feebler and slower, and everywhere there are indications of the diminished ability to metabolize the amount of protein according to Voit's standard; and in old age the amount consumed ought to approach somewhat nearer to the physiological minimum. Many persons in old age actually do reduce the amount consumed to the physiological requirements. I could give instances of old people who actually consume no more than 30 grams of protein daily, and, nevertheless, enjoy moderate health, or do not suffer from any appreciable disease.

But as regards children, growing persons, and young adults, the general principles laid down should guide us; and when the cost of animal food is prohibitive a freer use of vegetable proteins—legumes and nuts—should be recommended.

RHEUMATOID ARTHRITIS:

A PERSONAL EXPERIENCE OF THE DISEASE.

BY

FREDERICK H. PARKER, F.R.C.S.,

LLANDRINDOD WELLS.

THE writer of this article has suffered from arthritis—a rather doubtful privilege, but one which carries with it opportunities for insight and investigation which are denied to his more normal brethren. Such is my apology for the infliction of this somewhat personal treatise upon those who are interested in the subject.

I propose to describe my own variety of arthritis, and particularly to attempt the elucidation of certain points in the pathology. I do not imagine that all cases of this disease will admit of the same explanation, but I do think that there is a large group which would come under the same heading.

Although a history of joint disease is usual in these cases, it is not the rule to find a family history of arthritis. The case under consideration is an exception to this rule, since one grandmother was crippled for years with "rheumatic gout," and one member of the present generation in my own family has a joint disorder as nearly as possible identical with my own. The parents had no serious joint trouble of any kind, but one of them had a constitution which I consider to be of some importance in considering the pathology of the disease. Some features of this constitution were as follows: A skin which blanched abnormally easily, cold hands and feet, nails which were very much ribbed, a tendency to severe sick headaches, and a digestion which was only kept in order by careful and abstemious living. These were inherited from the old lady with rheumatic gout, but throughout a long life of 80 years no joint symptoms of any importance supervened, and it was not until the present generation that this constitution again provided a suitable nidus for a germ infection which was to lead to arthritis.

In the present generation there have been since childhood the same peculiarities—a skin rather dry and white, fingers which go dead rather easily, and a tendency to typical attacks of migraine. The frequency of the latter has always depended upon the proportion of starchy foods in the diet; at school, where we fed mostly on bread-and-butter and porridge, the sick headaches were frequent; during the holidays they never occurred. It was suggested that this might be due to the fact that the optic axes are almost imperceptibly out of the parallel. Appropriate glasses, however, have been tried with no good result. The indisposition lasts only about four or five hours, and usually ends with vomiting. Since the advent of the arthritis this sickness has always had an astonishing effect; the joint symptoms are much diminished for about twenty-four hours, and the more severe the attack of migraine the more complete is the relief from stiffness.

The intimate way in which the migraine depended upon the diet, and the dramatic rapidity with which the joint symptoms diminished after one of these attacks, at first led me to suppose that the stiffness was directly due to a species of food poisoning. Subsequent investigations, I think, now clearly show that the effect of the diet is indirect. Both cases of arthritis in the present generation have a chronic congestion and catarrh of the nasal mucous membrane, and one is troubled at times with hay fever. I believe that this vasomotor imperfection is due to the same cause which induces the other constitutional

peculiarities. The latter have for the most part existed since childhood, whereas the joint symptoms are a comparatively recent addition. I regard the alimentary deficiency, therefore, as a predisposing cause only; the actual determining cause appears to be a staphylococcal infection of the nasal mucous membrane. This will be dealt with more fully later.

