RHEUMATISM AND ARTHRITIS

How wonderful it is to come to later life and watch the years go by without a twinge of rheumatism and arthritis! No one need fall prey to these diseases if he will follow the sensible advice given in the following pages.

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Kinds of Rheumatism

RHEUMATISM is a word that covers a multitude of muscle, tendon, and joint aches and pains. It is what the instructor in rhetoric would call a generic term, for it is decidedly general in its definition. To the physician, rheumatism may mean arthritis, or joint inflammation; tenositis, or tendon and ligament inflammation; myositis, or muscle inflammation. You see, "itis" means inflammation, and the rheumatic individual may have his "itis" involving one or more crippling spots in knees, fingers, elbows, spine; along tendons and ligaments that attach muscles to bones or hold bony parts snugly together; in muscles big or little, here or there.

This rheumatic affliction of one type or other is said to attack practically seventy-five per cent of all industrial workers past forty years of age. That makes a man in this age-period somewhat of a liability to his employer, as you can see, for statistics indicate that this very crippling malady stands away ahead of cancer, heart disease, or even tuberculosis as a cause of loss of time and work.

Once rheumatism gets a good start it often means long months or years of partial or complete disability. Thus it constitutes a very grave social problem. But its ravages may largely be met by a knowledge of the simplest facts concerning the disease and its several causes. The glimpse of the standard methods of diagnosis and treatment that we shall have in this booklet may be helpful in making us sufficiently rheumatism-minded to guard against its development and to seek the right help in effecting its cure.

Naturally, the very best kind of medicine is *preventive medicine*—best from the standpoint of physical well-being and best

from the economic viewpoint. Rheumatism unquestionably offers a tremendous opportunity for the exercise of good common sense in halting a serious disease before it gets started. The major fundamental in rheumatism prevention, as in any disease, is a life so ordered as to insure superlative health and maximum vitality. This means a knowledge of and adherence to the laws of nature, which are in truth the laws of God.

Arthritis—Joint Trouble

The rheumatic disability that provides the greatest problem is *arthritis*—joint trouble. It is in this type of rheumatism that we find the long-standing chronicity and the crippling impairment that is suggested by the term rheumatism—the disease that "cripples in the largest number of cases, and kills in the smallest number." Very often joint, muscle, and tendon inflammation are combined; and then again a sprained ankle or wrist will involve ligaments and tendons, with no arthritis. Lumbago means the inflammation and consequent soreness of the great muscles in the lumbar region, or lower back. But then, muscle, tendon, and ligament disorders are minor in comparison to joint inflammations, and it is with the latter that we are chiefly concerned and to which we shall devote our attention.

We shall first introduce you to a surprising number of diseases with which joint inflammation may be associated. Just read through the list, and let us explain the terms later.

1. Chronic infectious arthritis.
2. Chronic osteoarthritis.
3. Rheumatic fever.
4. Gout.
5. Systemic diseases which may give rise to joint infection and are caused by the specific germ responsible for the particular disease.

   a. Gonorrhea.
   b. Tuberculosis.
   c. Syphilis.
   d. Dysentery.
   e. Malta fever.
   f. Scarlet fever.
   g. Septicemia.
   h. Pneumonia
   i. Typhoid fever.
   j. Meningitis.
   k. Mumps.
   l. Leprosy.

6. Illness from serum injections.
7. Certain nervous system disorders.
8. Certain blood disorders, as hemophilia and purpura.

Such a list indeed looks formidable, and yet it is incomplete as a technical classification. It is quite sufficient, however, for practical purposes; and even of this number there are only perhaps six that represent the great number of rheumatic cases seen by the general practitioner. Of the next 100 rheumatic patients visiting the average medical office there will be 25 to 30 with chronic osteoarthritis, 35 to 40 with chronic infectious arthritis, 3 to 5 with gouty arthritis, 2 with gonorrheal arthritis, 1 with tubercular arthritis, and 1 with rheumatic fever. The last three are included not because of the great prevalence, but because of the seriousness of the disease and the prevailing ignorance concerning it. From the arthritis clinic of the Presbyterian Hospital comes the report that of 400 patients consecutively entered with chronic joint complaints, 300 belong to the first two groups; namely, chronic infectious arthritis and chronic osteoarthritis. This makes it appear as if Nos. 1 and 2 of the above list were of chief importance in the rheumatic woes of mankind; and, as such, these two types have received much attention from research workers. We are thus able to present you with facts that have been accumulated from the intensive study of scientific minds the world around, and it is our hope that they may be so clearly and convincingly presented that the quackery so injuriously practiced on credulous and hopeful rheumatics may be curtailed.

We shall endeavor to present the different types of arthritis through the concrete examples offered by the patients themselves. In other words, you may think of yourself as an observer in a rheumatism clinic. We shall examine the records of patients that represent each type of the disease, and thus try to bring out the essential points in diagnosis and treatment. And to make it the more interpretative we shall ask you, the reader, to take the role of *Mr. Average Man,* and thus, through questions that might occur to the mind, aid us in bringing out helpful points.

Chronic Infectious Arthritis

THIS type of arthritis has been given a number of confusing names. Perhaps we had better list them; then you will see why even some doctors themselves get mixed up. Here they are: atrophic, proliferative, rheumatoid, primary progressive, synovial, deformans. These names suggest something of what is actually going on in a joint involved in such a destructive process,—but they all mean the same thing,—namely, infectious arthritis. Let us see why it is called chronic infectious, deforming, progressive, atrophic, and so on. It is a germ infection, and the patient's trouble is not limited to the sore joints; he is sick all over, chronically ill. It begins with inflammation and swelling of the tissues within the joint,—the synovial membranes,—gradually following with complete destruction of that lining membrane and the thick cartilage beneath, thus removing all the "bearings" of the joint and causing raw bone to grate on raw bone. Of course this means bone injury, and nature tries to protect the part by depositing in and about the joint a lot of calcium (bone), which naturally deforms it. And then from this extensive inflammation we get a growing together of the bones thus united, and the joint becomes fixed in one position. Well, suppose we go into our "Rheumatism Clinic" and take some cases of this type now to get from real life the details we are interested in.

Our first patient this morning is Mrs. Anderson. She presents a very interesting story. Her experience should teach us much as to how the arthritis patient must relate himself to the affliction and to the physician. This woman is forty-one, has a pleasant home, two fine children, and reasonable financial advantages. She is a person who appreciates the accrued value of careful and healthful living, has always been abstemious in her habits, and consequently has had occasion to challenge the suggestion that her type of arthritis always selects the debilitated, the overworked, the undernourished.

