reported again fourteen months after discharge. Her condition has deteriorated. The improvement which took place in hospital was maintained until July 1953, when her left knee, left elbow and right ankle became painful. There has been no major relapse in her condition, but she finds it painful to walk now.

Examination gives the following results:-

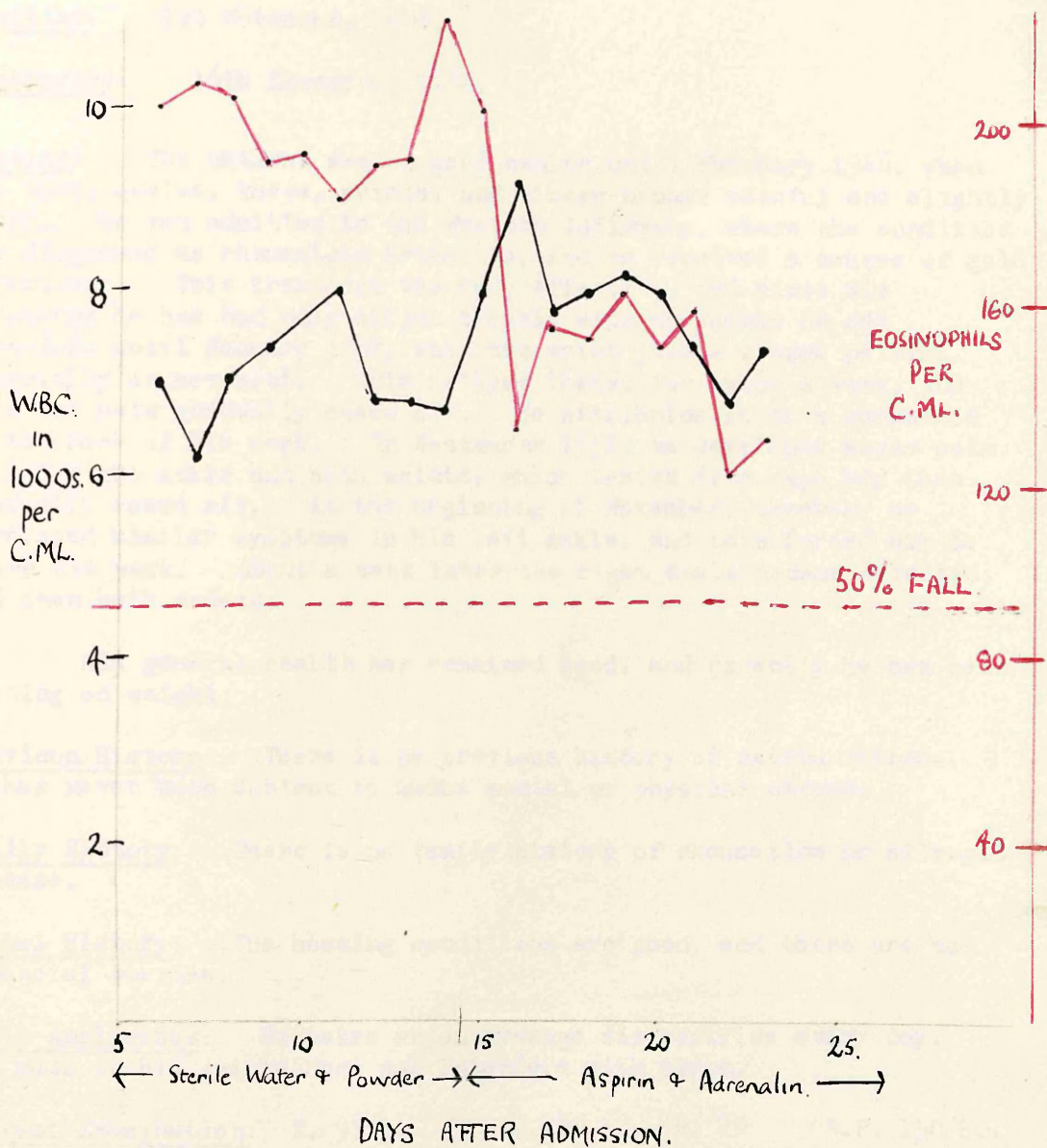
Tenderness - 8

Movement Range - 13

Ring Sizes - R. QVUMI
L. PRRJH (-13)

Grip - R. 120
L. 125 (-10)

Eosinophil and White Cell Counts.



CASE NO. 21

NAME: Arthur Bannister.

ADDRESS: Whitehill, Glenmavis Road, Airdrie.

AGE: 51. OCCUPATION: Quarry Manager.

Admitted: 21st November, 1952.

Discharged: 16th December, 1952.

History: The patient was in good health until February 1946, when his toes, ankles, knees, wrists, and elbows became painful and slightly stiff. He was admitted to the Western Infirmary, where the condition was diagnosed as rheumatoid arthritis, and he received a course of gold injections. This treatment was very effective, and since his discharge he has had only slight trouble with his joints on odd occasions until January 1952, when his wrist joints became painful, especially on movement. This relapse lasted for about a week, and then the pain gradually eased off. He attributes it to a carbuncle on the back of his neck. In September 1952, he developed acute pain in the right ankle and both wrists, which lasted five days and then gradually eased off. At the beginning of November, however, he developed similar symptoms in his left ankle, and this forced him to leave his work. About a week later the right ankle became affected, and then both wrists.

His general health has remained good, and recently he has been putting on weight.

Previous History: There is no previous history of severe illness. He has never been subject to undue mental or physical stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are good, and there are no financial worries.

Daily Analgesics: He takes on an average six aspirins every day. The pain in his joints does not interfere with sleep.

General Examination: T. 97.3 P. 60 R. 20 B.P. 150/80.

The patient is an obese middle-aged man, who looks healthy and lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is intelligent and co-operative.

Locomotor System: There is moderate limitation of movement in the left wrist. Both wrists are tender.

There is moderate limitation of movement in the left ankle. Both ankles are tender.

Other Systems: Examination is negative.

X-Ray Report: Ankles: There is slight decalcification in both ankles. The joint spaces are intact.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		3 weeks		
WEEKS AFTER ADMISSION		0	1	3
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	0 2	0 0	0 0
	Extension	0 2	0 0	0 0
	Tenderness	1 2	1 1	0 0
<u>ANKLE</u>	P. Flexion	0 2	0 1	0 0
	D. Flexion	0 2	0 1	0 0
	Tenderness	1 1	1 1	0 0
<u>TOTAL</u>	Tenderness	5	4	0
	Movement Range	8	2	0

TREATMENT

The patient was allowed up during treatment, which consisted of hyperdural adrenalin 3 minims t.i.d. The dose was raised by 1 minim t.i.d. until he was receiving 12 minims t.i.d. at which dose he showed reaction, and the dose was maintained thereafter at that level. The dose of aspirin given was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks			
WEEKS AFTER ADMISSION	0	1	3	Final result 3 weeks
Tenderness	-	1	5	5
Movement Range	-	6	8	8

The patient was treated with aspirin and adrenalin for a period of three weeks. The disability in his case was not marked to begin with, as only the wrists and the ankles were affected, and by the end of the period of treatment, he had no disability whatsoever. He lost 5 degrees of tenderness and gained 8 degrees in movement range.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		
WEEKS AFTER ADMISSION	0	1	3
<u>Dress</u>	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		
WEEKS AFTER ADMISSION	0	1	3
	-	Better	No disability

SPECIAL INVESTIGATIONS.
(BIOCHEMISTRY, etc).

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks			
WEEKS AFTER ADMISSION	0	1	2	3
Sodium Mgm. %	342			
Potassium Mgm. %	23.75			
Chloride Mgm. %	585			
Serum Uric Acid Mgm. %	2.95			
B.S.R. Mm in 1st hour	48	33	20	18
Blood Pressure	150/80	145/80	135/75	135/75
Haemoglobin	100%	100%	100%	100%
R.B.C. Mill/c.mm	4.9	5.2	5.1	5.2

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient has retained much of the benefit received in hospital with treatment. There is slight tenderness in the left ankle, but the wrists and hands are completely free from pain. He states that he is feeling much better and can now use a hammer and saw, which previously he had been unable to do for years.

3 months

The condition is very much the same as when he reported one month after discharge. There is still Grade I tenderness of the left ankle, and slight limitation of movement is now evident. Both wrists are slightly tender.

He was instructed to take a course of aspirin and adrenalin as an out-patient.

4 months

The patient has had the prescribed course of aspirin and adrenalin. He took 60 gr. of aspirin daily for three weeks and 6 minims of adrenalin t.i.d. This dose was increased and the maximum dose of adrenalin attained was 9 minims t.i.d. when he had severe reaction in the form of shaking, tachycardia and gastric discomfort.

On examination there has been improvement. The wrists are no longer tender. The left ankle still shows Grade I tenderness and 2 degrees of limitation of movement.

5 months

The patient has completely recovered apart from a pain in the left heel, which apparently has no relation to his rheumatoid arthritis. He has been referred to the Orthopaedic Surgeon.

14 months

The patient has been attending the Orthopaedic Out-patient Department at intervals during the past six months. At one stage he had a plaster on the left ankle, which gave him some benefit. He is better than when treatment was originally started 15 months ago. On examination there is no disability of hands and wrists. The left ankle shows 2 degrees of limitation of movement, but is no longer painful.

CASE NO. 22

NAME: Mrs. Marion Gallacher.

ADDRESS: 22 Backmuir Crescent, Hamilton.

AGE: 35. OCCUPATION: Housewife.

Admitted: 24th November, 1952.

Discharged: 27th December, 1952.

History: Six months prior to admission, the patient began to have pain in the small joints of both hands, and a few weeks later pain in the right ankle. This pain, which she described as throbbing in character, has been present intermittently until the time of admission.

Four weeks ago the affected joints became stiff and swollen, and at the same time the left knee became painful. When her illness first started she developed a painful nodule on the extensor aspect of the left forearm, which was red and increased in size for a few months, but is now regressing.

Her general health has deteriorated during the past month, and she feels tired and listless.

Previous History: There is no history of serious previous illness. She has never been subject to undue mental or physical stress. She had a fracture of both bones of the right forearm many years ago, and there is some residual deformity from that.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: She has had five pregnancies, four of which were normal, and the children are alive and well. She had a septic abortion. Menstruation is regular with a normal loss.

Daily Analgesics: She has been taking four to six aspirins daily, and the pain does not keep her awake.

General Examination: T. 98.4 P. 100 R. 20 B.P. 130/84

The patient is a well-built, slightly obese woman who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average

intelligence and co-operative. There is a small nodule attached to the upper end of the left ulna posteriorly.

Locomotor System: There is slight limitation of movement with slight tenderness in the right wrist, which is swollen. The metacarpal phalangeal joint of the third finger of the right hand is tender. Several of the first interphalangeal joints of both hands are tender.

The right ankle shows moderate limitation of movement and slight tenderness, and is swollen.

Other Systems: Examination is negative.

X-Ray reports: (1) Hands: These show peri-articular soft tissue swelling surrounding the proximal interphalangeal joints, and the second and third metacarpal phalangeal joints. No articular bony changes otherwise observed.

(2) Elbows: Negative apart from liping of the right radial head.

(3) Knees: Apart from a small bony exostosis arising from the upper medial margin of the right tibia, these are negative.

(4) Shoulders: Negative.

(5) Ankles: These appear osteoporotic, and these changes are also seen in the tarsus and forefoot. There is periarticular soft tissue swelling involving especially the right ankle and dorsum of the foot. No articular joint changes are otherwise observed.

The general appearances are consistent with rheumatoid arthritis.

TREATMENT		No treatment		Aspirin and Adrenalin
DURATION OF TREATMENT		10 days		10 days
DAYS AFTER ADMISSION		0	10	20
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	1 0	1 0	0 0
	Extension	1 0	1 0	0 0
	Tenderness	1 0	2 0	0 0
<u>WRIST CIRCUMFERENCE (Rt.)</u>		$7\frac{1}{2}"$	$7\frac{1}{4}"$	$6\frac{1}{2}"$
<u>METACARPAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	1 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 1	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 0	1 0	0 0
<u>JOINT</u>	III	2 0	2 0	0 0
<u>TENDERNESS</u>	IV	1 0	1 0	0 0
	V	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		3 0	3 0	0 0
<u>ANKLE</u>	P. Flexion	1 0	1 0	0 0
	D. Flexion	2 0	2 0	0 0
	Tenderness	1 0	2 0	0 0
<u>ANKLE CIRCUMFERENCE (Rt.)</u>		11 "	11 "	$10\frac{1}{4}"$
<u>TOTAL</u>	Tenderness	7	10	0
	Movement Range	8	8	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	No treatment		Aspirin and Adrenalin
DURATION OF TREATMENT	10 days		10 days
DAYS AFTER ADMISSION	0	10	20
Ring Sizes	R. RYZWH	R. RYYVH	R. QSVSG
	L. RSYNJ	L. RSXNJ	L. POUH
Grip	R. 120	R. 130	R. 175
	L. 165	L. 165	L. 190

TREATMENT

The patient was confined to bed during the first ten days of treatment. She was used as a control subject for ten days, being given no treatment apart from rest in bed. For the following ten days treatment consisted of hyperdurec adrenalin 3 minims t.i.d. and the dose was raised 2 minims t.i.d. until she was receiving 8 minims t.i.d. at which dose she showed reaction. The dose of aspirin given was gr. 15 four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	No treatment		Aspirin and Adrenalin	
DURATION OF TREATMENT	10 days		10 days	
DAYS AFTER ADMISSION	0	10	20	Final result 3 weeks
Tenderness	-	-3	10	7
Movement Range	-	0	8	8
Ring sizes) Both hands	-	3	26	29
Grip) hands	-	10	70	80

The patient was treated as a control subject for the first ten days. She was kept on absolute rest and there was very little response to this treatment - in fact, the tenderness increased by 3 degrees. Movement range remained the same, the ring sizes diminished by 3 sizes and the grip improved by 10 millimetres.

Treatment with aspirin and adrenalin was then started, and there was a marked improvement within ten days. At the end of 10 days on this treatment, she had lost 10 degrees of tenderness and had gained 8 degrees in range of movement; the ring sizes had diminished by a further 26 and the grip had improved by a further 70 millimetres.

Thus at the end of three weeks in hospital she had lost in all 7 degrees of tenderness and gained 8 degrees in movement range; the ring sizes had diminished by 29 and the grip had improved by 80 millimetres.

PERFORMANCE CHART

TREATMENT	No treatment		Aspirin and Adrenalin
DURATION OF TREATMENT	10 days		10 days
DAYS AFTER ADMISSION	0	10	20
<u>Dress</u>	With difficulty	With difficulty	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	With difficulty	With difficulty	Yes
<u>Dress Hair</u>	With difficulty	With difficulty	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	No treatment		Aspirin and Adrenalin
DURATION OF TREATMENT	10 days		10 days
DAYS AFTER ADMISSION	0	10	20
	-	Slightly better	No disability

SPECIAL INVESTIGATIONS.
(BIOCHEMISTRY, etc).

TREATMENT	No treatment		Aspirin and Adrenalin
DURATION OF TREATMENT	10 days		10 days
DAYS AFTER ADMISSION	0	10	20
Sodium Mgm. %	325		324
Potassium Mgm. %	18.9		20.7
Chloride Mgm. %	585		614
Serum Uric Acid Mgm. %	2.16	2.1	1.8
B.S.R. Mm in 1st hour	71	58	15
Blood pressure	130/84		125/80
Haemoglobin	75%		80%
R.B.C. Mill/c.mm	3.8		4.1

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

There has been no relapse. The patient felt well after discharge from hospital. Her only complaint is of occasional stiffness in the hands in the morning, but this soon loosens up. She was discharged on a dose of 30 gr. of aspirin daily. She now manages to do all her household duties, sweeping, washing, cooking, etc. The only objective finding is Grade I tenderness in the first interphalangeal joint of the third finger of the left hand. The hands are slightly swollen. The ring sizes are Right - PUXTG, Left - ROXMG (-8).

4 months

There has been no relapse. Her condition is unchanged.

9 months

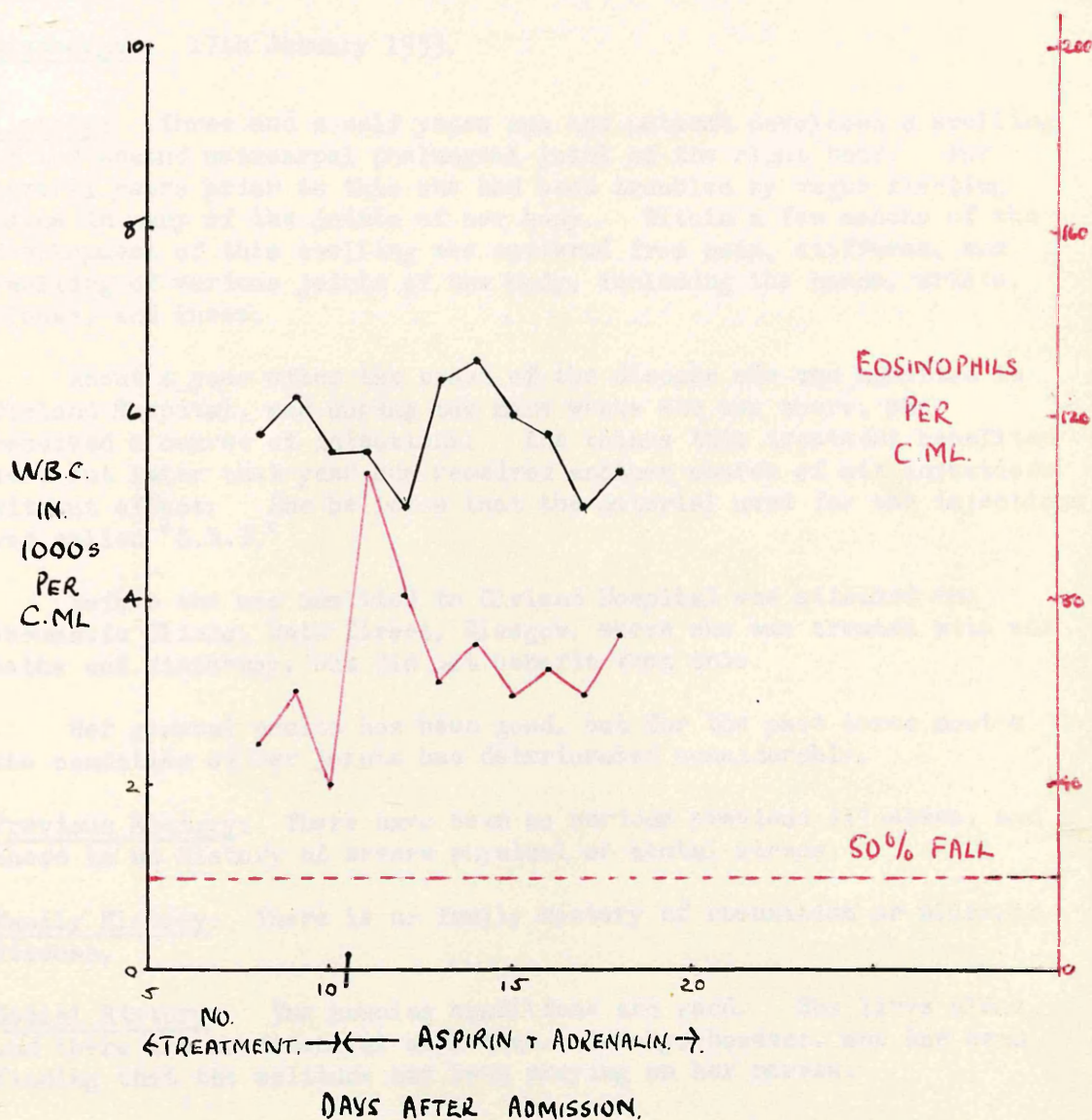
She is now taking only an occasional aspirin, when the joints of the hands become slightly tender. She reports that she can now run upstairs where, before treatment, she had to hold on to the banisters and limp slowly to the top.

14 months

The patient has only slight disability.

		R.	L.
<u>WRIST</u>	Flexion	0	0
	Extension	0	1
	Tenderness	0	1
<u>FIRST</u>	I	0	0
<u>INTERPHALANGEAL</u>	II	0	0
<u>JOINT</u>	III	0	1
<u>TENDERNESS</u>	IV	0	0
	V	0	0
<u>GRIP</u>		160	160
<u>RING SIZES</u>		PPQRG	ORSLF (+13)

Eosinophil and White Cell Counts.



CASE NO. 23

NAME: Mrs. Susan Swan.

ADDRESS: 71 Quarry Street, Hamilton.

AGE: 65.

OCCUPATION: Housewife.

Admitted: 17th December 1952.

Discharged: 17th January 1953.

History: Three and a half years ago the patient developed a swelling of the second metacarpal phalangeal joint of the right hand. For several years prior to this she had been troubled by vague fleeting pains in many of the joints of her body. Within a few months of the development of this swelling she suffered from pain, stiffness, and swelling of various joints of the body, including the hands, wrists, elbows, and knees.

About a year after the onset of the disease she was admitted to Cleland Hospital, and during the nine weeks she was there, she received a course of injections. She thinks this treatment benefited her, but later that year she received another course of six injections without effect. She believes that the material used for the injections was called "S.B.T."

Before she was admitted to Cleland Hospital she attended the Rheumatic Clinic, Bath Street, Glasgow, where she was treated with wax baths and diathermy, but did not benefit from this.

Her general health has been good, but for the past three months the condition of her joints has deteriorated considerably.

Previous History: There have been no serious previous illnesses, and there is no history of severe physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are good. She lives alone, and there are no financial anxieties. Lately, however, she has been finding that the solitude has been preying on her nerves.

Obstetric and Menstrual History: There have been no pregnancies. The menopause occurred at the age of forty-five.

Daily Analgesics: She takes six aspirin daily to relieve the pain. The pain often keeps her awake at night.

General Examination: T. 97.8 P. 84 R. 20

The patient is a well-nourished, fresh-complexioned woman, who lies comfortably in bed. She looks younger than her age. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative.

Locomotor System: The left shoulder is slightly tender.

Both elbows are tender and the right wrist is tender. There is swelling and deformity of several of the metacarpal phalangeal joints of the right hand and the first interphalangeal joints of both hands, which are tender.

Both knees show limitation of movement. The right knee is moderately tender and the left knee is extremely tender.

Other Systems: Examination is negative.

X-Ray reports: (1) Hands and wrists. These show characteristic osteoporosis and joint changes of atrophic arthritis of rheumatoid type.

(2) Elbows and ankles. The changes seen are not gross, but there is characteristic osteoporosis.

(3) Knees. These show changes of an osteoarthritic type.

TREATMENT		Rest alone		Adrenalin & Inactive Powder.	
DURATION OF TREATMENT		1 week		3 weeks	
WEEKS AFTER ADMISSION		0	1	2	4
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 0	0 0	0 0	0 0
	Tenderness	0 1	0 1	0 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0
	Tenderness	2 1	2 1	0 0	0 0
<u>WRIST</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0
	Tenderness	2 0	2 0	0 0	0 0
<u>METACARPAL</u>	I	2 0	2 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 0	2 0	0 0	0 0
<u>JOINT</u>	III	3 0	1 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 1	0 1	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 0	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	1 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 1	0 1	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		3 0	3 0	0 0	0 0
<u>KNEE</u>	Extension	1 0	1 0	0 0	0 0
	Flexion	2 2	2 2	0 0	0 0
	Tenderness	2 3	2 2	0 1	0 0
<u>TOTAL</u>	Tenderness	23	18	1	0
	Movement Range	8	8	0	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Rest alone		Adrenalin & Inactive Powder.	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
Ring Sizes	R. TPQMG	R. SOQLG	R. QNOKF	R. RNOKF
	L. QNPLH	L. RNPLH	L. RNPKJ	L. QNOKJ
Grip	R. 80	R. 95	R. 115	R. 145
	L. 125	L. 100	L. 120	L. 125

TREATMENT

The patient was confined to bed during the first two weeks of treatment and thereafter was allowed up for a limited period.

Treatment consisted of rest in bed for the first week, and thereafter injections of hyperduric adrenalin were given, starting with 3 minims t.i.d. This dose was raised 1 minim t.i.d. until she was receiving 8 minims t.i.d. at which time she showed reaction to the drug. In addition, during the time she was receiving adrenalin, she was given an inactive powder four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Rest alone		Adrenalin & Inactive Powder		
DURATION OF TREATMENT	1 week		3 weeks		
WEEKS AFTER ADMISSION	0	1	2	4	Final result 4 weeks
Tenderness	-	5	17	18	23
Movement Range	-	0	8	8	8
Ring Sizes)	Both hands	2	9	10	12
Grip)		-10	40	75	65

The patient was treated with rest alone for the first week, and there was little response to this treatment. She lost 5 degrees of tenderness, but the movement range was unaltered. The ring sizes diminished by two sizes and the grip deteriorated by 10 millimetres.

Injections of adrenalin were then commenced, and in addition an inactive powder was given as a control. There was considerable improvement, and at the end of a week of this treatment, she had lost a further 17 degrees of tenderness and had gained 8 degrees in range of movement. The ring sizes had diminished by a further 9 sizes, and the grip had improved by 40 millimetres from the reading taken at the end of the first week.

At the end of three weeks of this treatment the patient had no disability. The tenderness had diminished by 18 degrees, and the movement range had increased by 8 degrees. The ring sizes had diminished by 10 sizes and the grip improved by 75 millimetres.

Thus, during the four weeks the patient was in hospital, she lost a total of 23 degrees of tenderness and gained a total of 8 degrees in range of movement. The ring sizes had diminished by 12 sizes, and the grip had improved by 65 millimetres.

PERFORMANCE CHART

TREATMENT	Rest alone		Adrenalin & Inactive Powder.	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Rest alone		Adrenalin & Inactive Powder.	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
	-	Slightly better	Much better	No disability

SPECIAL INVESTIGATIONS
(BIOCHEMISTRY etc)

TREATMENT	Rest alone		Adrenalin & Inactive Powder.		
DURATION OF TREATMENT	1 week		3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4
Sodium Mgm. %	318				331.9
Potassium Mgm. %	19.7				18.7
Chloride Mgm. %	596.7				596.7
Serum Uric Acid Mgm. %	3.0				2.85
B.S.R. Mm in 1st hour	20	26			24
Blood Pressure	120/64				120/60
Haemoglobin	95%				90%
R.B.C. Mill/c.mm	4.8				4.6

OUT-PATIENT RECORD.Months after
dischargeCondition

1 month

The improvement in her condition has been maintained. On examination there is no objective evidence of rheumatoid arthritis apart from slight swelling of her fingers. There is no tenderness nor diminution in range of movement. The ring sizes and grip are the same as at the time of her discharge.

3 months

The patient's condition is satisfactory. There is no change from the previous examination.

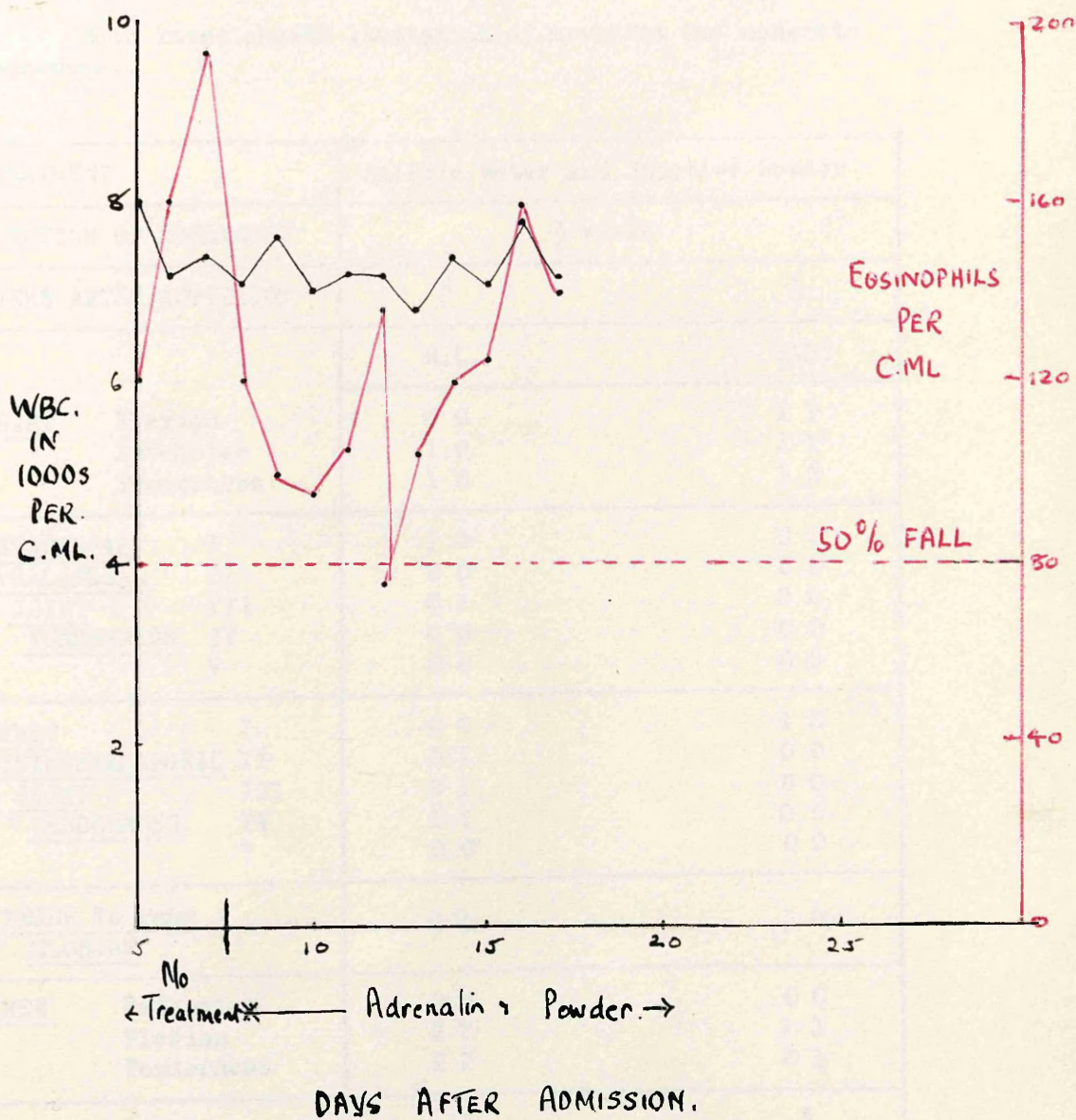
6 months

There has been some deterioration in the patient's condition. On examination the right wrist is slightly painful and shows diminution of movement. There has been a return of swelling and stiffness in both hands, and the knees are once more tender and limited in their movement range.

Arrangements were made for Mrs. Swan to have treatment as an out-patient. She gave herself injections of hyperduralic adrenalin, 7 minims three times a day, and took 15 gr. of aspirin four times a day. This treatment was continued for three weeks, and at the end of that time there was slight improvement in her condition. The tenderness, which had previously been 18 on examination, had fallen to 10. The movement range had decreased slightly from 9 to 7 degrees.

It was decided, however, to admit her to hospital, and she was re-admitted on 19th October 1953.

Eosinophil and White Cell Counts.



NAME: Mrs. Susan Swan.

Re-admitted: 19th October, 1953.

Discharged: 11th November, 1953.

Locomotor System: The right wrist was slightly tender, and showed slight limitation of movement. Several of the metacarpal phalangeal joints and the first interphalangeal joints of both hands were slightly tender.

Both knees showed limitation of movement and moderate tenderness.

TREATMENT		Sterile Water and Inactive Powder	
DURATION OF TREATMENT		3 weeks	
WEEKS AFTER ADMISSION		0	3
		R.L.	R.L.
<u>WRIST</u>	Flexion	0 0	1 1
	Extension	1 0	2 1
	Tenderness	1 0	1 0
<u>METACARPAL</u>	I	1 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0
<u>JOINT</u>	III	0 1	0 0
<u>TENDERNESS</u>	IV	0 0	0 0
	V	0 0	0 0
<u>FIRST</u>	I	0 0	1 0
<u>INTERPHALANGEAL</u>	II	0 1	0 0
<u>JOINT</u>	III	0 1	0 0
<u>TENDERNESS</u>	IV	0 1	0 0
	V	0 0	0 0
<u>FINGER TO PALM</u>			
<u>CLOSURE</u>		3 0	3 0
<u>KNEE</u>	Extension	0 0	0 0
	Flexion	2 2	1 1
	Tenderness	2 2	0 1
<u>TOTAL</u>	Tenderness	10	3
	Movement Range	8	10

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
Ring Sizes	R. TQQNG L. QPONI	R. TQQNG L. RPONI
Grip	R. 65 L. 105	R. 70 L. 110

TREATMENT

Mrs. Swan had been very enthusiastic about the treatment she received in hospital, indeed, one might say over-enthusiastic, so it was decided to treat her on her second admission as a control case. She was given injections of sterile water three times a day, and also an inactive powder in a dosage comparable to the aspirin she had been receiving outside.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
Tenderness	-	7
Movement Range	-	-2
Ring Sizes)	-	-1
) Both		
Grip) hands	-	10

During the three weeks when this patient was used as a control subject, there was improvement in the tenderness of her joints - she lost 7 degrees of tenderness. The movement range, however, deteriorated - she lost 2 degrees in range of movement. The swelling of the fingers remained much as before; there was in fact an increase in the ring sizes for both hands of 1 size. There was very slight improvement in the grip - 10 millimetres in all.

Despite these figures, the patient was highly gratified with her treatment, as can be seen on referring to the subjective improvement table. She evidently felt very much better, although on objective examination there was little or no improvement in the rheumatoid state. This, of course, is quite mild, and she was allowed home.

It is interesting to note that this patient stated that the injections, which we were giving her, were causing a tremor and a feeling of excitement. These were the symptoms of which she complained when she was getting adrenalin on her first admission, but, of course, on this occasion she was only receiving injections of sterile water.

PERFORMANCE CHART.

TREATMENT	Sterile Water and Inactive Powder	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
<u>Dress</u>	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes
<u>Bathe</u>	Yes	Yes
<u>Dress Hair</u>	Yes	Yes
<u>Walking</u>	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
	-	Much better

SPECIAL INVESTIGATIONS
(BIOCHEMISTRY, etc.)

TREATMENT	Sterile Water and Inactive Powder			
DURATION OF TREATMENT	3 weeks			
WEEKS AFTER ADMISSION	0	1	2	3
Sodium Mgm. %	328	319		316
Potassium Mgm. %	19.36			19.1
Chloride Mgm. %	325	320		318
Serum Uric Acid Mgm. %	1.97	1.97		2.2
B.S.R. Mm in 1st hour	45	62		33
Ketosteroids	7.5	7.2		5.7
Haemoglobin	90%			90%
R.B.C. Mill/c.mm	4.6			4.4
Blood Pressure	125/60			120/64

OUT-PATIENT RECORD.

The patient did not return again as an out-patient, but she was re-admitted to the wards on 11/1/54 in coma. We thought at first that she had had a cerebral vascular accident, but it transpired that she had taken an overdose of phenobarbitone tablets. She recovered satisfactorily, and the psychiatrist reported that she was suffering from a mild depression, probably partly due to the fact that she had lived alone for some time. There was no alteration in her rheumatoid state since her previous admission.

NAME: Miss Mary McRobert.

ADDRESS: 9 Cunningham Road, East Kilbride.

AGE: 39. OCCUPATION: School teacher.

Admitted: 19th November 1952.

Discharged: 9th March 1953.

History: About four years ago the patient developed stiffness in her right foot. Although it pained her to rise on the toes of that foot, she was able to walk flat-footed with no discomfort. The ankle was not swollen, but at times it was hot and tender. During the following year, the patient developed stiffness in her right hand and wrist, and the interphalangeal joints of that hand were red, hot, swollen and tender.