The following brief account of the symptoms will serve to convey a notion of the general course of the illness. The onset was extremely slow and gradual; the first symptom was rheumatism in the right shoulder, which lasted for twenty-four hours and then disappeared; after a month the same thing occurred again; at the end of another two months a curious stiff feeling was noticed in the soles of the feet on first getting out of bed in the morning; this at first disappeared after standing for a minute or two, but it gradually lasted a longer and longer period every morning until, at the end of eighteen months, it continued throughout the day. In the same insidious way the hands were attacked. On awaking one morning there was an unaccountable stiffness in all the proximal interphalangeal joints of both hands; after flexing and extending once or twice they recovered their usual suppleness; like the feet, they were affected for a longer and longer period each morning, until, when two years had elapsed, all the joints were typically spindled. Similarly the wrists, ankles, knees, elbows, shoulders, hips, jaw, back, and neck were gradually attacked. As a rule, there appeared to be merely a pulpy thickening of the synovial membrane, but in some cases they contained fluid. Certain tendon sheaths were affected in the same way, and especially those beneath the internal and external malleoli and round the wrists. Another prominent feature has been tenderness in the fibrous origin of muscles from certain bony points, such as the tuber ischii, anterior superior iliac spine, os calcis, and clavicle; also there have been tender fibrous nodules in various tedinous structures. In addition to this slow advance of the disease, from time to time attacks of acute pain and swelling have arisen and as suddenly disappeared, after lasting only forty-eight or seventy-two hours; the carpal and tarsal joints have been the ones usually attacked in this way.

Of those collateral symptoms which are usually looked upon as being part of the disease, the following were constantly present: General lassitude, increased pulse-rate, cramps and fibrillary twitching of muscles, ridging and brittleness of nails, enlargement of the axillary glands, unnatural whiteness of the skin over the affected joints, glossiness of the skin at the root of the nails, and pigmented patches about the skin. The following common symptoms were absent: sweating, neuralgia, and sensations of pins and needles. A few rather unusual symptoms were present: a very dry and itchy skin, occasional urticaria, and a very decided increase of the joint pains in warm weather.

It is usual to find a warm sunny climate recommended in the treatment of arthritis. Acting on this advice, I spent a year in South Africa, and was sadly disappointed to find that the joint pains rapidly got worse in the delightfully sunny though temperate climate of the Cape peninsula; the same results awaited me in the Karroo, where the rainfall is next to nothing, and bright sunny days are almost perpetual. A holiday in Switzerland and a year as ship's surgeon travelling backwards and forwards to South Africa, resulted in the same experience; hot weather invariably caused an increase of joint pains, and cold weather always came as a relief. The ideal climate is a constant temperature of about 55° F., with a little dampness in the air such as one gets towards the end of October in England. Failing this, decidedly cold weather is infinitely preferable to great heat.

Answers which I have received from many arthritis patients make me rather sceptical as to the advantages of warm weather on account of the loss of vigour which heat entails.

In some cases I believe there is a reason why a hot climate actually increases the joint swellings; if the nasal mucous membrane is the site of a chronic germ infection the engorgement of that part which a hot atmosphere induces both causes a more vigorous inflammatory reaction and also carries more toxins into the general circulation. This is borne out by the way in which the heat produces its bad effect; after a spell of cool weather

the first hot day feels rather beneficial than otherwise, but a couple of days at 80° F. or so has frequently sufficed to bring on acute pain and swelling of carpal and tarsal joints; this sequence of events happened on eight successive journeys through the tropics.

The very striking symmetry of the joint symptoms in arthritis led in the first instance to the idea that it was a nervous disease. Later observers have noticed the frequency with which the disease is accompanied by a chronic germ infection of some kind, and it has been attributed to the prolonged absorption of toxins; there is much evidence to show that a mouth of decayed teeth or a septic condition of one of the mucous membranes are potent accessories in the production of the disease.

When such a septic source exists and can be removed by some surgical procedure the recovery of the joints may be truly dramatic; unfortunately, however, it is the rule rather than the exception to find no obvious septic focus, and it has become the fashion to regard these cases as originating directly from the toxins of abnormal bacteria in the alimentary canal.

It is true that such cases frequently show a gradual improvement with attention to diet, and that results are better now than they were before the days of intestinal antiseptics; but there is still no proof that in the majority of cases of arthritis the disease arises directly from toxins produced by intestinal bacteria.