Well, about six years ago—she was only thirty-five then—her right knee began to swell, was sore, a bit hot and red, and ached at night. Presently both elbows began to ache, and the right wrist added further to her fear and misery.

She began to "doctor." Mrs. Anderson had one very bad fault. She insisted on quick, painlessly acquired results. She saw no reason to curtail her activities about the home or to allow treatment to interfere with her social interests. And when one doctor failed to secure freedom from pain and annoyance in three or four weeks she would dismiss him and select another practitioner. And so things continued, up and down, for some time. Finally, X-ray pictures of her joints were shown to her, and an inevitable future of stiff legs and arms was graphically detailed. It brought her to her senses, and she entered into solemn contract with her medical adviser to follow his instructions implicitly and faithfully irrespective of the sacrifice of her personal desires.

Her physician had a dentist extract three teeth—not very bad, but with enough inflammation around them to make them objects of suspicion. The opening of the womb had been badly torn in childbirth and the deep pockets thus formed were filled with pus. These were opened by an electric knife and the whole area cleaned up. And—much against her will—she was put to bed and kept there for several weeks.

Mr. Average Man: Why was she put to bed?

Doctor: Would you expect a broken arm to mend if you removed it from the splint several times a day and bent the fragments around just to see how things were progressing? Of course not. You would keep that injured part at absolute rest, and thus give nature an opportunity to effect a cure. Well, when the lining membrane of a joint is swollen and sore, when the cartilage underneath that membrane is rough and irregular-looking, like a linoleum covering worn through here and there, exercising such a joint offers just about as great a handicap to nature in her effort to heal as to wriggle a broken arm. Physical rest is the first order of nature for any illness. It is by all odds the best medicine in the world,—the one and only panacea.

In our study of chronic infectious arthritis we must early get it fixed in our minds that this type of rheumatism is a constitutional disease,—a general body disease,—with local manifestations in the joints or elsewhere. You may wonder just what we mean by that. Well, when a man has pulmonary tuberculosis, you look on him as a sick man,—sick all over,—yet the manifestation

of the disease is distinctly local—in his lungs, at least at first. The same attitude must be taken toward arthritis. It is a general body disease, and therefore the whole body must be treated, not the joints alone.

Mr. Average Man: Is Mrs. Anderson's rheumatism caused by a germ of some kind? You stated that some teeth were extracted and certain other abscesses opened and drained.

Doctor: We call Mrs. Anderson's type of arthritis nonspecific. That means it is not caused by germs specifically identified with certain known diseases, as gonorrhea, pneumonia, dysentery, tuberculosis, and a dozen others. But the chronic rheumatism she has had is most certainly due to a germ; it is named after its appearance rather than for any special disease in which it may be implicated. We call it a *streptococcus,*—just a string of dots like this (.....) under the microscope. Well, our infection may begin locally in the gums as a pyorrhea, or in the tonsils, or in the sinuses. From these higher areas it is passed on into the stomach and intestinal tract. Thus the intestinal tract may become the most important of the Augean stables for Dr. Hercules to clean up. For that reason, if bacterial study of the stool indicates an equal number of streptococci and the usual intestinal bacteria, we recognize an intestinal poisoning that should demand our attention. When the colonies of the streptococci amount to more than half of all the types of bacteria present in the stool, we think more of cleaning up the colon than the suspicious teeth. Incidentally, ordinary pyorrhea is more definitely associated with troubles of this sort than pockets at the root of a tooth. In pyorrhea we constantly swallow the stuff and pass it along for intestinal planting. And, don't forget, the stomach gets it first. A lot of stomach trouble and other constitutional ailments develop from swallowed bacteria from teeth, tonsils, and sinuses.

Some time ago, a woman came along who still had her rheumatism in spite of a wholesale cleanup of her mouth,—the sort of infirmity that should have responded to the fine treatment she had co-operated in. Well, the stool revealed an overwhelming growth of streptococci, and efforts directed at her intestines solved her problem.

Yes, most emphatically, Mr. Average Man, this kind of rheumatism is a germ disease. Mrs. Anderson was searched with a fine-tooth comb for the source of her infection,—a focus we call it,—and everything that was found was cleaned up or removed. But there is reason to know that these teeth and this diseased cervix of the uterus, draining pus into the system for years, have distributed germs to areas not accessible, and so the body must build up its resistance to conquer whatever infection is left. Thus, you see, this is another reason for considering arthritis as a constitutional disease with local manifestations, instead of simply looking at it as a joint disease. This is the reason for treatment aimed at the building up of the whole body.

It might be interesting right here to note that from years of study and the collection of much data from many clinics it has been quite well established that a localized infection somewhere is invariably the activator of chronic infectious arthritis. Just where do you suppose these germ incubators are usually found?

We will tell you: tonsils 59%, teeth 29%, and from appendix, gall bladder, sinuses, prostate, cervix of the uterus, and colon 12%. And please do not get the idea that just because your throat is not sore or your teeth are not hurting, your doctor and your dentist are wrong. Now, since an infection of the teeth and tonsils may constitute the original source of infection in other areas, as the gall bladder, the colon, and the appendix, it remains that the last 12% noted above may have originated from a long-standing pyorrhea or diseased tonsil.

Here is another concrete example of a chronic mouth infection, showing how tonsils that are never "sore" are sometimes dangerous: A woman of thirty-six complained of early symptoms of infectious arthritis. Three points of specific interest were noted: (1) She had tonsils from which free pus could be squeezed; (2) she was overworked, profoundly tired, and underweight; (3) the rheumatism did not show its vicious head until the loss of weight and fatigue were manifest.

When we advised removal of the tonsils, she countered with the testimony that they had been just as bad for fifteen years and that her joint aches were only three months old! What was the answer? We told her that her lowered vitality due to overwork, worry, and the resulting loss of appetite, loss of weight, indiges-

tion, and her developing anemia opened wide the gate, and those streptococci, incubated in her tonsils, lost little time in going to work in their favorite spots. This woman had her tonsils out, and she got well.

Mr. Average Man: Since chronic infectious arthritis is conceded to be a germ disease, did you use vaccine in this case?