A year after the onset of the disease she developed pain and stiffness of the left foot, and at the same time had stiffness in the lumbar region. About eighteen months ago the shoulders became affected and she was unable to do her hair, and in the past year the elbows and knees have given her trouble. Her elbows are stiff and sore after resting on them, and her knees are stiff and painful when ascending or descending stairs. She sometimes has discomfort when eating, when she has stiffness of the temporo-mandibular joints.

Recently she has been losing weight and feels that her general health has been deteriorating. She has been breathless on exertion, but there has been no swelling of the ankles. Her hands sweat profusely.

Prior to admission she had a short course of Butazolidin without effect.

Previous History: Four years prior to admission she had a dermoid cyst of ovary removed at Hairmyres Hospital. Her joint symptoms occurred after this operation, but the exact time is unknown. There is no other history of mental or physical stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are excellent, and there are no financial worries.

Menstrual History: Menstruation was regular until four years ago. Since then it has been irregular, and recently it has been very frequent, occurring every fourteen days or so, and lasting for eleven.

Daily Analgesics: She has not been taking regular analgesics, and the pain as a rule does not keep her from sleeping.

General Examination: T. 97.5 P. 84 R. 18 B.P. 125/75

The patient is a pale, thin woman, who has an anxious expression. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is above average intelligence, and co-operative.

Locomotor System: The patient shows moderate tenderness of both wrists and of several of the metacarpal phalangeal joints and first interphalangeal joints of both hands.

The left knee is slightly tender.

There is no limitation in the range of movement in any of the joints.

Other Systems: Examination is negative.

X-Ray Reports:

PELVIS AND SPINE: No abnormality apart from a lumbar scoliosis with concavity to the left.

BOTH FEET: There is bilateral hallux valgus with arthritic changes at both M.P. joints.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT		2 weeks		4 weeks		
WEEKS AFTER ADMISSION		0	2	3	4	6
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	0 0	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0	0 0
	Tenderness	2 2	0 1	0 1	0 0	1 2
<u>METACARPAL</u>	I	2 0	2 0	1 0	0 0	1 0
<u>PHALANGEAL</u>	II	2 2	0 1	0 1	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	1 1	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	1 0
	V	0 0	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 0	1 0	1 0	0 0	2 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	0 0
	V	2 2	1 1	1 1	0 0	1 1
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0	0 0	0 0
	Tenderness	0 1	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	18	7	8	0	9
	Movement Range	0	0	0	0	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT		Adrenalin and Inactive powder		Aspirin and Adrenalin		
DURATION OF TREATMENT		2 weeks		4 weeks		
WEEKS AFTER ADMISSION		0	2	3	4	6
Ring Sizes		R. LPLIH	R. KOKHH	R. KNKHG	R. KNKHG	R. KOKHH
		L. KKLGE	L. KJLGE	L. KJKGE	L. JJKGE	L. JJKGF
Grip		R. 90	R. 105	R. 105	R. 115	R. 110
		L. 95	L. 70	L. 115	L. 100	L. 85

TREATMENT

The patient was allowed up for a limited period during the course of treatment.

She received two weeks treatment consisting of injections of hyperduralic adrenalin (3 minims t.i.d. raised by 1 minim t.i.d. until she was receiving 9 minims t.i.d.) and an inactive powder four times a day. For the next four weeks she was treated with aspirin gr. 15 four times a day and adrenalin in the same dosage as above.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin			
DURATION OF TREATMENT	2 weeks		4 weeks			
WEEKS AFTER ADMISSION	0	2	3	4	6	Final result 6 weeks
Tenderness	-	11	-1	7	-2	9
Ring Sizes)	-	5	3	4	1	6
Grip) Both hands	-	-10	45	40	20	10

The patient was treated with adrenalin alone for the first two weeks, and there was improvement in the tenderness. The tenderness diminished from 18 degrees to 7 degrees. There was slight improvement in the swelling of the fingers. The ring sizes diminished by 5 sizes. The grip, however, became slightly less powerful (minus 10 millimetres).

During the next four weeks the patient was treated with aspirin and adrenalin. As can be seen from the figures, there was some variation in the findings during this treatment. She appeared to improve for a few weeks and at one period, when she had been treated for a fortnight, there was no tenderness at all. However, she did relapse again, and at the end of four weeks treatment with aspirin and adrenalin, there was really very little change in her condition from the time of admission.

During her stay in hospital she lost 9 degrees of tenderness, the ring sizes improved by 6 sizes, and the grip improved by 10 millimetres.

Her discharge from hospital was delayed, as we wished to see the effect of cortisone therapy in this patient. Unfortunately, we

had only enough cortisone for a week's trial. She received 200 mgms. of cortisone for two days, and thereafter 100 mgms. daily for a further five days. There was some diminution in the tenderness of the joints during treatment. The tenderness diminished from 9 degrees to 3 degrees. The ring sizes remained unaltered, as did the grip, and within a few days of the cessation of the cortisone therapy, the condition had relapsed to its former state.

PERFORMANCE

During the whole course of treatment she was able to dress, wash hands and face, bathe, dress hair and use a knife and fork. Her only disability was slight pain on walking, and this persisted throughout the course of treatment.

SUBJECTIVE IMPROVEMENT

This patient was a nervous, intelligent, introspective individual, so much so that little reliance could be placed on her own observations of her condition

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	2	3	4	6
	-	Better	Better	Much better	Worse

SPECIAL INVESTIGATIONS
(BIOCHEMISTRY, etc.)

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	2	4	6
Serum Uric Acid Mgm.%	2.1	1.85	1.8	
B.S.R. Mm in 1st hour	45	45	34	33
Blood Pressure	125/75	120/70	120/75	120/65
Haemoglobin	66%	72%	80%	80%
R.B.C. Mill/c.mm	4.6	4.4	4.4	4.3

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient's condition has deteriorated slightly since her discharge from hospital. Her knees are now slightly stiff and painful, but there is no great disability. She was advised to continue with her work as a school teacher.

6 months

The patient's condition is the same as on the previous examination. During the past year there has been a steady and insidious increase in her disability. The condition has now spread to the knees, elbows, and shoulders.

9 months

I referred this patient to the Gynaecologists in November 1953 because of menorrhagia. Total hysterectomy and left ovarian cystectomy was performed. Although this has resulted in a considerable improvement in her anaemia, her general condition remains very much the same, and her joints were in no way improved by the operation.

Ring sizes

R. KCLHG
L. JJJFE (+3)

Tenderness

8 (+1)

Movement Range

8 (-8)

This patient was re-admitted on 5/7/54 for gold therapy.

CASE NO. 25.

NAME: James Cowan.

ADDRESS: 86 Doune Terrace, Coatbridge.

AGE: 53. OCCUPATION: Clerk.

Admitted: 7th January 1953.

Discharged: 16th February 1953.

History: The patient was in good health until nine years ago, when during army service his knee joints became stiff and painful. Soon after this the ankles and wrists became involved in the same way. The stiffness of the knees regressed, but other joints became involved during the next few years.

During the past nine years he has been in hospital on three occasions, and has been treated with physiotherapy, wax baths, radiant heat, etc. He derived only slight temporary benefit from these treatments.

The disease has been slowly progressive, but with long remissions at times. Until six weeks prior to admission to this hospital, he had had no acute pain for almost a year, but during the last six weeks there has been an acute flare up. He has had great difficulty in rising from a chair because of pain and stiffness in the ankles and knees. His general health has deteriorated recently.

Previous History: There is no history of serious previous illness. Three years before the onset of the disease, he was involved in an explosion of a land mine, and as a result spent five weeks in hospital suffering from shock and bruises.

Family History: There is no family history of rheumatism or allergy.

Social History: The housing conditions are good, and there are no financial worries.

Daily Analgesics: He has been taking four tablets daily of a proprietary preparation called "Dolcin." The pain of his joints wakens him from sleep always after two hours in bed.

General Examination: T. 98.6 P. 88 R. 20 B.P. 120/80.

The patient is a middle-aged man with a fresh complexion who lies quite comfortably in bed, but who has an anxious, drawn expression. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is of average intelligence and co-operative.

Locomotor System: The left shoulder is markedly tender, and shows marked limitation of movement.

The right elbow shows slight limitation of movement and slight tenderness. Both wrists show marked limitation of movement, and the left wrist is slightly tender. Several of the metacarpal phalangeal and first interphalangeal joints are tender.

Both ankles show moderate limitation of movement and are slightly tender.

Other Systems: Examination is negative.

X-Ray Reports: (1) Hands. These show the changes of long-standing rheumatoid arthritis with irreversible joint changes especially affecting the metacarpo-phalangeal joints and radio-carpal joints. There is partial bony ankylosis in the carpi.

(2) Ankles. These show rheumatoid changes with loss of joint space and degeneration of the articular surfaces. No ankylosis is seen.

TREATMENT		Rest alone		Aspirin and Adrenalin	
DURATION OF TREATMENT		1 week		3 weeks	
WEEKS AFTER ADMISSION		0	1	2	4
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 3	0 3	0 1	0 1
	Tenderness	0 3	0 2	0 1	0 0
<u>ELBOW</u>	Flexion	1 0	1 0	1 0	0 0
	Extension	1 0	1 0	0 0	0 1
	Tenderness	1 0	0 0	1 0	0 0
<u>WRIST</u>	Flexion	2 2	2 2	2 2	2 2
	Extension	3 3	3 3	3 2	2 1
	Tenderness	0 1	2 1	1 1	0 0
<u>METACARPAL</u>	I	1 0	1 0	0 0	0 0
<u>PHALANGEAL</u>	II	1 0	0 0	0 0	0 0
<u>JOINT</u>	III	2 0	2 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	1 0	0 0	0 0
	V	2 0	1 0	0 0	0 0
<u>FIRST</u>	I	1 1	1 1	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 1	0 1	0 1	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 0	2 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		2 2	2 2	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 2	2 2	1 1	0 0
	D. Flexion	1 1	1 1	1 1	0 0
	Tenderness	1 1	1 1	0 0	0 0
<u>TOTAL</u>	Tenderness	19	17	5	0
	Movement Range	25	25	15	9

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Rest alone		Aspirin and Adrenalin	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
Ring Sizes	R. WRWTI	R. WRWTI	R. VRURI	R. UQTRI
	L. VTROK	L. VTROK	L. USQOJ	L. URROJ
Grip	R. 130	R. 130	R. 145	R. 160
	L. 110	L. 130	L. 160	L. 155

TREATMENT

The patient was confined to bed during the first week of treatment and thereafter was allowed up for a limited period. Treatment consisted of rest in bed for the first week and then aspirin and adrenalin for the next three weeks. He received 3 minims of hyperdureic adrenalin t.i.d. to begin with and this was raised by 1 minim t.i.d. until he was receiving 9 minims t.i.d. at which dose he showed reaction, and the dose was maintained at 9 minims t.i.d. thereafter. The dose of aspirin given was 15 gr. four times a day.

The patient complained of considerable dyspepsia after the first week of treatment with aspirin and adrenalin. This was relieved somewhat by giving the aspirin in milk.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Rest alone		Aspirin and Adrenalin		
DURATION OF TREATMENT	1 week		3 weeks		
WEEKS AFTER ADMISSION	0	1	2	4	Final result 4 weeks
Tenderness	-	2	12	17	19
Movement Range	-	0	10	16	16
Ring Sizes)	-	0	9	12	12
Grip) Both hands	-	20	45	55	75

The patient received treatment with rest in bed alone for one week, and there was no substantial improvement. Thereafter aspirin and adrenalin was started, and there was considerable improvement. He lost 17 degrees of tenderness and gained 16 degrees in range of movement. The swelling of the fingers diminished by 12 ring sizes and the grip improved by 55 millimetres.

Thus at the end of four weeks he had lost in all 19 degrees of tenderness, gained 16 degrees in range of movement, gained 75 millimetres in grip and the ring sizes had diminished by 12 sizes. The improvement in his condition is clearly shown by cinematography.

PERFORMANCE CHART

TREATMENT	Rest alone		Aspirin and Adrenalin	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
<u>Dress</u>	With diffi-culty	With diffi-culty	Yes	Yes
<u>Wash hands and face</u>	With diffi-culty	With diffi-culty	Yes	Yes
<u>Bathe</u>	With diffi-culty	With diffi-culty	With diffi-culty	Yes
<u>Dress Hair</u>	With diffi-culty	With diffi-culty	Yes	Yes
<u>Use knife and fork</u>	With diffi-culty	With diffi-culty	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Yes

SUBJECTIVE TREATMENT

TREATMENT	Rest alone		Aspirin and Adrenalin	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
	-	Slightly better	Much better	Much better

SPECIAL INVESTIGATIONS.
(BIOCHEMISTRY. etc)

TREATMENT	Rest alone		Aspirin and Adrenalin	
DURATION OF TREATMENT	1 week		3 weeks	
WEEKS AFTER ADMISSION	0	1	2	4
Sodium Mgm.%	338.3			330.6
Chloride Mgm.%	585			573.3
Serum Uric Acid Mgm.%	2.74			2.75
B.S.R. Mm in 1st hour	26	30		36
Blood pressure	120/80			125/80
Haemoglobin	100%			95%
R.B.C. Mill/c.mm	4.8			4.8

OUT-PATIENT RECORD

Months after
discharge

Condition

1 month

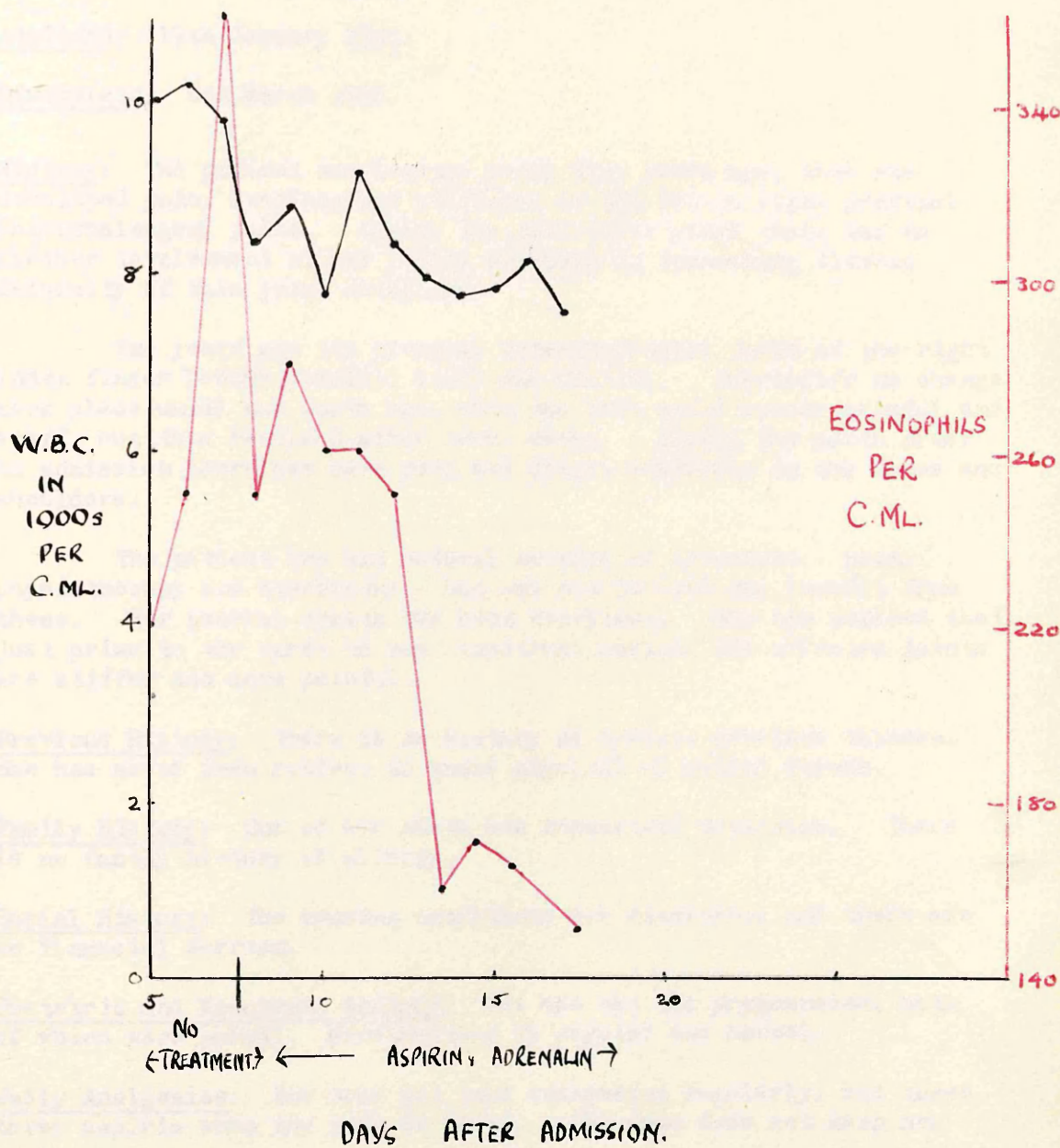
The patient remained well for a week after discharge from hospital, then his left shoulder began to give him pain.

On examination the ring sizes remain the same and the grip is unaltered. The left shoulder is again considerably limited in movement and tender. (Tenderness - 2, Movement Range - 2).

The patient is still having considerable dyspepsia, and although on examination, apart from the left shoulder, there is no objective difference, he complains that he again suffers from pain in many of the affected joints. He does not look as well as when discharged.

Mr. Cowan did not return again when requested.

Eosinophil and White Cell Counts.



CASE NO. 26.

NAME: Mrs. Williamina Allan.

ADDRESS: 53 Morris Crescent, Blantyre.

AGE: 35. OCCUPATION: Housewife.

Admitted: 19th January 1953.

Discharged: 6th March 1953.

History: The patient was healthy until five years ago, when she developed pain, swelling and stiffness of the fourth right proximal interphalangeal joint. During the next three years there was no further involvement of her joints although an increasing flexion deformity of this joint developed.

Two years ago the proximal interphalangeal joint of the right index finger became painful, stiff and swollen. Thereafter no change took place until one month ago, when the left ankle became painful and stiff, but this resolved after three weeks. During the month prior to admission there has been pain and slight stiffness in the knees and shoulders.

The patient has had several courses of treatment - heat, physiotherapy and homeopathy - but has not derived any benefit from these. Her general health has been excellent. She has noticed that, just prior to the onset of each menstrual period, the affected joints are stiffer and more painful.

Previous History: There is no history of serious previous illness. She has never been subject to undue physical or mental stress.

Family History: One of her aunts has rheumatoid arthritis. There is no family history of allergy.

Social History: The housing conditions are excellent, and there are no financial worries.

Obstetric and Menstrual History: She has had two pregnancies, both of which were normal. Menstruation is regular and normal.

Daily Analgesics: She does not take analgesics regularly, but takes three aspirin when the pain is acute. The pain does not keep her awake.

General Examination: T. 97.6 P. 78 R. 20 B.P. 130/92.

The patient is a well nourished woman with a fresh healthy complexion.

She does not appear ill, and lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is above average intelligence and co-operative.

Locomotor System: There is moderate tenderness of the left shoulder.

There is moderate tenderness of the left wrist, which is slightly swollen. There is marked tenderness of the metacarpal phalangeal joint of the third finger of the right hand, and marked tenderness of the first interphalangeal joints of the second and fourth fingers of the right hand.

Other Systems: Examination is negative.

X-Ray Reports: **HANDS:** There is peri-articular soft tissue swelling maximal in the proximal interphalangeal joints of the second and fourth fingers of the right hand where joint changes are observed. No bony or articular changes are otherwise observed.

KNEES, ANKLES, SHOULDERS: Negative.

TREATMENT		Sterile Water and Inactive Powder		Adrenalin and Inac. Pow.		Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		2 weeks		2 weeks	
WEEKS AFTER ADMISSION		0	2	3	4	5	6
		R.L.	R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 0	0 0	0 0	0 0	0 0	0 0
	Tenderness	0 2	0 2	0 1	0 0	0 0	0 0
<u>WRIST</u>	Flexion	0 0	0 0	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0	0 0	0 0
	Tenderness	0 3	0 0	0 0	0 1	0 1	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	3 0	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	3 0	3 0	3 0	3 0	3 0	3 0
<u>JOINT</u>	III	0 0	2 0	1 0	0 0	1 0	1 0
<u>TENDERNESS</u>	IV	3 0	3 0	3 0	2 0	2 0	2 0
	V	0 0	0 0	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		1 0	1 0	1 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	14	10	8	6	7	6
	Movement Range	1	1	1	0	0	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Inac. Pow.		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks		2 weeks	
WEEKS AFTER ADMISSION	0	2	3	4	5	6
Ring Sizes	R. CUPUF L. QPPLH	R. OXQWF L. NNNJF	R. CUPUF L. NNNJF	R. CUPUF L. NNNJF	R. PUQTF L. NNNJF	R. OUQTF L. NNNJF
Grip	R. 65 L. 115	R. 110 L. 90	R. 120 L. 100	R. 165 L. 120	R. 200 L. 150	R. 230 L. 150

TREATMENT

The patient was used as a control subject for the first two weeks of treatment. She was allowed up for a limited period, and was given injections of sterile water three times a day and an inactive powder four times a day.

Adrenalin was then substituted for the sterile water and for the next two weeks she received injections of hyperdural adrenalin 3 minims t.i.d, this dose being raised by 1 minim t.i.d. until she was receiving 9 minims t.i.d, at which dose she showed a reaction, and an inactive powder four times a day.

Aspirin was then substituted for the inactive powder, and for the next two weeks she received aspirin 15 gr. four times a day and adrenalin 9 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	St. Wat. and Inac. Pow.		Adren. and Inac. Pow.	Asp. and Adren.	
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks	
WEEKS AFTER ADMISSION	0	2	4	6	Final result 6 weeks
Tenderness	-	4	4	0	8
Movement Range	-	0	1	0	1
Ring Sizes)	-	5	6	0	11
Grip) Both) hands	-	20	85	95	200

The patient was used as a control subject for the first fortnight and treated with sterile water and an inactive powder. There was a slight improvement. She lost 4 degrees of tenderness. The movement range remained the same. The swelling of the fingers diminished slightly - the ring sizes diminished by 5 sizes, and the grip improved by 20 millimetres.

Adrenalin was then substituted for the sterile water, and there was a further slight improvement. She lost a further 4 degrees of tenderness. The movement range became normal - she was now able to approximate the affected finger to her palm (a gain of 1 degree in movement range). The ring sizes diminished by a further 6 sizes and the grip improved by a further 85 millimetres.

Aspirin and adrenalin were given for the next fortnight, and the only substantial change was in the grip, which improved by a further 95 millimetres.

Thus at the end of six weeks she had lost in all 8 degrees of tenderness and had gained 1 degree in movement range, thus making the movement range normal. The ring sizes had diminished by 11 sizes, and the grip had improved by 200 millimetres total for both hands.

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Inactive Powder	Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks
WEEKS AFTER ADMISSION	0	2	4	6
<u>Dress</u>	Yes	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Yes	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	St. Wat. and Inac. Pow.		Adren. and Inac. Pow.	Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks
WEEKS AFTER ADMISSION	0	2	4	6
	-	Slightly better	Slightly better	Slightly better

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder		Adrenalin and Inac. Pow.		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks		2 weeks	
WEEKS AFTER ADMISSION	0	2	3	4	5	6
Sodium Mgm. %	344					
Potassium Mgm. %	20.1					
Serum Uric Acid Mgm. %	2.6	2.4				2.8
Blood pressure	130/90		130/85			125/85
Haemoglobin	90%		90%			95%
R.B.C. Mill/c.mm	4.3		4.5			4.5
B.S.R. Mm in 1st hour	36		32			34

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient's general health remains excellent. The disease has in no way affected it at any time. The fingers remain as swollen as on the day of admission. Once more she is unable to approximate the fourth finger of the right hand to the palm.

CASE NO. 27.

NAME: Mrs. Catherine Gallacher.

ADDRESS: 32 Shawburn Street, Burnbank.

AGE: 47. OCCUPATION: Housewife.

Admitted: 22nd January 1953.

Discharged: 31st March 1953.

History: The patient was in good health until three years before admission when she developed slight pain and increasing stiffness of her finger joints. The disease varied in severity during the next three years. One year ago the affected finger joints became swollen, and since that time she has suffered rather more pain than formerly.

Nine months prior to admission she developed nodules at the back of her elbows, and these have steadily increased in size. No other joints in her body have been involved in the disease process. She states that, when the pain and stiffness are severe, she feels ill, and that there has been some deterioration in her general health recently. She believes that she has lost a little weight.

Previous History: Apart from appendicitis in 1949 there has been no serious previous illness. She has been subject to considerable mental and physical stress for eight years. Her husband has been in a mental institution during that time, and in addition to looking after her family of four, she has had to go out working.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate. There are no financial anxieties now, although prior to the onset of the disease she had a considerable burden in that respect. Her family is now grown-up.

Obstetric and Menstrual History: She has had four pregnancies, all of which were normal. The menopause occurred a year before admission, and for a few months prior to that, menstruation was irregular.

Daily Analgesics: The patient takes two aspirins only occasionally. Pain does not keep her awake.

General Examination: T. 97.4 P. 80 R. 20 B.P. 120/70.

The patient is a thin, apathetic, middle-aged woman, who is pale and looks ill. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. Her intelligence is below average, but she is co-operative.

Locomotor System: Only the hands are affected in the rheumatoid process. Several of the first interphalangeal joints of both hands are tender, and she is unable to make a fist with either hand. There is typical interosseous wasting in both hands.

Other Systems: Examination is negative.

X-Ray Report: Hands and Wrists: There is evidence of erosions involving the articulations of the proximal interphalangeal joints of both middle fingers, the metacarpo-phalangeal joints of both index fingers and thumbs, and the proximal interphalangeal joints of both little fingers. These changes are associated with slight soft tissue swelling at the level of the proximal phalangeal joints of the affected fingers as well as with moderate decalcification of the hands. In the wrists commencing involvement of the joints between the metacarpals of middle and index fingers and carpals is evident.

TREATMENT		Sterile Water and In. Powder	Adrenalin and In. Powder	Aspirin and Sterile W.	Aspirin and Adrenalin
DURATION OF TREATMENT		2 weeks	2 weeks	2 weeks	2 weeks
WEEKS AFTER ADMISSION		0 2	4	6	8
		R.L.	R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0
	Tenderness	0 0	0 1	1 0	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 1	0 1	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	1 1	1 1	0 0
<u>TENDERNESS</u>	IV	1 0	1 0	0 0	0 0
	V	1 1	1 1	1 1	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		4 4	4 4	4 3	4 4 0 0
<u>TOTAL</u> Tenderness		4	7	6	0 0
Movement Range		8	8	7	8 0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT		Sterile Water and In. Powder	Adrenalin and In. Powder	Aspirin and Ster. Wat.	Aspirin and Adrenalin
DURATION OF 'TREATMENT'		2 weeks	2 weeks	2 weeks	2 weeks
WEEKS AFTER ADMISSION		0 2	4	6	8
Ring Sizes	R. NOQRJ L. PPSLL	R. NOQRJ L. PPSMK	R. NPQRJ L. PNTNK	R. MPPQJ L. PNSMK	R. MNPPH L. NNRLJ
Grip	R. 60 L. 80	R. 60 L. 75	R. 60 L. 75	R. 75 L. 85	R. 90 L. 100

TREATMENT

The patient was used as a control subject for a period. During the first fortnight she received injections of sterile water three times a day and an inactive powder in a comparable amount to the aspirin to be given. She was allowed up for a limited period during treatment.

For the next fortnight she received hyperdural adrenalin and an inactive powder. The dose of adrenalin given was 3 minims t.i.d. rising to 8 minims t.i.d.

For the next fortnight she was given injections of sterile water and aspirin gr. 15 four times a day.

For the final fortnight she received hyperdural adrenalin 8 minims t.i.d. and aspirin gr. 15 four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and In. Powder		Adrenalin and In. Powder	Aspirin and Ster. Wat.	Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks	2 weeks	
WEEKS AFTER ADMISSION	0	2	4	6	8	Final Result 8 weeks
Tenderness	-	-3	1	6	0	4
Movement Range	-	0	1	-1	8	8
Ring Sizes) Both	-	0	-1	5	10	14
Grip) hands	-	-5	0	25	30	50

The patient was made the subject of several control tests. She was allowed up for a limited period during the whole course of her stay in hospital.

While she was given sterile water and inactive powder, there was no difference in her condition, indeed, it deteriorated slightly. The tenderness increased by 3 degrees, and the grip diminished by 5 millimetres.

Adrenalin was then given with inactive powder for two weeks, and

and there was no appreciable change. The tenderness diminished by 1 degree, and the movement range increased by 1 degree. The ring sizes increased by 1 size, and the grip remained the same.

During the fortnight's treatment with aspirin and sterile water there was some improvement. The tenderness diminished by 6 degrees. The movement range, however, was less, having diminished by 1 degree. The ring sizes diminished by 5 sizes, and the grip improved by 25 millimetres.

There was considerable improvement when she was treated for the last fortnight with aspirin and adrenalin. The position of the previous fortnight, when she had no tenderness at all, was consolidated. The movement range increased by 8 degrees, the ring sizes diminished by 10 sizes, and the grip improved by 30 millimetres.

Thus, at the end of her eight weeks course of treatment, there had been a total loss in tenderness of 4 degrees. The movement range had increased by 8 degrees. The ring sizes had diminished by 14 sizes and the grip had improved by 50 millimetres.

PERFORMANCE CHART

TREATMENT	Sterile Water and In. Powder		Adrenalin and In. Powder	Aspirin and Ster. Wat.	Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks	2 weeks
WEEKS AFTER ADMISSION	0	2	4	6	8
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	Yes	Yes	Yes	Yes	Yes

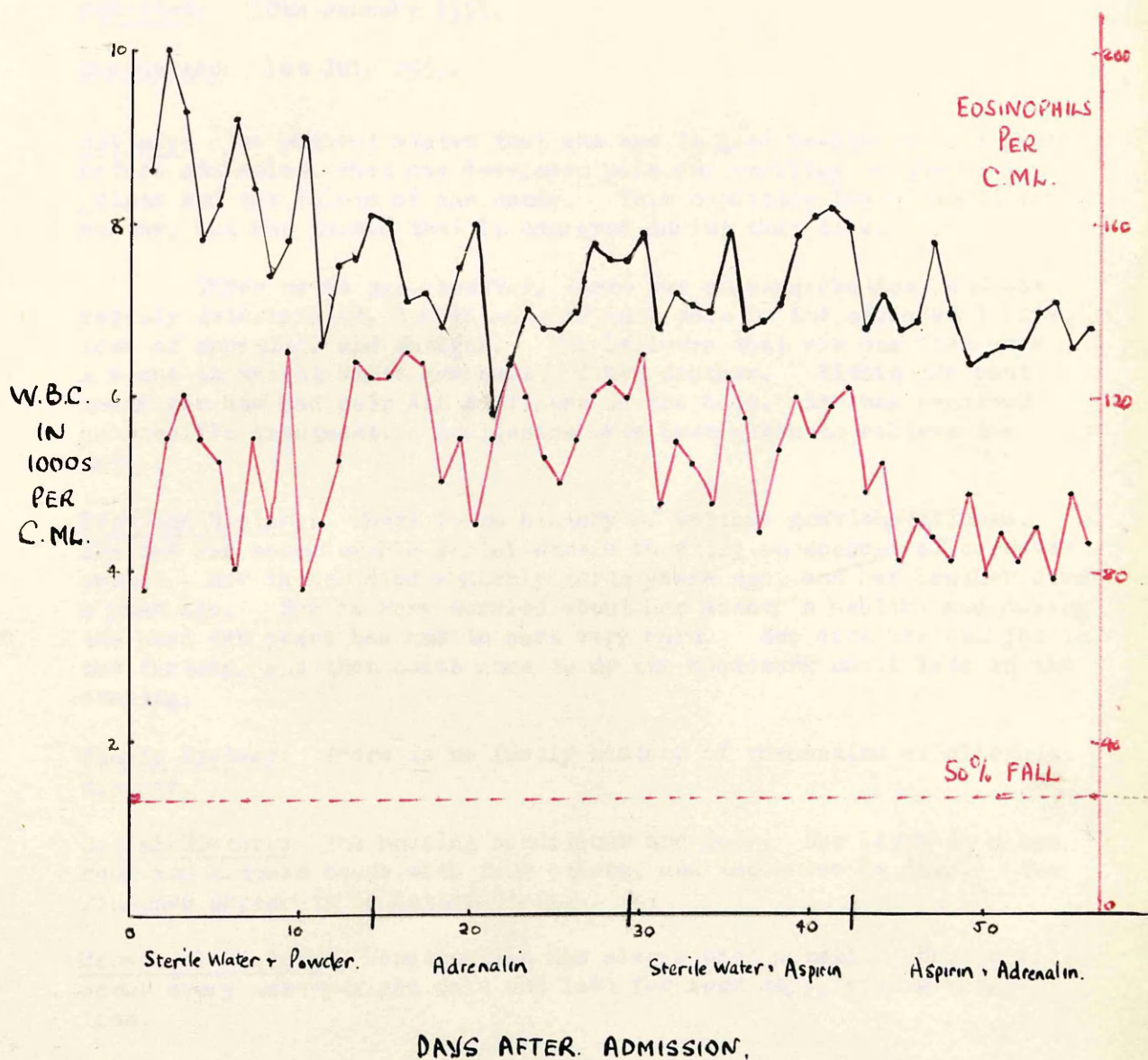
SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and In. Powder		Adrenalin and In. Powder	Aspirin and Ster. Wat.	Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks	2 weeks
WEEKS AFTER ADMISSION	0	2	4	6	8
	-	Slightly better	Better	Better	Much better

SPECIAL INVESTIGATIONS.
(BIOCHEMISTRY, etc).

TREATMENT	Sterile Water and In. Powder		Adrenalin and In. Powder	Aspirin and St. Wat.	Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks		2 weeks	2 weeks	2 weeks
WEEKS AFTER ADMISSION	0	2	4	6	8
Serum Uric Acid. Mgm %	2.25	2.1	2.21	1.9	1.75
B.S.R. Mm in 1st hour	86	96	114	92	65
Blood pressure	120/70	125/75	125/65	115/65	120/70
Haemoglobin	70%	72%	68%	70%	75%
R.B.C. Mill/c.mm.	3.4	3.8	3.6	3.5	3.8

Eosinophil and White Cell Counts.



CASE NO. 28.

NAME: Miss Annie McBride.

ADDRESS: 13 Crossgates, Bellshill.

AGE: 27. OCCUPATION: Machinist.

Admitted: 30th January 1953.

Discharged: 1st July 1953.

History: The patient states that she was in good health until a year before admission, when she developed pain and swelling in the knee joints and the joints of the hands. This condition lasted about ten months, but she thinks that it improved during that time.

Three weeks ago, however, there was an exacerbation, and she rapidly deteriorated, complaining of much pain in the affected joints, loss of appetite, and fatigue. She believes that she has lost over a stone in weight since the onset of her disease. Within the past month she has had pain and stiffness of the back. She has received no specific treatment. Analgesics have been given to relieve the pain.

Previous History: There is no history of serious previous illness. She has had considerable mental stress recently on account of bereavements. Her father died suddenly three years ago, and her brother died a year ago. She is very worried about her mother's health, and during the past few years has had to work very hard. She does her own job in the factory, and then comes home to do the housework until late in the evening.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are poor. She lives in a two room and kitchen house with four others, and the house is damp. The finances appear to be satisfactory.

Menstrual History: Menstruation has always been normal. Her periods occur every twenty-eight days and last for four days, with a normal loss.