It was suggested earlier in this article that there may be a constitution peculiarly suited to a chronic germ infection which may give rise to arthritis; the peculiarities indicated were a faulty digestion, a liability to attacks of migraine, and a tendency to vasomotor disturbances. The migraine occurs more frequently with an increase of starch in the diet and is absent when starch is for the most part withheld; the state of the nasal mucous membrane improves considerably under the same conditions, and, furthermore, the arthritis gradually becomes less troublesome.

It does not seem unreasonable to suppose that imperfectly digested materials carried into the general blood stream may cause vasomotor disturbances and may be excreted through the nasal mucous membrane sufficiently to keep up a continual nasal catarrh; this would provide an admirable nursery for micro-organisms. Once such a chronic muco-purulent catarrh is set up and purulent material is continually swallowed, the alimentary canal is likely to become toxic, just as it does where the mouth is full of carious teeth.

A case of arthritis due to carious teeth is comparatively easy to treat, since the offending cause of the disease is not difficult to remove; similarly pus which is being continually swallowed from a suppurating antrum can be dealt with surgically. It is far more difficult to cure a chronic septic state of the whole nasal mucous membrane; such a state of affairs perhaps is not rare and only becomes a serious matter when the gastric juice fails to sterilize such organisms as are swallowed; it is, nevertheless, a most serious matter to an individual who has arthritis. It does not receive very minute attention in literature, and therefore I will endeavour to give an accurate account of it.

Both the cases to which this article refers have frequently been examined by experts on nasal diseases, and the report has always been that the mucous membrane is somewhat hypertrophic and congested but that otherwise to the naked eye there appears to be no disease.

At one time in one of the cases a little pus was seen in the right superior meatus of the nose, and it was thought possible that this came either from the sphenoidal sinus or a posterior ethmoid cell. A cultivation of *Staphylococcus pyogenes aureus* was obtained from this. More recently at one sitting six cultivations were taken from the middle turbinate, inferior turbinate, and septum on both sides of the nose; all of these gave a culture of *Staphylococcus pyogenes albus*. On many occasions pus from the nose has been examined both on a slide and by cultivations, and I have always found staphylococci and pus cells. Cultivations of *Staphylococcus pyogenes aureus* have also been obtained from the other case.

The discharge of pus is extremely variable. In the early stages of the arthritis, when the anaemia was pronounced, intervals of weeks might elapse without any sign of pus. The only abnormal signs were a slight turbidity

of the mucus cleared from the naso-pharynx and the possibility of obtaining cultivations of *S. aureus*. A spell of hot weather has always tended to produce a vigorous flow of thin yellow pus, while during the colder periods the inflammatory process subsides.

As a rule the muco-pus only runs down into the naso-pharynx, but when it becomes increased for any reason it comes away freely also from the anterior nares. The ability to avoid swallowing pus from the naso-pharynx is a knack which I find few people possess. As a rule the pus is swallowed, and neither the arthritic patient nor his medical adviser have their attention drawn to this fuel which is being continually added to the fire.

The pains in the joints depend very much on the state of the nose. When the discharge becomes active, at first there is an increase in the joint pains. This auto-inoculation, however, is followed by a positive phase and subsequently stiffness and discomfort are for a time much diminished. This fact was made more abundantly clear by a staphylococcal vaccine which I have used for long periods; each inoculation is followed first by an increase of pus and joint pains, but subsequently there has always resulted a great diminution in articular discomfort.

The following is a further testimony to the intimate connexion between the joint pains and the nasal mucous membrane. Two years ago both inferior turbinates were cauterized, an interval of about a month being allowed to elapse between the operations. On each occasion, so soon as the cauterized surface became raw, there followed a sharp attack of rheumatism. I have noticed the same thing to occur after the extraction of teeth from a septic mouth, and I attribute it to the absorption of toxin through the wounded surface.