Doctor: Yes, we did. There is a lot of pro and con on the vaccine question in arthritis; some very good physicians condemn it and equally good men advocate it. It has more high-powered advocates among arthritis specialists, however, than it has enemies. This is the reason: Results speak louder than arguments. When you see the halt and the lame walk as a result of this vaccine, your antivaccine fangs are drawn. And it is logical, for organisms that we have every reason to believe are associated with arthritis as a distinct cause are used in the preparation of the vaccine. These germs come from the victims themselves. Now the thing that vaccine is supposed to do—and we know that in most folks it actually does it—is to jar the defense mechanism of the body into more potent and aggressive action against this enemy. By injecting at five- to seven-day intervals over a period of six to twelve months, with increasing doses of this material, the biochemical defense resources of the system are built up, and in a certain large percentage of cases will provide a potent weapon in conquering the disease.

The vaccine and the enforced rest are the two things that Mrs. Anderson will always remember us for. She disliked them both, and we found it necessary to chastise her verbally on a few occasions because of her impatience of restraint and unconscious lack of co-operation. The tendency is to want to get up and go just as quickly as the pain leaves; but we know that until all evidence of the infection has disappeared, activity invites a return of trouble and a prolongation of the illness. Well, you see in Mrs. Anderson the result of six months' effort.

Doctor: Are you having any pain or stiffness now, Mrs. Anderson?

Mrs. Anderson: Not a bit. I feel just fine; but I want to know when you are going to tell me that I can do as I please, and when do we quit the "shots"? And, by the way, doctor, give plenty of

credit to that carrot juice; I have been drinking about a pint a day of that for the past month and, really, I think it has helped a lot.

Doctor: Well, we will give reasonable credit to the carrot juice. It provides a fair amount of vitamins B and C, which are now recognized as valuable in rheumatic ailments. Tomatoes, spinach, and cabbage, however, are much richer in these desirable elements. We shall have more to say about this matter later. And the "shots,"—we are about done with them, but you may expect to be on parole for several months yet. Mrs. Anderson, your trouble is arrested, but we are not yet sure of a cure, so please do not act as you might if you were actually cured. Keep the brakes on.

Our next patient is Mrs. Baldwin. Stand up, Mrs. Baldwin, and walk across the floor for us. Do you folks detect a limp? No, you don't, do you? Well, just a year ago this lady was unable to straighten her right leg. The knee was fixed in a slightly bent position by chronic arthritis, and as a result she limped badly. She had some difficulty also in her right hip, her left elbow, and her right wrist. Well, for three solid months this young woman—she is only twenty-nine—was in bed with a pin through the heel bone of her right foot and a ten-pound weight pulling constantly on that leg and knee. She, too, received the same constitutional treatment as did Mrs. Anderson. You see the result; the knee extends fully and both legs are the same length.

This little lady represents the type of individual who takes it for granted that a disease of this kind can be licked by doing nothing in particular about it—just grind away at the regular job and try to ignore the evidences of developing trouble. Well, for six or eight years she suffered in silence, some weeks worse, some days better, until she eventually discovered that she could bend her left elbow just so far and no farther, and her right knee was stiffening and shortening. This brought alarm and action. X-ray of this damaged elbow shows us that the lining and cushion is entirely gone, bone joins bone, and inflammation has been so great and over such a long period of time that deposits of calcium have successfully fused the bones of the forearm with the bone of the upper arm and given her what virtually amounts to one crooked bone from shoulder to hand. What a pity! All because of neglect. The

only hope now of restoration of any kind of function for this elbow will involve an elaborate surgical procedure that means a pile of money and uncertain results. The knee was caught in time, that is, before the destruction in the joint had gone too far; and, if she continues to co-operate in her treatment, the disease will undoubtedly be eradicated, with limited permanent disability.

This case brings to our attention the importance of competent mechanical help in the treatment of this type of arthritis,—the use of splints to immobilize, and thus compel rest of, inflamed joints, and the use of apparatus whereby a steady pull can be exerted upon limbs to pull them back to normal. This sort of work requires a specialist—we call him an orthopedic surgeon.

Mr. Average Man: How about the diet in these cases?

Doctor: Yes, that is an important point. We are past the freak diet era in arthritis. We know that this type of chronic rheumatism is due to infection. Therefore the logical thing is to provide the type of diet that will build up vitality, for in so doing we are the more likely to whip the infection. Thus a good substantial tray is provided: alkaline ash, relatively high in protein, but relatively low in starches and sugars; plenty of bulk from fruit and vegetables, cooked and in salads; cream and butter as substitutes for starches and sweets in those cases where overweight is not a problem. We can get along very nicely without meat by providing our protein through milk, eggs, cottage cheese, nut foods, and the legumes—peas, beans, lentils, etc. Recently much has been said about vegetable juices. There is probably some virtue in these; and, if our patients are so minded, we encourage the free use of such vitamin-and-mineral carriers as carrot juice, spinach juice, tomato juice, and others. We shall have more to say about diet, and in considerable detail, in another chapter.

Mr. Average Man: Does heredity have anything to do with infectious arthritis?

Doctor: Yes, in probably the same way that any chronic disease is lined up with family history or hereditary influences. We acquire weakened, more susceptible, building material, but we do not have the germs themselves passed on to us. An individual with a family history of arthritis just has to watch his step a little more than the fellow with no squeaky joints in his family tree. He

should not take the chance with pyorrhea and cheesy tonsils that his neighbor tries to get by with.

Mr. Peters is our next patient. He is a grocery clerk, on his feet much, and, to his great concern, those big feet of his began to go bad on him some months ago. For a long time he did nothing about it, but when it became quite impossible to work, he came to find out if his pedal extremities were worth salvaging. Both ankles were swollen, red, hot, tender. The only cause we found was two tonsils from which we could, on pressure, express pus,—and plenty of it. Well, to condense our story, we took his tonsils out, took him off his feet for a while, gave him the type of program which we have been describing. Are you improving, Mr. Peters?

Mr. Peters: Decidedly, doctor. It has been just six weeks since the tonsils came out, and I am getting around the store now with very little pain.

Doctor: We are giving him vaccine, which we shall keep up for at least two months more, and also local treatment until further notice. It is quite safe for him to be around on his feet if not for too many hours a day.

Mr. Average Man: Do you give these folks any kind of physical therapy; that is, massage or heat or anything like that?