Daily Analgesics: She takes codeine tablets, but not regularly. The pain often keeps her from sleeping.

General Examination: T. 97.5 P. 76 R. 20 B.P. 120/70.

The patient is a small, thin, poorly developed girl, being almost a

dwarf in build and stature. She is pale and ill-looking, but there is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative.

Locomotor System: There is moderate tenderness and limitation of movement of both shoulders.

Both elbows show moderate limitation of movement and are markedly tender. Both wrists show marked limitation of movement and marked tenderness. There is tenderness of several of the metacarpal phalangeal and first interphalangeal joints of both hands.

There is marked limitation of movement of both hips.

There is slight limitation of movement of both knees with marked tenderness. There is moderate limitation of movement of both ankles with marked tenderness.

Other Systems: The only other abnormality which was discovered was that the spleen was enlarged two finger breadths below the costal margin.

X-Ray Reports: WRISTS, ELBOWS, ANKLES, KNEES. The appearances are those of an advanced atrophic arthritis of considerable duration. There is marked osteoporosis in the neighbourhood of the joints. There is a considerable degree of cartilage destruction. In the wrists there is secondary deformity of the carpal bones. In the elbow joints the cartilage destruction is more marked on the right side. Knee and ankle joints show no further changes than those described above.

HIP JOINTS: Both hip joints show gross osteo-arthritis, in all probability superimposed on previous atrophic. Destruction of articular cartilage is considerable.

PELVIS AND FEMORA: Show considerable osteoporosis.

TREATMENT		Sterile Water and Inactive Powder		Aspirin and St. Wat.	Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		2 weeks	7 weeks	
WEEKS AFTER ADMISSION		0	2	4	6	11
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 2	0 0	0 0	0 0	0 0
	Tenderness	2 2	0 0	0 0	0 1	0 0
<u>ELBOW</u>	Flexion	1 1	1 1	1 1	1 1	1 1
	Extension	2 2	2 2	2 2	2 2	2 2
	Tenderness	3 3	2 2	2 0	2 1	1 1
<u>WRIST</u>	Flexion	3 2	3 2	2 2	1 1	1 1
	Extension	3 3	3 3	3 3	2 2	1 1
	Tenderness	3 3	3 3	2 3	2 0	1 2
<u>METACARPAL</u>	I	2 2	2 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	3 2	2 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 2	0 0	0 0	0 0	0 0
	V	0 1	3 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 2	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	2 0	0 0	0 0	0 0
<u>JOINT</u>	III	2 2	2 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	2 2	2 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0	0 0
<u>HIP</u>	Abduction	3 3	3 3	3 3	3 3	3 3
	Flexion	1 1	1 1	1 1	1 1	1 1
<u>KNEE</u>	Extension	0 0	1 1	1 1	1 1	1 1
	Flexion	2 2	2 2	2 2	2 2	2 2
	Tenderness	3 3	3 3	3 2	2 0	1 1
<u>ANKLE</u>	P. Flexion	2 1	2 1	2 1	1 1	1 1
	D. Flexion	2 2	2 2	2 2	1 1	1 1
	Tenderness	3 2	3 3	2 0	0 0	0 0
<u>TOTAL</u>	Tenderness	51	35	14	8	7
	Movement Range	40	38	37	30	28

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and St. Wat.	Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks	7 weeks	
WEEKS AFTER ADMISSION	0	2	4	6	11
Ring Sizes	R. MJKHE	R. LJLHD	R. KIKGC	R. JHIFB	R. JGHFA
	L. LJKHB	L. LIJGA	L. KHJFA	L. JGHEA	L. IHGEA
Grip	R. 65	R. 85	R. 115	R. 100	R. 105
	L. 75	L. 80	L. 100	L. 110	L. 135

TREATMENT

The patient was confined to bed during the first fortnight of treatment. Treatment for the first two weeks consisted of injections of sterile water three times a day and an inactive powder four times a day.

At the end of a fortnight aspirin 15 gr. four times a day was substituted for the inactive powder.

At the end of another fortnight adrenalin was substituted for the sterile water. She was given injections of hyperdural adrenalin 3 minims t.i.d., the dose being raised by 1 minim t.i.d. until she was receiving 8 minims t.i.d., at which dose she showed a reaction, and thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	St. Wat. and Inac. Pow.		Aspirin and St. Wat.	Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		2 weeks	7 weeks		
WEEKS AFTER ADMISSION	0	2	4	6	11	Final result 11 weeks
Tenderness	-	16	21	6	7	44
Movement Range	-	2	1	7	9	12
Ring Sizes)	Both hands	5	8	11	15	28
Grip)		25	50	-5	25	100

For the first fortnight the patient was confined to bed and given sterile water and an inactive powder, and there was some improvement in her condition. She lost 16 degrees of tenderness. There was scarcely any change in the movement range - she gained 2 degrees in movement range. The swelling of the fingers improved slightly - the ring sizes diminished by 5 sizes. The grip improved by 25 millimetres.

For the following fortnight she was given aspirin and injections of sterile water. The tenderness again improved considerably - she lost a further 21 degrees of tenderness. There was little change in the movement range - she gained a further 1 degree in movement range. There was a slight improvement in the ring sizes - the ring sizes diminished by a further 8 sizes. The grip improved by a further 50 millimetres.

She was then treated with aspirin and adrenalin. At the end of two weeks of this treatment she had lost a further 6 degrees of tenderness and gained a further 7 degrees in movement range. The ring sizes had diminished by a further 11 sizes, but the grip had deteriorated by 5 millimetres. This treatment was continued for a further five weeks and there was little alteration in her condition. There was a further loss of 1 degree of tenderness and gain of 2 degrees in movement range. The ring sizes diminished by a further 4 sizes and the grip improved by 25 millimetres.

Thus at the end of eleven weeks the patient had lost in all 44 degrees of tenderness and had gained 12 degrees in movement range. The ring sizes had diminished by 28 sizes and the grip improved by 100 millimetres.

It can be seen from these figures that there was not a great deal of improvement in the movement range, and the patient remains very disabled. As there was some doubt about the diagnosis in this case, the atypical features being that her spleen was enlarged and the hips were grossly involved in the process, it was considered possible that she might be an atypical case of ankylosing spondylitis, although the X-ray of spine was negative, and she was transferred to the Victoria Infirmary, where she was given a therapeutic trial with deep X-ray therapy. She gained no benefit from this, however, although her condition did not deteriorate. She was finally discharged on 1st July 1955. The result was not quite satisfactory, although in fact she was more mobile and had improved from the time of admission.

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder		Aspirin and St. Wat.	Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks	7 weeks	
WEEKS AFTER ADMISSION	0	2	4	6	11
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Bathe</u>	No	No	No	With diffi- culty	With diffi- culty
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Not without pain	Not without pain

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and St. Wat.	Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks	7 weeks	
WEEKS AFTER ADMISSION	0	2	4	6	11
	-	Slightly better	Better	Better	Better

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder		Aspirin and St. Wat.	Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		2 weeks	7 weeks	
WEEKS AFTER ADMISSION	0	2	4	6	11
Serum Uric Acid Mgms %	2.6	2.5	2.2		2.2
B.S.R. Mm in 1st hour	25	18	20	22	5
Blood pressure	120/80	115/75	120/75	115/80	120/70
Haemoglobin	55%	60%	70%	80%	95%
R.B.C. Mill/c.mm	3.2	3.4	4.0	4.1	4.6

OUT-PATIENT RECORD.

The patient did not return as an out-patient until 24/2/54, when she was requested to attend. Apparently she had remained fairly well until November 1953, when she developed an acute appendix and had an appendicectomy performed at Law Hospital. Since that time she had apparently remained in bed, the pain and stiffness in her elbows, shoulders and back having become severe.

When I saw her as an out-patient she arrived on a stretcher and was completely bedridden, with a very poor range of movement in all her joints.

The shoulders were markedly tender and showed marked limitation of movement. The elbows showed moderate limitation of movement. Both wrists showed moderate limitation of movement and moderate tenderness.

There was not so much swelling of the fingers as on the previous admission, but some of the metacarpal phalangeal and first interphalangeal joints of both hands were slightly tender.

Both hips showed marked limitation of movement.

Both knees showed limitation of movement and moderate tenderness, as did the ankles.

She was re-admitted for further treatment.

Re-admitted : 24th February, 1954

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Discharged : 19th May, 1954.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		3 weeks	
WEEKS AFTER ADMISSION		0	2	4	5
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction Tenderness	3 2 2 2	3 2 2 0	3 2 0 2	3 2 0 2
<u>ELBOW</u>	Flexion Extension Tenderness	1 1 2 2 0 1	1 1 2 2 2 0	1 1 2 2 1 1	1 1 2 2 1 2
<u>WRIST</u>	Flexion Extension Tenderness	2 1 2 2 2 1	2 1 2 2 2 2	2 1 2 2 2 1	2 1 2 2 0 0
<u>METACARPAL</u>	I	0 2	2 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	2 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 1	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>HIP</u>	Abduction Flexion	3 3 2 2	3 3 2 2	3 3 1 1	3 3 1 1
<u>KNEE</u>	Extension Flexion Tenderness	2 1 2 2 1 2	2 1 2 2 2 2	1 1 2 2 2 2	1 1 2 1 2 2
<u>ANKLE</u>	P. Flexion D. Flexion Tenderness	2 2 1 1 2 2	2 2 1 1 0 0	2 2 1 1 0 0	2 2 0 1 0 0
<u>TOTAL</u>	Tenderness Movement Range	20 41	16 41	11 38	9 36

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
Ring Sizes	R. IKJFB L. JIJEB	R. IJJFA L. IGJEA	R. LHHEA L. IFGCA	R. HHHEA L. HFGCA
Grip	R. 60 L. 55	R. 65 L. 65	R. 70 L. 65	R. 80 L. 65

TREATMENT

The patient was confined to bed during treatment. For the first two weeks she received an inactive powder four times a day and injections of hyperdurec adrenalin 3 minims t.i.d, the dose being raised by 1 minim t.i.d. until she was receiving 8 minims t.i.d. at which dose she showed a reaction. Thereafter the dose was maintained at this level.

For the next three weeks she received aspirin 15 gr. four times a day and hyperdurec adrenalin 8 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2	4	5	Final result 5 weeks
Tenderness	-	4	5	7	11
Movement Range	-	0	3	5	5
Ring Sizes)	-	6	11	13	19
Grip) Both hands	-	15	5	15	30

The patient was treated first of all with adrenalin and inactive powder. There was no substantial difference in the condition after a fortnight on this treatment. She lost 4 degrees of tenderness and there was no alteration in the movement range. The swelling of the fingers diminished slightly - the ring sizes diminished by 6 sizes, and the grip improved by only 15 millimetres.

Aspirin was then substituted for the inactive powder, and there was some improvement. After two weeks on treatment with aspirin and adrenalin she lost a further 5 degrees of tenderness, and gained 5 degrees in movement range. The ring sizes diminished by a further 11 sizes and the grip improved by a further 5 millimetres. At the end of three weeks on this treatment she had lost a further 2 degrees of tenderness and had gained a further 2 degrees in movement range. The ring sizes had diminished by a further 2 sizes and the grip had improved by a further 10 millimetres.

Thus at the end of five weeks treatment she had lost in all 11 degrees of tenderness and had gained 5 degrees in movement range. The ring sizes had diminished by 19 sizes and the grip had improved by 30 millimetres.

The patient was kept in hospital for a further four weeks, during which time there was no substantial progress from that already indicated, but when discharged on 19/5/54 she was able to walk a little.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
<u>Dress</u>	No	No	No	No
<u>Wash hands and face</u>	No	No	Yes	Yes
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	No	No	No	No
<u>Walking</u>	No	Not without pain (With diffi- culty)	Not without pain	Not without pain
<u>Use knife and fork</u>	No	No	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
	-	Slightly better	Slightly better	Slightly better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks		3 weeks
WEEKS AFTER ADMISSION	0	2	5
Serum Uric Acid Mgms. %	2.7	1.9	1.7
B.S.R. Mm in 1st hour	65	70	72
Blood pressure	120/80	115/75	115/75

APPENDIX

VOLUME III

CASE RECORDS 29 - 56, incl.

MASTER TABLES IA - IXA.

CASE NO. 29.

NAME: Thomas Scoular.

ADDRESS: 20 Alness Street, Hamilton.

AGE: 50. OCCUPATION: Saddler.

Admitted: 9th February 1953.

Discharged: 14th March 1953.

History: The patient was in good health until seven months before admission, when he developed pain and stiffness in his right shoulder. This followed a game of badminton, and the following evening the left shoulder was similarly affected. A few days later, he developed pain, stiffness, and swelling of his hands and wrists.

About a fortnight after the onset of the disease, his knees and his feet became involved. The pain and stiffness in these joints has been present intermittently since that time, but have never completely disappeared. The pain is worse at night, and the stiffness of the joints is most noticeable in the morning, and eases off during the day.

His general health has remained good, and he has not lost weight.

Previous History: He had three operations for an appendix abscess at the Victoria Infirmary in 1942.

Apart from this he has never been subject to undue mental or physical stress.

Family History: He states that his mother had "rheumatism" at the age of forty, but recovered completely and is now aged eighty-five.

Social History: The housing conditions are good, and there are no financial worries.

Daily Analgesics: For the past few weeks he has been taking one tablet of codeine three times a day without relief. The pain often keeps him awake.

General Examination: T. 97.8 P. 76 R. 20 B.P. 115/75.

The patient is a well-built, healthy-looking man, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is intelligent and co-operative.

Locomotor System: The right shoulder is slightly tender, and shows slight limitation of movement.

The right elbow is slightly tender. The fingers show swelling of the interphalangeal joints with slight interosseous wasting, and the deformity appears to be typically of rheumatoid type.

The left ankle is moderately tender.

Other Systems: Examination is negative.

X-Ray report: Shoulders: Examination is negative.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		2 weeks
WEEKS AFTER ADMISSION		0	3	5
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 0	1 0	0 0
	Tenderness	1 0	1 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		3 3	3 3	0 0
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0
	D. Flexion	0 0	0 0	0 0
	Tenderness	0 2	0 1	0 0
<u>TOTAL</u>	Tenderness	4	2	0
	Movement Range	7	7	0

IMPROVEMENT IN GRIP AND RING SIZES

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		2 weeks
WEEKS AFTER ADMISSION	0	3	5
Ring Sizes	R. Z+Z+Z+ZW	R. Z++Z+Z+Z+V	R. ZZZWS
	L. Z+ZZXQ	L. Z+Z+Z+WR	L. ZYYUP
Grip	R. 170	R. 185	R. 230
	L. 230	L. 225	L. 275

TREATMENT

The patient was allowed up during the course of treatment. For the first three weeks of treatment he received aspirin gr. 15 four times a day and injections of sterile water subcutaneously three times a day.

He was then given hyperdureic adrenalin in place of the sterile water, the aspirin being continued. The dose of adrenalin at which the patient showed reaction was 9 minims t.i.d and the dose was maintained at that level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		2 weeks	
WEEKS AFTER ADMISSION	0	3	5	Final result 5 weeks
Tenderness	-	2	2	4
Movement Range	-	0	7	7
Ring Sizes)	-	-3	20	17
Grip) Both hands	-	10	95	105

The patient received treatment with aspirin alone for the first three weeks, and there was no response to this treatment. The tenderness diminished by 2 degrees, but the movement range remained the same. The ring sizes increased by three sizes and the grip improved by 10 millimetres.

Aspirin and adrenalin was then commenced, and there was considerable improvement within a short time. After a fortnight the tenderness diminished by a further 2 degrees, and the joints were no longer tender. The movement range increased by 7 degrees, the ring sizes fell by 20 sizes and the grip improved by 95 millimetres.

Thus, at the end of five weeks' treatment, the tenderness had diminished by 4 degrees, the movement range had increased by 7 degrees, the ring sizes had fallen by 17 sizes, and the grip had improved by 105 millimetres.

PERFORMANCE CHART.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		2 weeks
WEEKS AFTER ADMISSION	0	3	5
<u>Dress</u>	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		2 weeks
WEEKS AFTER ADMISSION	0	3	5
	-	No change	No disability

SPECIAL INVESTIGATIONS
(BIOCHEMISTRY, etc)

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		2 weeks	
WEEKS AFTER ADMISSION	0	3	4	5
Sodium Mgm. %	354			
Chloride Mgm. %	590			
Serum Uric Acid Mgm. %	3.35			
B.S.R. Mm in 1st hour	21	12		12
Blood pressure	115/75	120/75		115/75
Haemoglobin	105%	100%		105%
R.B.C. Mill/c.mm	4.8	4.9		5.2

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

There has been no recurrence of symptoms. Physical examination is the same as on his discharge from hospital.

4 months

The patient complains of slight pain in the left shoulder. Examination shows Grade I tenderness, without limitation of movement. There are no other disabilities.

12 months

During the past year the patient has had occasional twinges of pain in the joints of his hands and in his left shoulder, but there has been no progressive disability, and physical examination shows the same findings as when he was discharged from hospital.

CASE NO. 30.

NAME: Mrs. Mary McNulty.

ADDRESS: 4 Babylon Road, Bellshill.

AGE: 38. OCCUPATION: Housewife.

Admitted: 17th February 1953.

Discharged: 22nd March 1953.

History: The patient was in good health until eleven months ago when she first noticed pain in her right instep when walking. A month later the proximal interphalangeal joint of the ring finger of the left hand became stiff, swollen and painful.

Since that time the disease has been slowly progressive with only a few incomplete remissions. Most of her fingers, her wrists, right elbow, knees, and ankles have become similarly affected. Two months ago her shoulders were painful for a few days, but have not troubled her since.

Apart from the fact that she finds it difficult to kneel, the patient has not been greatly incapacitated, and can still do her ordinary housework. She has noticed that her hands perspire freely, and that they are always moist. She was given a course of "Butazolidine" in October 1952, but did not receive benefit from this. Her general health is good.

Previous History: There have been no serious previous illnesses, and there is no history of undue physical or mental stress, apart from when her husband left her.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate. Her husband left her fourteen years ago, taking the eldest daughter with him. This caused her distress at the time but she has recovered. There are no financial anxieties.

Obstetric and Menstrual History: She has had three pregnancies, all of which have been normal. Menstruation is regular, occurring every twenty-eight days and lasting for four days with a normal loss.

Daily Analgesics: She does not take any analgesic regularly for the relief of pain. A few months ago the pain used to keep her awake, but does not do so now.

General Examination: T. 97.4 P. 76. R. 20 B.P. 140/90.

The patient is a healthy looking woman of average build, who is of good colour and lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and co-operative.

Locomotor System: There is considerable limitation of movement of both wrists with moderate tenderness. Several of the metacarpal phalangeal and first interphalangeal joints of both hands show tenderness.

Both knees are moderately tender and the second metatarsal phalangeal joints of both feet are tender.

Other Systems: Examination is negative.

X-Ray Report: There is marked osteoporosis of the bones of the hands and wrists, more marked on the left side, and there is apparently some diminution of the joint space at the right 2nd metacarpal phalangeal joint and the left 3rd metacarpal phalangeal joint.

The appearances are those of the second stage radiological changes of rheumatoid arthritis.

TREATMENT		Aspirin and Adrenalin		No treat- ment
DURATION OF TREATMENT		3 weeks		1 week
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0
<u>WRIST</u>	Flexion	2 2	0 0	0 0
	Extension	3 3	0 0	0 0
	Tenderness	1 2	0 1	0 1
<u>METACARPAL</u>	I	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	0 2	0 1	0 1
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FIRST</u>	I	0 1	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 2	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		1 0	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0
	Tenderness	2 2	0 0	0 0
<u>METATARSAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 1	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	18	2	2
	Movement Range	11	0	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT.

TREATMENT	Aspirin and Adrenalin		No treat- ment
DURATION OF TREATMENT	3 weeks		1 week
WEEKS AFTER ADMISSION	0	3	4
Ring Sizes	R. RXUMH L. QUNSK	R. QTQKG L. PSMPI	R. QTQKG L. PSMPI
Grip	R. 140 L. 110	R. 170 L. 120	R. 170 L. 120

TREATMENT

The patient was allowed up for a limited period during treatment which consisted of hyperduralic adrenalin 3 minims t.i.d. the dose being raised 1 minim t.i.d. until she was receiving 9 minims t.i.d. She began to show reaction at this time and was maintained at this dose. During the three weeks of treatment with adrenalin, she was also given 15 gr. of aspirin four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		
WEEKS AFTER ADMISSION	0	3	Final result 4 weeks
Tenderness	-	16	16
Movement Range	-	11	11
Ring Sizes)	-	21	21
Grip) Both hands	-	40	40

The patient received treatment with aspirin and adrenalin for three weeks, and there was a marked response to this treatment. She lost 16 degrees of tenderness, and gained 11 degrees in range of movement. The swelling of the fingers diminished considerably - the ring sizes decreased by 21 sizes. There was an improvement of 40 millimetres in the grip.

Treatment was discontinued for a week. There was no relapse and the patient was allowed home.

PERFORMANCE CHART.

TREATMENT	Aspirin and Adrenalin		No treat- ment
DURATION OF TREATMENT	3 weeks		1 week
WEEKS AFTER ADMISSION	0	3	4
<u>Dress</u>	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		No treat- ment
DURATION OF TREATMENT	3 weeks		1 week
WEEKS AFTER ADMISSION	0	3	4
	-	No disability	No disability

SPECIAL INVESTIGATIONS
(BIOCHEMISTRY etc)

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks			
WEEKS AFTER ADMISSION	0	1	2	3
Sodium Mgm.%	331.9			
Potassium Mgm.%	20.3			
Chloride Mgm.%	590.9			
Blood Uric Acid Mgms.%	2.7			
B.S.R. Mm in 1st hour	25	25	16	15
Blood pressure	140/90	135/85	130/80	130/80
Haemoglobin	92%			95%
R.B.C.	4.8			4.8

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The improvement which this patient experienced in hospital has been maintained. On examination there is slight tenderness in the 3rd metacarpal phalangeal joint of the left hand. The range of movement in all joints is unrestricted.

Ring Sizes - R. QURKG (-1)
L. OSMQI

Grip - R. 170 (+10)
L. 130

3 months

There has been a slight relapse. On examination there were 5 degrees of tenderness and 2 degrees restriction in range of movement. The ring sizes have increased by 5 sizes and the grip has diminished by 20 mil limetres.

12 months

The patient states that, during the past year, that is, after her discharge from hospital, she has been very much better than in the year prior to admission to hospital.

Examination shows the following figures:

Tenderness - 2

Movement Range - 4

Ring Sizes - R. OSXJG
L. NSMJ

Grip - R. 170
L. 155

CASE NO. 31.

NAME: Mrs. Janet Chatham.

ADDRESS: 40 Maxwell Crescent, Blantyre.

AGE: 55. OCCUPATION: Housewife.

Admitted: 26th March 1953.

Discharged: 22nd May 1953.

History: The patient was in good health until two and a half years ago, when she developed an aching pain in the left shoulder. At the same time her left ankle became painful, but was not swollen or stiff. Both of these joints have been troublesome since that time. She states that the pain in the left shoulder joint has persisted, and that her left ankle is weak and liable to give way when she is walking.

Six weeks ago all her joints became stiff and painful, worse in the morning and eased by exercise. The joints were not noticeably swollen. The left hand and wrist are worst, and she is unable to lift or grip anything with the fingers of that hand because of the pain, which she describes as a constant ache.

Her general health has been fairly good since the onset of the disease. Her weight is constant, and her appetite is good.

Previous History: The patient had diphtheria at the age of twenty-five, but there is no other history of serious illness. There is no history of mental stress. She has had to work very hard all her life, working on farms (potato lifting, threshing, milking, etc.) in addition to looking after her own home.

Family History: Her mother had rheumatic fever. There is no other family history of rheumatism, and there is no history of allergic disease.

Social History: The housing conditions are poor. She lives in a room and kitchen with three other adults, and the house is damp. There appears to be some financial anxiety, but she is not forthcoming about this. Her husband is a labourer and unemployed.

Obstetric and Menstrual History: She has had ten pregnancies, and there are eight surviving children - one died of "chest catarrh", the other of tuberculosis. All pregnancies were normal. The menopause occurred at the age of fifty, and there has been no bleeding since then.

Daily Analgesics: She has not been taking any analgesics regularly. The pain often keeps her awake.

General Examination: T. 97.7 P. 72 R. 20 B.P. 135/90.

The patient is a small, thin, middle-aged woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. Her intelligence is below average, and it is difficult to get a satisfactory history from her.

Locomotor System: The left wrist shows moderate limitation of movement and moderate tenderness. There is tenderness in several of the metacarpal phalangeal joints and first interphalangeal joints. Apart from slight swelling of the proximal interphalangeal joint of the left fifth finger, there is no other swelling present in the hands, but movement of the fingers is limited.

There is moderate tenderness in the left knee and left ankle.

Other Systems: Examination is negative.

X-Ray Report. HANDS: Soft tissue swelling is present over the proximal inter-phalangeal joints due to thickening of the peri-articular soft tissues, the joint surfaces are intact and joint spaces diminished. There is no associated decalcification but appearances are probably due to fairly early atrophic arthritis. The terminal inter-phalangeal joints are also involved.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		3 weeks
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	0 2	0 2	0 0
	Extension	0 2	0 1	0 0
	Tenderness	0 2	0 1	0 0
<u>METACARPAL</u>	I	2 3	2 2	0 0
<u>PHALANGEAL</u>	II	1 1	1 0	0 0
<u>JOINT</u>	III	3 2	2 2	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 1	0 0	0 0
<u>FIRST</u>	I	0 3	0 3	0 1
<u>INTERPHALANGEAL</u>	II	1 1	0 0	0 0
<u>JOINT</u>	III	3 3	2 3	0 1
<u>TENDERNESS</u>	IV	1 2	0 1	0 0
	V	0 1	0 1	0 0
<u>FINGER TO PALM CLOSURE</u>		2 5	2 5	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0
	Tenderness	0 2	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0
	D. Flexion	0 0	0 0	0 0
	Tenderness	0 2	0 0	0 0
<u>TOTAL</u>	Tenderness	34	20	2
	Movement Range	11	10	0

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day for the first three weeks.

For the next three weeks she was given hyperdural adrenalin 3 minims t.i.d., the dose being raised 1 minim t.i.d. until she was receiving 8 minims t.i.d. at which time she showed reaction. The aspirin was continued during this time in the same dosage.

TOTAL IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	14	18	32
Movement Range	-	1	10	11

The patient received treatment with aspirin and injections of sterile water for the first three weeks, and there was some response to this treatment. The tenderness diminished by 14 degrees, but the movement range only improved by 1 degree.

Injections of adrenalin were then started, and these were given in addition to the aspirin. At the end of three weeks there was further considerable improvement in the tenderness - she lost a further 18 degrees of tenderness, and the improvement in movement range was much more marked - she gained a further 10 degrees in range of movement.

Thus at the end of the six week period, she had lost in all 32 degrees of tenderness and gained 11 degrees in movement range.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes
<u>Dress</u> <u>Hair</u>	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
	-	Slightly better	No disability

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
Sodium Mgm.%			
Serum Uric Acid Mgm.%	1.85	1.8	1.9
B.S.R. Mm in 1st hour	30	35	24
Blood pressure	135/90	130/90	125/85
Haemoglobin	90%	90%	95%
R.B.C. Mill/c.mm	4.6	4.5	4.6

NAME: Mrs. Janet Chatham.

Re-admitted: 24th July 1955.

History: A few days after discharge from hospital, the patient suffered a severe emotional shock, in that one of her sons was mangled and killed in an industrial accident. Within a few days of this occurring, she began to complain of pain in her hands and arms, and stiffness of the fingers, wrists and elbows. A few days after this the fingers of both hands became swollen for the first time, and her knees also became stiff.

She was re-admitted to Hairmyres Hospital.

Locomotor System: There is limitation of movement in both shoulders with marked tenderness.

There is limitation of movement in both elbows, with marked tenderness in the left elbow. There is limitation of movement in the right wrist with marked tenderness. There is considerable tenderness in several of the metacarpal phalangeal joints and first interphalangeal joints of both hands, with typical rheumatoid swelling of the small joints.

She is unable to close the fingers of either hand.

TREATMENT		Aspirin and Sterile Water			Aspirin and Adrenalin
DURATION OF TREATMENT		2 weeks			4 days
WEEKS AFTER ADMISSION		0	1	2	2 $\frac{1}{2}$
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 1	2 1	2 2	2 2
	Tenderness	3 3	3 3	3 3	3 3
<u>ELBOW</u>	Flexion	1 1	0 1	0 1	0 1
	Extension	2 2	1 2	1 2	1 2
	Tenderness	0 3	2 2	0 2	0 2
<u>WRIST</u>	Flexion	2 0	1 0	1 0	1 0
	Extension	3 0	2 0	2 0	2 0
	Tenderness	3 0	3 0	3 0	3 0
<u>METACARPAL</u>	I	3 0	3 0	1 3	1 3
<u>PHALANGEAL</u>	II	1 3	0 3	3 3	3 3
<u>JOINT</u>	III	3 0	3 2	3 2	3 2
<u>TENDERNESS</u>	IV	3 0	3 0	2 3	2 3
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 2	3 0	3 0
<u>INTERPHALANGEAL</u>	II	3 3	3 3	3 3	3 3
<u>JOINT</u>	III	3 3	3 3	3 3	3 3
<u>TENDERNESS.</u>	IV	3 0	3 0	3 3	3 3
	V	3 0	3 0	3 0	3 0
<u>FINGER TO PALM</u>					
<u>CLOSURE</u>		5 5	5 5	5 5	5 5
<u>TOTAL</u>	Tenderness	43	47	55	55
	Movement Range	24	20	21	21

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks			4 days
WEEKS AFTER ADMISSION	0	1	2	2½
Ring Sizes	R. MORPH L. MNOJF	R. MORIG L. MNNJE	R. LNOIG L. LMNJE	R. LNOIF L. LLMID
Grip	R. 35 L. 35	R. 45 L. 45	R. 40 L. 50	R. 40 L. 45

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day for the first two weeks. Then injections of adrenalin were also given in place of the sterile water, 3 minims t.i.d. rising to 9 minims t.i.d. at which dose she showed a brisk reaction.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks			4 days	
WEEKS AFTER ADMISSION	0	1	2	2½	Final result 2½ weeks
Tenderness	-	-4	-12	0	-12
Movement Range	-	4	3	0	3
Ring Sizes	-	9	13	6	19
Grip	-	20	20	-5	15

The patient was treated with aspirin and sterile water for the first fortnight, and there was a mixed response to treatment. The tenderness increased by 4 degrees and the range of movement improved by 4 degrees. The swelling of the fingers diminished by 13 ring sizes, and the grip improved by 20 millimetres.

Injections of adrenalin were then started and these were given in addition to the aspirin. There was no improvement in the tenderness or movement range within four days. The ring sizes diminished by a further 6 sizes. The grip remained more or less the same.

The patient refused to stay in hospital any longer. She was alarmed at the reactions she was having to the adrenalin, although in fact they consisted only of pallor occurring ten minutes after the injection and some tachycardia.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks			4 days
WEEKS AFTER ADMISSION	0	1	2	2½
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Not without pain

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks			4 days
WEEKS AFTER ADMISSION	0	1	2	2½
	-	No improve- ment	No improve- ment	No improve- ment

SPECIAL INVESTIGATIONS
(BIOCHEMISTRY, etc).

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin
DURATION OF TREATMENT	2 weeks			4 days
WEEKS AFTER ADMISSION	0	1	2	2½
Sodium Mgm.%	325			319
Serum Uric Acid Mgm.%	1.5			2.5
B.S.R. Mm in 1st hour	46	25	32	12
Blood pressure	130/80			125/75
Haemoglobin	90%			90%
R.B.C. Mill/c.mm	4.6			4.7

OUT-PATIENT RECORD.

The patient was requested to return as an out-patient, and despite the fact that she had been an irregular dismissal, she did in fact appear on 26th February, that is, six months after her discharge from hospital.

Apparently she had gradually improved since her dismissal, and only the hands and the left ankle were then affected by the rheumatoid process.

On examination: Tenderness - 4

Movement Range - 8

Ring Sizes - R. LMMKD (+10)
 L. LKKIC

Grip - R. 75 (+50)
 L. 60

The patient had gained weight and was looking very much better.

CASE NO. 32.

NAME: Mrs. Elizabeth Duffy.

ADDRESS: 4 Kirkton Place, East Kilbride.

AGE: 24.

OCCUPATION: Housewife.

Admitted: 27th April 1953.

Discharged: 12th June 1953.

History: The patient was in good health until two years ago, when she developed pain in the feet, which was worse on walking, and which was associated with swelling of the ankles. These symptoms increased in severity, and she was admitted to Stonehouse Hospital, where she was given a course of Butazolidin. She was discharged from this hospital in April 1952, her condition having improved considerably during her sojourn there.

She remained fairly well for some months after this, but since January of this year, the joint pains have again increased in severity. The joints of the hands, knees and elbows are mainly affected. Apart from excessive sweating she has no other symptoms. Her appetite is good and her weight is constant.

Previous History: There is no history of serious illness prior to the onset of arthritis. She had an appendicectomy in Stonehouse one year ago. There is no history of undue physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate. There are no financial anxieties.

Obstetric and Menstrual History: She has been married five years but has never been pregnant. Menstruation is normal, occurring every twenty-eight days with normal loss.

Daily Analgesics: She takes an occasional aspirin to relieve the pain.

General Examination: T. 97 P. 88 R. 20 B.P. 120/80.

The patient is a thin woman with a pale complexion, who has a rather anxious expression. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and is co-operative.

Locomotor System: There is slight tenderness and limitation of movement of the left shoulder.

There is considerable limitation of movement in the left elbow and it is slightly tender. The right wrist is fixed. The left wrist shows considerable limitation of movement and slight tenderness.

The left knee shows some limitation of movement, and the left ankle shows limitation of movement and slight tenderness.

There is no swelling or deformity of the fingers.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: The appearances are typical of atrophic arthritis of rheumatoid type.

ANKLES: The left ankle joint shows considerable change in the thickness of the articular cartilage and there appears to be a fusion of the calcaneo-cuboid joint. Considerable osteoporosis is present and the changes on the right side are similar though not so advanced.

KNEES: Both knee joints show the characteristic osteoporosis with changes more advanced on the left side.

RIGHT ELBOW: The joint surfaces appear intact with perhaps slight diminution in the joint space. No bone lesion defined.

LEFT ELBOW: There is diminution of the joint space with involvement of the articular surfaces and decalcification of the neighbouring bones, appearances consistent with an atrophic arthritis.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		6 weeks		
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 1	0 1	0 0
	Tenderness	0 1	0 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	0 3	0 3	0 2
	Tenderness	0 1	0 1	0 0
<u>WRIST</u>	Flexion	4 2	3 1	3 0
	Extension	4 2	4 2	4 0
	Tenderness	0 1	0 1	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 2	0 1	0 1
	Tenderness	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 2	0 2	0 2
	D. Flexion	0 3	0 3	0 3
	Tenderness	0 1	0 0	0 0
<u>TOTAL</u>	Tenderness	4	2	0
	Movement Range	23	20	15

TREATMENT

The patient was confined to bed for the first three weeks of treatment, and thereafter allowed up for a limited period. Treatment consisted of hyperduralic adrenalin 3 minims t.i.d. the dose being increased 1 minim t.i.d. until the patient was receiving 8 minims t.i.d. at which dose she showed a reaction, and the dose was maintained at this level. The dose of aspirin given was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	6 weeks			
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	2	4	4
Movement Range	-	3	8	8

The patient received treatment with aspirin and adrenalin for six weeks and there was some response to this treatment. The tenderness, which was only slight to begin with, disappeared - she lost 4 degrees of tenderness. The movement range improved - she gained in all 8 degrees in movement range. A notable feature was the improvement in the range of movement in the affected left elbow.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	With diffi- culty	Yes	Yes
<u>Walking</u>	Not Without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
	-	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	6 weeks			
WEEKS AFTER ADMISSION	0	1	2	3
Sodium Mgm. %	325	329	332	328
Potassium Mgm. %	19	18.6	20.6	20
Serum Uric Acid Mgm. %	1.9	1.9	2.1	2.2
B.S.R. Mm in 1st hour	16	16	10	8
Blood pressure	120/80	115/75	120/70	115/65
Haemoglobin	78%	80%	80%	85%
R.B.C. Mill/c.mm	4	4.1	4.2	4.3

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

A fortnight after her discharge from hospital, the pain began again in her left elbow.

