The Treatment of Disabled Joints Resulting from the So-called Rheumatoid Diseases

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THE TREATMENT OF DISABLED JOINTS RESULTING FROM THE SO-CALLED RHEUMATOID DISEASES.[1]

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DURING the past few years it has been my fortune to see a large number of patients with reference to the treatment of stiff or deformed joints which have resulted from the so-called rheumatoid diseases; and from a careful study of the cases certain points have been suggested in regard to the diagnosis and the treatment which seem to me to be of enough importance to be brought before this Society for discussion.

My apology for presenting a subject in which there is so little general interest is that the impression made upon me by seeing so many of these helpless cripples has been most profound; and it is my chief desire and hope that by the discussion of the subject here a more definite understanding of the disease may be obtained, and that it may be possible to hold out more encouragement to those afflicted with diseases than which none that are non-mortal can be worse.

The cases, as they have been seen, have varied greatly, both as to the extent of the disease and the degree of deformity. In some of the mildest only one or two joints have required treatment, while in the worst cases almost every joint in the body has been affected, the condition being not unlike that seen in the pitiable subjects who are exhibited as ossified men and women in our cheap museums. Most of the cases have been seen at the Carney or the Good Samaritan Hospitals; and I am indebted to the members of the staff of both hospitals for referring the cases to me, and for their aid in carrying on the treatment.

[1] Read at the Surgical Section of the Suffolk District Medical Society, November 4, 1896.

All cases have been excluded in which the joint disability resulted from acute inflammatory rheumatism, and also all cases in which the trouble developed in connection with gonorrhea, typhoid fever, or the other infectious diseases. In these cases the treatment is more definite and the prognosis more or less certain. Only those cases have been considered in which the diagnosis of rheumatoid arthritis, or some of its synonyms, had been made by the physician in charge, and in which the diagnosis was borne out by the pathological changes which it was possible to study clinically. Among all the cases which were grouped under this head, there were two distinct types, which presented entirely different features, and which were affected so differently by treatment that a brief description of their distinctive features is necessary before any report of the treatment can be given. Please understand that the classification is purely a clinical one, and is not based, as should be the case, upon a careful bacteriological and pathological study. Such work is being carried on, but as yet the observations are too few from which to make any deductions. It is for this reason that I have not attempted to suggest new names, but have used those which have long been employed, giving them perhaps a somewhat different meaning.

One of the two types I have called "rheumatoid arthritis," and the other "osteo arthritis." Both terms are incorrect; but they may, perhaps, serve until more advanced work has determined the cause of the disease and the exact nature of the morbid anatomy.

The cases designated by the term "rheumatoid arthritis" are less frequent than those of "osteo arthritis," but develop more rapidly and lead to much more permanent crippling. Rheumatoid arthritis seems to be essentially a disease of atrophy, and is characterized by a spindle-shaped swelling of the joints during the acute and the subacute stages, which afterwards subsides leaving the joint smaller than normal. In the fingers

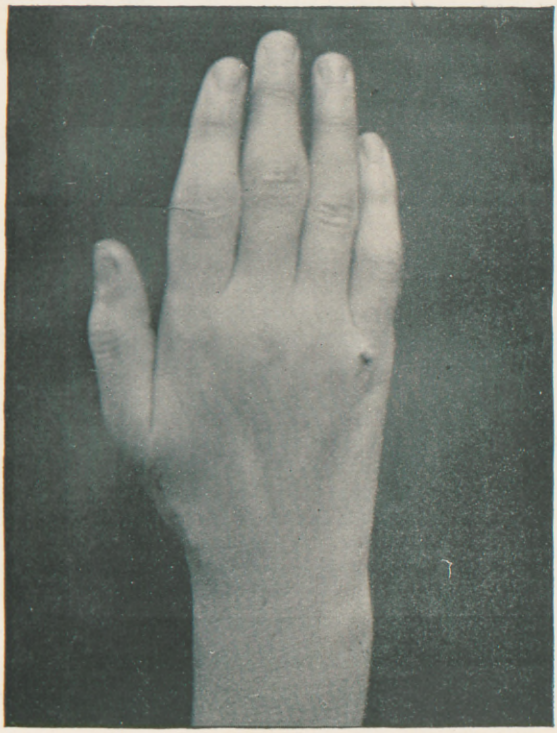

FIG. I.