Doctor: That is what we mean by "local treatment." The most serviceable local help we have found is the infrared ray. That may be secured by an expensive therapeutic lamp or by a humble ninety-eight-cent electric heater. The application of this heat to each joint for thirty minutes twice a day is our routine. We usually use with it an iodine ointment, and, following one of the heat treatments, massage of the muscles *between the joints*. Do not allow the nurse or masseur to manipulate the joint in this kind of rheumatism. That part of the job is distinctly up to the specific direction of the doctor. Sun baths are of extreme importance, and if they are not climatically possible, by all means get quartz or ultraviolet light.

It might be well at this point to summarize briefly the treatment program that has been carried out on these three cases presented. Remember, we have been talking about *chronic infectious arthritis* only. Here is the recognized treatment for it:

1. Rest. Avoid hurry and worry at all times. Physical quiet

must be regulated in accordance with the degree of infection and the condition of the patient. Some cases should be put at absolute bed rest. Others should secure ten hours of sleep at night and at least one hour during the morning and one hour during the afternoon.

2. Inflamed, sore joints should be put up in a removable cast or splint and thus immobolized for a sufficient period of time to quiet the local swelling, pain, and heat. Each day the splint should be removed, and, following a treatment to be described, the joint should be moved through the entire extent of its possible movement—once. This action is for the purpose of preventing adhesions, which may form very rapidly with inflammation and immobolization.

3. Physical therapy:

a. Hot tub baths, followed by quick, cold shower or cold friction rub, avoiding inflamed joints.

b. Heat-lamp to affected joints for thirty minutes two or more times a day. It cannot be overdone, and may be used in conjunction with an ointment containing iodine and oil of wintergreen, as follows:

Lamp for five minutes.

Apply ointment to heated part.

Lamp to same area for thirty minutes.

c. Massage to muscles, but *avoid the inflamed joints*. The only exercise given directly to the inflamed joint is the one movement a day described under "2."

d. Sun baths. Begin cautiously with about three minutes' exposure, and gradually increase. Take them early in the morning to avoid the heat. The thing desired is the ultraviolet ray, not the heat. If sunlight is not available, use quartz light in the doctor's office.

e. Fever therapy for this type of rheumatism is probably of no great value.

4. Clean up all evident infection—tonsils, teeth, sinuses, digestive tract (colon). Remember we are dealing with a disease that has its origin in an infection; yet we must not overlook the fact that its course is materially influenced by heredity, nutrition, age, occupation, and vitality, as affected by habits of life.

5. Vaccine. Success in vaccine treatment depends upon persistence. It must be continued at five- to seven-day intervals for at least four months, and frequently up to a year.

6. Manipulative surgery where indicated. This simply means the breaking up of adhesions by the clever trained hand of a specialist. Adhesions tend to form quickly in the soft tissues of the inflamed or injured joint, and thus to limit motion and incapacitate the victim. Usually this can be accomplished only under an anesthetic, and should be attempted only after the inflammation has subsided.

7. Combat anemia by proper feeding and, where indicated, by the use of recognized iron compounds.

8. Diet. A chapter will be devoted to the nutritional program for the arthritic.

9. Such general measures as will contribute to the building up of vitality in recognition of the fact that arthritis affects the whole body. Among them may be preparations dispensed by the physician which he considers helpful in bringing about an improvement in the circulation, especially in the joints—effected largely by dilatation of the blood vessels; by improving the appetite, by regulating the bowels, and by enhancing general bodily tone and vigor.

10. A hopeful attitude and peace of mind must be sought. A mind and body stimulated by hope means much in the process of recovery.

11. Vitamins B and C are proved to be distinctly beneficial in rheumatic affections. A and D undoubtedly aid in the building up of vitality. Any infection increases the demand for vitamin B; consequently, infectious arthritis should suggest an added need for B in the diet. One of the best sources is wheat germ. If the full requirement came from this alone, it would take about one cup a day. (Wheat germ may be cooked in a double boiler for twenty minutes and used as a cereal, or baked as muffins.) But we find B also in beans, spinach, cabbage, carrots, and tomatoes, as well as in certain types of yeast. It is perhaps just as well to step up the possible intake of B from food by giving it in capsule form as provided on the market, or in tablet form, as these yeasts. In fact, capsules containing vitamins A, B, C, and D are very much

to the point,—perhaps one or more after each meal; but be sure to stress B in particular.

Mr. Average Man: Will you not follow this summary of therapeutics with a résumé of probable causes for this type of arthritis?

Doctor: That is a worthy request and a good suggestion even through it is odd to follow therapy with etiology (cause). So here it is:

1. Infection—look for it in tonsils, teeth, sinuses, appendix, gall bladder, prostate, tubes, cervix, colon.

2. Whatever may contribute to the lowering of resistance to infection, as for example:

a. Heredity—trouble of a similar nature in the family.
b. Underweight.
c. Fatigue.
d. Exposure.
e. Glandular defects.
f. Worry.

Chronic Osteoarthritis

THIS particular type of arthritis also carries a number of different names supplied by men who have attempted to describe it in as graphic terms as their vocabulary would permit. And so we hear it called hypertrophic, menopausal, senile. Well, of course it all means chronic osteoarthritis, and the term "senile" probably expresses the most suggestive thing about it. It is one of the signs of age and is to be expected with the same degree of certainty as gray hair, hardening arteries, and "hot flashes."

Mr. Average Man: Is this type such as to make the victim sick all over, as in the infectious type?

Doctor: No. Osteoarthritis is not due to infection; it is distinctly the result of wear and tear and injury. There is no anemia; the joint is not hot, or red; there is no fever. So it is not a constitutional disease with local manifestations, as is infectious arthritis.

Mr. Average Man: Are focal infections important in this type, then? If it is not due to infection, are vaccines of any value?

Doctor: Infections here and there are not important, except as the general well-being of the body may be affected by them. They probably do not have any causal relationship to the arthritis. Since osteoarthritis is not caused by infection, it therefore stands to reason that it will *not* be benefited by vaccine.

Mr. Average Man: Aside from the natural processes of age, what is the probable cause of this type?

Doctor: First and foremost among causes we must put down trauma (injury) as the most frequent exciting factor,—a twist, a fall, a blow, the putting of too much strain on joints. A school janitor slipped on the steps while carrying a load of something and, in trying to save himself from a picturesque fall in front of a group of giggly students, wrenched his back severely. He was laid up with arthritis of the spine for months. Age had brought changes in his spine that required only a wrench to tear ligaments and start trouble.