9 months

There has been considerable deterioration in the patient's condition. At the end of December 1953 she began to have pain in the right elbow and in the fingers of both hands, and the left ankle began to be swollen and painful.

On examination:-

Tenderness - 5

Movement Range - 25

CASE NO. 33

NAME: Mr. William Allison.

ADDRESS: 28 Shawburn Street, Hamilton.

AGE: 58. OCCUPATION: Night Watchman.

Admitted: 6th May 1953.

Discharged: 24th July 1953.

History: The patient began to have trouble with his joints in 1926. At first the disease was slow in its progress, and the upper limbs were mainly affected. During the past three years the knees and ankles have become increasingly stiff, swollen, and painful, causing great difficulty in walking latterly.

The pain in his joints is now continuous, but varies in severity. He sweats excessively, and complains that his hands are always moist. His general health has deteriorated during the past three years. Since the onset of the disease he has had various forms of treatment including salicylates, some form of shock therapy, and more recently Butazolidin. He does not consider that any of these forms of treatment have benefited him.

Previous History: There is no previous history of serious illness, and there is no history of undue physical stress. Just before the onset of the condition he suffered a shock; there was a fire at his place of employment, and during the excitement he fell into a deep pit containing water. He evidently was concussed and shocked at that time. He had a quinsy throat three years ago which required incision, and it is since that time that his joint condition has deteriorated markedly.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate. He has not worked during the past three years, but does not admit to any great financial difficulty.

Daily Analgesics: The patient was unable to give an account of the analgesics he had been taking, but evidently his doctor had been giving him tablets in some form for the relief of pain.

General Examination: T. 97.4 P. 78 R. 20 B.P. 140/90.

The patient is a thin, fresh-complexioned man, who is garrulous and of low intelligence. There is no cyanosis, jaundice, oedema, clubbing of fingers or enlarged lymph glands.

Locomotor System: The right shoulder shows slight limitation of movement and slight tenderness. There is marked limitation of movement of the left shoulder.

Both elbows show moderate limitation of movement. The left elbow is markedly tender and the right slightly tender. The right wrist is fixed and slightly tender. The left wrist shows slight limitation of movement and slight tenderness. There is marked deformity of the hands with ulnar deviation. There is tenderness in varying degrees of the metacarpal phalangeal and first interphalangeal joints of both hands.

Both knees show limitation of movement and are markedly tender. The ankles are tender and show slight limitation of movement.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: Old standing poly-arthritis of atrophic type. Marked osteoporosis. Narrowing of the joint spaces in the proximal interphalangeal and metacarpo-phalangeal joints due to destruction of articular cartilage; in the right carpus some of the carpal bones have fused. There is erosion of the juxta-articular and sub-chondral bone.

ELBOW JOINTS: Similar appearance. Gross deformity of the articular surfaces with secondary osteo-arthritis. The changes are most marked in the left elbow.

SHOULDER JOINTS: Apart from slight osteoporosis no bone change is present. The joint space is intact.

KNEE JOINTS: Marked narrowing of the joint spaces, especially in the medial compartment; some degree of osteoporosis.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks		6 weeks	
WEEKS AFTER ADMISSION		0	3	6	9
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 3	0 1	0 1	0 0
	Tenderness	1 0	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	1 1	1 1	0 0	0 0
	Extension	2 2	2 2	2 2	1 2
	Tenderness	1 3	1 1	1 1	1 0
<u>WRIST</u>	Flexion	4 1	3 1	2 1	2 0
	Extension	4 1	4 1	4 1	3 1
	Tenderness	1 1	1 2	1 2	0 0
<u>METACARPAL</u>	I	1 1	1 1	1 0	0 0
<u>PHALANGEAL</u>	II	3 1	1 0	1 1	0 0
<u>JOINT</u>	III	3 1	1 1	2 1	0 0
<u>TENDERNESS</u>	IV	2 1	1 0	1 1	0 0
	V	1 3	1 0	2 1	0 0
<u>FIRST</u>	I	1 1	0 0	1 1	0 0
<u>INTERPHALANGEAL</u>	II	1 2	0 2	1 2	0 0
<u>JOINT</u>	III	2 1	0 0	1 1	0 0
<u>TENDERNESS</u>	IV	2 1	1 1	1 1	0 0
	V	3 1	1 1	1 1	0 0
<u>KNEE</u>	Extension	1 2	1 2	1 1	0 1
	Flexion	1 2	2 1	1 1	1 0
	Tenderness	2 3	2 0	1 1	0 0
<u>ANKLE</u>	P. Flexion	1 2	2 2	1 1	1 1
	D. Flexion	1 0	0 0	0 0	0 0
	Tenderness	1 2	0 1	0 0	0 0
<u>TOTAL</u>	Tenderness	47	21	29	1
	Movement Range	30	26	19	13

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
Ring Sizes	R. VQTSL L. TRPOI	R. WQTSL L. TRQOI	R. VRTSL L. TQROI	R. VPTTK L. SQQNI
Grip	R. 100 L. 80	R. 100 L. 95	R. 75 L. 95	R. 110 L. 100

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of aspirin gr. 15 four times a day for the first three weeks together with injections of sterile water three times a day. Then for the following six weeks he was given aspirin gr. 15 four times a day and injections of hyperdurec adrenalin 3 minims t.i.d. rising by 1 minim t.i.d. until he was receiving 9 minims t.i.d. at which dose he showed a reaction. The dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		6 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	Final result 9 weeks
Tenderness	-	26	-8	20	46
Movement Range	-	4	7	13	17
Ring Sizes) Both	-	-2	0	5	3
Grip) hands	-	15	-25	15	30

The patient received treatment with aspirin and sterile water for the first three weeks. There was considerable diminution of tenderness - he lost in all 26 degrees of tenderness. There was slight improvement in the movement range - he gained 4 degrees in range of movement. The swelling of the fingers increased slightly - there was a rise of 2 ring sizes, although the fingers were not swollen to any considerable degree before treatment commenced. There was a slight improvement in the grip - he gained 15 millimetres in grip.

Injections of adrenalin were then commenced, and these were given in addition to the aspirin. At the end of six weeks of this treatment the tenderness had diminished still further - he lost a further 20 degrees of tenderness. There was a marked improvement in the range of movement - he gained a further 13 degrees in range of movement. There was little alteration in the swelling of the fingers. The ring sizes diminished by 5 sizes. The grip continued to improve slightly - he gained a further 15 millimetres in grip.

Thus, at the end of nine weeks treatment, he had lost in all 46 degrees of tenderness and gained 17 degrees in range of movement. The ring sizes had diminished by 3 sizes and he had gained 30 millimetres in grip.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
<u>Dress</u>	No	No	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	No	No	With diffi- culty	With diffi- culty
<u>Walking</u>	Hobbles a few steps with pain	Hobbles a few steps with pain	Not without pain	50 yds. without pain

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
	-	Slightly better	Slightly better	Better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks			6 weeks	
WEEKS AFTER ADMISSION	0	2	3	4	6
Sodium Mgm. %	300	340	326	339.1	331.3
Potassium Mgm. %	18.2				18.21
Blood Uric Acid Mgm. %	2.8		2.4		2.5
B.S.R Mm in 1st hour	84	80	65	60	62
Blood pressure	140/90	135/85	130/80	125/75	130/75
Haemoglobin	105%		108%	105%	104%
R.B.C Mill/c.mm	5.1		5.2	5.1	5.1
17 Ketosteroids Mgm. per day	6.54		3.5		13.9

DAYS AFTER ADMISSION	4	11	18	22	24	27	32	34	36	40	42
TREATMENT	Before treatmt	Asp. + S.W.		Aspirin + Adrenalin							
Vol. of Urine	1330	2200	2340	2100	1190	2250	1910	2340	1880	2350	2520
Corticoid Mgm. %	.7	.48	.46	.27	.35	.38	.4	.27	.43	.33	.33
Corticoid Mgm./day	9.3	10.6	10.7	5.7	4.2	8.5	7.6	6.3	8.0	7.8	8.3

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient is walking much better than he did prior to admission to hospital. Physical examination shows little change from the picture on discharge.

6 months

On examination:

Tenderness - 1

Movement Range - 22

Ring Sizes - R. VPSRJ (+8)
L. SPMH

Grip - R. 85 (+10).
L. 135

CASE NO. 34.

NAME: Mrs. Jean McGuire.

ADDRESS: 89 Lomond Road, Coatbridge.

AGE: 37.

OCCUPATION: Housewife.

Admitted: 13th May 1953.

Discharged: 27th June 1953.

History: The patient was in good health until she began to have pains in her joints six years ago. Then she began to have pain, swelling and stiffness of various joints, the hands, wrists, elbows, and knees being particularly affected. The disability was slowly progressive, and she alleges that the pain has been constant for several years, although varying in severity. Despite the progressive nature of the symptoms, she has remained ambulant.

For a few months prior to her admission, her mother has been ill, and this has worried her greatly. As a result her symptoms have been worse, and in addition she has been extremely nervous. Five months ago her doctor commenced treatment with Butazolidin, giving her three tablets a day to begin with, then two tablets, and finally a maintenance dose of one tablet daily. She states that this treatment relieved the pain, but did not influence the stiffness of her joints.

A fortnight before admission, she felt her right arm twitching, and it appeared to become twisted. Shortly after this, her mouth began to twitch, and then she lost consciousness. She has no memory of events after this, but her doctor states that the attack was an epileptiform convulsion. Three hours after the attack, she vomited, and this preceded another epileptiform convulsion.

During the next two weeks there were no further convulsions, but she felt ill and weak, and has been living in constant fear lest another attack should occur. Her rheumatic pains have been much worse during this time. Her doctor discontinued the Butazolidin after the convulsive seizures, and he reports that the patient has had several bouts of pyrexia during the past fourteen days, which have responded to penicillin, but for which he has been unable to find an explanation.

Previous History: There have been no serious previous illnesses. There is no history of undue physical or mental stress before her illness.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The house in which she lives is adequate so far as accommodation is concerned, but she states that it is cold and damp. There are no financial worries.

Obstetric and Menstrual History: She has had three pregnancies, one of which was twin. She had no trouble with the pregnancies. Menstruation is regular, every twenty-eight days with a normal loss.

Daily Analgesics: Until a fortnight ago she was taking Butazolidin, and since then aspirin, two tablets as required.

General Examination: T. 99. P. 88 R. 20 B.P. 130/80.

The patient is a well-built woman who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of nervous temperament and loquacious.

Locomotor System: There is marked limitation of movement of both elbows and the right elbow is markedly tender. The left elbow is slightly tender.

Both wrists are fixed and the left wrist is moderately tender. There is marked rheumatoid deformity of the hands, and several of the metacarpal phalangeal and first interphalangeal joints of both hands are tender.

The right knee is slightly tender. Both ankles show marked limitation of movement and are tender.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: The appearances are those of advanced rheumatoid arthritis. Gross osteoporosis. Destruction of articular cartilage. Erosion of sub-chondral bone, e.g. the bases of the middle phalanges.

ELBOW JOINTS: Extensive erosion of the articular surfaces.

KNEE JOINTS: Narrowing of joint spaces, most marked in the right knee.

TEMPERO-MANDIBULAR JOINTS: Slight restriction of movement, no evidence of bone changes.

TREATMENT		Sterile Water and Inactive Powder		
DURATION OF TREATMENT		6 weeks		
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	2 2	2 2	2 2
	Tenderness	3 1	1 1	1 1
<u>WRIST</u>	Flexion	3 3	3 3	3 3
	Extension	3 3	3 3	3 3
	Tenderness	0 2	1 2	1 2
<u>METACARPAL</u>	I	0 2	3 3	0 0
<u>PHALANGEAL</u>	II	1 1	3 1	0 0
<u>JOINT</u>	III	1 3	3 2	2 0
<u>TENDERNESS</u>	IV	0 3	1 2	0 0
	V	0 1	3 1	0 0
<u>FIRST</u>	I	0 1	1 0	0 0
<u>INTERPHALANGEAL</u>	II	0 3	2 1	0 0
<u>JOINT</u>	III	2 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 1	1 1	0 0
	V	2 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		4 4	4 4	4 4
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	3 3	3 3	2 3
	D. Flexion	1 1	1 1	1 1
	Tenderness	2 1	2 0	0 0
<u>TOTAL</u>	Tenderness	32	35	7
	Movement Range	32	32	31

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
Ring Sizes	R. ORPOH L. PRQOH	R. QPRNH L. PRPNH	R. POQNH L. OQPMG
Grip	R. 45 L. 50	R. 60 L. 65	R. 90 L. 70

TREATMENT

The patient was allowed up for a limited period during treatment. She was used as a control subject, and was given injections of sterile water three times a day and an inactive powder four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder			
DURATION OF TREATMENT	6 weeks			
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	-3	25	25
Movement Range	-	0	1	1
Ring Sizes)	-	1	8	8
Grip) Both hands	-	30	65	65

The patient was treated as a control subject during her stay in hospital. During that time the tenderness of the affected joints markedly diminished. She lost in all 25 degrees of tenderness. There was very little change in the range of movement - she gained in all 1 degree in range of movement. There was some improvement in

the grip - she gained 65 millimetres in grip. The swelling of the fingers diminished - there was a fall in the ring sizes of 9 sizes.

This patient was delighted with her "treatment." She said that she was feeling very much better than before her admission, and that her joints were much less painful. It is noteworthy that, although the tenderness diminished, there was little change in the range of movement of the affected joints.

PERFORMANCE CHART.

TREATMENT	Sterile Water and Inactive Powder		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	No	No	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	With diffi- culty
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder.		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
	-	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder	
DURATION OF TREATMENT	6 weeks	
WEEKS AFTER ADMISSION	0	3
Sodium Mgm. %	318	320
Serum Uric Acid Mgm. %	2.3	2.4
B.S.R. Mm in 1st hour	15	14
Blood pressure	130/90	130/90
Haemoglobin	95%	95%
R.B.C. Mill/c.mm	4.5	4.6

Corticoids on Admission.

Volume of Urine - 1125

Corticoid Mgm. % - .8

Corticoid Mgm./day - 9.0

OUT-PATIENT RECORD.Months after
dischargeCondition

1 month

There is no alteration in the physical findings. The patient states that she is feeling very well and that the treatment has benefited her greatly.

3 months

Physical examination reveals no change from her discharge from hospital. She is gaining weight and states that there has been no deterioration in her condition.

6 months

The patient's condition is unchanged. She remarks that she is able to do things which she was formerly unable to do, for example, scrubbing and standing on a chair. Physical examination shows no change in her condition.

CASE NO. 35

NAME: Miss Beatrice Steel.

ADDRESS: 133 Woodstock Avenue, Glasgow.

AGE: 67. OCCUPATION: At Home.

Admitted: 14th May 1953.

Discharged: 7th February 1955.

History: The patient was in good health until 1940, when she began to have pain, swelling and stiffness of the joints of the hands. This disability was progressive, and gradually other joints were affected. Within a few years her shoulders, elbows, wrists, knees, and ankles were affected, and the knees were particularly stiff and painful.

At first she attended the Rheumatic Clinic, Bath Street, Glasgow, where she received exercises, but this did not benefit her. In May 1944 she was treated in Larbert Hospital for six months with exercises, wax baths and gold injections, but this only gave her relief for a short time. The following year she was treated in Hairmyres Hospital, where she had another course of gold injections, which improved her condition for a time.

Apart from this short spell the progress of the disease has been relentless, and she has been unable to walk outside for over two years. For a time she was able to hobble around indoors with some assistance, but latterly this also has been impossible. Just prior to admission she completed a course of Butazolidin tablets, which relieved her pain slightly. She has gained much weight during the past two years.

Previous History: She had enteric fever in childhood, but apart from this there is no history of serious previous illness. There is no history of undue physical stress, but she states that just before the onset of the arthritis there were several deaths in the family in quick succession.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are good, and there are no undue financial worries.

Menstrual History: The menopause occurred at the age of fifty-three, and prior to that menstruation was regular.

Daily Analgesics: She takes on an average five aspirins daily. Pain often keeps her from sleeping.

General Examination: T. 99 P. 88 R. 22 B.P. 180/95.

The patient is an obese elderly woman, who lies fairly comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. She is intelligent, and although co-operative, she is slightly querulous.

Locomotor System: Both shoulders show moderate limitation of movement; the right shoulder is markedly tender and the left shoulder is slightly tender.

Both elbows show moderate limitation of movement and are markedly tender. The right wrist is almost fixed and is markedly tender. The left wrist shows moderate limitation of movement and is markedly tender. Both wrists are swollen.

The hands show typical rheumatoid deformity and the fingers are markedly swollen. There is tenderness in varying degrees of all the metacarpal phalangeal joints and first interphalangeal joints of both hands.

Both knees are swollen, and there is marked limitation of movement and marked tenderness. The ankles show marked limitation of movement and marked tenderness.

Other Systems: Examination is negative.

X-Ray Reports: HANDS: Generalised osteoporosis. The proximal interphalangeal, metacarpo-phalangeal and small joints of both carpi show marked diminution in joint space with, in some cases, erosion of adjacent bone surfaces.

The distal interphalangeal joints show less marked changes and the fingers of the right hand ulnar deviation.

BOTH ELBOW AND KNEE JOINTS: Show marked diminution in the joint spaces with some sclerosis of the adjacent bone surfaces.

The appearances are those of a long-standing atrophic arthritis.

TREATMENT		Aspirin and Adrenalin		Aspirin and Sterile Water	
DURATION OF TREATMENT		4 weeks		4 weeks	
WEEKS AFTER ADMISSION		0	3 & 4	6	8
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction Tenderness	2 2 3 1	2 2 1 0	2 2 1 1	2 2 1 1
<u>ELBOW</u>	Flexion Extension Tenderness	1 1 2 2 3 3	1 1 2 2 2 2	1 1 2 2 2 3	1 2 2 2 2 3
<u>WRIST</u>	Flexion Extension Tenderness	3 2 4 2 3 3	3 2 4 2 1 0	3 2 4 2 1 1	3 2 4 2 2 1
<u>METACARPAL</u>	I	3 3	2 2	2 1	2 0
<u>PHALANGEAL</u>	II	3 2	3 1	2 2	2 1
<u>JOINT</u>	III	3 3	3 1	2 1	2 2
<u>TENDERNESS</u>	IV	3 3	2 0	2 1	1 2
	V	3 2	0 0	0 0	1 0
<u>FIRST</u>	I	0 1	0 0	1 0	1 1
<u>INTERPHALANGEAL</u>	II	3 3	0 0	0 1	0 0
<u>JOINT</u>	III	3 3	2 2	2 1	1 2
<u>TENDERNESS</u>	IV	3 2	0 0	1 0	0 0
	V	1 1	0 0	0 0	1 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		0 4	0 4	0 4	0 4
<u>KNEE</u>	Extension Flexion Tenderness	3 3 2 2 3 3	3 3 2 2 2 1	3 3 2 2 2 2	3 3 2 2 2 1
<u>ANKLE</u>	P. Flexion D. Flexion Tenderness	3 3 3 2 3 3	2 3 3 2 0 0	2 3 3 2 0 0	2 3 3 2 0 1
<u>TOTAL</u>	Tenderness Movement Range	76 46	27 45	32 45	33 46

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		Aspirin and Sterile Water	
DURATION OF TREATMENT	4 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	3 & 4	6	8
Ring Sizes	R. TWZ+UN	R. RTWSL	R. RUXSL	R. RUXTL
	L. PXUSO	L. QUTQM	L. QXTQM	L. QXTRM
Grip	R. 45	R. 45	R. 50	R. 50
	L. 45	L. 45	L. 45	L. 45

TREATMENT

The patient was confined to bed during treatment. Treatment with aspirin and adrenalin was commenced but had to be discontinued after a few days because the patient developed pneumonia and was seriously ill for a period.

Treatment was recommenced after a month's break, and consisted of hyperduralic adrenalin 3 minims t.i.d. the dose being raised 1 minim t.i.d. until she was receiving 8 minims t.i.d. at which dose she showed reaction. She was also given aspirin gr. 15 four times a day.

This treatment was continued for four weeks, and then injections of sterile water were substituted for the adrenalin, the aspirin being continued in the same dosage. This treatment was given for a further four weeks.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin		Aspirin and Sterile Water		
DURATION OF TREATMENT	4 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	3 & 4	6	8	Final result 8 weeks
Tenderness	-	49	-5	-6	43
Movement Range	-	1	0	-1	0
Ring Sizes)	Both hands	20	-5	-7	13
Grip)					
	-	0	5	5	5

The patient received treatment with aspirin and adrenalin for four weeks. There was marked diminution in the tenderness - she lost 49 degrees of tenderness. There was little improvement in the range of movement - she gained 1 degree in movement range. There was marked diminution in the swelling of the fingers - the ring sizes diminished by 20 sizes. There was no alteration in the grip.

Injectons of sterile water were then substituted for the adrenalin injections. At the end of four weeks of this treatment there was a slight deterioration. She had gained 6 degrees of tenderness, and lost 1 degree in range of movement. The swelling of the fingers had increased slightly - there was an increase of 7 ring sizes. There was little change in the grip - she had gained 5 millimetres in grip.

Thus at the end of eight weeks of treatment, she had lost in all 43 degrees of tenderness. There had been no improvement in the movement range. The ring sizes had diminished by 13 sizes, and the grip was substantially the same.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		Aspirin and Sterile Water	
DURATION OF TREATMENT	4 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	3 & 4	6	8
<u>Dress</u>	No	No	No	No
<u>Wash hands and face</u>	No	No	No	No
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	No	No	No	No
<u>Use Knife and fork</u>	No	No	No	No
<u>Walking</u>	No	No	No	No

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		Aspirin and Sterile Water	
DURATION OF TREATMENT	4 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	3 & 4	6	8
	-	Better	Better	Better

TREATMENT	Aspirin and Adrenalin				Aspirin and St. Water
DURATION OF TREATMENT	4 weeks				4 weeks
WEEKS AFTER ADMISSION	0	1	2	3 & 4	8
Serum Uric Acid . Mgms.%	3.0			3.0	2.8
B.S.R Mm in 1st hour	80	88	78	68	90
Blood pressure	180/95	180/90	165/95	160/85	170/90
Haemoglobin	67%			75%	80%
R.B.C Mill/c.mm	5.2			3.8	4.2

DAYS AFTER ADMISSION	10	20	21	24	26	28
TREATMENT	Before treatment	Aspirin and Adrenalin				
Vol. of Urine	800	680	520	755	760	510
Corticoid Mgm.%	.8	.92	1.2	.89	.83	1.2
Corticoid Mgm./day	6.4	6.3	6.2	6.7	6.3	6.1

OUT-PATIENT RECORD.

This patient was transferred to the Orthopaedic Unit for manipulation of her knees.

CASE NO. 36.

NAME: Joseph McGarrity.

ADDRESS: 23 Roman Drive, Bellshill.

AGE: 48. OCCUPATION: Iron Dresser.

Admitted: 8th July 1953.

Discharged: 22nd September 1953.

History: The patient was in good health until 1949, when he developed pain and stiffness in his right elbow. The disease advanced rapidly, and soon his hands, knees, and wrists were involved. A few months after the onset of the condition, he was forced to give up his work because of the pain and stiffness in his joints.

In 1950 he was admitted to Law Hospital for treatment, which consisted of wax baths, physiotherapy and radiant heat. This gave him some symptomatic relief, but this was not maintained after discharge from hospital. His feet began to trouble him in November 1952, and for a time he had considerable difficulty in walking. He had a short remission at the beginning of this year, and was able to take a labouring job for a few months, but was eventually forced to abandon it because of the pain in his feet and knees.

His general health has been poor since the onset of the disease, and during the last year he has lost a stone in weight. He sweats excessively. For the past seven months he has been taking Butazolidin, which gives him symptomatic relief, but his pain and stiffness are as bad as ever when he stops the drug.

Previous History: There have been no serious previous illnesses. There is no history of undue physical stress. For several years prior to the onset of the disease he had a lot of worry. His wife contracted pulmonary tuberculosis, and her condition deteriorated while he was in the Army. Moreover his daughter contracted the disease about this time. His wife died in 1950.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and he states that there are no great financial worries.

Daily Analgesics: For a few weeks prior to admission he has been taking two-four codeine tablets daily. Prior to that he was on Butazolidin. Pain interferes with sleep.

General Examination: T. 98 P. 78 R. 20 B.P. 150/100.

The patient is a middle-aged man who has an anxious expression, but does not look ill. He lies comfortably in bed, and there is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. He is of average intelligence and co-operative.

Locomotor System: There is limitation of movement of the left shoulder and marked tenderness in both shoulders.

Both elbows show limitation of movement and marked tenderness. Both wrists are limited in movement and show marked tenderness. There is tenderness of all the metacarpal phalangeal and first interphalangeal joints of both hands. The hands show typical rheumatoid deformity.

Both knees show slight limitation of movement and are markedly tender. Both ankles show marked limitation of movement and marked tenderness.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: Changes of advanced rheumatoid arthritis are noted with very marked decalcification in the hands and wrists. There is considerable loss of joint space, mainly at the metacarpo-phalangeal joints and partial destruction of the heads of the 1st and 2nd metacarpal and 3rd metacarpals of both hands.

SPINE: Cervical and upper thoracic spine negative.

TREATMENT		Sterile Water and Inactive Powder			Aspirin and Adrenalin	
DURATION OF TREATMENT		4 weeks			4 weeks	
WEEKS AFTER ADMISSION		0	3	4	7	8
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 2	0 1	1 1	1 0	0 0
	Tenderness	3 3	3 3	2 3	0 3	0 0
<u>ELBOW</u>	Flexion	1 1	1 0	2 1	1 1	1 1
	Extension	2 2	2 2	2 2	1 0	1 0
	Tenderness	3 3	3 3	3 3	0 0	0 0
<u>WRIST</u>	Flexion	2 3	2 2	1 1	1 1	1 1
	Extension	2 2	1 1	2 1	2 1	2 1
	Tenderness	3 3	0 3	3 3	0 2	1 0
<u>METACARPAL</u>	I	3 3	3 0	3 3	1 3	0 0
<u>PHALANGEAL</u>	II	3 3	3 0	3 3	0 0	0 0
<u>JOINT</u>	III	3 3	0 2	3 3	0 0	1 0
<u>TENDERNESS</u>	IV	3 3	3 3	0 3	3 0	0 1
	V	3 3	3 3	3 3	2 2	3 1
<u>FIRST</u>	I	3 0	0 0	0 2	0 0	0 1
<u>INTERPHALANGEAL</u>	II	2 3	0 3	2 3	0 2	0 0
<u>JOINT</u>	III	3 3	0 3	3 0	0 0	0 0
<u>TENDERNESS</u>	IV	3 3	2 3	3 3	1 0	0 3
	V	3 3	3 0	3 3	0 0	0 0
<u>FINGER TO PALM</u>		5 5	5 5	5 5	3 4	3 4
<u>CLOSURE</u>						
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	1 1	1 1	1 1	1 0	0 0
	Tenderness	3 3	3 0	3 1	0 0	0 0
<u>ANKLE</u>	P. Flexion	3 2	3 3	3 3	2 3	2 3
	D. Flexion	3 3	1 1	2 2	2 2	2 2
	Tenderness	3 3	3 3	3 3	0 1	0 1
<u>TOTAL</u>	Tenderness	86	58	76	20	12
	Movement Range	40	32	36	26	24

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			4 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	8
Ring Sizes	R. Z+VWVQ L. ZXWTK	R. YUVSO L. XVUQK	R. ZVVSP L. YVTRK	R. YUVRN L. XUSQJ	R. YTUQN L. WTSQJ
Grip	R. 70 L. 80	R. 90 L. 75	R. 80 L. 65	R. 110 L. 70	R. 115 L. 70

TREATMENT

The patient was confined to bed for the first week of treatment and thereafter allowed up for a limited period. He was used as a control subject for the first four weeks, when he received an injection of sterile water three times a day and a dose of inactive powder four times a day.

At the end of four weeks he was given aspirin and adrenalin. He received hyperdural adrenalin 3 minims t.i.d. the dose being raised 1 minim t.i.d. until he was receiving 8 minims t.i.d. at which dose he showed a reaction. The dose was maintained at this level. The dose of aspirin was 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks			4 weeks		
WEEKS AFTER ADMISSION	0	3	4	7	8	Final result 8 weeks
Tenderness	-	28	10	56	64	74
Movement Range	-	8	4	10	12	16
Ring Sizes)	Both hands	18	14	10	15	29
Grip)						
	-	15	-5	35	40	35

The patient was used as a control subject during the first four weeks of treatment, and during that time there was some improvement. He lost 10 degrees of tenderness and gained 4 degrees in movement range. The swelling of the fingers diminished considerably - there was a fall in ring sizes of 14 sizes. There was a slight deterioration in the grip- he lost 5 millimetres in grip.

Treatment with aspirin and adrenalin was then commenced, and there was considerable improvement at the end of four weeks of this treatment. He lost a further 64 degrees of tenderness and gained a further 12 degrees in range of movement. The ring sizes diminished by a further 15 sizes and the grip improved by 40 millimetres.

Thus, at the end of eight weeks he had lost in all 74 degrees of tenderness and had gained 16 degrees in movement range. The ring sizes had diminished by 29 sizes, and the grip had improved by 35 millimetres.

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			4 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	8
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			4 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	8
	-	Slightly better	Better	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder						Aspirin and Adrenalin			
	4 weeks						4 weeks			
DURATION OF TREATMENT	0	1	2	3	4		5	6	7	8
WEEKS AFTER ADMISSION										
Sodium Mgm. %	331.2	323	314	318	325.5		320	330	325	328
Potassium Mgm. %	20.7	18	19.2	19.72	18.4		19.4	18.7	19.3	19.6
Serum Uric Acid Mgm. %	3.3	3.8	3.2	2.2	2.39		2.6	2.32	2.7	2.4
B.S.R. Mm in 1st hour	32	24	40	38	27		37	35	37	44
Blood pressure	150/100	130/80	135/85	125/75	130/80		120/85	120/75	115/80	120/80
Haemoglobin	95%				98%					98%
R.B.C. Mill/c.mm	5.04				5					4.9
17 Ketosteroids Mgm. per day	7.51	9.7	10.3	12.9	16.2		12.2	12.4	10.1	13.5
Urinary Volume	1590	1710	1725	1760	1935		2100	2124	1800	1400

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient states that, the day after his discharge from hospital, his condition deteriorated. The hands became swollen and painful again, and the ankles were painful.

(On examination:)

Tenderness - 40

Movement Range - 28

Ring Sizes - R. (-4)
L. (-5)

Grip - R. 90
L. 70

3 months

The condition has remained more or less static since his previous examination. The ankles have improved slightly, but the fingers remain swollen and painful and he is unable to approximate any of the fingers to the palm.

6 months

The condition is more or less static, although the patient is not so well as when discharged from hospital.

(On examination:)

Tenderness - 29

Movement Range - 28

Ring Sizes - R. Z+TVQM
L. YTSPJ (-3 from discharge)

Grip - R. 65
L. 70

Thus on objective examination there has not been very marked deterioration in this patient's condition, although he himself complains that he is very much worse.

12 months

There has been further deterioration in this patient's condition and on examination his condition is worse than when he first came under observation.

CASE NO. 37.

NAME: Mrs. Agnes Anderson.

ADDRESS: Hut 38, Mid Netherton Camp, Carmunnock.

AGE: 43 OCCUPATION: Housewife.

Admitted: 8th July 1953.

Discharged: 10th August 1953.

History: The patient was in good health until eighteen months ago, when she began to have pain and stiffness of both shoulders. Soon after this her elbows, wrists and hands became affected, and these joints, in addition to becoming stiff and painful, were also swollen. She noticed that the disability was more pronounced in the morning. After a few months the pain and stiffness of the shoulders and elbows settled, but the hands remained painful and swollen.

Fourteen months ago her hips and knees became painful, and she was confined to bed for a fortnight. Her doctor advised her to get up and use the joints. She carried out his instructions, and although she had varying degrees of pain, she was able to do her housework. She has had several incomplete remissions in the past year, but the pain and stiffness have never entirely left her. For the past three months her fingers, ankles and toes have been very painful.

Her general health has deteriorated since the onset of the disease. She has lost weight and sweats excessively, especially her hands.

Previous History: There have been no serious previous illnesses. She has never been subjected to undue physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are shocking. She lives with her husband and four children in an ex-army hut, which is damp. She does not admit to any financial worries.

Obstetric and Menstrual History: She has had four pregnancies. The first two were difficult labours, and the first child is a spastic. The last two children were born by Caesarean section. Menstruation is regular, but occurs every two months with normal loss. Until just before the onset of the arthritis, menstruation occurred regularly every twenty-eight days.

Daily Analgesics: She takes two to three codeine tablets every day. Recently the pain in her joints has kept her awake.

General Examination: T. 98.4 P. 76 R. 20 B.P. 125/85.

The patient is a small, wizened, tired-looking woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is below average intelligence, but is co-operative.

Locomotor System: There is tenderness of several of the metacarpal phalangeal and first interphalangeal joints of both hands, with typical rheumatoid swelling of the fingers.

Both knees are tender and the right one is slightly limited in movement. Both ankles show limitation of movement and are markedly tender.

Other Systems: Examination is negative.

X-Ray Reports: HANDS: Peri-articular swelling is noted around some of the proximal interphalangeal joints, most marked in the right middle finger; the joint spaces are intact. Bone density normal.

KNEE JOINTS: Slight osteo-arthritic lipping, otherwise no evidence of bone changes.

TREATMENT		Aspirin and Sterile Water	
DURATION OF TREATMENT		3 weeks	
WEEKS AFTER ADMISSION		0	3
		R.L.	R.L.
<u>METACARPAL</u>	I	0 0	0 0
<u>PHALANGEAL</u>	II	3 2	0 0
<u>JOINT</u>	III	3 0	0 0
<u>TENDERNESS</u>	IV	0 2	0 0
	V	0 0	0 0
<u>FIRST</u>	I	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 1	0 0
<u>JOINT</u>	III	3 0	1 0
<u>TENDERNESS</u>	IV	0 0	0 0
	V	0 3	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		3 2	1 0
<u>KNEE</u>	Extension	0 0	0 0
	Flexion	1 0	0 0
	Tenderness	2 2	0 0
<u>ANKLE</u>	P. Flexion	2 2	1 1
	D. Flexion	2 2	1 1
	Tenderness	3 3	0 0
<u>TOTAL</u>	Tenderness	29	1
	Movement Range	14	5

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
Ring Sizes	R. PRVNH L. PQPMK	R. OORNH L. OOPNH
Grip	R. 95 L. 105	R. 175 L. 160

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of aspirin gr. 15 four times a day and injections of sterile water three times a day.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Aspirin and Sterile Water		
DURATION OF TREATMENT	3 weeks		
WEEKS AFTER ADMISSION	0	3	Final result 3 weeks
Tenderness	-	28	28
Movement Range	-	9	9
Ring Sizes) Both	-	13	13
Grip) hands	-	135	135

The patient was treated with aspirin and injections of sterile water for three weeks, and during that time there was a marked improvement. She lost 28 degrees of tenderness and gained 9 degrees in range of movement. There was considerable diminution of the swelling of the fingers - the ring sizes diminished by 13 sizes. The grip improved markedly - she gained 135 millimetres in grip.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
<u>Dress</u>	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes
<u>Bathe</u>	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes
<u>Use knife and fork</u>	With diffi- culty	Yes
<u>Walking</u>	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water	
DURATION OF TREATMENT	3 weeks	
WEEKS AFTER ADMISSION	0	3
	-	Much better

SPECIAL INVESTIGATIONS.