Rheumatoid arthritis, showing the spindle-shaped enlargement of the first phalangeal articulation, as is seen during the acute and subacute stage of the disease.

the line of the joint is smaller than the rest of the finger, instead of larger as is normal, due to the atrophy of the ends of the bones and the articular structures. The skin over the joint is also much atrophied, the normal wrinkles being obliterated. The deformities are due, except when the disease has come on very early in life before the bones have ossified, to muscular atrophy or the continued unvaried position of the affected part. They are usually deformities of flexion or extension, there rarely being any lateral distortion, such as is common in joints affected by the other type of the disease.

The patients have been chiefly women, and the disease has developed at two distinct periods of life, at adolescence and from middle life to old age. In the former the disease runs a more acute course, more of the joints are involved at one time, and nearly all of the affected joints become firmly anchylosed as the inflammatory process subsides. The disease of middle life or old age is much less acute than in adolescence, developing more slowly, with rarely more than two or three joints inflamed at a time. With these cases it has taken from four to five or six years for the disease to develop, while with the younger patients, one, two or three years have shown the disease well advanced. Firm anchylosis is much less frequent in the disease occurring after middle life. The joints may be partially anchylosed and the function much impaired, but the destructive process is less marked than with the younger patients.

Fig. I shows the appearance of the fingers, with the spindle-shaped enlargement about the joints, as is seen during the acute or subacute stage of the disease. This swelling is due almost entirely to change in the soft parts and peri-articular structures, the bone being but little if any involved, as is shown in the radiograph, Fig. II. It is seen in this that there is considerable swelling about the joint, but the appearance of the bone is normal, except that the line of the joint is

somewhat indistinct, due to the change in the cartilage.

Figs. III and IV illustrate the same condition after the acute symptoms, with the swelling, have subsided. The atrophy of the joint is plainly shown, the joint line being the smallest part of the finger. In both patients the finger joints were anchylosed. Fig. III represents the hand of an old person, while Fig. IV is the hand of a young woman. The contrast between this condition and that represented by Fig. V is certainly very evident.

Osteo arthritis is much more common than rheumatoid arthritis, but rarely leads to permanent crippling, and is characterized by a proliferation of the cartilage, with the formation of osteophytes, at the ends of the bones. This is essentially a disease of mindle life or old age, and the joint disability is due to the mechanical presence of the masses of bone or cartilage. The distortion of the part is due also to the presence of this hypertrophied tissue, and as the growth is rarely equal upon the two sides of the joint there is almost always some lateral deformity. The joint is usually more or less flexed, owing to the presence of the osteophytes or cartilage on the dorsal aspect of the joint. These rarely if ever occur in the flexure of the joint, so that hyperextension is never seen as in rheumatoid arthritis. In osteo arthritis the joint is larger than normal, as is shown in Fig. V, the reverse of rheumatoid arthritis. The change in the bone is shown in Fig. VI.

The most common form of osteo arthritis is that seen so frequently in both men and women in the form of Heberden's nodes (Fig. V), at the phalangeal articulations. While this in the large majority of cases may interfere with the use of the joint to a certain degree, it does not cause serious trouble. If, however, an injury is received, the hypertrophy of the cartilage and the formation of the osteophytes goes on much more rapidly, and may very seriously disable the joint. This, it seems to me, is a point of much importance, and

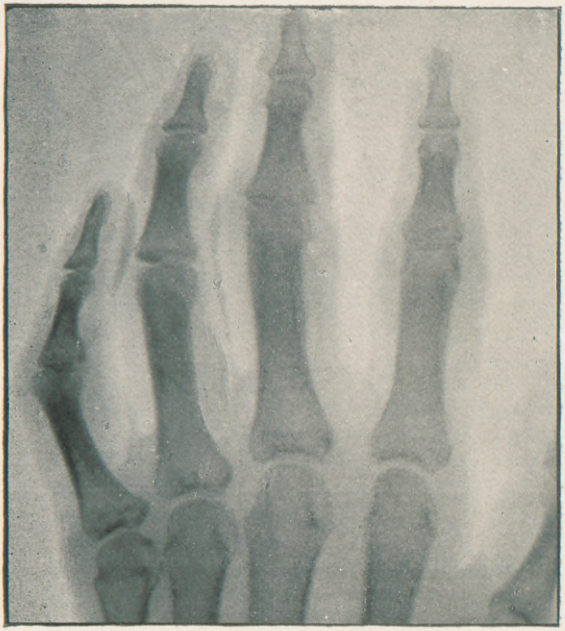

FIG. II.