Overweight is a common cause. A fall to the pavement may tear at a knee or a wrist and initiate difficulties that simulate a bad sprain. Other causes are glandular disturbances (this type often arrives with the change of life); faulty posture which throws an

abnormal strain somewhere; exposure; bad circulation; heredity, with its tendency to pass on to us a lot of inferior joint tissue that fails to wear its allotted time. And so we find it in persons at or beyond middle life, producing disability varying all the way from inconvenience to severe crippling. The joints enlarge, but rarely stiffen tightly by growing together as they do in the infectious-type victims. A common place for the first evidence of it is in the terminal joints of the fingers. Instead of a distinctly angry inflammation of the soft tissues in the joint caused by an infection, it presents a worn-out joint cartilage and a bony overgrowth, incapacitating by "rusty-hinge" action and bunglesome enlargement.

Mr. Average Man: Is there not a certain amount of bony overgrowth about some joints that will gradually develop throughout the years as a result of ordinary wear and tear?

Doctor: Exactly. The gnarled hands of the farm laborer attest to that. Almost invariably we see it in the spine in individuals past middle life. We find it accidentally with the X ray when examining for other difficulties. There may be no symptoms unless an acute injury sets up some inflammation, as in the case of the janitor.

Now may we introduce Mrs. Stephens? She is just fifty-two years old, not overweight, looks to be in good health, has no anemia or infected teeth or tonsils. But she does have several enlarged joints on her hands and very creaky knees that show enlargement. These joints are occasionally painful, but there is none of the redness or soft-tissue swelling or heat that were observed in the other cases.

Mr. Average Man: Any fever?

Doctor: No fever, whereas the other patients did have fever while the disease was active. This woman's trouble began during the change of life, and she has observed its development for the past five years. So, you see, glandular disturbances may have much to do with chronic osteoarthritis.

Here is another woman who, I would guess, weighs in the neighborhood of two hundred pounds—fully fifty pounds overweight. You will notice when she arises she does so with evident distress in her knees, and she walks as if uncertain of her knees. There you have a proposition of age with its expected wear plus

excessive strain on joint surfaces by overweight. Knees and ankles built to carry one hundred forty pounds may not take two hundred without a grumble.

An old chap seventy-two years of age undertook to mow the lawn the other day. He did it, but he paid for it with a swollen knee and two sore wrists that will give him trouble off and on for the rest of his days. Worn joints just cannot take certain forms of added abuse without actual serious injury to parts that ordinarily would serve us well as long as needed.

Mr. Average Man: I suppose treatment for osteoarthritis differs from the infectious type.

Doctor: In certain points, yes. For example, this type of the disease needs exercise and joint massage—a treatment taboo in the infectious type. Mrs. Stephens will always have her enlarged joints, for we cannot absorb the bone that has crowded around and made them ugly, but we may succeed in stopping its progress and make the joints painless. She will need a precise mixture of thyroid, ovarian, and pituitary extracts to secure a proper balance in her glandular system. This alone will do much in taking the soreness and the swelling out of her joints, through its effect upon body chemistry.

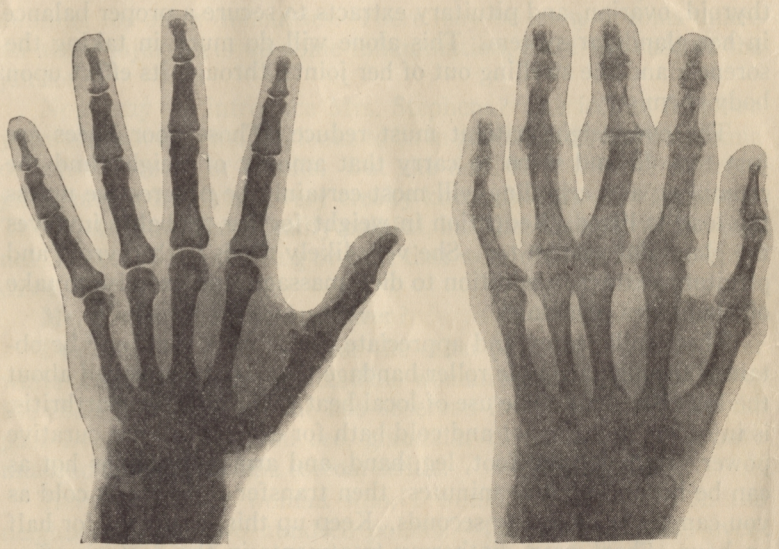
The overweight patient must reduce. Those poor knees are just too old and worn to carry that amount of weight, and the crumbling and crippling will most certainly be progressive unless the load is lifted. Reduction in weight for her probably involves the glandular system too. She very likely needs both thyroid and pituitary extract in addition to diet, massage, and exercise to take off that extra poundage.

These folks enjoy and appreciate the support that may be obtained through a simple roller bandage that can be wrapped about the knee and foot. The use of local heat, as in infectious arthritis, is in order; and the hot and cold bath for extremities has curative power. Immerse the foot, leg, hand, and arm in water as hot as can be borne for three minutes; then transfer to water as cold as you can get it for thirty seconds. Keep up this treatment for half an hour. Short-wave diathermy treatments in the doctor's office are probably more helpful in this type than in the infectious.

Another treatment that can be used in any type of arthritis

and that is applicable to any joint is the paraffin coat. Buy about two pounds of the kind of paraffin used to seal jelly, and melt it in a double boiler—the same utensil as is used for oatmeal cooking. When it has melted, allow it to cool until a thin scum has formed on the top. It is then at the temperature that will be tolerated by the skin. Then with an ordinary paintbrush, or a swab made by tying a bit of cloth to a stick, apply eight successive coats of the paraffin to the area about the joint to be treated. Allow it to remain for from thirty to sixty minutes, then peel it off and return it to the pot for use again the next day.

Provide a well-balanced diet, and reinforce the usual vitamin intake with A, B, D capsules. And remember, there is no royal road, no short cuts back to recovery. Patience it takes, and a lot of it!



Bones of the hand (right) in a case of arthritis deformans of five years' duration, as compared with the bones of a normal hand (left). Note the "welding together" of the bones in some of the finger joints, and the irregular density of the bones.

Gonorrheal Arthritis

GONORRHEA, as you know, is a venereal disease caused by a specific germ called the gonococcus. Usually the evidence of the loathsome infection is localized, but it frequently becomes a general blood infection. As such it may plant some of these organisms in certain joints, there to flare up into a very painful arthritis. In other words, gonorrheal arthritis is a complication of gonorrhea which may appear while the disease is acute, while it is subsiding, or when it is chronic. Unless the arthritis is promptly and successfully treated, the joints involved may undergo changes that result in permanent crippling. Let us meet a typical case of gonorrheal arthritis,—Mr. Fox.