TREATMENT	Aspirin and Sterile Water			
DURATION OF TREATMENT	3 weeks			
WEEKS AFTER ADMISSION	0	1	2	3
Sodium Mgm.%	319			323
Potassium Mgm.%	18.1			18.2
Serum Uric Acid Mgm.%	2.56			1.3
B.S.R. Mm in 1st hour	25	25	10	8
Blood pressure	125/80	118/75	120/80	115/75
Haemoglobin	95%			96%
R.B.C. Mill/c.mm	4.6			4.7
Ketosteroids Mgm. per day	7.85			9
Urinary volume per day	1940			1770

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient reported that her condition has remained good, and physical examination showed no deterioration.

2 months

Shortly after the patient was seen on the last occasion as an out-patient, she began to have pain and swelling of her fingers, her ankles became swollen and painful, and her shoulders and elbows became involved in the process. It was decided to re-admit her for further treatment.

NAME: Mrs. Agnes Anderson.

Re-admitted: 12th October 1953.

Discharged: 5th December 1953.

Locomotor System: There is slight limitation of movement in the right shoulder and moderate tenderness.

The left elbow is moderately tender and the right wrist slightly tender. There is tenderness in varying degrees of the metacarpal phalangeal and first interphalangeal joints of both hands. The hands are swollen.

Both ankles show limitation of movement; the right ankle is markedly tender and the left slightly tender.

TREATMENT		Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		3 weeks
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 0	0 0	0 0
	Tenderness	2 0	0 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	0 0	0 0	0 0
	Tenderness	0 2	3 2	0 0
<u>WRIST</u>	Flexion	0 0	0 0	0 0
	Extension	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0
<u>METACARPAL</u>	I	3 0	3 0	0 0
<u>PHALANGEAL</u>	II	3 0	2 0	0 0
<u>JOINT</u>	III	3 0	3 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	2 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTER-PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	3 0	3 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 2	0 2	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		2 1	1 1	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 0	0 0	0 0
	Tenderness	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 1	2 1	0 0
	D. Flexion	3 2	2 2	0 0
	Tenderness	3 1	3 1	0 0
<u>TOTAL</u>	Tenderness	25	22	0
	Movement Range	12	9	0

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
Ring Sizes	R. PPWNH L. PPSNJ	R. OPWNH L. OPPNK	R. MNSMG L. NONMH
Grip	R. 55 L. 95	R. 75 L. 105	R. 125 L. 110

TREATMENT

The patient was treated with injections of sterile water three times a day and an inactive powder four times a day for the first three weeks after admission to hospital. She was confined to bed during these three weeks.

She was then given aspirin gr. 15 four times a day together with injections of hyperduralic adrenalin, 3 minims t.i.d. rising by 1 minim t.i.d. until she was receiving 10 minims t.i.d. at which dose she showed reaction. The dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	3	22	25
Movement Range	-	3	9	12
Ring Sizes)	-	4	18	22
) Both				
Grip) hands	-	30	55	85

The patient was treated as a control subject for the first three weeks, and was given injections of sterile water and an inactive powder. There was very little improvement on this regime. She lost 3 degrees of tenderness and gained 3 degrees in movement range. The ring sizes diminished by 4 sizes, and the grip improved by 30 millimetres.

Thereafter treatment with aspirin and adrenalin was commenced and after three weeks of this treatment there was considerable improvement in her condition. She lost a further 22 degrees of tenderness and gained a further 9 degrees in movement range. The swelling of the fingers diminished - the ring sizes diminished by a further 18 sizes, and the grip improved by a further 55 millimetres.

Thus, at the end of six weeks, she had lost in all 25 degrees of tenderness and had gained 12 degrees in movement range. The ring sizes had diminished by 22 sizes and the grip had improved by 85 millimetres.

PERFORMANCE CHART

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
	-	Slightly better	No disability

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder			Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks			3 weeks		
WEEKS AFTER ADMISSION	0	2	3	4	5	6
Sodium Mgm. %	325	335	328.7	326 & 318.4	325	337
Potassium Mgm. %	20.1	17.7	20.2	18.8	20.7	18.7
Serum Uric Acid Mgm. %	2.72	2.87	2.5	1.9	2.06	1.79
B.S.R. Mm in 1st hour	16	18	32	20	30	19
Blood pressure	120/75	120/70	115/68	110/65	115/65	120/65
Haemoglobin	90%		94%			95%
R.B.C. Mill/c.mm	4.3		4.4			4.5
Ketosteroids Mgm. per day	3		8.7	3.8		6.2
Urinary volume per day	1050		1300	1400		2270

OUT-PATIENT RECORDMonths after dischargeCondition

1 month

The remission lasted three weeks after her discharge from hospital, then her hands and shoulders became painful. For a time she had slight pain in her left hip.

On examination:

Tenderness - 12

Movement Range - 3

Ring Sizes - R. NOWNG (-20)
L. QPQPK

2 months

On examination:

Tenderness - 5

Movement Range - 2

Ring Sizes - R. NOTMG
L. RORPK (-17)

Grip- R. 115 (+20)
L. 140

CASE NO. 38.

NAME: Mrs. Mary McAlinden.

ADDRESS: 14 Hillcrest Avenue, Coatbridge.

AGE: 50. OCCUPATION: Housewife.

Admitted: 16th July 1953.

Discharged: 3rd October 1953.

History: The patient was in good health until fourteen years ago. At that time she developed pain in her neck and both shoulders, which was relieved to a certain extent by massage. About the same time both feet became swollen and painful. The pain was mostly at the base of the toes, and it interfered with her walking. This persisted for about four years, and then she had a remission as regards the pain in her feet, although the pain in her shoulders still troubled her.

Three years ago the painful swelling of her feet returned, and a year later the joints of her fingers became swollen and painful. At that time she was given a course of injections (? gold) - one injection every ten days - but this was discontinued after four injections had been given. She was then admitted to Cleland Hospital where she was treated with massage and ? radiant heat. She improved with this treatment, and for a short time after her dismissal from hospital she was able to walk without much pain. This remission, however, was very short, and her condition has steadily deteriorated during the past year. The knees have been affected recently, and for the past month she has been confined to bed.

Her general health has been poor for the last year, and she has suffered from recurrent frontal headaches. For the past six weeks she has felt breathless on slight exertion.

Previous History: There is no history of serious previous illness. She has never been subjected to undue physical or mental stress.

Family History: There is no history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: She has had seven pregnancies, one of which was a miscarriage. She has had no difficulty during these pregnancies or with parturition. The menopause occurred six years ago, and there has been no bleeding since then.

Daily Analgesics: She takes two to three aspirin daily. The pain often keeps her from sleeping.

General Examination: T. 99 P. 90 R. 20 B.P. 220/105.

The patient is an obese, middle-aged woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence, and co-operative.

Locomotor System: Both shoulders show moderate limitation of movement and slight tenderness.

The right elbow shows marked limitation of movement and moderate tenderness. Both wrists show marked limitation of movement and slight tenderness. Several of the metacarpal phalangeal and first interphalangeal joints of both hands are tender. There is typical rheumatoid deformity of the fingers of both hands.

The left knee is markedly tender and the right slightly tender. The left knee is swollen. Both ankles show marked limitation of movement and marked tenderness.

Other Systems: Examination is negative.

X-Ray Reports: LEFT KNEE: Osteo-arthritic changes are evident. Some synovial thickening is seen.

RIGHT KNEE: Osteo-arthritis is seen.

HANDS AND WRISTS: Both hands show changes typical of rheumatoid arthritis. The wrist joints are also considerably involved.

TREATMENT		Aspirin and Sterile Water			Aspirin and Adrenalin	
DURATION OF TREATMENT		4 weeks			4 weeks	
WEEKS AFTER ADMISSION		0	3	4	7	8
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 2	2 2	2 3	1 2	1 2
	Tenderness	1 1	0 0	2 1	0 0	0 0
<u>ELBOW</u>	Flexion	1 0	1 0	1 0	0 0	1 0
	Extension	3 0	3 0	2 0	2 0	2 0
	Tenderness	2 0	1 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	3 2	3 1	3 1	2 1	3 1
	Extension	3 3	3 3	3 2	3 1	3 1
	Tenderness	1 1	1 0	3 0	0 0	0 0
<u>METACARPAL</u>	I	1 0	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	3 0	1 0	2 2	0 0	0 0
<u>JOINT</u>	III	3 1	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	0 0
	V	3 0	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	3 1	1 0	1 0	0 0	0 0
	V	1 0	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u>						
<u>CLOSURE</u>		3 1	2 0	1 0	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	1 2	1 2	1 2	0 1	0 1
	Tenderness	1 3	0 1	0 2	0 1	0 0
<u>ANKLE</u>	P. Flexion	3 2	3 3	3 3	0 2	1 2
	D. Flexion	1 3	0 1	3 1	3 0	3 0
	Tenderness	3 2	0 1	1 2	1 1	0 0
<u>TOTAL</u>	Tenderness	32	6	16	3	0
	Movement Range	35	30	31	18	21

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			4 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	8
Ring Sizes	R. RPPRF	R. PMOOE	R. QMOPE	R. PLNPD	R. QLNPD
	L. ROUNJ	L. PLRLH	L. QKRMH	L. PKRMG	L. PKRMH
Grip	R. 70	R. 75	R. 80	R. 75	R. 90
	L. 95	L. 95	L. 85	L. 90	L. 95

TREATMENT

The patient was confined to bed during the first four weeks of treatment and thereafter allowed up for a limited period. Treatment consisted of aspirin gr. 15 four times a day and injections of sterile water three times a day for the first four weeks. She was then given in addition to the aspirin injections of hyperdureic adrenalin 3 minims t.i.d. rising by 1 minim t.i.d. until she was receiving 9 minims t.i.d. at which dose she showed a reaction.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks			4 weeks		
WEEKS AFTER ADMISSION	0	3	4	7	8	Final result 8 weeks
Tenderness	-	26	16	13	16	32
Movement Range	-	5	4	13	10	14
Ring Sizes) Both	-	22	19	6	4	23
Grip) hands	-	5	0	0	20	20

The patient was treated with aspirin and injections of sterile water, for the first four weeks, and there was some response to this treatment. She lost 16 degrees of tenderness. There was slight improvement in the range of movement - she gained 4 degrees in movement range. There was considerable diminution in the swelling of the fingers - the ring sizes diminished by 19 sizes. There was no alteration in the grip.

Injectons of adrenalin were then started, and these were given in addition to the aspirin. The improvement continued. At the end of four weeks of this treatment she had lost a further 16 degrees of tenderness and gained a further 10 degrees in movement range. There was only slight further diminution of the swelling of the fingers - the ring sizes diminished by a further 4 sizes. The grip improved slightly - she gained 20 millimetres in grip.

Thus at the end of eight weeks she had lost in all 32 degrees of tenderness and gained 14 degrees in movement range. The ring sizes had diminished by 23 sizes and the grip had improved by 20 millimetres.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			4 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	8
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Bathe</u>	No	No	No	With diffi- culty	With diffi- culty
<u>Dress Hair</u>	No	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Use knife and fork</u>	No	With diffi- culty	With diffi- culty	With diffi- culty	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water			Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks			4 weeks	
WEEKS AFTER ADMISSION	0	3	4	7	8
	-	Slightly better	Better	Better	Much better

SPECIAL INVESTIGATIONS.

TREATMENT	Aspirin and Sterile Water						Aspirin and Adrenalin			
	4 weeks						4 weeks			
DURATION OF TREATMENT	0	1	2	3	4	5	6	7	8	
WEEKS AFTER ADMISSION										
Serum Uric Mgn. % Acid	2.9				2.8				2.1	
Urinary Volume Ml per day.	770								1380	
17 Ketosteroids Mgn. per day	2.1								3.97	
B.S.R. Mm in 1st hour	45	48	38	42	47	38	32	28	30	
Blood pressure	220/105	180/100	175/95	170/98	180/95	175/90	168/92	170/90	165/95	
Haemoglobin	70%				80%				86%	
R.B.C. Mill/c.mm	4.0				4.2				4.4	

OUT-PATIENT RECORDMonths after
dischargeCondition

5 months

The patient did not come back routinely as requested as an out-patient, but when a letter was sent to her, she reported for examination in February 1954.

On examination:-

Tenderness - 5

Movement Range - 18

Ring Sizes - R. QLNPD (-2)
L. QLQNH

Grip - R. 100 (+25)
L. 110

16 months

There has been a marked deterioration in the patient's condition, which commenced about twelve months after discharge from hospital. On examination the rheumatoid arthritis is more advanced than when she first came under observation.

CASE NO. 39.

NAME: Mrs. Robina Melville.

ADDRESS: 61 Burns Crescent, Airdrie.

AGE: 46.

OCCUPATION: Housewife.

Admitted: 24th July 1953.

Discharged: 21st November 1953.

History: Twenty years ago the patient began to have stiffness of the hands. Apparently there was no pain or swelling, but the condition was diagnosed as rheumatoid arthritis and she was treated for six weeks in the Glasgow Royal Infirmary with gold injections. This effected a temporary improvement, but the trouble recurred within a year. The stiffness of her hands has been progressive since that time, and has been accompanied from time to time by pain and swelling of the finger joints. For several years now because of this she has been unable to do any housework.

For the past two years she has suffered from intermittent attacks of joint pain, one joint being usually affected at a time. These attacks tended to begin in the evening and last until early the following day, and the ankles and shoulders have been affected most often. During this time she has lost weight.

Eight weeks ago she began to feel more listless and tired than usual, and developed a low back pain together with a vaginal discharge. She has been attending Glasgow Royal Infirmary Out-patient Department where ? cauterisation of the cervix was carried out. Five weeks ago on waking she found that her knees were swollen and that she was unable to walk. Soon after this she developed pain, swelling and limitation of movement of the joints of her hands and elbows. Her appetite has been very poor recently.

Previous History: There is no history of serious illness prior to the onset of the arthritis. She has not been subject to undue physical or mental stress. Two years ago she had a vaginal abscess treated in Glasgow Royal Infirmary.

Family History: Her mother suffered from rheumatoid arthritis. There is no family history of allergic disease.

Social History: The housing conditions are good, and there are no financial worries.

Obstetric and Menstrual History: She has had three pregnancies, all of which were normal. The symptoms of rheumatoid arthritis, however, commenced shortly after the first birth. Menstruation was regular

until eighteen months ago, when it ceased altogether for a year. For the past six months she has had irregular bleeding, and more recently a vaginal discharge, for which she has been under treatment.

Daily Analgesics: She has been taking about twenty grains of aspirin daily. The pain has been keeping her awake during the past six weeks.

General Examination: T. 102 P. 100 R. 22 B.P. 100/65.

The patient is a pale, debilitated woman, who looks ill and who appears to be in pain. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. She is of average intelligence, but is listless and has rather a hopeless outlook on life.

Locomotor System: Both shoulders show limited movement, and the left shoulder is extremely tender.

Both elbows show limitation of movement. The wrists show marked limitation of movement and the right wrist is tender. There is marked tenderness of the 2nd right metacarpal phalangeal joint, and the first interphalangeal joints of the middle fingers of both hands are tender.

Both knees show limitation of movement and are slightly tender.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: There is marked osteoporosis especially in the region of the small joints of the fingers and in the wrists. Narrowing of the joint spaces is noted in only one or two of the interphalangeal joints. The appearances suggest a rheumatoid arthritis in a fairly active stage without as yet any marked cartilage destruction.

SHOULDER, ELBOW AND KNEE JOINTS: These show some osteoporosis. The joint spaces are intact except in the left knee where there would appear to be definite narrowing.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		8 weeks		3 weeks	2 weeks
WEEKS AFTER ADMISSION		0 3		6 11		14	16
		R.L.	R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 3	1 3	3 3	0 0	0 0	0 0
	Tenderness	0 3	0 0	0 1	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0	0 0	0 0
	Extension	2 2	2 1	2 2	1 1	0 1	0 0
	Tenderness	0 0	0 0	0 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	2 2	2 1	2 1	1 1	1 1	1 0
	Extension	3 2	2 3	3 3	2 2	2 1	1 1
	Tenderness	2 0	2 0	0 3	0 0	0 0	0 0
<u>METACARPAL</u>	I	0 0	0 3	0 0	0 0	1 0	0 0
<u>PHALANGEAL</u>	II	3 0	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 3	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	1 1	0 3	1 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	2 0	1 1	0 0	0 0	0 0
	V	0 0	1 0	0 0	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		5 2	3 2	5 5	0 0	1 0	0 0
<u>KNEE</u>	Extension	1 2	1 1	1 1	0 0	1 1	0 0
	Flexion	1 1	2 1	2 2	0 0	1 0	0 0
	Tenderness	1 1	3 3	2 3	0 1	0 0	0 0
<u>TOTAL</u>	Tenderness	12	20	13	1	1	0
	Movement Range	30	25	35	8	10	3

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		8 weeks		3 weeks	2 weeks
WEEKS AFTER ADMISSION	0	3	6	11	14	16
Ring Sizes	R. SUYTJ L. TSVQJ	R. STYTK L. STWRJ	R. TSYUK L. TTWUL	R. RQURI L. RSTQI	R. RSURJ L. STVSJ	R. RRURJ L. RRRQI
Grip	R. 75 L. 65	R. 60 L. 65	R. 50 L. 60	R. 85 L. 70	R. 65 L. 75	R. 70 L. 90

TREATMENT.

The patient was confined to bed during the first eight weeks of treatment and thereafter allowed up for a limited period. Treatment consisted of aspirin gr. 15 four times a day and injections of sterile water three times a day for the first three weeks. Then for the next eight weeks she was given aspirin gr. 15 four times a day and hyperdureic adrenalin 3 minims t.i.d. rising by 1 minim t.i.d. until she was receiving 10 minims t.i.d. at which dose she showed a reaction, and the dose was maintained at this level.

Treatment was then discontinued for three weeks. For the final two weeks in hospital she was given another short course of aspirin gr. 15 four times a day and hyperdureic adrenalin 10 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		8 weeks		3 weeks	2 weeks	
WEEKS AFTER ADMISSION	0	3	6	11	14	16	Final result 16 weeks
Tenderness	-	-8	7	19	0	1	12
Movement Range	-	5	-10	17	-2	7	27
Ring Sizes)	-	-2	-7	19	-10	11	18
Both hands)							
Grip)	-	-15	-15	30	-15	20	20

The patient was treated with aspirin and injections of sterile water for the first three weeks. During that time there was increase in the tenderness - she gained 8 degrees of tenderness. There was slight improvement in the movement range - she gained 5 degrees in movement range. The swelling of the fingers increased slightly - the ring sizes increased by 2 sizes. The grip deteriorated slightly - she lost 15 millimetres of grip.

The patient was given aspirin and adrenalin for the next eight weeks, and her condition improved considerably, although during the first three weeks of this treatment there was a deterioration when, despite the fact that her tenderness diminished by 7 degrees, the movement range deteriorated by 10 degrees, the swelling of the fingers increased - the ring sizes increased by 7 sizes, and the grip deteriorated by a further 15 millimetres. At the end of the eight weeks treatment, however, the tenderness had diminished by 19 degrees and the range of movement improved by 17 degrees. The ring sizes had diminished by 19 sizes and the grip improved by 30 millimetres.

Treatment was then stopped for a period of three weeks, and during that time the tenderness did not increase, the movement range diminished by only 2 degrees and the grip deteriorated by 15 millimetres. The fingers, on the otherhand, became more swollen, and the ring sizes increased by 10 sizes.

Finally she was given a short course of aspirin and adrenalin

for the fortnight before her discharge from hospital, and there was further improvement in her condition. She lost a further 1 degree of tenderness and gained a further 7 degrees in range of movement. The grip improved by 20 millimetres, and the ring sizes diminished by 11 sizes.

Thus at the end of sixteen weeks the patient had lost in all 12 degrees of tenderness and had gained 27 degrees in movement range. The grip had improved by 20 millimetres and the ring sizes had diminished by 18 sizes.

PERFORMANCE CHART.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		8 weeks		3 weeks	2 weeks
WEEKS AFTER ADMISSION	0	3	6	11	14	16
<u>Dress</u>	No	No	No	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes	Yes	Yes
<u>Bathe</u>	No	No	No	No	No	Yes
<u>Dress Hair</u>	No	No	No	Yes	Yes	Yes
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes	Yes	Yes
<u>Walking</u>	No	No	No	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		No treat- ment	Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		8 weeks		3 weeks	2 weeks
WEEKS AFTER ADMISSION	0	3	6	11	14	16
	-	No change	Slightly worse	Slightly better	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and St. Water		Aspirin and Adrenalin									
	3 weeks		8 weeks									
DURATION OF TREATMENT	0	3	4	5	6	7	8	9	10	11		
WEEKS AFTER ADMISSION												
Sodium Mgm. %	317	319	318	312.5	312.5		325	312.5		300		
Potassium Mgm. %	17	17.5	16.8	16.5	16.06		16.8	20.2		20.3		
Serum Uric Acid Mgm. %	3.6	3	2.13	2.15	2.58		2.03	2.58		2.03		
B.S.R. Mm in 1st hour	140	110	105	104	102	78	76	55	35	50		
Blood pressure	100/65	110/70	115/70	110/65	120/68	116/65	120/70	115/68	125/70	120/65		
Haemoglobin	60%	66%	68%		70%		64%			68%		
R.B.C. Mill/c.mm	3.6		3.74							3.8		
Ketosteroids Mgm. per day	1.5	3.74		3.50		8			3.63			

SPECIAL INVESTIGATIONS (Cont'd).

TREATMENT	No treatment			Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks			2 weeks	
WEEKS AFTER ADMISSION	12	13	14	15	16
Sodium Mgm.%	300	331.2	338.4	313	330
Potassium Mgm.%	20	18.7	18.6		19.4
Serum Uric Acid Mgm.%	2.33	2.41	2.88	2.72	2.9
B.S.R. Mm in 1st hour	66	60	78	70	26
Blood pressure	110/65	120/70	120/65	110/65	120/70
Haemoglobin			68%		70%
R.B.C. Mill/c.mm			3.8		3.9
Ketosteroids Mgm. per day			5.5	8.1	4.1

Months after
dischargeCondition

1 month

Seen by colleague, who reported that there was no change in her condition since her discharge from hospital.

3 months

The patient has kept very well since her discharge from hospital. She reports that only the left ankle troubles her slightly. She is able to get about satisfactorily and is very pleased with the result of her treatment.

On examination:-

Tenderness - 0

Movement Range - 2

Ring Sizes - R. RRUQI
L. QQSPH (6)Grip - R. 140
L. 135 (+115)

CASE NO. 40.

NAME: Miss Jessie Prenty.

ADDRESS: 9 Linden Street, Glasgow.

AGE: 49. OCCUPATION:

Admitted: 19th August 1953.

Discharged: 3rd October 1953.

History: The patient's health had been good until five years ago, when she developed pneumonia and was in hospital for three months. About a month after she had recovered from this illness, she developed pain and swelling of the wrists. This persisted in varying severity for the next five months, when the ankles became similarly affected.

Until the beginning of 1953 these were the only joints affected, and although she was forced to give up her work because of the difficulty she had in walking, she was still able to get about. At times the pain has been very severe, and she thinks that the pain has always been worse than the stiffness and swelling of the affected joints.

At the beginning of 1955 her condition deteriorated markedly, and the hips became affected, especially the left hip. This made walking and standing very difficult, and she has spent a good deal of time in bed. The joints of her hands have also been more painful, and she has difficulty in performing her household duties.

Until two years ago, she was attending the Western Infirmary, where she was given wax baths, physiotherapy, etc. but did not receive permanent benefit from this treatment. Recently treatment has consisted of analgesics prescribed by her own doctor.

Previous History: As noted above, she had pneumonia just before the onset of arthritis. She had rickets in childhood, and was in a convalescent home for two years. At the beginning of this year there was considerable domestic upheaval, which coincided with the deterioration in her joint condition. Her father, aged eighty, started drinking heavily, and this upset her greatly.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate. She states that there are no financial worries.

Menstrual History: Menstruation ceased fifteen years ago. Prior to this the periods had been regular.

Daily Analgesics: She takes three codeine tablets daily. The pain has been keeping her awake during the past three months.

General Examination: T. 98. P. 80. R. 20. B.P. 125/75.

The patient lies fairly comfortably in bed. She is of small stature and has marked rachitic deformities of both legs. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is of average intelligence and optimistic outlook.

Locomotor System: There is slight limitation of movement of both shoulders and the left shoulder is slightly tender.

There is moderate limitation of movement of both elbows with slight tenderness in both. There is marked limitation of movement in both wrists. The right wrist is slightly tender and the left wrist is markedly tender. The first interphalangeal joints of the second fingers of both hands are slightly tender, and the first interphalangeal joint of the middle finger of the left hand is slightly tender. There is wasting of the small muscles of the dorsum of both hands, with typical spindle shaped deformity of the fingers.

There is considerable limitation of movement of the right hip.

There is moderate limitation of movement of both knees, and the left knee is slightly tender. Both ankles show moderate limitation of movement and the right ankle is slightly tender.

Other Systems: Examination is negative.

X-Ray Reports: WRISTS AND HANDS: The wrist joints show gross deformity due to an old-standing arthritic process, of rheumatoid type. The changes are more marked in the left wrist. Less marked changes are noted in the proximal interphalangeal joints, some of which show narrowing of the joint space.

HIP JOINTS: No marked changes in the left hip, but in the right hip there is practically complete destruction of the articular cartilage with extensive erosion of the sub-chondral bone of the femoral head and acetabulum.

TREATMENT		No treat- ment		Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		4 weeks	
WEEKS AFTER ADMISSION		0	2	4	6
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 1	1 1	2 2	0 1
	Tenderness	0 1	0 0	1 1	0 0
<u>ELBOW</u>	Flexion	1 1	1 1	1 1	1 0
	Extension	2 2	2 2	2 2	2 1
	Tenderness	1 1	0 0	1 1	0 0
<u>WRIST</u>	Flexion	2 3	2 2	2 1	1 1
	Extension	3 3	3 3	2 2	2 2
	Tenderness	1 3	1 1	3 1	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 1	0 0
<u>JOINT</u>	III	0 0	0 0	1 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 1	0 0
<u>INTERPHALANGEAL</u>	II	1 1	0 1	1 1	0 0
<u>JOINT</u>	III	0 1	1 0	0 1	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u>		1 0	1 0	0 0	0 0
<u>CLOSURE</u>					
<u>HIP</u>	Abduction	2 0	2 0	2 0	1 0
	Flexion	2 0	2 0	2 0	1 0
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0
	Flexion	2 2	1 1	1 1	0 1
	Tenderness	0 1	0 0	2 1	1 0
<u>ANKLE</u>	P. Flexion	2 2	1 2	2 1	1 1
	D. Flexion	1 3	1 3	2 3	2 2
	Tenderness	2 0	2 0	1 1	0 0
<u>TOTAL</u>	Tenderness	13	6	19	1
	Movement Range	36	32	31	20

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	No treat- ment		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	2	4	6
Ring Sizes	R. NPNJC L. NNNIC	R. OPNJC L. NONIC	R. MPMIC L. MMHBB	R. OQOID L. NOOIC
Grip	R. 90 L. 100	R. 90 L. 100	R. 115 L. 100	R. 90 L. 90

TREATMENT

The patient was used as a control subject for the first fortnight. She was confined to bed but given no tablets or injections.

For the following four weeks she was treated with aspirin gr. 15 four times a day and was given injections of hyperdural adrenalin, starting with 3 minims t.i.d. and rising by 1 minim t.i.d. until she was receiving 9 minims, at which dose she showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	No treat- ment		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		4 weeks		
WEEKS AFTER ADMISSION	0	2	4	6	Final result 6 weeks
Tenderness	-	7	-13	5	12
Movement Range	-	4	1	12	16
Ring Sizes) Both	-	-2	9	-3	-5
Grip) hands	-	0	25	-10	-10

The patient was used as a control subject for the first fortnight. During that time there was some improvement in the tenderness - she lost 7 degrees of tenderness. The movement range improved slightly - she gained 4 degrees in range of movement. The swelling of the fingers increased slightly - the ring sizes increased by 2 sizes, and there was no alteration in the grip.

Treatment with aspirin and adrenalin was then commenced, and during the first fortnight of this treatment, there was some deterioration as regards the tenderness - she gained 13 degrees of tenderness. The movement range improved very slightly - she gained 1 degree in range of movement. The ring sizes diminished by 9 sizes and the grip improved by 25 millimetres.

At the end of four weeks of this treatment, the tenderness had diminished by 5 degrees and the movement range had improved by 12 degrees. The ring sizes had increased by 3 sizes and the grip had deteriorated slightly - she had lost 10 millimetres in grip.

Thus during her stay in hospital of six weeks, she lost in all 12 degrees of tenderness and gained 16 degrees in movement range. The ring sizes increased by 5 sizes, and the grip deteriorated by 10 Millimetres.

PERFORMANCE CHART

TREATMENT	No treatment		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	2	4	6
<u>Dress</u>	With difficulty	With difficulty	With difficulty	With difficulty
<u>Wash hands and face</u>	With difficulty	With difficulty	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes	Yes
<u>Dress</u> <u>Hair</u>	With difficulty	With difficulty	With difficulty	Yes
<u>Use knife and fork</u>	No	No	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	No treatment		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	2	4	6
	-	Much better	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	No treatment			Aspirin and Adrenalin			
DURATION OF TREATMENT	2 weeks			4 weeks			
WEEKS AFTER ADMISSION	0	1	2	3	4	5	6
Sodium Mgm. %	320		325			337.5	342
Potassium Mgm. %	20.54		20	19.4			20.25
Serum Uric Acid Mgm. %	2.5		2.07	2.1		1.75	1.8
B.S.R. Mm in 1st hour	98	100	96	79	82	84	50
Blood pressure	125/75	120/70	115/70	120/70	118/68	120/72	120/75
Haemoglobin	80%		78%		84%		82%
R.B.C. Mill/c.mm	4.1		4.2		4.1		4.2
Ketosteroids Mgm. per day	1.9			5.11		3.07	2.93
Urinary volume per day	1000			960		773	840

Months after
dischargeCondition

5 months

The improvement made in hospital was maintained until January 1954. Then her knees became painful once more and her limp returned. Since that time, her condition has steadily deteriorated.

On examination:-

Tenderness - 22

Movement Range - 34

Ring Sizes - R. PPOKD (-4)
L. 000IDGrip - R. 65 (-15)
L. 100

CASE NO. 41.

NAME: Mrs. Mary Goldie.

ADDRESS: 2 Bryan Street, Hamilton.

AGE: 32. OCCUPATION: Housewife.

Admitted: 30th October 1953.

Discharged: 1st December 1953.

History: The patient was in good health until the latter part of 1951, when she noticed stiffness of the fingers, with pain and swelling of the interphalangeal joints. Shortly after this the left ankle became stiff, painful and swollen. The shoulders, knees and wrists were also affected, but not to the same degree. During the past two years she has had numerous courses of tablets and injections, the nature of which is unknown. These were all without effect, with the exception of Butazolidin, which the patient had earlier this year. Following a course of this drug, the fingers became less painful and more mobile, but the left ankle was unaffected.

She had been under the care of the Orthopaedic Surgeon for the past two years, and in August of this year the left ankle was encased in plaster for seven weeks, but on removal of the plaster the ankle was more painful, swollen, and just as stiff. Her general health has been poorer than before the onset of the condition, and she has lost over two stones in weight during the past two years.

Previous History: Apart from appendicitis in 1949, there is no previous history of ill health. There is no history of undue physical or mental stress.

Family History: The patient's elder sister has rheumatoid arthritis. There is no family history of allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: There have been no pregnancies. Menstruation is regular, lasting four days, and occurring every twenty eight days.

Daily Analgesics: She does not require analgesics. Her sleep is undisturbed by pain.

General Examination: T. 97.6 P. 80 R. 20 B.P. 115/75.

The patient is a healthy-looking young woman, with a good complexion.

There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She is intelligent and co-operative.

Locomotor System: Both wrists show marked limitation of movement and are tender.

The left ankle shows marked limitation of movement and is slightly tender.

Other Systems: Examination is negative.

X-Ray Reports:

2.7.52. Left knee: The left knee shows osteo-arthritic changes. There is surrounding synovial thickening maximal in the supra-patellar pouch. Small bony spur is defined projecting upwards from the upper pole of the patella.

30.7.53. Both feet: There is hallux valgus deformity in both feet, fairly marked in the left, which shows erosion of the medial aspect of the head of the 1st metatarsal. There is also a deformity of the metatarso-phalangeal joint of the left little toe with secondary osteo-arthritic changes. In the tarsal region no bone changes are discernible.

25.1.54. Both feet: There is general osteoporosis. There is marked hallux valgus deformity and also a varus deformity of the little toe with secondary osteo-arthritic changes and erosions of the heads of the 1st and 5th metatarsals. In the tarsus no bone lesion is discernible.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		4 weeks		
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	2 2	1 1	1 1
	Extension	2 1	1 1	1 1
	Tenderness	2 1	0 0	0 0
<u>ANKLE</u>	P. Flexion	0 3	0 2	0 2
	D. Flexion	0 2	0 1	0 1
	Tenderness	0 1	0 0	0 0
<u>TOTAL</u>	Tenderness	4	0	0
	Movement Range	12	7	7

TREATMENT

The patient was allowed up for a limited period during treatment. Treatment consisted of aspirin gr. 15 four times a day and injections of hyperdural adrenalin, 3 minims t.i.d. the dose being raised 1 minim t.i.d. until she was receiving 9 minims t.i.d. at which dose she showed a reaction. The dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	4 weeks			
WEEKS AFTER ADMISSION	0	3	4	Final result 4 weeks
Tenderness	-	4	4	4
Movement Range	-	5	5	5

The patient was treated with aspirin and adrenalin for four weeks and her condition improved. During the first three weeks she lost 4 degrees of tenderness and gained 5 degrees in movement range. Her condition remained the same during the fourth week of treatment.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
<u>Dress</u>	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
	-	Much better	No disability

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin				
DURATION OF TREATMENT	4 weeks				
WEEKS AFTER ADMISSION	0	1	2	3	4
Sodium Mgm. %	306.4	320	319	331	337.5
Potassium Mgm. %	20.4	19.4	19.33	18	17.8
Serum Uric Acid Mgm. %	2.37	1.9	2.04	1.9	2
B.S.R. Mm in 1st hour	18	36	17	18	16
Blood pressure	115/70	120/75	115/65	115/70	118/68
Haemoglobin	90%				92%
R.B.C. Mill/c.mm	3.4				4.5
Ketosteroids Mgm. per day	4.6				14.5
Urinary volume per day	940				1170

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient's condition is unchanged from what it was on her discharge from hospital, and there has been no relapse.

3 months

The patient has no complaints whatsoever. She is able to walk quite freely without pain.

On examination:-

		<u>R.L.</u>
<u>WRIST</u>	Flexion	0 0
	Extension	1 1
	Tenderness	0 0
<u>ANKLE</u>	P. Flexion	0 0
	D. Flexion	0 0
	Tenderness	0 0

There has been a further gain in movement range of 5 degrees since her discharge from hospital.

CASE NO. 42.

NAME: Mr. Patrick Collins.

ADDRESS: 8 Shawburn Crescent, Burnbank, Hamilton.

AGE: 61. OCCUPATION: Ex-labourer.