I think the fact which has impressed me most in this disease has been the very elusive nature of what I consider to be the septic origin, and since a profitable diagnosis must include the discovery of such a focus if possible, any new light in this direction will be of value. The point which I would emphasize is that in the early stages of the disease, when the individual is saturated with toxin and there is much anaemia, pus visible to the naked eye is only an occasional occurrence, and that the cultivation tube and microscope must be mainly relied upon in searching for offending bacteria. The constant presence of a certain organism in a situation which is normally sterile is a suspicious circumstance, and if a vaccine made from this organism will reproduce the arthritic symptoms and cause a flow of pus, we have some evidence that this organism is in part responsible for the disease.

The treatment of arthritis presents a very much more hopeful aspect now than it did even a few years ago. Emphasis has already been laid on the fact that a warm climate is not desirable for all forms of arthritis, and certainly in one variety it aggravates the symptoms very considerably; for that variety a temperature of 55° to 60° F. is the most suitable, but it is better that it should be persistently below 55° than continually above 60°; the essential is that the climate should be bracing.

After taking 15 to 30 grains of guaiacol carbonate daily for a year there were no striking results; but things might have gone much worse without it, and it seems a reasonable course to pursue if pus is being swallowed from time to time; every effort should be made to prevent any pus passing down into the stomach; it is very difficult, however, to do this completely, and many people seem to be unable to attain any success in this direction.

Nasal douching must be carried out regularly, but it only cleanses the inferior turbinate and lower parts of the nasal fossae. Vaccine treatment has proved more effective for this purpose, and it is well worth a trial; it is likely to improve the patient's general health sufficiently to enable him to cut off certain harmful articles of diet and to take regular exercise.

With vaccine treatment alone there is a temporary but decided improvement; the soil, however, is still as suitable as ever for a fresh supply of seed unless the alimentary canal is made more healthy by diet, water drinking, and exercise. I believe that a vicious circle is set up in the following way: The arthritis is directly due to the germ infection; the germ infection is kept flourishing owing to an unhealthy alimentary canal; the alimentary canal is likely to remain unhealthy as long as arthritis prevents

the patient from taking exercise and the bad general health precludes any attempt at dieting. It is waste of breath to tell a patient with arthritis affecting the feet to take efficient exercise. It cannot be done unless he is first assisted in some other way. Such a patient can, by means of vaccine treatment, be got into a far more active state. The same remark applies in a less degree to massage, faradic baths, and cataphoresis; vaccine treatment, however, goes more to the root of the disease, and in my experience has proved the more powerful ally.

I have inoculated myself between forty-five and fifty times, always using a vaccine from my own organism. The ordinary doses of staphylococcus vaccine proved far too large. A dose of 300 millions would cause an increase of joint pains during the day and continual cramps at night which might last for three weeks; small doses, on the other hand, produced a great improvement, and at one time led to the increase of a stone in weight in the course of three months. In order to bring about a cure of any permanency, I regard attention to the alimentary canal as essential.

While the patient is in an obviously low state of health, nothing much can be done in the way of cutting off any articles of diet. As he gets stronger, however, the starchy materials can with advantage be cut down and replaced by milk and hydrocarbons. Much can be done by long courses of water drinking. In theory it would appear a most reasonable procedure to wash out an unhealthy alimentary tract in this way, and in practice one certainly is not disappointed. The only possible objection which could be raised is the danger of exhausting the patient by over-vigorous purging. As a matter of fact, the Llandrindod Wells saline waters do not have a powerfully purging effect. As a rule, two or three glasses before breakfast act as a mild laxative. Individuals differ much in this respect, and it is a matter which must be suited to each one.

I trust that these remarks may help others in elucidating the mysteries of this troublesome complaint. I have attempted during the time that I have been closely associated with it to be a careful but impartial observer, and have neglected those symptoms which have not been constantly repeated. The explanation which I have given is the one which seems to fit most easily into the history of the case, and the treatment suggested has led to a more favourable result than falls to the lot of many arthritic individuals.

A SERIES OF CASES OF CATARRHAL JAUNDICE OCCURRING IN EPIDEMIC FORM.