Note the difficulty with which Mr. Fox walks. His trouble seems to be entirely in his feet. And you may rest assured that every step that he takes registers a jolt of pain through several hundred nerve paths. His feet really hurt. He is one of the million and a half new cases of gonorrhea that blossom forth each year, and he is suffering from gonorrheal arthritis. It developed just when Mr. Fox thought he was forever done with a bad mistake. He has been under treatment for it for weeks,—at first in bed, with fever, sweating, pain from any movement. And the pain is most difficult to control.

Mr. Average Man: Does it always attack the feet?

Doctor: Not always; but with great frequency the feet are involved, alone or with any other joint or joints. It is a most stubborn thing to clear up. This is one type of arthritis in which everyone will agree that vaccine therapy is important and efficient. In fact, before the dawn of this type of treatment, feet like his sometimes never returned to normal. We recall a man who hobbled about for thirty-five long years on huge swollen feet that required tailor-made shoes. Every minute of the day he had a reminder of his early folly.

Another form of treatment that has proved to be very sucessful in this specific joint trouble is the hyperpyrexia bath, or artificial fever. Care must be taken in this, as in the infectious type, to prevent adhesions by giving cautious movements as the acute symptoms subside.

Other Infections of the Joints

There are many other specific infections—that is, infections due to a particular germ disease—that may cause arthritis. It may happen with a certain type of dysentery. It may occur with, or as a result of, pneumonia. Tubercular joints in young patients are far from uncommon in association with tuberculosis elsewhere. It is a fairly common occurrence in the course of scarlet, typhoid, or Malta fever. Blood infections from wounds—septicemia—very frequently are accompanied by abscess formation in or about the joints. There are some five additional systemic diseases listed in an earlier chapter that may give rise to more or less serious arthritic problems, and which must be looked upon as complications of the general disease.

We have discussed gonorrhea in this connection, but there is just one more disease which we feel should receive a bit more than simply passing mention. That one is tubercular arthritis. The subtle development of this very serious disease in the course of tubercular infections elsewhere often allows for rather marked advancement before one is aware that anything untoward is happening.

Although almost any joint may become infected, those most commonly attacked are the hip, knee, spine, ankle, wrist, elbow, and the small bones of foot and hand. The night symptoms are always suggestive in a child,—he tosses, groans, cries out. While during consciousness the muscles are tense and will keep a sore joint quiet, during sleep they are relaxed and will allow for movement and contact of tender surfaces, causing pain sensation from sensitive nerves. The child then has what are sometimes called "night terrors," as a result of subconscious pain. The treatment is, as always in any type of tuberculosis, rest of body, mind, and joint, with the usual adjuncts of general body building.

Rheumatic Fever

THIS disease is also known as inflammatory rheumatism. It strikes suddenly, roams from joint to joint, is accompanied by fever, sweating, pain in joints and muscles,—the discomfort that accompanies a general infection.

Now if you will follow me, we will go into the hospital ward and see a patient with acute rheumatic fever. Here we observe a little chap about twelve years of age, with his face flushed, his breathing hard and rapid, his chest wall bulging with the throbs of a racing heart, his left knee, right ankle, right wrist, and elbow flannel-wrapped, and everything reeking with the smell of wintergreen.

Doctor: Is your throat sore, son?

Patient: Yes, doctor, I had tonsillitis before my joints began to hurt.

Doctor: Just note that fact,—he was just getting over an attack of tonsillitis when this hit him. We look at his throat and see some huge red tonsils. We unwrap his knee with great care, for the slightest movement brings pain. The knee is badly swollen, red, hot to the touch. We listen to his excited heart, and we hear things we do not like,—there is evidence of an inflammation in the heart, and unless the disease is quickly halted, some irreparable damage will be done the valves.

Mr. Average Man: What have the tonsils had to do with this illness?

Doctor: Probably plenty. As soon as it is safe, this boy's tonsils will be put in a bottle, and we hope he will thus be saved from a second attack. The very serious part of rheumatic fever is that the heart is always hit by it, and many heart cripples today owe their invalidism distinctly to diseased tonsils. You see, the same germ that causes the joint inflammation also causes the heart inflammation, and the common source is the tonsil.

Mr. Average Man: If the tonsil is responsible, why is it that a person will sometimes have a second or a third attack after the tonsils have been removed?

Doctor: That is a reasonable question and might seem hard to answer, but really it is not. The infected tonsil spreads and dis-

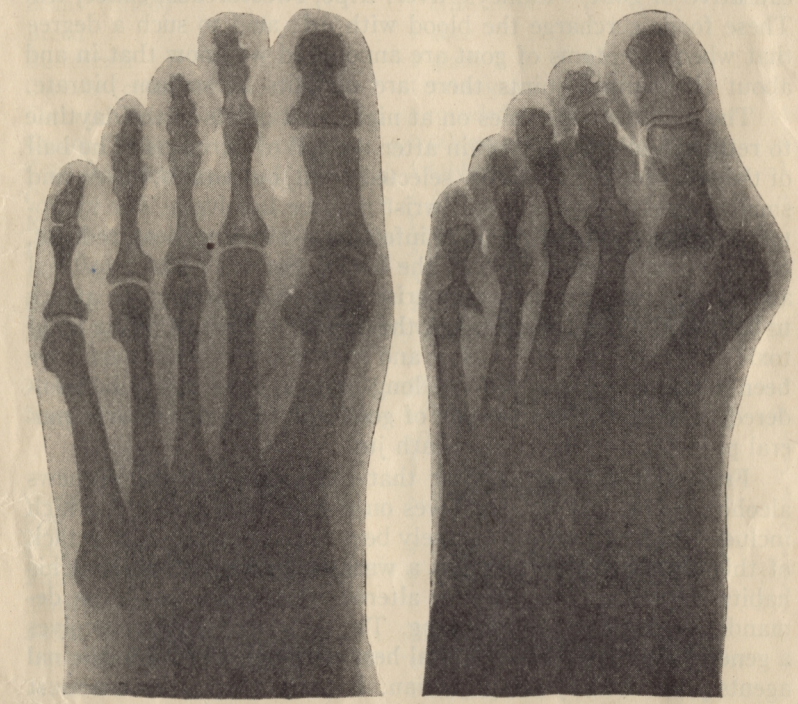
tributes its germs and poisons to lymph glands scattered along the windpipe. There the germs that cause rheumatic fever take up housekeeping again, away from any danger from prying and critical eyes and surgeons' designs. The tonsils in which the germs have been incubated and grown may be out, but those tonsils stayed in long enough to have allowed for shelter of the offspring in other hidden spots; from these other sources infection springs when the patient is run down and in poor trim. We remember a girl who had a severe attack when she was six years of age. The tonsils were removed and she enjoyed splendid health for a good twelve years, and then, bang!—she was down with another very severe attack of rheumatic fever. What was back of it? It was her first year in college; she was away from home, batching it, struggling to get by on a pittance, working much of her way, and pitifully tired. Her resistance was down, unable to hold lurking infection in abeyance. Here is another proof that right living is necessary for physical safety.