Admitted: 30th October 1953.

Discharged: 5th December 1953.

History: The patient was in good health until February 1950, when he developed pain, swelling and stiffness of the fingers of the right hand. About this time also the left hand was similarly affected, but the symptoms subsided within four weeks. During the next six months he was off his work on several occasions, but in December 1950 the left knee became stiff, painful and swollen, and he was forced to leave his work.

In January 1951 he was seen by the Orthopaedic Surgeon, Hairmyres Hospital, and radiology confirmed the presence of rheumatoid arthritis. He was instructed to rest in bed, but at the end of six weeks his condition was no better, and he was admitted to the Medical Unit of Hairmyres Hospital. He was in hospital for almost five months and was treated there with aspirin (60 gr. daily for three weeks), and then with a course of Myocrysin (total 0.66 Grams). The joint condition was very slow to improve, and indeed when he was discharged it was noted that his left knee was still stiff, swollen and painful.

At home there was some further improvement, and he had periods when he was practically free from symptoms. He was able to resume work, although his ability was somewhat impaired.

In June of this year the patient was forced to stop work, as his hands had become more painful, and he was unable to grip any heavy objects. A few weeks later his elbows, wrists, and left ankle became affected. For several days at a time he has been able only to lie in bed because of the pain and stiffness.

Previous History: There is no previous history of serious illness. There were no undue physical or mental stresses before the onset of the disease. It is interesting to note that the patient's wife died in June 1953, and he himself noted that just at this time there was a marked deterioration in his condition.

Family History: There is no family history of rheumatism or allergic illness.

Social History: The housing conditions are adequate, and he states that he has no pressing financial worries.

Daily Analgesics: For the past few weeks he has been taking two codeine tablets every four hours during the day. Occasionally the pain keeps him from sleeping.

General Examination: T. 97.4 P. 78 R. 24 B.P. 120/70.

The patient is a thin man, who looks older than his years. He is pale, but lies comfortably in bed, and does not appear to be in pain. There is no cyanosis, jaundice, oedema, or clubbing of the fingers. In both axillae and groins there are several palpable glands, which are not, however, pathologically enlarged. His intelligence is average, and he is co-operative.

Locomotor System: There is slight limitation of movement of the right elbow, with marked tenderness. Both wrists show moderate limitation of movement and the left wrist is slightly tender. There is typical rheumatoid deformity of both hands, especially the right, which is held in the position of ulnar flexion. Several of the metacarpal phalangeal and first interphalangeal joints of both hands are tender and swollen.

There is marked swelling of the left ankle and marked limitation of movement of both ankles. The left ankle is markedly tender.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND KNEES: There are fairly advanced rheumatoid arthritic changes in the right hand, and to a lesser degree in the left hand. Early changes are also present in the left knee.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		4 weeks		
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	1 0	0 0	0 0
	Extension	1 0	0 0	0 0
	Tenderness	3 0	0 0	0 0
<u>WRIST</u>	Flexion	2 2	1 1	1 1
	Extension	2 1	1 1	1 1
	Tenderness	0 2	0 0	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 3	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 3	0 0	0 0
	V	3 0	0 0	0 0
<u>FIRST</u>	I	0 1	0 0	0 0
<u>INTERPHALANGEAL</u>	II	3 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 3	0 0	0 0
	V	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		2 0	0 0	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 1	0 1	0 1
	Tenderness	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 1	1 0	1 0
	D. Flexion	3 3	2 2	2 2
	Tenderness	0 3	0 0	0 0
<u>TOTAL</u>	Tenderness	26	0	0
	Movement Range	21	10	10

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
Ring sizes	R. YYUSN L. VTVVN	R. VVTRN L. VSUUM	R. WWURN L. USUUM
Grip	R. 80 L. 70	R. 155 L. 140	R. 180 L. 160

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of aspirin gr. 15 four times a day, and injections of hyperduralic adrenalin 3minims t.i.d, this dose being raised by 1 minim t.i.d until he was receiving 10 minims t.i.d, at which dose he showed a reaction. The dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	4 weeks			
WEEKS AFTER ADMISSION	0	3	4	Final result 4 weeks
Tenderness	-	26	26	26
Movement Range	-	11	11	11
Ring Sizes)	-	12	10	10
Grip) Both hands	-	145	190	190

The patient was treated with aspirin and adrenalin for four weeks, and there was a good response to this treatment. During the first three weeks he lost 26 degrees of tenderness and gained 11 degrees in range of movement. The ring sizes diminished by 12 sizes and the grip improved by 145 millimetres.

There was no change in the tenderness and movement range during the fourth week of treatment, but the ring sizes altered slightly. There was a slight increase in the swelling of the hands - the ring sizes increased by 2 sizes. The grip continued to improve, however, and he gained a further 45 millimetres in grip.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
	-	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin				
DURATION OF TREATMENT	4 weeks				
WEEKS AFTER ADMISSION	0	1	2	3	4
Sodium Mgm. %	344.6	326	336.7	337.5	
Potassium Mgm. %	20	18.12	20.4	20	
Serum Uric Acid Mgm. %	2.57	2.57	2.67	2.5	
B.S.R. Mm in the 1st hour	52	38	38	30	
Blood pressure	120/70	115/65	116/65	120/70	
Haemoglobin	98%			95%	
R.B.C. Mill/c.mm	4.9			4.7	
Ketosteroids Mgm. per day	11.5				

OUT-PATIENT RECORD.

This patient was requested to return as an out-patient on several occasions, but did not do so.

NAME: Mrs. Christina Semple.

ADDRESS: 40 King Street, Burnbank, Hamilton.

AGE: 46.

OCCUPATION: Housewife.

Admitted: 30th November 1953.

Discharged: 10th March 1954.

History: Twelve years ago the patient developed a painful swelling of the right wrist. This occurred about two months after her last pregnancy, and within a few months the condition spread to other joints, namely, the shoulders and elbows. She noticed that the pain was more severe in the morning, and that she has incomplete remissions in the summer months.

During the next seven years the stiffness of the affected joints gradually became worse. In 1948 her husband died suddenly, and this was followed by a marked deterioration in her condition. The knees and ankles became swollen, stiff and painful, and walking became very difficult. For the past two years she has been unable to go out of doors.

At the beginning of 1953 her hands became affected for the first time, and the finger joints became painful and swollen. Her general condition has been deteriorating during the past two years. She has been tired and listless and has lost weight. She was admitted to the Gynaecological Unit of Hairmyres Hospital on 16th November 1953 because of menorrhagia occurring during the past two years. A diagnosis of cervical polyp was made there, and dilatation and curettage with removal of the polyp was carried out. She was then transferred to the Medical Unit for treatment of her rheumatoid arthritis.

Previous History: Apart from the menorrhagia mentioned above, there is no previous history of serious illness. There is no history of undue physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate and there are no financial worries.

Obstetric and Menstrual History: The patient has had four pregnancies. Three of the pregnancies were normal, and she had one abortion. Menstruation was normal up to two years ago, when she developed menorrhagia, for which she has had treatment as mentioned above.

Daily Analgesics: The patient has been taking four codeine tablets a day for nine months prior to her admission. The pain in her joints keeps her awake at night.

General Examination: T. 97.6 P. 88 R. 20 B.P. 104/72.

The patient is a thin, pallid woman, who lies listlessly in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands. She takes little interest in her surroundings and is extremely depressed.

Locomotor System: There is limitation of movement of both shoulders with slight tenderness in the left shoulder.

Both elbows show moderate limitation of movement, and the left elbow is tender. Both wrists are markedly swollen, with marked limitation of movement and slight tenderness. Several of the meta-carpal phalangeal joints of both hands are tender.

The right knee shows moderate limitation of movement and moderate tenderness. The left knee shows slight limitation of movement and slight tenderness. Both ankles show marked limitation of movement.

Other Systems: Examination is negative.

X-Ray Reports: KNEE JOINTS: The bones of the right knee are osteoporotic and the joint spaces of both are diminished. Soft tissue swelling is also evident on both sides, particularly on the right.

ANKLE JOINTS: Considerable destruction of the articular cartilages of the left is evident, and secondary degeneration in the bones is seen; the ankle joint on the left side is less affected. Considerable arthritis of the tarsal joints is seen.

HANDS AND WRIST JOINTS: Both hands show advanced atrophic arthritis and the carpal and wrist joints are also considerably affected. The appearances are those of an atrophic arthritis of the rheumatoid type.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks		11 weeks	
WEEKS AFTER ADMISSION		0	3	6	9 12 & 14
		R.L.	R.L.	R.L.	R.L. R.L.
<u>SHOULDER</u>	Abduction	2 1	2 1	1 1	1 1
	Tenderness	0 1	1 1	1 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	2 1	2 2	2 2	1 1
	Tenderness	0 1	0 2	0 0	0 0
<u>WRIST</u>	Flexion	3 3	3 3	1 1	1 1
	Extension	3 3	3 3	3 3	3 3
	Tenderness	1 1	2 1	0 0	0 0
<u>METACARPAL</u>	I	1 1	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	0 1	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 2	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		0 0	2 0	0 0	0 0
<u>KNEE</u>	Extension	1 1	1 1	1 0	1 0
	Flexion	2 0	3 0	2 0	1 0
	Tenderness	2 1	3 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 2	2 2	0 0	0 0
	D. Flexion	3 3	3 3	1 1	1 1
	Tenderness	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	11	13	1	0
	Movement Range	32	36	19	16

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		11 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	12 & 14
Ring Sizes	R. USTPI L. QOSNI	R. TUQK L. ROTOI	R. SSSOI L. QNQNG	R. SRRNI L. PMQMG	R. SRRNI L. PMQMG
Grip	R. 65 L. 45	R. 70 L. 45	R. 100 L. 95	R. 100 L. 90	R. 115 L. 90

TREATMENT.

The patient was confined to bed during the first five weeks of treatment and thereafter allowed up for a limited period. Treatment consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day for the first three weeks. Thereafter she was given aspirin 15 gr. four times a day and injections of hyperdural adrenalin 3 minims t.i.d, the dose being raised by 1 minim t.i.d. until she was receiving 10 minims t.i.d, at which dose she showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks		11 weeks			
WEEKS AFTER ADMISSION	0	3	6	9	12 & 14	Final result 14 weeks
Tenderness	-	-2	12	12	13	11
Movement Range	-	-4	17	18	20	16
Ring Sizes)	-	-8	17	23	23	15
Grip) Both hands	-	5	80	75	90	95

The patient was given aspirin and injections of sterile water for the first three weeks, and during that time there was a slight deterioration in her condition. The tenderness increased slightly - she gained 2 degrees of tenderness. The movement range deteriorated slightly - she lost 4 degrees of movement range. The swelling of the hands increased - the ring sizes increased by 8 sizes. There was a slight improvement in the grip - she gained 5 millimetres in grip.

Injections of adrenalin were then given in addition to the aspirin and there was a marked improvement within a short period. After three weeks of this treatment the patient lost 12 degrees of tenderness and gained 17 degrees in movement range. The ring sizes diminished by 17 sizes and the grip improved by 80 millimetres.

After eleven weeks of this treatment she had lost 13 degrees of tenderness and gained 20 degrees in movement range. The ring sizes had diminished by 23 sizes and the grip had improved by 90 millimetres.

Thus at the end of fourteen weeks in hospital the patient had lost in all 11 degrees of tenderness and had gained 16 degrees in movement range. The ring sizes had diminished by 15 sizes and the grip had improved by 95 millimetres.

There was a striking improvement in the mental attitude of the patient. Her depression during the spell on aspirin increased if anything and she was completely apathetic. Within a week of starting the adrenalin she was very much brighter, and from then on there was progressive improvement in her mental attitude.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		11 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	12 & 14
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	No	No	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	No	Yes	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		11 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	12 & 14
	-	Slightly worse	Much better	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water				Aspirin and Adrenalin										
	3 weeks				11 weeks										
	0	1	2	3	4	5	6	7	9	10	11	12	14		
WEEKS AFTER ADMISSION															
Sodium Mgm. %	320	322	337	322	340.6	315	324		324	335.3	300	300	324		
Potassium Mgm. %	17	17.6	20	19.4	18.6	20.7	20.7		18.3	18.5	19.9	19.3	17.8		
Serum Uric Acid Mgm. %	2.5	3	1.51	1.7	2	2.5	2.3		2.2	2	2.5	2.45	2.2		
B.S.R. Mm in 1st hour	37	17	27	20	44	40	37	37	15	5	23	16	10		
Blood pressure	105/72			110/70		115/70	115/65	115/65		118/70		115/65	120/70		
Haemoglobin	50%			55%			60%			68%			75%		
R.B.C. Mill/c.mm	2.9			3			3.2			3.6			3.8		

OUT-PATIENT RECORD.Months after
dischargeCondition

1 month

After her discharge from hospital the patient had another brisk uterine haemorrhage which confined her to bed for over a week. During that time the pain in her joints returned but went away after she became ambulant again.

Physical examination shows no alteration in her condition since her discharge from hospital.

NAME: Mrs. Rachael Robb.

ADDRESS: 8 Milton Terrace, Burnbank, Hamilton.

AGE: 38.

OCCUPATION: Housewife.

Admitted: 4th December 1953.

Discharged: 20th January 1954.

History: The patient was in good health until 1941, when she developed pain, stiffness, and swelling of several of the finger joints of the right hand. Soon after this the left hand was similarly affected. Six months after the onset of the condition, the left knee became swollen and painful, and she attended the Glasgow Royal Infirmary, where the joint was aspirated. At that time she was given a course of twelve injections of an unknown substance, and there was a remission for several months.

For the next year or so, the symptoms were intermittent, although the disease did not entirely clear up. In 1943 she had another bad attack, when the left knee and ankle were particularly affected. In March 1948 the patient had a course of gold injections in the Glasgow Royal Infirmary, but she did not respond to treatment. Later massage and radiant heat were tried without success.

She was first admitted to the Medical Unit of Hairmyres Hospital in August 1948. Treatment consisted of the administration of aspirin, and splinting the left hand and knee. She was discharged after seven weeks' treatment in a quiescent stage, and remained fairly well until June 1951, when she developed severe pains in the hands, left knee, and both ankles. She was again treated with aspirin, with improvement. However, the symptoms recurred two months after discharge from hospital, and the disease has progressed slowly but relentlessly. She states that, if she sits down for any length of time, her joints become so stiff that she cannot rise again.

Previous History: There is no previous history of serious illness. There is no history of undue physical or mental stress.

Family History: She states that her mother had "rheumatism." There is no family history of allergic disease.

Social History: The housing conditions are good, and there are no financial worries.

Obstetric and Menstrual History: The patient has had one pregnancy, which was normal. Menstruation is regular, occurring for six days every three weeks with normal loss.

Daily Analgesics: She does not take a regular dose of aspirin, but takes it only when the pain is severe. The pain often keeps her from sleeping.

General Examination: T. 98 P. 76 R. 20 B.P. 118/84.

The patient is a small woman with an anxious expression. She sits up in bed without pain. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. She is intelligent and co-operative.

Locomotor System: There is limitation of movement of both wrists, with slight tenderness.

There is tenderness of some of the metacarpal phalangeal and first interphalangeal joints of both hands.

The left knee is slightly tender and shows slight limitation of movement. There is marked limitation of movement of both ankles. The right ankle is markedly tender, the left slightly tender.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: Appearances are typical of atrophic arthritis, mainly of the rheumatoid type. The metabolic disorder producing the arthritis may not be entirely rheumatoid; an element of gout should be considered. The bones are osteoporotic.

KNEES: Synovial thickening is seen particularly on the left side. There is some osteoporosis.

ANKLES: Synovial thickening on the left side is also seen. Both are osteoporotic.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		6 weeks		
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	2 2	1 1	1 0
	Extension	2 1	1 1	0 0
	Tenderness	1 1	0 1	0 0
<u>METACARPAL</u>	I	2 1	1 0	1 0
<u>PHALANGEAL</u>	II	2 0	1 0	0 0
<u>JOINT</u>	III	2 0	1 0	1 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 1	0 1	0 0
<u>JOINT</u>	III	2 2	1 0	1 0
<u>TENDERNESS</u>	IV	1 0	0 0	0 0
	V	2 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		1 1	1 0	1 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 1	0 1	0 0
	Tenderness	0 1	0 1	0 0
<u>ANKLE</u>	P. Flexion	3 2	2 2	2 2
	D. Flexion	3 3	2 2	1 1
	Tenderness	3 1	0 1	0 0
<u>TOTAL</u>	Tenderness	23	8	3
	Movement Range	21	14	8

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
Ring Sizes	R. LKRQK L. LMQHD	R. KKQPJ L. LLPGC	R. IJINI L. KJNFC
Grip	R. 105 L. 85	R. 90 L. 80	R. 85 L. 85

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of aspirin gr. 15 four times a day and hyperduralic adrenalin minims 3 t.i.d. this dose being raised 1 minim t.i.d. until she was receiving 9 minims t.i.d. at which dose she showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	6 weeks			
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	15	20	20
Movement Range	-	7	13	13
Ring Sizes)	-	8	25	25
Grip) Both hands	-	-20	-20	-20

The patient was treated with aspirin and adrenalin for six weeks, and there was considerable progressive improvement in the tenderness, movement range and swelling of the fingers. At the end of three weeks treatment, she had lost 15 degrees of tenderness and gained 7 degrees in range of movement. The ring sizes had diminished by 8 sizes, but there was a slight deterioration in the grip, which had diminished by 20 millimetres.

At the end of six weeks, there had been a further improvement. She had lost in all 20 degrees of tenderness and gained 13 degrees in movement range. The ring sizes had diminished by 25 sizes. The grip, on the other hand, was slightly weaker than on admission, having diminished by 20 millimetres.

PERFORMANCE CHART.

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT.

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	6 weeks		
WEEKS AFTER ADMISSION	0	3	6
	-	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin					
DURATION OF TREATMENT	6 weeks					
WEEKS AFTER ADMISSION	0	1	2	3	4	5
Sodium Mgm. %	312.5	336.3	337	340.6	321	330
Potassium Mgm. %	18.8	20.2		18.7		18.5
Serum Uric Acid Mgm. %	2.77	1.51	2	2	2.5	
B.S.R. Mm in 1st hour	17	6	15	9	4	11
Blood pressure	118/84	120/80	115/80	115/75	120/75	120/70
Haemoglobin	88%					85%
R.B.C. Mill/c.mm	4.4					4.4
Ketosteroids Mgm. per day	5.25					

OUT-PATIENT RECORD.

The patient reported six weeks after discharge from hospital.

Apparently when she went home she felt very sick and suffered from vomiting every day for the first week. At the same time she had severe constipation. There was no deterioration in the joint condition at that time, and her condition remained the same until a week prior to her reporting as an out-patient, when both ankles became painful.

On examination:-

Tenderness - 9

Movement Range - 13

Ring Sizes - R. KKQPK
L. KKOGC (-15)

Grip - R. 80
L. 65 (-25)

NAME: Mr. James McGuinness.

ADDRESS: 9 Kirkwood Street, Coatbridge.

AGE: 67. OCCUPATION: Labourer.

Admitted: 5th December 1953.

Discharged: 9th January 1954.

History: The patient was in fairly good health until November 1949, when he began to have pain and stiffness in the joints of his hands and in the wrists. The onset of this condition was sudden, and occurred following a soaking in the rain. A few days later, his shoulders and his neck became stiff and painful, and by the end of December his knees and ankles had become involved.

He has been in Hairmyres Hospital on three previous occasions for treatment. He was first admitted in January 1950, and was initially treated with aspirin in large dosage (80 grains per day) without benefit. He was then given protein shock treatment in the form of T.A.B. injections, and this effected considerable improvement. He was discharged on 4th March almost symptom free.

This remission only lasted five days, however, after his discharge from hospital, and he was re-admitted on 24th April 1950. Protein shock again improved his condition, and this was followed by wax baths and exercises.

The condition recurred a fortnight after discharge from hospital on 10th May 1950. The knees became especially troublesome in November 1950 and this made walking very difficult. His general health began to deteriorate about this time.

He was re-admitted to Hairmyres on 3rd April 1951 and treated with Myocrysin injections. His condition had again improved by June 1951, when he was discharged.

He was kept under supervision as an out-patient, and by November 1953 it was noted that his disability was still progressing. He had been on Butazolidin tablets at that time without any benefit. Physiotherapy was prescribed, but he was finally admitted on this occasion because his condition was deteriorating.

Previous History: He had bilateral cataract operated upon in January 1949. There is no other history of serious previous illness. There is no history of undue mental stress. He states that his job as a puddler is exceptionally arduous, and that before he was forced

to give it up because of his arthritis, he had to work twelve hours a day for thirty-five years.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and he does not admit to any financial worries.

Daily Analgesics: He takes a varying number of aspirin daily. The pain of the disease disturbs his sleep.

General Examination: T. 98.2 P. 78 R. 20 B.P. 110/65.

The patient is an old man of moderate build, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. He is of average intelligence and co-operative.

Locomotor System: There is slight limitation of movement of the left shoulder with marked tenderness.

There is limitation of both elbows, and the right elbow is slightly tender. There is limitation of movement of both wrists and both are slightly tender. There is tenderness affecting several of the metacarpal phalangeal and first interphalangeal joints of both hands, and there is typical rheumatoid deformity of the hands.

The left ankle is slightly tender.

Other Systems: Examination is negative.

X-Ray Report: Both hands: The radiograph of the hands shows fairly advanced changes due to rheumatoid arthritis. In the wrists, metacarpo-phalangeal joints and proximal interphalangeal joints, there is loss of joint space and erosions of the sub-chondral and juxta-articular bone. The bone density remains fairly normal.

TREATMENT		Aspirin and Adrenalin		
DURATION OF TREATMENT		4 weeks		
WEEKS AFTER ADMISSION		0	3	4
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 1	0 0	0 0
	Tenderness	0 3	0 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	2 2	0 1	0 1
	Tenderness	1 0	0 0	0 0
<u>WRIST</u>	Flexion	2 1	0 0	0 0
	Extension	2 2	1 2	0 0
	Tenderness	1 1	0 0	0 0
<u>METACARPAL</u>	I	1 1	0 0	0 0
<u>PHALANGEAL</u>	II	2 3	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0
<u>TENDERNESS</u>	IV	1 1	0 0	0 0
	V	1 1	0 0	0 0
<u>FIRST</u>	I	1 1	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 1	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	0 0	0 0
	V	1 1	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		4 4	1 1	0 1
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0
	D. Flexion	0 0	0 0	0 0
	Tenderness	0 1	0 0	0 0
<u>TOTAL</u>	Tenderness	27	0	0
	Movement Range	20	6	2

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
Ring Sizes	R. KUWUM	R. WTVSL	R. WTVRL
	L. WTVIM	L. VSUSM	L. VSUSM
Grip	R. 80	R. 110	R. 115
	L. 85	L. 80	L. 95

TREATMENT

Treatment consisted of aspirin gr. 15 four times a day and hyperdureic adrenalin 3 minims t.i.d, the dose being raised 1 minim t.i.d until he was receiving 10 minims t.i.d, at which dose he showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Adrenalin			
DURATION OF TREATMENT	4 weeks			
WEEKS AFTER ADMISSION	0	3	4	Final result 4 weeks
Tenderness	-	27	27	27
Movement Range	-	14	18	18
Ring Sizes)	-	10	11	11
Grip) Both hands	-	25	45	45

The patient was treated with aspirin and adrenalin for four weeks and there was progressive improvement during that time. During the first three weeks he lost 27 degrees of tenderness and gained 14 degrees in movement range. The ring sizes diminished by 10 sizes and the grip improved by 25 millimetres total for both hands.

At the end of four weeks he had lost in all 27 degrees of tenderness and gained 18 degrees in range of movement. The ring sizes had diminished by 11 sizes and the grip had improved by 45 millimetres.

PERFORMANCE CHART

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes
<u>Dress</u> <u>Hair</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT.

TREATMENT	Aspirin and Adrenalin		
DURATION OF TREATMENT	4 weeks		
WEEKS AFTER ADMISSION	0	3	4
	-	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Adrenalin				
DURATION OF TREATMENT	4 weeks				
WEEKS AFTER ADMISSION	0	1	2	3	4
Sodium Mgm. %	325	325	320		331.5
Potassium Mgm. %	20.7	17.6	20.2		17.4
Serum Uric Acid Mgm. %	3.53	2.94	2.1	1.6	1.7
B.S.R. Mm in 1st hour	61	63	58	56	50
Blood pressure	110/65	115/70		115/75	115/70
Haemoglobin	90%				92%
R.B.C. Mill/c.mm	4.4				4.3
Ketosteroids Mgm. per day	2.5				

Months after
dischargeCondition

1 month

The patient remained well for a fortnight after discharge from hospital. Then the fingers of his left hand began to give him pain and became stiffer. He states that he feels very much as he did prior to treatment.

On examination:

Tenderness - 0

Movement Range - 11

Ring Sizes - R. YTVRM
L. XTVSM (-6)

Grip - R. 110 (-20)
L. 80

NAME: Miss Elizabeth Craig.

ADDRESS: 27 Selkirk Street, Hamilton.

AGE: 55. OCCUPATION: Nurse (retired).

Admitted: 7th December 1953.

Discharged: 3rd February 1954.

History: The patient was in good health until six years ago, when she developed pain in the right knee. The joint was tender but not swollen, and the pain was worse on movement. Soon after this, the left knee was affected similarly, and then both knees became swollen. Since that time there has been a gradual spread to involve other joints, namely, the wrists, the elbows, the shoulders, the hands and the right ankle.

Treatment in the first instance consisted of a plaster splint to the right knee, which was not beneficial. Then gold injections were commenced, but she had a reaction to the treatment, and the injections were abandoned.

During the past year she has been taking Cortisone by injection into the knee joint, and has also been taking oral Cortisone. (40 mgm. daily for the past year). This latter treatment helped the condition in that pain was not so severe, and movement was freer, but at no time during it has she felt completely free from symptoms. The supply of Cortisone ceased a fortnight before admission, and her symptoms have been more severe despite the fact that she has been taking ten or more aspirin daily.

The patient has been living in America for several years, but returned to this country because she is now unable to carry out her job as a nurse.

Previous History: In 1927 the patient had an attack of "rheumatism" which cleared up following tonsillectomy. There have been no serious previous illnesses, and there is no history of undue physical or mental stress.

Family History: There is no family history of rheumatism. One brother suffers from asthma.

Social History: The housing conditions are satisfactory, and there are no financial anxieties.

Menstrual History: Menstruation ceased at the age of forty-six, and there has been no bleeding since. Her periods were always regular.

Daily Analgesics: For the past three months she has been taking ten aspirins daily. In addition, until a fortnight ago, she was taking 40 mgm. Cortisone daily.

General Examination: T. 97.8 P. 80 R. 20 B.P. 130/80.

The patient is a tall, well-built woman, with an unhealthy, puffy appearance. She has marked cheilosis. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. She is intelligent and co-operative.

Locomotor System: There is limitation of movement of both elbows.

There is limitation of movement of both wrists. The right wrist is slightly tender; the left wrist is markedly tender and slightly swollen. Both hands are swollen and there is marked tenderness of the first right metacarpal phalangeal joint.

Both knees show limitation of movement and are both markedly tender. Both knees are swollen, the right one markedly so.

Other Systems: Examination is negative.

X-Ray Report: Both knee joints show advanced arthritis with considerable atrophy of the articular cartilages. Flexion deformity is evident.

Osteoporosis is marked. The appearances are of typical atrophic arthritis.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks		6 weeks	
WEEKS AFTER ADMISSION		0	3	6	9
		R.L.	R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	1 2	1 2	1 2	1 2
	Tenderness	0 0	0 0	0 0	0 0
<u>WRIST</u>	Flexion	2 2	2 1	0 0	0 0
	Extension	2 2	2 1	0 1	0 1
	Tenderness	1 3	1 3	0 0	0 0
<u>METACARPAL</u>	I	3 0	2 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>		0 0	0 0	0 0	0 0
<u>KNEE</u>	Extension	1 1	0 1	0 1	0 1
	Flexion	2 2	2 2	1 2	0 0
	Tenderness	3 3	0 3	0 0	0 0
<u>TOTAL</u>	Tenderness	13	9	0	0
	Movement Range	17	14	8	5

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
Ring Sizes	R. QQSQH	R. QQSQI	R. PPRPI	R. OOPNH
	L. PPQOI	L. OPPOH	L. OPPNH	L. OPPNH
Grip	R. 85	R. 110	R. 140	R. 140
	L. 100	L. 115	L. 130	L. 140

TREATMENT

The patient was allowed up for a limited period during the whole of her treatment. The treatment consisted of injections of hyperdural adrenalin 3 minims t.i.d, the dose being raised 1 minim t.i.d. until she was receiving 9 minims t.i.d, at which dose she showed a reaction, and an inactive powder four times a day for three weeks.

For the next six weeks she received aspirin gr. 15 four times a day in addition to the hyperdural adrenalin 9 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		6 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	Final result 9 weeks
Tenderness	-	4	9	9	13
Movement Range	-	3	6	9	12
Ring Sizes) Both	-	2	5	12	14
Grip) hands	-	40	45	55	95

The patient was treated with adrenalin and an inactive powder for the first three weeks, and during that time there was some improvement. She lost 4 degrees of tenderness and gained 3 degrees in range of movement. The ring sizes diminished by 2 sizes and the grip improved by 40 millimetres. In fact, although the objective measurements do not indicate any great improvement, she was able to move much more freely than on admission.

For the following six weeks she was given aspirin in addition to the adrenalin, and there was considerable progressive improvement. At the end of three weeks of this treatment she had lost a further 9 degrees of tenderness and gained a further 6 degrees in range of movement. The ring sizes had diminished by a further 5 sizes and the grip had improved by a further 45 millimetres.

At the end of nine weeks in hospital she had lost in all 13 degrees of tenderness and gained 12 degrees in movement range. The ring sizes had diminished by 14 sizes and the grip had improved by 95 millimetres total for both hands.

PERFORMANCE CHART.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Wash hands and face.</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
	-	Much better	Very much better	Very much better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin and Inactive Powder					Aspirin and Adrenalin				
	3 weeks					5 weeks				
DURATION OF TREATMENT	0	1	2	3	4	5	6	7	8	
WEEKS AFTER ADMISSION										
Sodium Mgm. %	325	325	329	331	324	318	331	342	336	
Potassium Mgm. %	17.2	18.8	19.4	20	18.8	18.2	18	17.1	19.7	
Serum Uric Acid Mgm. %	2.92	2.8	2.5	2.7	2	1.75	2.3		2.2	
B.S.R. Mm in 1st hour	42	33	52	70	54	56	52	51	56	
Blood pressure	120/75			125/75					115/70	
Haemoglobin	82%			80%					82%	
R.B.C. Mill/c.mm	3.8			3.9					4.2	

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

For the first fourteen days after discharge the patient felt weak and depressed, and her knees gave her pain. Thereafter her condition gradually improved. She states that the right knee is very much better than it was prior to admission, but that her left knee is still giving her slight trouble. She is able to walk about inside the house but cannot walk outside.

Her general health is greatly improved, and as regards her joints, her condition is much improved from what it was in the United States, where she was getting Cortisone. For example, while coming home in the boat, she could not walk and required to have all her meals in her cabin.

On examination:-

Tenderness - 0

Movement Range - 3

Ring Sizes - R. QQSPI
L. OOPNI (-12)

Grip - R. 140
L. 140

9 months

The patient's general health has deteriorated during the past few months, and the rash is very evident around her mouth. The left knee has been very painful for the past fortnight. The condition of the right knee, on the other hand, the one which troubled her on admission to hospital, has not changed.

On examination:-

Tenderness - 5

Movement Range - 8

CASE NO. 47.

NAME: Mrs. Margaret Costello.

ADDRESS: 2 Shawhead Avenue, Whifflet, Coatbridge.

AGE: 58.

OCCUPATION: Housewife.

Admitted: 15th December 1953.

Discharged: 11th March 1954.

History: Four months prior to admission the patient developed pain in the dorsum of the left foot and the foot became swollen. This was followed on the next day by pain in the left hip, and about a week later the fingers became swollen, tender and stiff. She has steadily deteriorated, has lost a little weight, is listless and has difficulty with walking.

Previous History: There is no history of previous serious illness. There is no history of severe mental or physical stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate. There are no financial worries.

Obstetric and Menstrual History: The patient has had nine pregnancies none of which were abnormal. The menopause occurred ten years ago, and there has been no bleeding since that time.

Daily Analgesics: The patient takes 60 gr. of aspirin daily. The pain keeps her awake at night.

General Examination: T. 97.8 P. 88 R. 20 B.P. 140/90.

The patient is an obese, middle-aged female, who lies comfortably in bed but who apparently has pain on movement. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. She is below average intelligence and rather disgruntled.

Locomotor System: There is slight limitation of movement in both shoulders with tenderness.

There is limitation of movement in both wrists with slight tenderness. There are varying degrees of tenderness in the metacarpal phalangeal and first interphalangeal joints of both hands. There is typical rheumatoid swelling of the hands.

The knees show slight limitation of movement and are moderately tender. The ankles show limitation of movement and tenderness. Both ankles are slightly swollen.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: There is fairly marked osteoporosis in the neighbourhood of the small joints; joint spaces remain intact. Some peri-articular swelling is noted around the proximal interphalangeal joints.

KNEE JOINTS: Apart from slight osteoporosis no bone change is discernible. The joint spaces are intact.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin		Asp. & Ad + Wax Baths
DURATION OF TREATMENT		3 weeks		3 weeks		2 weeks
WEEKS AFTER ADMISSION		0	3	5	6	8
		R.L.	R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 1	1 1	0 0	1 1	1 1
	Tenderness	2 1	1 1	0 0	0 0	0 0
<u>WRIST</u>	Flexion	1 1	1 1	1 0	1 1	1 1
	Extension	1 1	1 1	0 0	1 0	1 1
	Tenderness	1 1	1 1	0 0	0 0	0 0
<u>METACARPAL</u>	I	3 2	3 1	2 0	2 1	1 0
<u>PHALANGEAL</u>	II	3 1	3 2	0 0	1 1	1 0
<u>JOINT</u>	III	2 1	2 2	0 0	0 1	0 1
<u>TENDERNESS</u>	IV	0 1	0 0	0 0	0 1	0 0
	V	0 1	0 0	0 0	0 1	0 0
<u>FIRST</u>	I	1 3	0 3	1 2	0 2	0 2
<u>INTERPHALANGEAL</u>	II	2 2	1 2	1 1	2 0	1 1
<u>JOINT</u>	III	2 2	3 2	2 2	1 1	2 1
<u>TENDERNESS</u>	IV	3 3	1 0	0 0	1 2	2 1
	V	2 0	2 0	2 0	1 1	1 1
<u>FINGER TO PALM CLOSURE</u>		5 5	5 5	1 2	2 4	2 4
<u>KNEE</u>	Extension	0 0	0 0	0 0	0 0	0 0
	Flexion	1 1	2 2	2 2	1 1	2 2
	Tenderness	2 2	0 0	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	1 1	1 2	0 0	1 1	1 0
	D. Flexion	3 3	3 2	1 1	2 2	3 1
	Tenderness	2 1	1 0	1 0	0 0	0 0
<u>TOTAL</u>	Tenderness	46	32	14	19	15
	Movement Range	26	28	10	19	21

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		Asp. & Ad. + Wax baths
DURATION OF TREATMENT	3 weeks		3 weeks		2 weeks
WEEKS AFTER ADMISSION	0	3	5	6	8
Ring Sizes	R. VSSPH L. TTUPH	R. USVPM L. VTTPI	R. SRTNK L. SQRNH	R. RSSPL L. SPSOI	R. SSUQL L. SRTPK
Grip	R. 50 L. 45	R. 0 L. 10	R. 70 L. 70	R. 50 L. 55	R. 65 L. 60

TREATMENT

Treatment consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day for the first 3 weeks. Adrenalin was then substituted for the sterile water, and the patient was given injections of hyperdural adrenalin 3 minims t.i.d. the dose being raised by 1 minim t.i.d. until she was receiving 9 minims t.i.d. at which dose she showed a reaction. Thereafter the dose was maintained at this level. During the last two weeks of treatment she received wax baths in addition to the aspirin and adrenalin.