Rheumatoid arthritis, showing no change in the outline of the bones in spite of the marked spindle-shaped enlargement of the joints. The line of the first phalangeal joints in the index and middle fingers is less distinct than normal, due to the atrophy of the cartilage and the anchylosis of the joint.

explains in part why seemingly simple injuries in middle-aged or old people often result in long confinement and permanent impairment of the use of the joint. In such cases a much more serious prognosis should be given.

In support of this statement, the following cases are reported in considerable detail:

Case I. Miss E. M., sixty-five years of age, a nurse by occupation, was referred to me at the Carney Hospital by Dr. J. C. Warren. For many years the finger-joints have been enlarged, but she has been able to do her regular work and aside from this has been very well.

About two and a half years ago the patient fell into a cellar-way, receiving a small scalp wound and a severe contusion of the right knee. The left knee and right arm were considerably strained, but not as severely as the right leg. The left arm escaped entirely. Because of the injuries she was taken to the Massachusetts General Hospital, where she remained for two or three weeks, and was then transferred to the St. Luke's Convalescent Home, where she remained for six or eight weeks. After this she was as well as ever for a few months, but then began to be troubled with needle-like pains in the knee-joints, chiefly the right. These pains were quite constant, and grew worse, so that it was more and more difficult for her to be about.

A year and a half after the injury the right knee commenced to catch occasionally on walking. This grew worse, so that the patient was frequently thrown down by "the locking of the joint." Because of this and the feeling of insecurity and helplessness which it produced, the patient was referred to the Orthopedic Clinic at the Carney Hospital.

When first seen, in July of this year, the right knee was considerably swollen, partly due to synovial fluid and partly due to thickening of the ends of the bones. Several loose pieces of cartilage were easily

felt. In the left knee there was somewhat the same condition, but less marked, and, while some loose bits of cartilage could be felt, they were evidently still attached to the synovial membrane. Some thickening of the bones at the right elbow could be felt, and the thickening of the humerus at the shoulder was very marked. The left arm was apparently perfectly normal. The Heberden nodosities were present at the phalangeal articulations of both hands.

The patient was admitted to the hospital, and a few days later the right knee-joint was opened by Dr. Balch, and three loose cartilages, as large as hickory-nuts, were removed. At this time the joint was carefully explored, and the rim of new-formed cartilage could be seen as well as felt, and in some places it was quite nodular, showing plainly the origin of the loose bodies.

The subsequent history has been uneventful. There has been no more locking of the joint, although it is probably only a matter of time before some of the other pieces break off and cause trouble.

Case II. Miss J. A., eighty years old, has always been well and strong, except for trouble with the hands, supposed to be "rheumatism."

Two and one-half years ago the patient was struck by a carriage and knocked down, producing a severe contusion of the right hip and knee, and which confined the patient to bed for a few weeks. After this she was about as well as ever until a few months later, when occasional sharp, needle-like pains were noticed, chiefly in the right knee. This grew steadily worse, the function of the joint becoming more and more impaired and walking more and more difficult. It was because of the pain and the lameness that the patient sought treatment.

Upon examination, the right knee was considerably swollen, the swelling being partly synovial, but chiefly due to the thickening of the bones. The right patella was fully twice as wide as the left, and the rim of

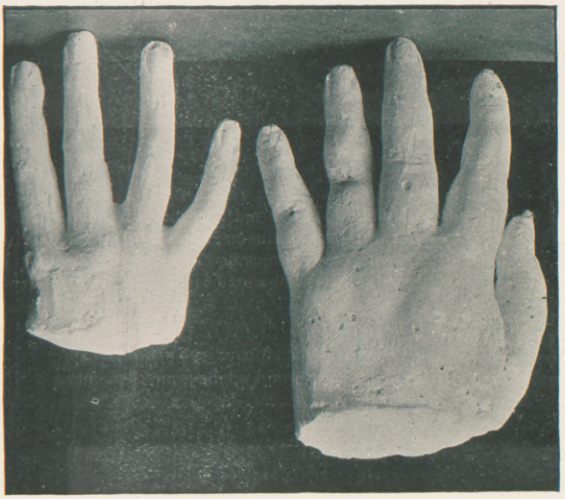

FIG. IV. FIG. III.