Heart clinics are educating parents to take seriously the finding of septic or diseased tonsils in Johnny or Mary. If tonsils are diseased, they should be removed, for they are unquestionably a potential danger, an ever-present source of germs that are capable of cutting in on the life expectancy of the child. It is not only the very acute conditions, such as inflammatory rheumatism, that the tonsils may be associated with in injuring the vital capacity of the heart; but the heart is often subject throughout life to a very subtle infection from the tonsils alone that withers valves and debilitates muscle. Parents should watch for "growing pains," or aching in the legs, usually at night. That too is rheumatic—very, very mild rheumatic fever.

Fortunately, these folks usually get over their troubles with intelligent care. It requires internal medication with a salicylic acid preparation, local heat, immobilization of the joints involved, and, above all, absolute bed rest. The fomentation (moist heat) is of great value. A set of fomentations to a joint is followed by the application of oil of wintergreen, and the part is carefully wrapped in cotton and flannel. Although we do not choose to advocate the use of drugs, we are compelled to recognize salicylic acid as almost a specific. It is usually given in diminishing

dosage for weeks after all symptoms have subsided, and then during the fall and winter months—the period of susceptibility to relapse—a short course every month is advisable. Needless to say, it should be given only under supervision of the physician in charge.

The convalescent period is to be carefully measured, for, remember, the heart has been hurt in this disease, and extreme caution must be exercised in the getting-up process. A good rule to follow is to keep the patient at rest in the recumbent position as long as the heart rate reaches or exceeds one hundred in the sitting or erect position.



Bones of the foot (right) in a patient with arthritis deformans of five years' duration, as compared with the bones of a normal foot (left). Note the "eating away" of the bones at the joint ends, and the dislocation of the metacarpal bone at the base of the great toe.

Gout

THIS is very distinctly a disease that is due to bad eating habits, either in the patient or his forebears. If you have fallen heir to a predisposition to gout, you simply will find that you will be a victim of the disease a little earlier by reason of your wanton habits than otherwise, for between fifty and eighty per cent of these patients have a gouty ancestry.

The disease will probably be on the increase by reason of increasing alcoholic consumption,—not so much from hard liquor either, as from beer and wines. Dietetic errors lie along the lines of quantity as well as quality. Those types of food which are particularly heavy in certain chemical waste products are apparently causative of gout,—kidneys, liver, tripe, sweetbreads, coffee, tea. These foods surcharge the blood with uric acid to such a degree that when symptoms of gout are announced we know that in and about the painful joints there are deposits of sodium biurate.

The pain usually comes on at night, and quiets in the daytime to return in all violence again after the fall of darkness. The ball of the great toe is the usually selected point, but ankles, knees, and small joints of the hand and wrist may be involved. The symptoms are suggestive of an acute infection,—swelling, heat, redness, and increase in white cells of the blood. Serious gastrointestinal and kidney complications may arise capable of causing the attack to be a fatal illness. Remember, the disease is due to a piling up of toxic elements from overeating, and liver, kidneys, and heart have been seriously overtaxed for a long period. It is not to be wondered at, then, if the explosion of gout is not the signal for a general physical upheaval with death just ahead.

From this it would appear that the individual who eschews alcohol, coffee, and tea, and lives on a vegetarian program which includes milk and eggs, will rarely be a victim of gout. One attack of this disease should serve as a warning to the patient that his habits should be permanently altered in harmony with the demands of simple, healthful living. The treatment further involves a general cleanup,—sweats, local heat, massage, certain medicinal agents prescribed by the physician. But above all the cause must not be overlooked,—alcohol, tea, coffee, overeating.

Diet for Chronic Arthritis

First General Principle.—Adequate protein is an absolute essential. It is estimated in grams by the following formula: Weight of patient divided by 2.2 times ¾. (This must be estimated on normal weight for height as detailed in Second General Principle below.) Example: Weight 132 pounds. 132÷2.2=60. ¾ x 60=45. This is the number of grams of protein required in 24 hours. The following table will show you how to interpret grams in terms of kitchen-utensil portions, and the rest is simple addition.

Foods	*Portions*	*Grams of Protein*
Beans (dried)	1 tablespoon	2
Bread	1 slice	3
Buttermilk	1 glass	7
Cereals (cooked)	1 tablespoon	1
Cottage Cheese	1 rounded tablespoon	4
Cream Cheese	1 tablespoon	4
Corn (creamed)	1 tablespoon	1
Custard	1 cup	4
Egg	1	7
Fruits	3 tablespoons	1
Ice Cream	Average serving	3
Lentils	1 tablespoon	2
Meat (lean)	Average serving	12
Milk (whole)	1 glass	6
Nut Meat	½ average slice	7
Nuts: Pecans	5 large	1
Almonds	10 large	3
Walnuts	5 medium	3
Peas (dry)	1 tablespoon	3
Peas (green	3 tablespoons	2
Peas (canned)	3 tablespoons	2
Peanut Butter	1 tablespoon	2½
Shredded Wheat	1 biscuit	2½
Soup: Bean	1 cup	6
Cream of Pea	1 cup	6
Macaroni and Cheese	2 tablespoons	7
Vegetables	3 tablespoons	½

Second General Principle.—Sugars must be drastically curtailed. Starches and fats should be determined by your weight. To roughly determine what your normal weight should be, use the following formula: For a height of 60 inches, the normal weight is 110 pounds. For every inch above 60 inches add 5½ pounds; then for women, if small-boned, deduct 5 pounds, for large men, add 5 pounds. Weigh each week on standard scales and adjust the intake of bread, potatoes, gravy, cream, and butter to the reading of the scales. Decrease the intake if overweight, or increase it if underweight.

Third General Principle.—Ample bulk: fruits, vegetables, coarse grains.