The patient was allowed up for a limited period during treatment.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		Asp. & Ad. + Wax baths	
DURATION OF TREATMENT	3 weeks		3 weeks		2 weeks	
WEEKS AFTER ADMISSION	0	3	5	6	8	Final result 8 weeks
Tenderness	-	14	18	13	17	31
Movement Range	-	-2	18	9	7	5
Ring Sizes	-	-9	20	16	6	-3
Grip	-	-85	130	95	115	30

The patient was treated with aspirin alone for the first three weeks. Apart from some slight improvement in the tenderness - she lost 14 degrees of tenderness - there was a deterioration in her condition. She lost 2 degrees in movement range. The swelling of the fingers increased - the ring sizes increased by 9 sizes. The grip deteriorated by 85 millimetres.

Aspirin and adrenalin was then started and after two weeks there was some improvement in her condition. She lost a further 18 degrees of tenderness and gained 18 degrees in movement range. The swelling of the fingers decreased - the ring sizes diminished by 20 sizes, and the grip improved by 150 millimetres. One week later, however, there had been considerable deterioration from the previous fortnight, although she was still better than she had been at the end of three weeks on aspirin alone. She gained 5 degrees of tenderness and lost 9 degrees in movement range. The ring sizes increased by 4 sizes and the grip deteriorated by 35 millimetres.

This patient was not responding well to treatment, and it was decided to give her a course of wax baths to the hands in addition to the aspirin and adrenalin, but there was no real improvement from this treatment either. On this treatment she lost 4 degrees of tenderness. There was a decrease in movement range of 2 degrees. The swelling of the fingers increased - the ring sizes increased by 10 sizes. There was a slight gain of 20 millimetres in grip.

Thus, at the end of eight weeks treatment, the patient had lost in all 31 degrees of tenderness, and had gained 5 degrees in movement range. The swelling of the fingers had increased slightly - the ring sizes had increased by 3 sizes. The grip had improved by 30 millimetres.

The patient became very dissatisfied and requested to be allowed home.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		Asp. & Ad. + Wax baths
DURATION OF TREATMENT	3 weeks		3 weeks		2 weeks
WEEKS AFTER ADMISSION	0	3	5	6	8
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	No	No	No	No
<u>Dress Hair</u>	No	No	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Not without pain	Not without pain

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		Asp. & Ad. + Wax baths
DURATION OF TREATMENT	3 weeks		3 weeks		2 weeks
WEEKS AFTER ADMISSION	0	3	5	6	8
	-	No	Slightly better	Slightly worse	Worse

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	3	4	5	6
Sodium Mgm. %	337.5	337.5	330	337.5	325.2
Potassium Mgm. %	16.6	18.0	18.6	20.0	19.3
Serum Uric Acid Mgm. %	3.3	1.75	2.0		2.16
B.S.R. Mm in 1st hour	23	25	22	18	20
Blood pressure	140/90	135/90			130/85
Haemoglobin	70%				75%
R.B.C. Mill/c.mm	3.3				3.4

OUT-PATIENT RECORD

This patient did not return as an out-patient.

CASE NO. 48

NAME: Mrs. Christina McWhinnie.

ADDRESS: 6 Arden Avenue, Thornliebank.

AGE: 59.

OCCUPATION: Housewife.

Admitted: 20th January 1954.

Discharged: 22nd March 1954.

History: Fifteen years ago the patient began to have pain, swelling and stiffness in the joints of the hands. The disease gradually spread during the next few years to involve her ankles, knees and wrists, and the elbows were also affected.

For the next ten years the disease was subject to exacerbations and remissions, but none the less the disability was progressive. About three years prior to admission the left hip became stiff and painful, and a few months later the right hip was also affected.

She states that her general health has been reasonable for the past few years, although she tends to become easily tired and is often depressed. Her husband died two years ago, and after that the pain and stiffness in the joints became worse, and recently she has lost some weight. She states that she is troubled with "nerves" and has been taking phenobarbitone latterly. She states that, during the past fifteen years, she has received numerous injections and tablets from her doctor, the nature of which she was unable to say.

Three years ago she was given a six weeks course of gold injections at the Victoria Infirmary, but this was stopped because she developed an exfoliative dermatitis. She also had Butazolidin last year, but states that there was no improvement from that treatment.

Previous History: There is no history of any serious previous illness or of any severe physical stress. Following the death of her husband two years ago, she had an exacerbation of the rheumatoid arthritis.

Family History: There is no family history of rheumatoid arthritis, or of any allergic disease.

Social History: The housing conditions are adequate and there are no financial worries.

Obstetric and Menstrual History: There have been no pregnancies. There has been no bleeding since the menopause at forty.

Daily Analgesics: She has been taking "Edresal" tablets regularly

and she thinks that they provide relief from pain, which interferes with sleep.

General Examination: T. 98 P. 84 R. 20 B.P. 170/80.

The patient is a fresh complexioned woman who does not look particularly ill, although she is very deaf. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands.

Locomotor System: There is limitation of movement of both elbows but no tenderness. She has marked limitation of movement of both wrists and slight tenderness. The hands show ulnar deviation, interosseous wasting and varying degrees of deformity. There is tenderness of the metacarpal phalangeal and first interphalangeal joints of both hands.

There is considerable limitation of movement of both hips.

Both ankles show marked limitation of movement, but are not tender. The left ankle is swollen.

Other Systems: Examination is negative.

X-Ray Reports: HANDS: All the joints show evidence of advanced atrophic arthritis of the rheumatoid type with considerable osteoporosis, diminution of joint spaces and erosion of the articular surfaces. Erosive changes are particularly in evidence at the metacarpo-phalangeal joints and at the carpo-radial and carpo-ulnar joints. The joint spaces in the wrist itself are only poorly defined.

BOTH KNEES: Show evidence of osteoporosis with some diminution of the joint spaces.

BOTH HIP JOINTS: Show marked loss of joint space with protrusion of the acetabulae inwards, more marked on the left side.

TREATMENT		Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		4 weeks
WEEKS AFTER ADMISSION		0	3	6 & 7
		R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	0 1	0 1	0 1
	Extension	1 2	1 2	1 2
	Tenderness	0 0	0 0	0 0
<u>WRIST</u>	Flexion	3 3	3 3	2 3
	Extension	2 2	2 2	2 2
	Tenderness	1 1	0 0	1 1
<u>METACARPAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	2 2	1 2	2 2
<u>JOINT</u>	III	1 0	0 0	1 2
<u>TENDERNESS</u>	IV	1 1	0 1	0 0
	V	0 0	0 2	1 0
<u>FIRST</u>	I	1 1	1 1	0 0
<u>INTERPHALANGEAL</u>	II	0 2	0 1	1 0
<u>JOINT</u>	III	1 1	1 2	1 1
<u>TENDERNESS</u>	IV	2 1	2 2	0 1
	V	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		5 5	5 5	5 5
<u>HIP</u>	Abduction	2 2	2 2	2 2
	Flexion	1 1	1 1	1 1
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 0	0 1	1 1
	Tenderness	0 0	1 1	0 0
<u>ANKLE</u>	P. Flexion	3 2	3 2	3 2
	D. Flexion	1 2	2 2	1 2
	Tenderness	0 0	1 2	1 1
<u>TOTAL</u>	Tenderness	18	21	16
	Movement range.	38	40	39

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		4 weeks
WEEKS AFTER ADMISSION	0	3	6 & 7
Ring Sizes	R. PQQNG L. OPNJE	R. QRQNH L. OQMJE	R. PQQNH L. OQNJE
Grip	R. 70 L. 60	R. 55 L. 55	R. 60 L. 60

TREATMENT

The patient was allowed up for a limited period during treatment. The patient was given injections of sterile water three times a day and an inactive powder four times a day for the first three weeks. For the next four weeks she was given aspirin 15 gr. four times a day and injections of hyperdureic adrenalin 3 minims t.i.d., the dose being raised by 1 minim t.i.d. until she was receiving 9 minims t.i.d., at which dose she showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	3	6 & 7	Final result 7 weeks
Tenderness	-	-3	5	2
Movement Range	-	-2	1	-1
Ring Sizes)	-	-3	1	-2
Grip) Both) hands	-	-20	10	-10

The patient was used as a control subject for the first three weeks and was treated with injections of sterile water and an inactive powder. During this time the patient's condition deteriorated slightly. She gained 3 degrees of tenderness and lost 2 degrees in movement range. The swelling of the fingers increased slightly - the ring sizes increased by 3 sizes, and the grip deteriorated by 20 millimetres.

She was then treated with aspirin and adrenalin, and there was no real improvement with this treatment. At the end of three weeks she had lost 5 degrees of tenderness and gained 1 degree in movement range. The ring sizes had diminished by 1 size and the grip had improved by 10 millimetres. There was no change at the end of another week on this treatment.

Thus, at the end of seven weeks, she had lost 2 degrees of tenderness. The movement range had deteriorated - she had lost 1 degree in movement range. The ring sizes had increased by 2 sizes and the grip had deteriorated by 10 millimetres.

PERFORMANCE CHART

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TREA TMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		4 weeks
WEEKS AFTER ADMISSION	0	3	6 & 7
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	No	No	No
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Not without pain

SUBJECTIVE IMPROVEMENT

TREA TMENT	Sterile Water and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		4 weeks
WEEKS AFTER ADMISSION	0	3	6 & 7
	-	Slightly better	Slightly better

SPECIAL INVESTIGATIONS

TREATMENT	Sterile Water and Inactive Powder				Aspirin and Adrenalin			
	3 weeks				4 weeks			
DURATION OF TREATMENT	0	1	2	3	4	5	6	7
WEEKS AFTER ADMISSION								
Sodium Mgm. %	330	318	325	300	325	344	338	327
Potassium Mgm. %	16.4	18.6	20.4		20	18.5	16.1	16
Serum Uric Acid Mgm. %	3.3	3.32	3.2	3.9	3.6	2.3	2.1	2.4
B.S.R. Mm in 1st hour	23	34	50	47	47	36	38	27
Blood pressure	170/80			160/85				155/80
Haemoglobin	74%	80%	78%	80%	80%	85%	82%	87%
R.B.C. Mill/c.mm	3.9			4.1				4.3

OUT-PATIENT RECORD

This patient did not report as an out-patient.

CASE NO. 49.

NAME: Miss Annie Lambie.

ADDRESS: 38 Fernleigh Road, Newlands, Glasgow.

AGE: 62.

OCCUPATION: Housewife.

Admitted: 20th January 1954.

Discharged: 20th March 1954.

History: Six years ago the patient began to have pain and swelling in the joints of her thumbs. This was followed by a similar affection of the ankles, and finally the knees, elbows, wrists, and shoulders. At first the patient was able to get about without great difficulty, but gradually she found that she required one stick, and for the last two years she has walked with great difficulty with the aid of two sticks.

Her general health has been fairly good during the progress of this disease, but she has lost weight, the amount being unknown. Her doctor diagnosed rheumatoid arthritis at the beginning, and she was treated first of all with iodine, then various other preparations. She apparently had a course of injections, the nature of which is unknown, though from the description they were probably gold, in 1949-50 without effect. She has been taking Butazolidin since September 1952, without any real effect apart from the fact that the tablets help the pain.

Previous History: There is no history of any serious previous illness apart from erysipelas in 1940. There is no history of severe physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Menstrual History: The menopause occurred at the age of forty, and there has been no bleeding since.

Daily Analgesics: She takes two Butazolidin tablets supplemented by codeine and aspirin daily. The pain often keeps her awake at night.

General Examination: T. 97.5 P. 80 R. 20 B.P. 150/85.

The patient is a frail looking old lady, pale and very thin, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands.

Locomotor System: There is limitation of movement of both shoulders with marked crepitation on movement.

Both elbows are slightly swollen, exhibit flexion deformity and are markedly limited in movement. They are both markedly tender. The wrists both show marked limitation of movement and slight tenderness. There is slight tenderness of the 3rd metacarpal phalangeal joint of the left hand. The hands show marked ulnar deviation and rheumatoid deformity.

The knees show moderate limitation of movement and moderate tenderness. The ankles show marked limitation of movement.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: The appearances are those of a marked osteoporosis associated with an advanced rheumatoid arthritis affecting especially the metacarpo-phalangeal joints and the carpus, where there is destruction of the articular cartilage and erosions of the articular surfaces.

ELBOW JOINTS: Both show gross disorganisation with extensive erosion of the articular bone.

KNEE JOINTS: There is a Genu-varum deformity in the right knee. There is marked destruction of the articular cartilage especially in the lateral compartment. There is also erosion and eburnation of the sub-chondral bone.

ANKLE JOINTS: Apart from general osteoporosis no change is discernible.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks		5 weeks	
WEEKS AFTER ADMISSION		0	3	6	8
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	2 2	1 2	1 1	1 1
	Tenderness	0 0	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	1 0	0 0	0 0	0 0
	Extension	2 3	2 3	1 3	1 3
	Tenderness	3 2	0 1	1 2	1 2
<u>WRIST</u>	Flexion	2 1	2 1	2 1	2 1
	Extension	3 3	3 3	3 3	3 3
	Tenderness	1 1	0 0	0 0	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>KNEE</u>	Extension	1 1	1 0	1 1	1 1
	Flexion	2 2	2 1	2 1	2 1
	Tenderness	2 1	2 1	0 0	0 0
<u>ANKLE</u>	P. Flexion	3 3	3 3	3 3	3 3
	D. Flexion	1 1	1 1	1 1	1 1
	Tenderness	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	11	4	3	3
	Movement Range	33	29	28	28

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		5 weeks	
WEEKS AFTER ADMISSION	0	3	6	8
Ring Sizes	R. PLNLG L. OKMJE	R. PLNLG L. NKMJE	R. NLMIF L. MJKID	R. MLMIF L. MJKID
Grip	R. 60 L. 45	R. 60 L. 45	R. 80 L. 65	R. 80 L. 75

TREATMENT

The patient was allowed up for a limited period during treatment. Treatment for the first three weeks consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day. For the following five weeks treatment consisted of aspirin 15 gr. four times a day and injections of hyperduric adrenalin 3 minims t.i.d, this dose being raised by 1 minim t.i.d. until the patient was receiving 8 minims t.i.d. at which dose she showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		5 weeks		
WEEKS AFTER ADMISSION	0	3	6	8	Final result 8 weeks
Tenderness	-	7	1	1	8
Movement Range	-	4	1	1	5
Ring Sizes)	-	1	13	14	15
Grip) Both hands	-	0	40	50	50

The patient was treated with aspirin and sterile water for the first three weeks. There was some improvement in the tenderness. She lost 7 degrees of tenderness. There was slight improvement in the movement range. She gained 4 degrees in movement range. There was no change in the grip and the ring sizes only diminished by 1 size.

Adrenalin was then substituted for the sterile water. After three weeks on this treatment, there was a slight additional improvement in tenderness - she lost a further 1 degree of tenderness, and in the movement range - she gained a further 1 degree in movement range. There was a marked improvement in the ring sizes and grip. The ring sizes diminished by a further 13 sizes and the grip improved by 40 millimetres. There was little change at the end of five weeks on this treatment.

Thus at the end of eight weeks she had lost in all 8 degrees of tenderness and had gained 5 degrees in movement range. The ring sizes had diminished by 15 sizes and the grip had improved by 50 millimetres.

The only substantial improvement in this case was a diminution in the swelling of the fingers and improvement in the grip.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		5 weeks	
WEEKS AFTER ADMISSION	0	3	6	8
<u>Dress</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Bathe</u>	No	No	No	No
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	With diffi- culty	With diffi- culty	With diffi- culty	With diffi- culty
<u>Walking</u>	Not without pain	Not without pain	Not without pain	Not without pain
She could only walk a few steps with assistance and with much difficulty throughout treatment.				

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		5 weeks	
WEEKS AFTER ADMISSION	0	3	6	8
	-	Slightly better	Slightly better	Slightly better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water				Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks				5 weeks			
WEEKS AFTER ADMISSION	0	1	2	3	4	5	6	7
Sodium Mgm.‰	333	336	335.3	339	343.7	330	336	336
Potassium Mgm.‰	18.6		18.2	18.4	18.7		17.1	17.5
Serum Uric Acid Mgm.‰	2.9	1.9	2.65	1.9	3.4	2.4	2.0	2.4
B.S.R. Mm in 1st hour	30	32	28	24	17	14	12	18
Blood pressure	150/80			145/80				145/85
Haemoglobin	62%			65%				70%
R.B.C. Mill/c.mm	3.5			3.5				3.8

OUT-PATIENT RECORD

This patient did not report as an out-patient.

CASE NO. 50.

NAME: Mrs. Isobel Waugh.

ADDRESS: 27 May Street, Hamilton.

AGE: 38. OCCUPATION: Housewife.

Admitted: 22nd March 1954.

Discharged: 29th April 1954.

History: Three years ago the patient became aware of pain and swelling of the big toe of the right foot and the heads of the metatarsals of that foot. The condition then spread to affect the left foot. Gradually the hands were affected, and she attended Bath Street Clinic, where she was treated with wax baths and some form of radiant heat.

During a pregnancy one and a half years ago she became symptom free and thought that she was cured. However, when the pregnancy terminated, her symptoms and signs recurred. For a few months prior to admission the wrists and ankles have been painful and swollen.

Previous History: There is no history of serious previous illness or operation. There is no history of severe physical or mental stress.

Family History: Her mother suffered from rheumatoid arthritis. There is no family history of rheumatism or allergic disease apart from that.

Social History: The housing conditions are adequate. There are no financial worries.

Obstetric and Menstrual History: The patient has had one pregnancy without incident. Menstruation is regular and there is no undue loss.

Daily Analgesics: The patient takes 9 to 10 aspirins daily. The pain often keeps her awake.

General Examination: T. 98 P. 84 R. 20 B.P. 140/95.

The patient is a healthy-looking woman, slightly obese, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands.

Locomotor System: There is slight swelling of the right wrist and moderate limitation of movement of both wrists. There is slight

tenderness of several of the metacarpal phalangeal and first inter-phalangeal joints of both hands, with some swelling of the metacarpal phalangeal joints of both hands.

There is slight swelling of both ankles and feet.

Other Systems: Examination is negative.

X-Ray Reports: HANDS: There is marked osteoporosis and loss of joint space, especially on the left side in the radio-carpal articulation. The picture presented would be consistent with the diagnosis of an osteo-arthritis superimposed on one of rheumatoid type.

KNEES: No significant abnormality is detected.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT		2 weeks		3 weeks	
WEEKS AFTER ADMISSION		0	2	4	5
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 0	0 0	1 0	0 0
	Tenderness	0 0	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	0 0	0 0	0 0	0 0
	Extension	0 0	0 0	0 0	0 0
	Tenderness	0 1	0 0	0 0	0 0
<u>WRIST</u>	Flexion	2 1	1 1	2 1	2 1
	Extension	2 2	2 2	2 2	2 2
	Tenderness	0 0	0 0	0 0	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0	0 0
	V	0 0	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 0	0 0	0 0	0 0
<u>JOINT</u>	III	1 0	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	0 0	0 0	0 0
	V	0 1	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	3 1	2 1	2 1	2 1
	D. Flexion	2 3	1 2	1 2	1 2
	Tenderness	0 0	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	6	0	0	0
	Movement Range	17	12	14	13

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
Ring Sizes	R. QRPNI L. NONJJ	R. QQPMH L. NONJG	R. OONKG L. MMMJG	R. OOMKG L. MMMJG
Grip	R. 100 L. 125	R. 100 L. 75	R. 135 L. 135	R. 140 L. 140

TREATMENT.

The patient was allowed up for a limited period during treatment. For the first two weeks the patient was given an inactive powder four times a day and injections of hyperduric adrenalin 3 minims t.i.d, the dose being raised by 1 minim t.i.d. until she was receiving 9 minims t.i.d, at which dose she showed a reaction. Aspirin was then substituted for the inactive powder and for the next three weeks she received aspirin 15 gr. four times a day and adrenalin 9 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2 weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2	4	5	Final result 5 weeks
Tenderness	-	6	0	0	6
Movement Range	-	5	-2	-1	4
Ring Sizes)	-	6	13	14	20
Grip) Both hands	-	-50	95	105	55

The patient was treated with adrenalin and an inactive powder for a fortnight. There was some improvement in the tenderness - she lost 6 degrees of tenderness, so that at the end of that time she had no tenderness in any of the joints. There was a slight improvement in the movement range - she gained 5 degrees in movement range. The swelling of the fingers diminished - the ring sizes diminished by 6 sizes. The grip, however, deteriorated by 50 millimetres.

Aspirin was then substituted for the inactive powder. There was still no tenderness, but the movement range deteriorated slightly - she lost 2 degrees in movement range. The swelling of the fingers improved markedly - the ring sizes diminished by a further 13 sizes, and the grip improved by 95 millimetres, after two weeks on this treatment.

At the end of a further week on this treatment the tenderness and movement range remained substantially the same. The ring sizes diminished by a further 1 size and the grip improved by a further 10 millimetres.

Thus at the end of five weeks she had lost all her tenderness (6 degrees) and had gained in all 4 degrees in movement range. The ring sizes had diminished by 20 sizes and the grip had improved by 55 millimetres.

PERFORMANCE CHART

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
<u>Dress</u>	With diffi- culty	Yes	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes	Yes
<u>Bathe</u>	No	Yes	Yes	Yes
<u>Dress Hair</u>	Yes	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2	4	5
	-	Better	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin and Inactive Powder			Aspirin and Adrenalin	
DURATION OF TREATMENT	2 weeks			3 weeks	
WEEKS AFTER ADMISSION	0	1	2	3	4
Sodium Mgm. %	300		318	330	319
Potassium Mgm. %	20		20	17.6	
Serum Uric Acid Mgm. %	2.72		2.74	2.24	2.08
B.S.R. Mm in 1st hour	13	12	15	18	15
Blood pressure	140/95		135/90		130/90
Haemoglobin	85%		85%		80%
R.B.C. Mill/c.mm	4.2		4.0		4.1

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient remained well for one week. Then she went for a long walk and had a relapse after that. Her feet became very painful, and she was forced to go to bed for ten days. However, she made a good recovery from that.

On examination:-

R. PQOLI

Ring Sizes - (-12)

L. NNNKG

Thus the fingers are more swollen than they were.

Tenderness - 1

Movement Range - 13

4 months

The patient has kept very well, has lost a stone in weight and states that she is very much better than prior to admission. There is some limitation of movement of both wrists and ankles but no tenderness whatsoever. The hands are slightly swollen, but this does not disable her.

12 months

During the past four months the condition has flared up, and on examination the arthritis is more advanced than prior to treatment a year ago. Arrangements have been made to admit her to hospital for gold therapy.

CASE NO. 51.

NAME: Mrs. Maureen McKendrick.

ADDRESS: 19 Exeter Drive, Glasgow, W.1.

AGE: 27. OCCUPATION: Housewife.

Admitted: 22nd March 1954.

Discharged: 29th April 1954.

History: In April 1951 the patient noticed pain, swelling and stiffness of her right wrist. This was transient, lasting only one day, but in December of the same year the left wrist was similarly affected.

Early in 1953 she developed swelling and stiffness in the index and ring fingers of the right hand, and was given a course of gold therapy and, when this was finished, she was put on to Butazolidin tablets, which she continued to take until the time of her admission. Neither of these treatments appear to have benefited her at all.

In December 1953 her knees and shoulders became affected. She notices that the pain and stiffness tend to wear off as the day progresses.

Previous History: There is no history of previous serious illness, and no history of physical or mental stress. She states that, during the two years when this condition became fully developed, she was working in very damp conditions.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: The patient has had no children. Menstruation is normal.

Daily Analgesics: The patient has been taking two tablets of Butazolidin daily and requires three aspirins at night for the relief of pain.

General Examination: T. 98 P. 80 R. 20 B.P. 120/65.

The patient is a healthy-looking, intelligent girl, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. She is very co-operative.

Locomotor System: There is slight limitation of movement of both wrists and the right wrist is slightly tender.

Several of the metacarpal phalangeal and first interphalangeal joints of both hands are tender. In the hands there is typical rheumatoid swelling of the first interphalangeal joints.

There is slight limitation of movement of both knees and the right knee is slightly tender. The left ankle shows limitation of movement and is moderately tender.

Other Systems: Examination is negative.

X-Ray reports: HANDS: There is loss of joint space, most marked at the radio-carpal joint of the left hand and there would appear to be some marginal destruction of the right 1st metacarpal phalangeal joint. A localised area of osteoporosis is also noted at the base of the 5th metacarpal.

KNEES: An exostosis is noted in the left knee. No other significant abnormality is detected.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT		2½ weeks		3 weeks
WEEKS AFTER ADMISSION		0	2½	5½
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	1 1	1 2	0 1
	Extension	2 1	1 1	1 1
	Tenderness	1 0	0 0	0 0
<u>METACARPAL</u>	I	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 0	0 0	0 0
<u>JOINT</u>	III	2 1	0 0	0 0
<u>TENDERNESS</u>	IV	0 1	0 0	0 0
	V	0 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		4 1	4 0	1 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	1 1	0 0	0 0
	Tenderness	1 0	1 0	0 0
<u>ANKLE</u>	P. Flexion	0 0	0 0	0 0
	D. Flexion	0 2	0 0	0 0
	Tenderness	0 2	0 0	0 0
<u>TOTAL</u>	Tenderness	11	1	0
	Movement Range	14	9	4

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	2½ weeks		3 weeks
WEEKS AFTER ADMISSION	0	2½	5½
Ring Sizes	R. TWZRM L. QSWSI	R. SVYQK L. QRVRH	R. RUXPJ L. PRURH
Grip	R. 90 L. 145	R. 130 L. 145	R. 145 L. 130

TREATMENT

The patient was allowed up for a limited period during treatment. For the first two and a half weeks treatment consisted of injections of hyperdurec adrenalin 3 minims t.i.d. the dose being raised by 1 minim t.i.d. until she was receiving 8 minims t.i.d. at which dose she showed a reaction, together with an inactive powder four times a day.

For the next three weeks the patient received aspirin 15 gr. four times a day and hyperdurec adrenalin 8 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	2½ weeks		3 weeks	
WEEKS AFTER ADMISSION	0	2½	5½	Final result 5½ weeks
Tenderness	-	10	1	11
Movement Range	-	5	5	10
Ring Sizes)) Both) hands	-	10	7	17
Grip	-	40	0	40

The patient received treatment with adrenalin and an inactive powder for the first two and a half weeks, and there was some response to this treatment. She lost 10 degrees of tenderness and gained 5 degrees in movement range. The ring sizes diminished by 10 sizes, and the grip improved by 40 millimetres.

For the following three weeks aspirin was given in addition to the adrenalin injections, and there was further improvement. She lost a further 1 degree of tenderness and gained a further 5 degrees in movement range. The ring sizes diminished by a further 7 sizes, while the grip remained the same.

Thus at the end of five and a half weeks treatment in hospital she had lost in all 11 degrees of tenderness and had gained 10 degrees in movement range. The ring sizes had diminished by 17 sizes, and the grip had improved by 40 Millimetres.

PERFORMANCE CHART

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	$2\frac{1}{2}$ weeks		3 weeks
WEEKS AFTER ADMISSION	0	$2\frac{1}{2}$	$5\frac{1}{2}$
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	$2\frac{1}{2}$ weeks		3 weeks
WEEKS AFTER ADMISSION	0	$2\frac{1}{2}$	$5\frac{1}{2}$
	-	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	2½ weeks		3 weeks		
WEEKS AFTER ADMISSION	0	2½	3½	4½	5½
Serum Uric Acid Mgm. %	2.6	2.5	1.52	1.8	
B.S.R. Mm in 1st hour	49	48	44	45	42
Blood pressure	120/60	120/65			125/65
Haemoglobin	90%	95%			90%

OUT-PATIENT RECORD.Months after
dischargeCondition

1 month

The patient remained well for one week after discharge from hospital, then her left foot began to trouble her, and this has been progressive. It has been accompanied by swelling and she can scarcely get her shoe on.

On examination:-

Tenderness - 4

Movement Range - 10

Ring Sizes - R. SVZQL (-9)
L. QSVQH

4 months

The patient's condition has deteriorated, and she now feels that she is as bad, if not worse, than prior to admission. She is pregnant, but pregnancy has brought no relief of her joint symptoms.

On examination:-

Tenderness - 14

Movement Range - 15

Ring Sizes - (-18)

CASE NO. 52.

NAME: Mrs. Catherine Yates.

ADDRESS: 13 Ashworth Terrace, Burnbank, Hamilton.

AGE: 35.

OCCUPATION: Housewife.

Admitted: 17th March 1954.

Discharged: 29th April 1954.

History: Eight years ago, shortly after the birth of a child, the patient began to have pain and swelling of the right shoulder. This was followed shortly afterwards by pain in the left shoulder, and the condition spread to affect the knees, wrists and hands.

She was admitted to Hairmyres Hospital on 23/9/47 for treatment of her rheumatoid arthritis. Radiology of the affected joints at that time showed changes consistent with the diagnosis of rheumatoid arthritis. However, it was also discovered that she had a right pyelonephrosis, the symptoms of which also dated from the previous pregnancy. Right nephrectomy was carried out at that time because of the persistent pyuria, and after the operation her joint symptoms were improved for some time. However, within the past few years there has been a gradual recurrence of her symptoms, and for the three months prior to admission she had been confined to the house because she was unable to walk properly, the pain and stiffness in the knees being most severe.

Previous History: Apart from the pyelonephritis in 1947 there is no history of previous serious illness. There is no history of severe mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Obstetric and Menstrual History: She has had three pregnancies, the last one complicated by pyelitis. Menstruation is regular, and loss is normal.

Daily Analgesics: She is in the habit of taking ten or more aspirin per day for the relief of her pain. The pain keeps her awake at night.

General Examination: T. 97.4 P. 78 R. 20 B.P. 125/70.

The patient is a rather thin woman, who lies comfortably in bed, but

is pale and looks ill. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands.

Locomotor System: Both wrists show slight limitation of movement, but are not tender.

Although movement of both knees is full, there is considerable difficulty in moving these joints and it takes some time to achieve the full range of movement. Both knees are tender.

Both ankles show marked limitation of movement and slight tenderness.

Other Systems: Examination is negative.

X-Ray Reports: HANDS: Old deformity of the tip of the right index finger. Some peri-articular swelling is noted around the proximal interphalangeal joints. There is a suggestion of some narrowing of the joint space e.g. in the metacarpo-phalangeal joint of the right index finger and in the proximal interphalangeal joint of the left little finger. There is no marked general bone atrophy.

KNEE JOINTS: Secondary osteo-arthritic changes are present; there is marked narrowing of the joint space in the medial compartment of the right knee.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		3 weeks
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>WRIST</u>	Flexion	1 1	1 1	1 0
	Extension	1 1	1 1	1 0
	Tenderness	0 0	1 1	0 0
<u>KNEE</u>	Extension	0 0	0 0	0 0
	Flexion	0 0	1 1	0 0
	Tenderness	1 2	2 2	1 1
<u>ANKLE</u>	P. Flexion	2 2	3 3	0 3
	D. Flexion	3 2	2 2	1 2
	Tenderness	1 1	1 1	0 0
<u>TOTAL</u>	Tenderness	5	8	2
	Movement Range	13	16	8

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
Ring Sizes	R. VQTPL	R. XQUPL	R. VPTOK
	L. TOSNH	L. TORNH	L. SNRMH
Grip	R. 165	R. 130	R. 170
	L. 150	L. 140	L. 170

TREATMENT

The patient was allowed up for a limited period during treatment, which consisted of injections of hyperduric adrenalin 3 minims t.i.d., the dose being raised by 1 minim t.i.d. until she was receiving 10 minims t.i.d. at which dose she showed a reaction, and an inactive powder four times a day, for the first three weeks.

For the next three weeks she received hyperduric adrenalin 10 minims t.i.d. and aspirin 15 gr. four times a day.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	-3	6	3
Movement Range	-	-3	8	5
Ring Sizes)	-	-2	9	7
Grip) Both hands	-	-45	70	25

The patient was treated with adrenalin and an inactive powder for the first three weeks, and objectively there was some deterioration in her condition. She gained 3 degrees of tenderness and lost 3 degrees in movement range. The ring sizes increased by 2 sizes and the grip deteriorated by 45 millimetres.

Aspirin was then given in addition to the adrenalin for the next three weeks and there was a considerable improvement in her condition. She lost 6 degrees of tenderness and gained 8 degrees in movement range. The ring sizes diminished by 9 sizes and the grip improved by 70 millimetres.

Thus, at the end of six weeks in hospital, the patient had lost in all 3 degrees of tenderness and gained 5 degrees in movement range. The ring sizes had diminished by 7 sizes and the grip had improved by 25 millimetres.

PERFORMANCE CHART.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	With diffi- culty	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes
<u>Dress Hair</u>	Yes	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
	-	Slightly better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin and Inactive Powder				Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks				3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4	5	6
Sodium Mgm.%	332			312		330	338
Potassium Mgm.%	18.6			20.6			20.4
Serum Uric Acid Mgm.%	5.36			3.12		2.24	1.98
B.S.R. Mm in 1st hour	23	20	35	40	16	18	15
Blood pressure	125/70			120/65			120/60
Haemoglobin	75%			75%			78%
R.B.C. Mill/c.mm	4.1			4.0			4.1

OUT-PATIENT RECORDMonths after
dischargeCondition

1 month

The patient remained well for about a week after her discharge from hospital, then her knees began to become painful again. However, there has been no marked deterioration since that time, and the knees, when she reported, were only slightly painful.

On examination:-

Tenderness - 2

Movement Range - 8

Ring Sizes - R. WQXQL (-14)
L. UOSNH

The fingers of both hands are swollen again but they are not painful on pressure, and there is no real limitation of movement.

CASE NO. 53.

NAME: Mr. Oswald Rask.

ADDRESS: 48 Hardie Street, Blantyre.

AGE: 51. OCCUPATION: Factory Worker.

Admitted: 23rd March 1954.

Discharged: 27th May 1954.

History: At the beginning of 1952 the patient developed pain and stiffness of both shoulders. There was no remission from this pain, and soon after that he developed pain in the knees. Since that time the pain has gradually spread to affect other joints of his body. Both the pain and stiffness are worse in the morning. He has had several exacerbations of this condition during the past two years, and at times the pain is very severe and the affected joints are swollen.

Treatment initially consisted of analgesics, but the patient has been taking Butazolidin for the past six months without benefit.

Previous History: The only serious previous illness was a streptococcal throat, which occasioned his admission to a Canadian Hospital in 1943. There is no history of severe mental or physical stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Daily Analgesics: The patient has been taking Butazolidin for the past six months, but there has been no improvement in his condition. The pain keeps him from sleeping at night.

General Examination: T. 97.8 P. 88 R. 20 B.P. 140/80.

The patient is a well-built man, who lies comfortably in bed, but who has an anxious, drawn expression. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands.

Locomotor System: There is slight tenderness of the left shoulder.

There is slight limitation of movement of both elbows, with slight tenderness. The right elbow is slightly swollen. Both

wrists show marked limitation of movement and moderate tenderness. There is typical rheumatoid swelling and deformity of the hands, and there is tenderness of several of the metacarpal phalangeal and first interphalangeal joints of both hands.

The right ankle is swollen, shows limitation of movement, and is markedly tender. The left ankle shows limitation of movement.

Other Systems: Examination is negative.