Rheumatoid arthritis, after the spindle-shaped swelling has subsided, showing the constriction at the joint due to the atrophy, instead of the nodular enlargements as seen in "osteo-arthritis." Fig. III is the hand of an old person. Fig. IV, a young person. All of the joints in both of these hands were stiff.

cartilage, which had been thrown out at the edge of the articular surface of the femur, was so distinct that it could be pinched between the fingers. What was apparently a similar condition was present at the hip.

None of the other joints showed any signs of active increase of the articular structures. The Heberden nodes at the finger-joints were quite marked, and the thickening was enough to produce considerable lateral deformity.

In both of these cases the change in the joint is apparently produced by a single severe trauma, but the same condition may result from a series of comparatively slight injuries. I have seen one or two cases in women, who were dressmakers, and who were complaining of trouble in the knees, which was apparently due to trauma received by dropping on to the knee or knees in fitting dresses.

The following case is reported more fully to still further emphasize this fact:

Mrs. L. B., seventy years of age, has been well, except for "rheumatism" of the hands, until the past five or six years. Since then she has been unable to continue her occupation, that of putting down carpets, because of the trouble with the knees, kneeling being almost impossible.

Upon examination, both knee-joints were enlarged, the enlargement being due partly to synovial distention and partly to thickening of the bone and cartilage. Both patellæ were fully twice their normal width, the edges being irregular. There was a large nodular thickening about the end of the femur, apparently a rim of new-formed cartilage. There were several pieces of loose cartilage which could be easily felt. The other joints, aside from the nodes on the fingers, showed no change.

The trouble with the joints in this case was probably due to the constant bruising received in dropping on to the knees in the patient's occupation of carpet-laying.

These cases are reported thus carefully to suggest at least, if not to prove, that what seem to be simple injuries of joints, occurring in persons having a tendency to osteo arthritis, as shown by the enlargement of the phalanges, are followed in many cases by a more or less rapid increase of the cartilage of the injured joints, even though this special joint may have shown no evidence of the osteo-arthritic change before. The increase in the cartilage is at times sufficient to render the joint useless, and the liability to this condition should be borne in mind in giving a prognosis in apparently simple joint injuries.

We must turn now, to that which is properly the subject of this paper, the treatment of the joints disabled by these diseases. The general treatment, including forced diet, stimulating bathing and massage, as well as the medicinal treatment, is of much importance, but more properly belongs to the realm of general medicine, and has been quite fully described in the general text-books and the magazine articles. In these articles, as well as in the works on surgery and even the works on orthopedic surgery, the surgical or mechanical treatment of these conditions is either passed over entirely, or, if it is mentioned, it is in the most superficial way and with the most discouraging prognosis.

In the cases which I have treated, no new or brilliant methods have been employed; and if the results have been any more encouraging or satisfactory than those of other writers, it has been due partly to the classification of the cases, and partly to a most careful and persistent attention to all of the details of treatment.

It is evident at once that the two forms of the disease, or possibly the two diseases, which differ so essentially in their clinical aspects, should require different modes of treatment. In the one, a disease of atrophy characterized by firm anchylosis of the joints, more active methods can be used than in the other

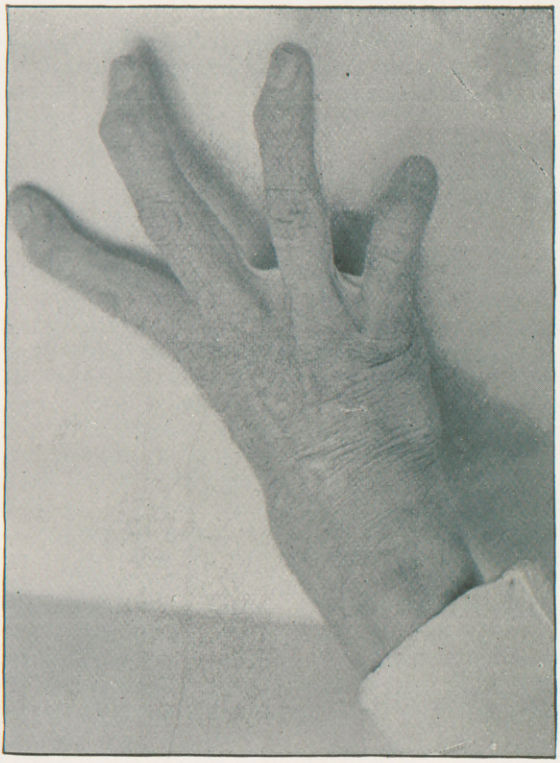

FIG. V.