Fourth General Principle.—Liberal vitamin- and mineral-containing foods.

B, C, and D are the most important vitamins for rheumatism. B from vegetables, eggs, outer coating of grains (wheat germ), yeast. C from orange juice, grapefruit juice, tomato juice, and vegetables. D from eggs and cream.

Calcium and phosphorus are the most important minerals. Adequate calcium for 24 hours may be had in 1 pint of milk, or 1 glass of orange juice, or a large serving of green vegetables, or 1 large tomato. Adequate phosphorus for 24 hours may be had in 1 pint of milk, 1 serving of eggs, wheat cereal, beans, or whole-wheat bread.

24-Hour Balanced Diet for Adult

a. Grains: Foods from wheat, corn, barley, oats, rice, rye. Requirement: 3 to 4 slices of bread or equivalent. One slice of bread is approximately equivalent to one of the following: 1 serving of cereal, 1 roll, 1 muffin, 4 crackers, 2 tablespoons of macaroni. For cereal I would suggest wheat germ, which may also be used in making muffins.

b. Eggs: Average of one a day, not including those used in cooking.

c. Meat: Meat is not the best food, and is not essential for bodily maintenance if other foods are used according to suggestions. If meat is used, limit to three servings a week, and alternate with nut foods. (See "e.") Protein requirement may be entirely

met by nut foods, milk, legumes, eggs, cottage cheese. (For your requirement see First General Principle.)

d. Cottage Cheese: One heaping tablespoon twice a week.

e. Nuts: Walnuts, peanuts, peanut butter, nut roasts, prepared nut food. See recipes following. Prepared foods: Savory Loaf, Nuttolene, Protose, Nut Meat, Nuttene. Roasts or prepared foods twice or three times a week, with whole nuts and peanut butter as advised.

f. Vegetables: Cooked—at least 2 servings (3 tablespoons per serving). Salad—at least 1 large serving. Potato—1 a day.

g. Legumes: Dry beans, Lima beans, soybeans, peas, lentils. Three tablespoons three times a week. (May alternate with nut preparations and roasts.)

h. Milk: Whole milk, skimmed milk, buttermilk. Three glasses a day.

i. Fruits: Twice a day, liberal servings, preferably at breakfast and lunch.

j. Water—4 to 6 glasses.

This diet provides approximately 50 grams of protein, and between 2,000 and 2,500 calories. This is sufficient for light work or sedentary activity. For the invalid it may be advisable to cut the total calories further on advice of the attending physician.

Nut Food Recipes

Savory Loaf Croquettes

1 cup Savory Loaf mashed with a fork
2 eggs
1 tablespoon chopped onion
1 large tablespoon butter
1 small teaspoon sage
Bread crumbs
1 cup cooked natural rice

(Savory Loaf is a prepared nut food supplied in tins.)

Simmer onion, butter, and sage on stove till light brown. Add onion mixture to Savory Loaf and 1 egg, unbeaten. Add 1 cup cooked rice. Stir in with fork. If too moist to mold with hands, add a few bread crumbs. Mold into small rolls, dip in beaten egg, and then roll in bread crumbs. Repeat dipping and crumbing. Fry in deep fat like doughnuts. Serve with any kind of gravy desired, or with jelly.

Walnut Roast

1 cup zwieback crumbs
1 cup milk
½ cup ground walnuts
1 cup steamed rice
3 tablespoons chopped onions
1½ tablespoons butter
1 tablespoon flour
1 egg

Pour ¾ cup of milk over the crumbs and let stand for 5 minutes. Put butter, onion, and pinch of savory, if desired, into a small saucepan and let simmer until the onion is softened but not browned. Add the flour and stir, then add the rest of the milk and stir smooth. Add then the slightly beaten egg, the ground walnuts, and lastly the rice.

Gluten Roast

8 cups of flour
3 to 4 cups of water
1 cup ground walnuts
1 medium onion, ground
½ cup Crisco
1 large egg
1½ teaspoons salt

Make stiff ball of the flour and water. Cover with water. Soak 1 hour at least. Wash out starch and run the remainder—the gluten—through grinder.

Mix the other ingredients thoroughly and add to the gluten, mix well, and run through grinder once more. Place in roaster. Lay 3 bay leaves on top. Add 2 cups boiling water with 1 teaspoon Vegex dissolved in it. Cover tightly. Bake 30 minutes in hot oven. Then reduce the heat. Bake 1 hour longer. Serve with gravy or sauces, or cold in sandwiches.

Prepared Nut Foods: Savory Loaf, Nuttolene, Protose, Nut Meat, Nuttene—may be fried with gravy or served cold sliced, with or without sauce. Excellent for "Nutburger" sandwiches.

Scientific Treatment Plus Patience

IF WE have given you a helpful insight into the problem of rheumatism and a few facts that will enable you to put yourself or your neighbor in understanding hands if trouble of this sort comes your way, we shall feel repaid for the effort. We hope that our discussions have convinced you of at least two points:

1. Arthritis is not just another sore joint,—it is a sore joint of a specific type, and for proper treatment needs accurate diagnosis. Many of the bad endings seen in arthritis cases are due to ignorance, for rheumatism usually receives neighborhood treatment and down-town quackery until much permanent damage is done.

2. There is no royal road to a cure—it takes time and a lot of it; it takes patience in huge doses; it takes co-operation.

And one thing more: It may offer a bit of hope for some poor sufferer to learn from authentic statistics that rheumatism is not the hopeless sort of thing we once thought it to be. In a great metropolitan arthritis clinic some three thousand rheumatics were discharged last year with treatment complete. Of this number a little better than 51% were cured, more than 35% were definitely improved, and only 13% had slight improvement or no change. Splendid, isn't it! So you folks with the creaky joints, find a good doctor and stay everlastingly with him until you are assured that you belong permanently in one of the three classifications: cured, better, or among the 13% who remain bent but happy.

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ATTENTION!
Arthritis Sufferers

ARTHRITIS is not just another sore joint. It is a sore joint of a specific type, and for proper treatment needs accurate diagnosis. Many of the bad endings seen in arthritis cases are due to ignorance, for rheumatism usually receives neighborhood treatment and downtown quackery until much permanent damage is done.

There is no royal road to cure in arthritis—it takes time and a lot of it; it takes patience in huge doses; it takes co-operation with your physician.

Modern diagnosis and methods of treatment have taken much of the terror out of arthritis. If you will do your part, modern medicine will do its part.

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