X-Ray Reports: ELBOWS, SHOULDERS, HUMERUS, PELVIS, UPPER FEMORA:

The appearances suggest that this case belongs to the group of Collagen Diseases with muscular calcification and calcinosis of the subcutaneous fat affecting the arms particularly and also the left buttock. The atrophic arthritis is a common associated feature of the condition.

TREATMENT		Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT		3 weeks		6 weeks	
WEEKS AFTER ADMISSION		0	3	6	9
		R.L.	R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	0 0	0 0	0 0	0 0
	Tenderness	0 1	2 1	0 0	0 0
<u>ELBOW</u>	Flexion	1 1	2 2	0 1	0 0
	Extension	1 1	1 1	0 1	0 1
	Tenderness	1 1	3 2	0 0	0 0
<u>WRIST</u>	Flexion	2 2	1 1	0 0	0 0
	Extension	3 2	2 2	2 1	2 1
	Tenderness	2 2	1 3	0 0	0 0
<u>METACARPAL</u>	I	1 3	1 1	0 0	0 0
<u>PHALANGEAL</u>	II	1 0	0 0	0 0	0 0
<u>JOINT</u>	III	2 0	1 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	0 0	0 0	0 0
	V	1 0	1 1	0 0	0 0
<u>FIRST</u>	I	0 1	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	2 1	2 1	0 0	0 0
<u>JOINT</u>	III	2 3	2 1	0 0	0 0
<u>TENDERNESS</u>	IV	3 1	0 0	0 0	0 0
	V	1 1	0 1	0 0	0 0
<u>FINGER TO PALM</u>					
<u>CLOSURE</u>		3 1	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 2	2 2	2 2	2 2
	D. Flexion	2 1	1 1	0 1	0 1
	Tenderness	3 0	2 2	0 1	0 0
<u>TOTAL</u>	Tenderness	34	28	1	0
	Movement Range	24	18	10	9

IMPROVEMENT IN GRIP AND RING SIZES DURING TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
Ring Sizes	R. Z++Z+Z++ZU L. Z++Z++Z++Z++X	R. Z++Z+Z++ZU L. Z++Z++Z++Z++X	R. Z+ZZ+YT L. Z+ZZ+Z+W	R. Z+ZZYT L. Z+ZZ+ZW
Grip	R. 100 L. 120	R. 90 L. 120	R. 150 L. 180	R. 160 L. 180

TREATMENT

The patient was allowed up for a limited period during treatment. Treatment consisted of injections of hyperdureic adrenalin 3 minims t.i.d, the dose being raised by 1 minim t.i.d. until he was receiving 9 minims t.i.d. at which dose he showed a reaction, and an inactive powder four times a day.

At the end of three weeks aspirin gr. 15 four times a day was substituted for the inactive powder and the adrenalin was continued at 9 minims t.i.d.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks		6 weeks		
WEEKS AFTER ADMISSION	0	3	6	9	Final result 9 weeks
Tenderness	-	6	27	28	34
Movement Range	-	6	8	9	15
Ring Sizes	-	0	11	13	13
Grip	-	-10	120	130	120

The patient received adrenalin and inactive powder for the first three weeks, and there was only slight response to this treatment. He lost 6 degrees of tenderness and gained 6 degrees in movement range. There was no change in the swelling of the fingers, and the grip deteriorated by 10 millimetres.

Aspirin was then given in addition to the adrenalin, and there was a marked response. At the end of three weeks of this treatment, he had lost a further 27 degrees of tenderness and had gained a further 8 degrees in movement range. The swelling of the fingers diminished - the ring sizes diminished by 11 sizes, and the grip improved by 120 millimetres. This improvement continued. During the following three weeks he lost a further 1 degree of tenderness and gained a further 1 degree in movement range. The ring sizes diminished by a further sizes and the grip improved by a further 10 millimetres.

Thus at the end of nine weeks in hospital he had lost in all 34 degrees of tenderness and had gained 15 degrees in movement range. The ring sizes had diminished by 13 sizes and the grip had improved by 120 millimetres.

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
<u>Dress</u>	No	No	Yes	Yes
<u>Wash hands and face</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Bathe</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Adrenalin and Inactive Powder		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		6 weeks	
WEEKS AFTER ADMISSION	0	3	6	9
	-	Slightly better	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Adrenalin and Inactive Powder			Aspirin and Adrenalin			
DURATION OF TREATMENT	3 weeks			6 weeks			
WEEKS AFTER ADMISSION	0	2	3	4	6	7	8
Sodium Mgm.‰	335	324	324	330	320	338	334
Potassium Mgm.‰	19.7		17.7	18	20.3	18.8	20
Serum Uric Acid Mgm.‰	2.5	3.14	3.3	1.6	2.16	2.25	2.1
B.S.R. Mm in 1st hour	48	46	67	35	28	17	16
Haemoglobin	90%		92%				90%
Blood pressure	140/80		130/75		135/80		135/75

OUT-PATIENT RECORDMonths after
dischargeCondition

4 months

The patient remained well for a few weeks after his discharge from hospital, and thereafter there was a relapse. The pain and stiffness of the affected joints gradually returned. He now thinks that he is not at all improved from the time of admission. On examination his condition has again deteriorated.

X-Ray Report: LEFT ARM, RIGHT ARM, GLUTEAL REGION.
The degree of calcification appears to be less, and similarly on the right side ? in addition some surgical removal. The calcinosis in the left gluteal region is apparently less.

CASE NO. 54

NAME: Mr. William Eadie.

ADDRESS: 33 Lettrickhills Crescent, Lightburn, Cambuslang.

AGE: 61.

OCCUPATION: Plate-layer.

Admitted: 7th April 1954.

Discharged: 22nd May 1954.

History: The patient has been troubled with pain and stiffness in his joints for the past fifteen years. His condition was diagnosed as rheumatoid arthritis some time ago, and he has been subject to remissions and exacerbations of this condition. However, since December 1953 the affected joints have been very painful and stiff, and he considers that he has suffered more than ever before. He has not worked since December 1953 because of the pain in the hands, wrists, elbows, shoulders and knees.

He has had no specific treatment for the rheumatoid arthritis, and indeed the condition has apparently been mild, as it has not previously interfered with his working capacity.

Previous History: There have been no serious previous illnesses, and there is no history of severe physical or mental stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The housing conditions are adequate, and there are no financial worries.

Daily Analgesics: He has been taking Butazolidin 2 to 3 tablets a day during the past few months, but has received no benefit from this treatment. The pain keeps him awake at night.

General Examination: T. 99 P. 96 R. 20 B.P. 115/90.

The patient is a rather depressed elderly man, who does not suffer pain lying in bed until he begins to move about. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands. He tends to be querulous, but is moderately intelligent and co-operative.

Locomotor System: There is slight limitation of movement of both shoulders.

The right elbow shows moderate limitation of movement, and is slightly swollen and moderately tender. Both wrists show marked

limitation of movement. The right wrist is markedly tender, and the left wrist is slightly tender. Two of the metacarpal phalangeal joints and one of the first interphalangeal joints are tender. The hands are slightly swollen and deformed.

Both ankles show moderate limitation of movement.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		3 weeks
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>SHOULDER</u>	Abduction	1 1	0 0	0 0
	Tenderness	0 0	0 0	0 0
<u>ELBOW</u>	Flexion	1 0	1 0	1 0
	Extension	2 0	2 0	2 0
	Tenderness	2 0	0 0	0 0
<u>WRIST</u>	Flexion	2 2	2 1	2 1
	Extension	3 3	2 2	2 2
	Tenderness	3 1	0 0	0 0
<u>METACARPAL</u>	I	0 1	0 0	0 0
<u>PHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	0 0	0 0	0 0
<u>TENDERNESS</u>	IV	1 0	0 0	0 0
	V	0 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	0 0	0 0	0 0
<u>JOINT</u>	III	0 1	0 0	0 0
<u>TENDERNESS</u>	IV	0 0	0 0	0 0
	V	0 0	0 0	0 0
<u>ANKLE</u>	P. Flexion	2 2	2 2	2 2
	D. Flexion	0 0	0 0	0 0
	Tenderness	0 0	0 0	0 0
<u>TOTAL</u>	Tenderness	9	0	0
	Movement Range	19	14	14

IMPROVEMENT IN RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
Ring Sizes	R. YZ+ZXP L. YZZ+VP	R. ZZZXP L. Z+ZZ+WP	R. Z+Z+XWO L. YYZWP

TREATMENT

The patient was allowed up for a limited period during treatment. For the first three weeks treatment consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day. For the next three weeks the patient was given aspirin 15 gr. four times a day and injections of hyperduric adrenalin, 3 minims t.i.d, the dose being raised by 1 minim t.i.d. until he was receiving 10 minims t.i.d, at which dose he showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	9	0	9
Movement Range	-	5	0	5
Ring Sizes (Both hands)	-	-3	6	3

The patient received treatment with aspirin and injections of sterile water for the first three weeks, and there was some response to treatment. He lost 9 degrees of tenderness and gained 5 degrees in movement range. The swelling of the fingers increased slightly, however - the ring sizes increased by 3 sizes.

Injectons of adrenalin were then given in addition to the aspirin. There was no further improvement in the tenderness or

movement range. The ring sizes, however, diminished by 6 sizes.

Thus, at the end of six weeks in hospital, the patient had lost in all 9 degrees of tenderness and gained 5 degrees in movement range. The ring sizes had diminished by 3 sizes.

Although the objective improvement appears to be very slight on measurement, the patient in fact improved quite considerably. This was most noticeable in the freedom of movement and in the way he walked.

PERFORMANCE CHART.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	No	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	No	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
	-	Better	Better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water				Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks				3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4	5	6
B.S.R. Mm in 1st hour	55	30	23	26	55	50	45
Blood pressure	115/90			120/85			120/80
Haemoglobin	85%			85%			90%
Blood Uric Acid Mgm. %	2.8						

OUT-PATIENT RECORD

The patient did not return as an out-patient as requested.

CASE NO. 55.

NAME: Mr. John Paterson.

ADDRESS: 16 Belmont Street, Coatbridge.

AGE: 35. OCCUPATION: Miner.

Admitted: 1st July 1954.

Discharged: 6th September 1954.

History: In January 1954 the patient developed pain in the left shoulder and there was some limitation of movement of this joint. A few days later he had a similar pain in the left wrist. Treatment with embrocation resulted in the pain disappearing within a few days. However, for the next three months he had recurrent pains of a similar nature in the back of the neck, knees, right shoulder and elbow, and in the fingers.

For the three weeks prior to admission there has been marked exacerbation of his disability, and the pain has been almost constant. He has noticed considerable swelling of his fingers and he has been forced to give up his work.

Previous History: There is a previous history of pleurisy at the age of twenty-five, but otherwise there have been no serious previous illnesses. There is no history of severe mental or physical stress.

Family History: There is no family history of rheumatism or allergic disease.

Social History: The house in which he lives is over-crowded, being a three apartment with four adults and three children, but it is not damp. There are no financial worries.

Daily Analgesics: The patient takes two to six aspirin for the relief of pain. The pain has been keeping him awake during the past three weeks.

General Examination: T. 97.6 P. 92 R. 20 B.P. 150/80.

The patient is a well nourished man, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers or enlarged lymph glands.

Locomotor System: There is limitation of movement of the right elbow with slight tenderness.

The first interphalangeal joints of the third fingers of both

hands are slightly tender and swollen. The first interphalangeal joint of the fourth finger of the right hand is tender and swollen.

Other Systems: Examination is negative.

X-Ray Reports: HANDS AND WRISTS: Some osteoporosis is present, especially related to the joints; and soft tissue swelling is present over the proximal I.P. joints of the right index and middle fingers especially. The appearances are consistent with a rheumatoid arthritis.

BOTH KNEE JOINTS: Similar but less marked changes are present.

RIGHT ELBOW: Appearances are just within normal limits.

TREATMENT	Aspirin and Sterile Water	Aspirin and Adrenalin
DURATION OF TREATMENT	4 weeks	4 weeks
WEEKS AFTER ADMISSION	0 3 & 4	7 & 8
	R.L.	R.L.
<u>ELBOW</u> Flexion	1 0	0 0
Extension	2 0	1 0
Tenderness	1 0	0 0
<u>FIRST</u> I	0 0	0 0
<u>INTERPHALANGEAL</u> II	0 0	0 0
<u>JOINT</u> III	1 1	0 0
<u>TENDERNESS</u> IV	1 0	0 0
V	0 0	0 0
<u>FINGER TO PALM</u> <u>CLOSURE</u>	1 0	0 0
<u>TOTAL</u> Tenderness	4	0
Movement Range	4	1

IMPROVEMENT IN RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water	Aspirin and Adrenalin
DURATION OF TREATMENT	4 weeks	4 weeks
WEEKS AFTER ADMISSION	0 3 & 4	7 & 8
Ring Sizes	R. ZZZUO L. ZVZUN	R. YZZ+VO L. YTZXP
		R. WRXVO L. VXZVM

TREATMENT

The patient was allowed up for a limited period during treatment. Treatment consisted of aspirin 15 gr. four times a day and injections of sterile water three times a day for the first four weeks. For the next four weeks he was given aspirin 15 gr. four times a day and injections of hyperduralic adrenalin 3 minims t.i.d., the dose being raised by 1 minim t.i.d. until he was receiving 8 minims t.i.d., at which dose he showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	4 weeks		4 weeks	
WEEKS AFTER ADMISSION	0	3 & 4	7 & 8	Final result 8 weeks
Tenderness	-	4	0	4
Movement Range	-	1	2	3
Ring Sizes	-	-3	17	14

The patient was treated with aspirin and injections of sterile water for the first four weeks and there was some response to this treatment. He lost 4 degrees of tenderness and gained 1 degree in range of movement. However, there was a slight deterioration in the swelling of the fingers - the ring sizes increased by 3 sizes.

Injections of adrenalin were then substituted for the sterile water, and there was further improvement. He gained a further 2 degrees in movement range. The swelling of the fingers diminished considerably - the ring sizes diminished by 17 sizes.

Thus, at the end of eight weeks in hospital the patient had lost in all 4 degrees of tenderness and had gained 3 degrees in movement range. The ring sizes had diminished by 14 sizes.

PERFORMANCE CHART.

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	4 weeks		4 weeks
WEEKS AFTER ADMISSION	0	3 & 4	7 & 8
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	With diffi- culty	With diffi- culty
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Yes	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	4 weeks		4 weeks
WEEKS AFTER ADMISSION	0	3 & 4	7 & 8
	-	Better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water				Aspirin and Adrenalin			
DURATION OF TREATMENT	4 weeks				4 weeks			
WEEKS AFTER ADMISSION	0	1	3	4	5	6	7	8
Serum Uric Acid Mgm. %	3.41			3.1				3.0
B.S.R. Mm in 1st hour	30	50	38	23	21	30	40	47
Blood pressure	150/80			140/75				140/75
Haemoglobin	72%			75%				78%
R.B.C. Mill/c.mm	3.5			3.6				3.6

OUT-PATIENT RECORD

The patient did not return as an out-patient.

CASE NO. 56.

NAME: Mrs. Elizabeth Sharp.

ADDRESS: 114 Hillhouse Road, Burnbank, Hamilton.

AGE: 26. OCCUPATION: Hospital Maid.

Admitted: 29th May 1954.

Discharged: 12th July 1954.

History: In July 1953 the patient developed painful and stiff knee joints. The knees were very swollen at that time, and the pain prevented her from walking. She was off work for a month, during which time the swelling and pain in the knee joints subsided, but when she returned to work her feet and ankles became painful. Despite this she remained at work, receiving treatment from the Orthopaedic Surgeon in the form of radiant heat, wax baths, etc.

In January 1954 her back, wrists and hands became very swollen and painful, and from that time she has suffered from pain in the joints mentioned above, although the knee joints have been only slightly affected since the first attack.

Previous History: There have been no previous serious illnesses, and there is no history of severe physical or mental stress.

Family History: Apparently the patient's mother had "rheumatics" when she was young and was unable to walk for some time. The trouble has evidently resolved itself now. There is no family history of allergic disease.

Social History: The housing conditions are adequate. There are no financial worries.

Obstetric and Menstrual History: The patient has one child, and had no upsets during pregnancy or parturition. Menstruation is normal.

Daily Analgesics: She takes 20 to 30 gr. aspirin a day. Latterly the pain has kept her awake at night.

General Examination: T. 97.6 P. 76 R. 20 B.P. 120/70.

The patient is a young, plump woman, who lies comfortably in bed. There is no cyanosis, jaundice, oedema, clubbing of the fingers, or enlarged lymph glands.

Locomotor System: There is slight tenderness of the right shoulder.

Both wrists show moderate limitation of movement and are slightly tender and swollen. Several of the metacarpal phalangeal and first interphalangeal joints of both hands are tender. The hands show typical swelling of the first interphalangeal joints.

There is slight tenderness and limitation of movement of the left ankle.

X-Ray Reports: HANDS AND WRISTS: No bone changes discernible. The joint spaces are intact. There is a suggestion of slight peri-articular swelling around the proximal interphalangeal joints.

FEET: Suggestion of slight osteoporosis. Otherwise nil significant.

TREATMENT		Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT		3 weeks		3 weeks
WEEKS AFTER ADMISSION		0	3	6
		R.L.	R.L.	R.L.
<u>ELBOW</u>	Flexion	0 0	0 0	0 0
	Extension	0 0	0 0	0 0
	Tenderness	1 0	0 0	0 0
<u>WRIST</u>	Flexion	2 2	1 2	1 1
	Extension	1 2	2 2	2 2
	Tenderness	1 1	0 0	0 0
<u>METACARPAL</u>	I	0 0	0 0	0 0
<u>PHALANGEAL</u>	II	1 1	0 2	0 0
<u>JOINT</u>	III	3 0	0 0	0 0
<u>TENDERNESS</u>	IV	3 0	2 0	0 0
	V	1 0	0 0	0 0
<u>FIRST</u>	I	0 0	0 0	0 0
<u>INTERPHALANGEAL</u>	II	1 1	0 0	0 0
<u>JOINT</u>	III	3 0	0 0	0 0
<u>TENDERNESS</u>	IV	3 0	0 0	0 0
	V	1 0	0 0	0 0
<u>FINGER TO PALM CLOSURE</u>		5 5	0 5	0 0
<u>ANKLE</u>	P. Flexion	0 1	0 0	0 0
	D. Flexion	0 1	0 0	0 0
	Tenderness	0 1	0 0	0 0
<u>TOTAL</u>	Tenderness	22	4	0
	Movement Range	19	12	6

IMPROVEMENT IN RING SIZES DURING TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
Ring Sizes	R. TUYXP L. USWQL	R. RTVWN L. SUVRN	R. QTUVN L. SSVQL

TREATMENT

The patient was allowed up for a limited period during treatment. Treatment consisted of aspirin gr. 15 four times a day for the first three weeks, together with injections of sterile water three times a day.

At the end of three weeks, injections of hyperdural adrenalin were substituted for the sterile water. She was given 3 minims t.i.d., the dose being raised by 1 minim t.i.d until she was receiving 9 minims t.i.d, at which dose she showed a reaction. Thereafter the dose was maintained at this level.

TOTAL IMPROVEMENT UNDER TREATMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin	
DURATION OF TREATMENT	3 weeks		3 weeks	
WEEKS AFTER ADMISSION	0	3	6	Final result 6 weeks
Tenderness	-	18	4	22
Movement Range	-	7	6	13
Ring Sizes (Both hands)	-	8	7	15

The patient was treated with aspirin and injections of sterile water for the first three weeks and there was considerable response to this treatment. She lost 18 degrees of tenderness and gained 7 degrees

in movement range. The ring sizes diminished by 8 sizes.

Injectons of adrenalin were then substituted for the sterile water, and after three weeks of treatment with aspirin and adrenalin there was a further improvement. She lost a further 4 degrees of tenderness and gained a further 6 degrees in movement range. The ring sizes diminished by a further 7 sizes.

Thus at the end of six weeks in hospital the patient had lost in all 22 degrees of tenderness and had gained 13 degrees in movement range. The ring sizes had diminished by 15 sizes.

PERFORMANCE CHART

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
<u>Dress</u>	With diffi- culty	Yes	Yes
<u>Wash hands and face</u>	Yes	Yes	Yes
<u>Bathe</u>	Yes	Yes	Yes
<u>Dress Hair</u>	With diffi- culty	Yes	Yes
<u>Use knife and fork</u>	Yes	Yes	Yes
<u>Walking</u>	Not without pain	Yes	Yes

SUBJECTIVE IMPROVEMENT

TREATMENT	Aspirin and Sterile Water		Aspirin and Adrenalin
DURATION OF TREATMENT	3 weeks		3 weeks
WEEKS AFTER ADMISSION	0	3	6
	-	Much better	Much better

SPECIAL INVESTIGATIONS

TREATMENT	Aspirin and Sterile Water				Aspirin and Adrenalin		
DURATION OF TREATMENT	3 weeks				3 weeks		
WEEKS AFTER ADMISSION	0	1	2	3	4	5	6
Serum Uric Acid Mgm. %	2.2			3.0			2.2
B.S.R. Mm in 1st hour	55	42	35	17	14	12	10
Blood pressure	120/70			120/65			115/70
Haemoglobin	80%			80%			78%
R.B.C. Mill/c.mm	4.1			4.2			4.2

OUT-PATIENT RECORD

The patient reported as an out-patient a fortnight after her discharge from hospital. She had omitted to take aspirin when discharged from hospital and within a few days she had pain in her feet. However this subsided after a time and she remains considerably improved compared with her original condition on admission to hospital.

On examination:

Tenderness - 0

Movement Range - 6

Ring Sizes - R. QTUVN
L. SSVQL

MASTER TABLES IA - IXA

Distribution of all Cases according to Stage, Class of Functional Improvement and Grade of Improvement in Activity before and after all treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0		0 0 0			
	2	+1		0 1 1			0 1 1
	1	+2	1 1 1	2 2 3			3 3 4
2	2	0		0 1 1	4 5 5	0 1 3	4 7 9
	1	+1	2 4 4	9 3 14	3 5 5		14 22 23
1	1	0					
Total			3 5 5	11 17 19	7 10 10	0 1 3	21 33 37

Stages III and IV.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0				2 2 2	2 2 2
	3	+1			2 2 3		2 2 3
	2	+2		2 2 2	1 1 2		3 3 4
	1	+3					
3	3	0			1 1 1	2 2 2	3 3 3
	2	+1		4 4 4	2 4 4		6 8 8
	1	+2		1 1 1			1 1 1
2	2	0			3 3 4		3 3 4
	1	+1		1 1 1			1 1 1
1	1	0					
Total				8 8 8	9 11 14	4 4 4	21 23 26

TABLE IA (continued).

All Stages.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0				2 2 2	2 2 2
	3	+1			2 2 3		2 2 3
	2	+2		2 2 2	1 1 2		3 3 4
	1	+3					
3	3	0			1 1 1	2 2 2	3 3 3
	2	+1		4 5 5	2 4 4		6 9 9
	1	+2	1 1 1	3 3 4			4 4 5
2	2	0		0 1 1	7 8 9	0 1 3	7 10 13
	1	+1	2 4 4	10 14 15	3 5 5		15 23 24
1	1	0					
Total			3 5 5	19 25 27	16 21 24	4 5 7	42 56 63

First set of figures (total 42) excludes mild and queried cases.

Second set of figures (total 56) indicates all cases in the series, excluding second admissions.

Third set of figures (total 63) indicates all cases in the series, including second admissions.

TABLE IIA.

Cases who received Aspirin and Adrenalin during first three weeks in hospital - distribution according to Stage, Class of Functional Improvement, and Grade of Improvement in Activity before and after this treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0					
	2	+1					
	1	+2			1 1		1 1
2	2	0		1 1	0 1		1 2
	1	+1	1 1	3 3	2 2		6 6
1	1	0					
Total			1 1	4 4	3 4		8 9

Stages III and IV.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0			2 2		2 2
	3	+1			0 1		0 1
	2	+2					
	1	+3					
3	3	0			1 1		1 1
	2	+1		1 1	1 1		2 2
	1	+2					
2	2	0			2 3		2 3
	1	+1			1 1		1 1
1	1	0					
Total				1 1	7 9		8 10

TABLE IIA (continued).

All Stages.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0			2 2		2 2
	3	+1			0 1		0 1
	2	+2					
	1	+3					
3	3	0			1 1		1 1
	2	+1		1 1	1 1		2 2
	1	+2			1 1		1 1
2	2	0		1 1	2 4		3 5
	1	+1	1 1	3 3	3 3		7 7
1	1	0					
Total			1 1	5 5	10 13		16 19

indicates

First set of figures in columns (total 16) all cases in the series who received this treatment, excluding second admissions.

Second set of figures in columns (total 19) indicates all cases in the series who received this treatment, including second admissions.

TABLE IIIA.

Cases who received Aspirin with or without Sterile Water during the first three weeks in hospital - distribution according to Stage, Class of Functional Improvement, and Grade of Improvement in Activity before and after this treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			0 1 1		0 1 1
	2	+1					
	1	+2					
2	2	0			4 6 6	2 2 3	6 8 9
	1	+1	1 1 1				1 1 1
1	1	0					
Total			1 1 1	4 7 7	2 2 3	7 10 11	

Stages III and IV.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0			2 2 2	2 3 3	4 5 5
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1	1 1 1	2 2 2
	2	+1					
	1	+2					
2	2	0					
	1	+1					
1	1	0					
Total					3 3 3	3 4 4	6 7 7

TABLE IIIA (continued).

All Stages.

Class		Class Change	No. of Patients in					
Before	After		G1	G2	G3	G4	Total	
4	4	0			2 2 2	2 3 3	4 5 5	
	3	+1						
	2	+2						
	1	+3						
3	3	0			1 2 2	1 1 1	2 3 3	
	2	+1						
	1	+2						
2	2	0			4 6 6	2 2 2	6 8 9	
	1	+1		1 1 1			1 1 1	
1	1	0						
Total				1 1 1	7 10 10	5 6 7	13 17 18	

First set of figures in columns (total 13) indicates all cases in the series who received aspirin with sterile water injections, excluding second admissions.

Second set of figures in columns (total 17) indicates all cases in the series who received aspirin without sterile water injections, (excluding second admissions) in addition to those who received Aspirin with Sterile water.

Third set of figures in columns (total 18) indicates all cases in the series who received aspirin with or without sterile water injections, and includes one case who received this treatment for the first two weeks only during the second admission (Case No. 31).

TABLE IVA.

Cases who received Adrenalin with or without Inactive Powder during the first three weeks in hospital - distribution according to Stage, Class of Functional Improvement, and Grade of Improvement in Activity before and after this treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total.
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1		1 1 1
	2	+1					
	1	+2					
2	2	0			1 1 1	1 1 1	2 2 2
	1	+1			0 1 1		0 1 1
1	1	0					
Total					2 3 3	1 1 1	3 4 4

Stages III and IV.

Class		Class Change	No. of Patients in				Total.
Before	After		G1	G2	G3	G4	
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1		1 1 1
	2	+1					
	1	+2					
2	2	0					
	1	+1					
1	1	0					
Total					1 1 1		1 1 1

TABLE IVA (continued).

All Stages.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			2 2 2		2 2 2
	2	+1					
	1	+2					
2	2	0			1 1 1	1 1 1	2 2 2
	1	+1			0 1 1		0 1 1
1	1	0					
Total					3 4 4	1 1 1	4 5 5

First set of figures in columns (total 4) indicates all cases in the series who received Adrenalin with inactive powder, excluding second admissions.

Second set of figures in columns (total 5) indicates all cases in the series who received Adrenalin without inactive powder in addition to those who received Adrenalin with inactive powder, and excludes second admissions.

Third set of figures in columns (total 5) indicates all cases in the series, who received Adrenalin with or without inactive powder, and includes second admissions.

TABLE VA.

Cases who received Adrenalin with or without Inactive Powder during the first two weeks in hospital - distribution according to Stage, Class of Functional Improvement and Grade of Improvement in Activity before and after this treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total.
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1	0 1 1	1 2 2
	2	+1					
	1	+2					
2	2	0			2 3 3	2 2 2	4 5 5
	1	+1			0 1 1		0 1 1
1	1	0					
Total					3 5 5	2 3 3	5 8 8

Stages III and IV.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total.
4	4	0				0 0 1	0 0 1
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1		1 1 1
	2	+1					
	1	+2					
2	2	0					
	1	+1					
1	1	0					
Total					1 1 1	0 0 1	1 1 2

TABLE VA (continued).

All Stages.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0				0 0 1	0 0 1
	3	+1					
	2	+2					
	1	+3					
3	3	0			2 2 2	0 1 1	2 3 3
	2	+1					
	1	+2					
2	2	0			2 3 3	2 2 2	4 5 5
	1	+1			0 1 1		0 1 1
1	1	0					
Total					4 6 6	2 3 4	6 9 10

First set of figures in columns (total 6) indicates all cases in the series who received Adrenalin with Inactive Powder, excluding second admissions.

Second set of figures in columns (total 9) indicates all cases in the series who received Adrenalin without Inactive Powder in addition to those who received Adrenalin with Inactive Powder, and excludes second admissions.

Third set of figures in columns (total 10) indicates all cases in the series who received Adrenalin with or without inactive powder, and includes second admissions.

TABLE VIA.

Cases who received Sterile Water and Inactive Powder during the first three weeks in hospital - distribution according to Stage, Class of Functional Improvement and Grade of Improvement in Activity before and after this treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0				0 0 1	0 0 1
	2	+1					
	1	+2					
2	2	0			0 0 1	1 1 1	1 1 2
	1	+1					
1	1	0					
Total					0 0 1	1 1 2	1 1 3

Stages III and IV.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1	2 2 2	3 3 3
	2	+1					
	1	+2					
2	2	0					
	1	+1					
1	1	0					
Total					1 1 1	2 2 2	3 3 3

TABLE VIA (continued).

All Stages.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			1 1 1	2 2 3	3 3 4
	2	+1					
	1	+2					
2	2	0			0 0 1	1 1 1	1 1 2
	1	+1					
1	1	0					
Total					1 1 2	3 3 4	4 4 6

First and second set of figures in columns (totals 4 & 4) indicates all cases in the series who received sterile water and Inactive Powder, excluding second admissions.

Third set of figures in columns (total 6) indicates all cases in the series who received sterile water and Inactive Powder, including second admissions.

TABLE VIIA.

Cases who received Sterile Water and/or Inactive Powder or Rest only during the first two weeks in hospital - distribution according to Stage, Class of Functional Improvement and Grade of Improvement in Activity before and after this treatment.

Stages I and II.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0				0 0 1	0 0 1
	2	+1					
	1	+2					
2	2	0			0 0 1	5 5 5	5 5 6
	1	+1					
1	1	0					
Total					0 0 1	5 5 6	5 5 7

Stages III and IV.

Class		Class Change	No. of Patients in				
Before	After		G1	G2	G3	G4	Total
4	4	0					
	3	+1					
	2	+2					
	1	+3					
3	3	0			2 2 2	3 3 3	5 5 5
	2	+1					
	1	+2					
2	2	0				0 1 1	0 1 1
	1	+1					
1	1	0					
Total					2 2 2	3 4 4	5 6 6

TABLE VIIA (continued).

All Stages.

Class		Class Change	No. of Patients in					
Before	After		G1	G2	G3	G4	Total	
4	4	0						
	3	+1						
	2	+2						
	1	+3						
3	3	0			1 1 1	3 3 4	4 4 5	
	2	+1			1 1 1		1 1 1	
	1	+2						
2	2	0			0 0 1	5 6 6	5 6 7	
	1	+1						
1	1	0						
Total					2 2 3	8 9 10	10 11 13	

First set of figures in columns (total 10) indicates all cases in the series who received sterile water and Inactive Powder, excluding second admissions.

Second set of figures in columns (total 11) indicates all cases in the series who received either sterile water and inactive powder or rest only, excluding second admissions (Cases 22, 23, & 25 not included because the period of rest only was for one week).

Third set of figures in columns (total 13) indicates all cases in the series who received either sterile water and inactive powder or rest only, and includes second admissions. (Cases 22, 23, & 25 not included).

Erythrocyte Sedimentation Rate Before Treatment and at End of
All Treatment.

Patient No.	Before	After	Difference	Patient No.	Before	After	Difference
1	58	12	46	29	21	12	9
2	50	22	28	30	25	15	10
3	30	5	25	31	30	24	6
4	55	56	-1	32	16	8	8
5	35	14	21	33	84	62	22
6	45	30	15	34	25	14	11
7	80	83	-3	35	80	90	-10
8	25	24	1	36	32	44	-12
9	97	105	-8	37	25	8	17
10	22	15	7	38	45	30	15
11	35	24	11	39	140	50	90
12	30	14	16	40	98	50	48
13	39	20	19	41	18	16	2
14	40	4	36	42	32	30	2
15	22	32	-10	43	37	10	17
16	36	30	6	44	17	11	8
17	22	10	12	45	61	50	11
18	75	22	53	46	42	56	-14
19	17	7	10	47	23	20	3
20	40	45	-5	48	23	27	-4
21	48	18	30	49	30	18	12
22	71	15	56	50	13	15	-2
23	20	24	-4	51	49	42	7
24	45	33	12	52	23	15	8
25	26	36	-10	53	48	16	32
26	36	34	2	54	55	45	10
27	86	65	21	55	30	47	-17
28	25	5	20	56	55	10	45

TABLE IX A

Blood Uric Acid and Erythrocyte Sedimentation Rate Before and After ⁴⁸⁹
Three Weeks Treatment

Aspirin & Adrenalin

Patient No.	Blood Uric Acid			E.S.R		
	Before	After	Difference	Before	After	Difference
6	2.8	2.6	0.2	45	37	8
8	2.8	2.6	0.2	25	14	11
9	2.9	2.6	0.3	97	100	-3
10	2.3	2.1	0.2	22	27	-5
12	2.5	2.4	0.1	30	18	12
15	2.8	2.0	0.8	22	15	7
19	2.7	2.3	0.4	17	8	9
32	1.9	2.2	-0.3	16	8	8
35	3.0	3.0	0.0	80	68	12
41	2.4	1.9	0.5	18	18	0
42	2.6	2.5	0.1	32	30	2
44	2.8	2.0	0.8	17	9	8
45	3.5	1.6	1.9	61	56	5
11	1.8	2.2	-0.4	35	24	11

Adrenalin.

4	2.8	2.6	0.2	55	57	-2
46	2.9	2.7	0.2	42	70	-28
51	2.6	2.5	0.1	49	48	1
52	3.4	3.1	0.3	23	40	-17
53	2.5	3.3	-0.8	48	67	-19

Sterile Water and Inactive Powder.

17	2.6	2.7	-0.1	22	19	3
34	2.3	2.4	-0.1	25	14	11
36	3.3	2.2	1.1	32	38	-6
48	3.3	3.9	-0.6	23	47	-24

Blood Uric Acid and Erythrocyte Sedimentation Rate Before and After
Three Weeks Treatment.

Aspirin.

Patient No.	Blood Uric Acid			E.S.R.		
	Before	After	Difference	Before	After	Difference
1	3.1	2.7	0.4	58	76	-18
2	3.1	3.0	0.1	50	55	-5
7	2.8	2.7	0.1	80	124	-44
14	2.8	2.4	0.4	40	28	12
18	2.1	1.8	0.3	75	52	23
31	1.9	1.8	0.1	30	35	-5
33	2.8	2.4	0.4	84	65	19
37	2.6	1.3	1.3	25	8	15
38	2.9	2.8	0.1	45	42	3
39	3.6	3.0	0.6	140	110	30
43	2.5	1.7	0.8	37	20	17
49	2.9	1.9	1.0	30	24	6
55	3.4	3.1	0.3	30	38	-8
56	2.2	3.0	-0.8	55	17	38
47	3.3	1.8	1.5	23	25	-2