Osteo-arthritis, showing the nodular enlargements (Heberden's nodes) at the second phalangeal articulations.

class, in which any trauma or forceful movement would cause a more rapid development of the hypertrophied tissue, and greater impairment of usefulness.

In neither case should a complete restoration of the normal functions of the joints be expected. Both forms represent what are considered incurable diseases, and the improvement following the treatment, is improvement in degree only. The patient may still be a cripple, but instead of being absolutely helpless she may be able to take care of herself.

For the cases designated as osteo arthritis, all manipulation of the joint or forcible correction of the deformity should be most carefully avoided, and the joint protected and immobilized as much as is possible or practicable. The presence of the newly-formed cartilage mechanically interferes with the motion, so that in each movement of the joint, the bones strike against some portion of this new tissue. This constant irritation acts as a stimulus and causes a more rapid development of the cartilage and a still greater impairment of the joint. Forcible manipulation would not only increase this irritation, but would possibly dislodge some of the cartilage, forming a loose body, which in its turn would cause more irritation to the joint. Rest and quiet for the joint is of the first importance, not necessarily an entire disuse of the part, but use in such a way that the joint is injured as little as possible. If complete immobilization is desirable, the plaster-of-Paris or the leather splint give the best results; but in the majority of cases some motion may be allowed, and a jointed splint, permitting certain degrees of motion, or even the flannel bandage applied over several thicknesses of cotton, will give all the needed support.

The result of free motion is not only to increase the development of the cartilage, but from the internal trauma which results, a subacute synovitis follows, and this at times from the distention of the capsule and the consequent loosening of the ligaments, causes

considerable annoyance. Aspiration of the joint in this condition has been very satisfactory.

In the cases of rheumatoid arthritis the affected joints should be used as little as possible, and never manipulated until the inflammatory process has entirely subsided. If treatment be undertaken before this not only will the individual joint be made worse but the disease as it shows in the other joints will be made more acute. Up to this time the treatment should be wholly general.

After the evidences of active disease in the joint have disappeared, more definite measures should be taken to preserve or restore the motion. If, as is frequently the case, there is complete anchylosis, the patient should be etherized completely so that the muscles are entirely relaxed, and the joint flexed first and then extended through the extreme normal limits. This should be done but once and the joint put absolutely at rest. Any malposition of the bones should be corrected at this time. The free manipulation of the joint, the so-called "pump-handle" manipulation should never be attempted in these cases, it being followed by acute pain and swelling, and practically always, so far as I have observed, resulting in an even firmer anchylosis than before.

After the joint has been bent once, always with the flexion first, it is immobilized, and not disturbed for three days. The dressing is then removed, and motion attempted by the patient, no force being allowed. The dressing is then reapplied as carefully as before. At first scarcely any voluntary motion will be possible, but the attempt should be made twice each day, the joint being kept perfectly quiet between times.

This treatment should be continued for several weeks and the dressing not entirely removed until the muscular spasm has disappeared. In the first few weeks when this spasm of the muscles is so marked decided benefit results from the use of hot-air baths.

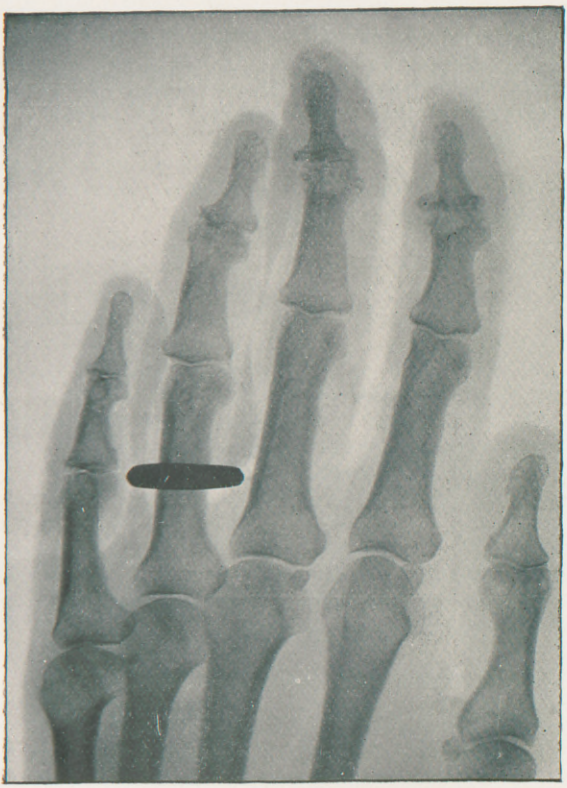

FIG. VI.