BY

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THESE cases, eight in number, occurred in an institution where some 2,000 children, of ages varying from a few months up to 16 years, are cared for. These children all live under identically similar conditions as regards food, clothing, habits of life, and so on, but they are divided amongst five houses, which are practically independent of one another. All the cases occurred in one only of these houses. Moreover, the house in which the outbreak took place contains two departments, a girls' and an infants' department, the latter consisting of girls under 9. These two departments, though not absolutely separate, mix very little. These cases were confined to this infants' department, the only patient of more than 9 years of age being a girl of 16, who helps in looking after the smaller children.

There was nothing remarkable about the disease. It consisted of an attack of obstructive jaundice (that is, tingeing of the skin, conjunctiva, and urine, and absence of bile from the stools), a variable degree of fever, some feeling of malaise, and in three cases enlargement of the liver, without, however, any tenderness. In two of the cases jaundice was not present to the full extent—that is, there was no change in the colour of the urine and stools. There was no history of antecedent gastro-intestinal trouble.

Appended is an analysis of the cases, with the dates of admission to and discharge from the infirmary. The cases as soon as they occurred were removed from the department to the infirmary, where, with the usual treatment, they soon recovered. They were discharged when all trace of jaundice had disappeared and they were quite well in themselves. The interesting point about the series is that the fact of its being limited to one department only—no other cases occurred in the rest of the institution all through the summer—suggests that the disease was probably infectious. Moreover, it will be noted in the table that the cases occurred in five groups. Between the first case and the next two an interval of thirteen days elapsed. Between the discharge of numbers 1 and 2 and the occurrence of numbers 4 and 5, nineteen and sixteen days respectively passed, number 3 still being in the infirmary. Between the discharge of numbers 4 and 5 and the appearance of numbers 6 and 7, eighteen and fourteen days respectively elapsed. Between the discharge of the last of these and the occurrence of the last case there was an interval of fifty days.

Analysis of Cases, with Dates of Occurrence and of Discharge from the Infirmary.

No. of Case.	Date of Admission.	Date of Discharge.	No. of Days Isolated.	Highest Temperature.	Extent of Jaundice.	Symptoms.	Enlargement of Liver.
1	May 5	May 23	18	Normal	Full	Malaise	Nil
2	May 18	May 26	8	Normal	Skin and conj. only	Malaise	Nil
3	May 19	June 17	29	100°	Full	Malaise	Nil
4	June 11	June 23	12	99°	Full	None	3 in. below costal margin
5	June 13	June 27	14	100°	Full except urine	None	Nil
6	July 11	July 25	14	101°	Full	Malaise, vomiting	Nil
7	July 11	July 28	17	99°	Full	Malaise	1 in. below costal margin
8	Sept. 16	Oct. 7	21	100°	Full	Malaise	2 in. below costal margin

From a consideration of this series it would seem that some of the cases were still infectious when discharged from the infirmary, and that they went down and infected other children in the department; and the length of the intervals suggests that the incubation period of the disease is between fourteen and twenty-one days, probably nearer the former. This suggestion is not supported by the last case, however; but this long interval might be explained on the hypothesis that a very mild case was missed, which, considering the mildness of some of the attacks, might well have happened.

Numerous epidemics of jaundice have been recorded. Hennig¹ reviews some 86, and others have been reported since. The majority of cases have been benign, like those in this epidemic, but some have been of the more severe type described by Weil and associated with his name. In cases where an incubation period has been mentioned it has been given as varying from a few days to several months.

Most writers have thought there was no evidence of case-to-case infection in their epidemics, and have been able to trace the origin of the disease to bad food or such things as exposure to cold and wet. None of these causes can be assigned here, however, and the history of the little outbreak is strikingly analogous to that of an epidemic of low virulence of one of the ordinary infectious diseases as they occur in this institution.

REFERENCE.

¹ V. Quincke and Hoppe-Seyler, *Nothnagel's Practice*, "Diseases of the Liver," p. 501.

THE thirty-third Congress of Balneology will be held at Berlin in March, 1912, under the presidency of Professor Brieger. All communications relative to the congress should be addressed to the General Secretary of the Balneological Society, Geh. San.-Rat Dr. Brock, Thomiasstrasse 24, Berlin.

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