Osteo-arthritis, showing the bony deposits upon and enlargement of the second and third phalanges, causing the lateral distortion.

The temperature of the air should be from 250° to 275° F., and the bath should be used for a half-hour each day. This not only relieves the muscular contraction but is claimed to stimulate the secretion of the joint fluid.

After the spasm has disappeared more active measures should be attempted. The patient should be given more active work and massage, and passive manipulation should be used.

In following this course of treatment very little pain results and what there is, is commonly referred to the muscles, probably the result of use after long inaction. There should be very little if any joint effusion as the result of the forcible breaking up of the anchylosis, and rarely any ecchymosis.

A movable joint should be the result in the large majority of cases, but the degree of motion will vary according to the joint involved, the amount of displacement of the bones, and the character of the adhesions. The more complicated the joint the less satisfactory will be the result. In the knee it will depend very largely upon the patella. If this can be freed and kept free the motion will be good, but, if it becomes adherent, a considerable amount of motion may still be present as the result of the stretching of the patella tendon, but the voluntary control of the joint will be much less perfect, and a splint will probably be necessary.

In the articulations in which the tendons lie close to the joint, as at the wrist, the restoration of motion will be more difficult than where the joint is more protected.

The prognosis as regards the hip joint is very good, and in one case in particular normal motion has resulted.

In the ankles and in the joints of the fingers and toes, the results have been fairly good. The chief difficulty at the ankle, consists in gaining the dorsal flexion. The joint is invariably anchylosed with the foot ex-

tended, the position at times having existed for years. During this period the calf muscles contract, and it is this shortening which limits the flexion. To meet this condition, the traction shoe devised by Dr. Shaffer, has been of great help and is to be used after the spasm has disappeared, when the passive manipulation is desirable.

The knee-joint is almost invariably found flexed, with some dislocation backwards of the tibia, and with this subluxation there is usually an outward rotation of the leg and foot. To meet this condition, the joint is first flexed as much as possible, the patient being etherized, and then by means of the genuclast, described in another paper,[2] the bones are brought forward into their normal position. It is impossible to accomplish this replacement of the bones, when the deformity has existed for any considerable time, with the hands alone.

The different cases, as they are seen, present so many different features as to the number of joints affected and the degree of disability; and the possibilities of treatment and the results of treatment vary so much in the different cases or the different joints, that it is impossible to form any statistics, or to make any more than general deductions from a series of such cases. Each case must be considered by itself, and rather than burden you with a detailed account of each patient, which would be not only wearying but of little value, I have selected two or three of the worst cases for detailed report, feeling that this will show, more clearly than any statistical table, the nature and extent of the improvement which is to be expected in these cases.

Case I. Miss L. G., thirty-three years of age. Thirteen years ago patient began to have trouble with "rheumatism." The disease has gradually progressed, one joint after another becoming involved, so that during the past six years the patient has been ab-

[2] See Boston Medical and Surgical Journal, September 7, 1893.

solutely helpless, confined to her bed and dependent upon others for every detail of personal care. During the past five years there has been little or no change in her condition.

When first seen, a year and a half ago, nearly all of the joints of the body were anchylosed. There was slight motion in the left shoulder and a few degrees at the left elbow; but aside from this, the joints of the arms and hands, with the exception of slight motion in one or two fingers, were entirely useless. In the left hip the motion was quite free; but aside from this, there was little if any motion in the joints of the legs and feet.

For the past year and a half, during which time the patient has been under my care, she has been etherized twice. At each time the adhesions in a number of the joints have been broken up, and this has been followed by constant gentle manipulation. Between the manipulations the joints have been protected with splints, and these continued until the patient was able to control the joint herself.

The improvement has been considerable. The patient is still much crippled; but instead of being absolutely helpless, she can take care of herself. She is able to go about the room without assistance, and with the aid of crutches can go up and down stairs. Besides this she is able to take quite considerable walks out of doors.

The condition of the special joints is of interest. The hips have nearly the normal amount of motion. The knees can be fully straightened; the right can be flexed to a right angle, while the left has about half of this motion. The motion in the feet and ankles is quite free. There is about one-half the normal amount of motion at the shoulders. In the elbows there has been no improvement, but the hands and fingers are decidedly better so that the patient has been able to make several patterns of Danish lace, by which she hopes to partially support herself.

CASE II. Mrs. D., seventy years of age. For the six years previous to 1892, the patient had been entirely confined to her bed, or to a wheel-chair because of "rheumatism," which had gradually developed. Both legs were involved, the knees being chiefly disabled, so that walking or standing erect was impossible. The hands and arms were considerably affected; but with the exception of the fingers, the joints were not anchylosed.

During the past four years the patient has been under my care at intervals. At the first the joints were manipulated without ether, and the contraction of the knees partially overcome with splints and extension. In two months she was able to walk with two canes, and soon after this the wheel-chair was discarded altogether. It was possible for her to go up and down stairs, and to go freely about her room.

Two years ago, in the depression caused by the death of a daughter, there was an exacerbation of the disease, which lasted with more or less severity for fully a year. Since then the treatment has been continued, and she is once more able to be about her rooms, using one or two canes.

These two cases represent the two extremes as regards the time of onset of the disease, the first patient being a young woman, and the second a woman quite advanced in life. In the younger patient the disease had been more acute and rapid in its development, and more joints were disabled as the result. Because of this and, as the youth of the patient made it possible, more active treatment was carried out than in the other case. Ether was given twice, and the joints freely manipulated. In the second case, because of the age and the general condition of the patient, the manipulating of the joints was entirely carried on without an anesthetic, the progress being much slower than in the first case. Both cases are much better than before the treatment, and both have been able,

after a long period of confinement to bed or a wheel-chair, to be up and to walk about, either without any support or with the aid of cane or crutch.

CASE III is another instance of the disease of the later period of life; but as it occurred in the early part of this period, it was possible to carry on a more active treatment.

Mrs. R., fifty-eight years of age, has been crippled with "rheumatism" for the past eight years, and for five years has been confined to the bed or chair, walking or standing erect being impossible.

The patient was first seen by me about eight months ago. At that time, both knees were flexed at a right angle and both joints partially anchylosed. The patellæ were firmly adherent, so that extension of the legs was impossible.

There was some motion at the ankles but the tarsal and phalangeal joints were stiff. The arms were somewhat affected, none of the joints being firmly anchylosed, but there was a restriction of the motions in nearly all.

The patient has been etherized twice. The patellæ were dislodged and the knees straightened with the knee apparatus (mentioned above), and the joints of the feet and toes were manipulated and the adhesions broken.

At the present time she is able to go about her rooms using crutches and wearing a pair of caliper splints to support the knees. There is a steady improvement, and during the next year, I feel sure that she will be able to do very much more.

In these and in the other cases the progress has been checked and the treatment stopped, at times, by the starting up of the disease in some new joint, or by an exacerbation of the disease in some joint in which the disease had been comparatively quiescent. In no case, however, has the disease reappeared in the joints which were being manipulated. Apparently when the disease disappears from the joint, and the

joint structures are so disorganized that it becomes anchylosed, that joint is no longer affected by the disease. That the acute manifestation of the disease in the other joints, is partly, at least, due to the treatment is not improbable.

CONCLUSIONS.

Of the cases classed as rheumatoid arthritis two types are described, clinically, which for convenience, are designated rheumatoid arthritis and osteo arthritis. The differentiation between the two types is of the utmost importance in the treatment.

Rheumatoid arthritis is much more acute than the other ; it occurs in middle and advanced life, but early in life as well. During the acute stage the joints show a spindle-shaped swelling, which finally subsides, leaving the joint much atrophied, and usually anchylosed.

For these cases the joints should be manipulated after all acute symptoms have disappeared, and the character of the manipulation is of much importance. Cases are reported showing the results of treatment in this class.

Osteo arthritis is a much more chronic condition, occurring only in middle life or old age, and is characterized by a proliferation of the articular cartilage, with the formation of nodes about the joints. These cases should not be manipulated, as any injury or undue violence results in a more rapid development of the cartilage. It is this tendency which explains the impairment of function which so often results after comparatively simple injuries to a joint. Protection and immobilization in such cases is of importance.

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