SOME PRINCIPLES IN THE MODERN TREATMENT OF RHEUMATIC DISEASES.*

BY

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THE classification of the various forms of rheumatism generally met with varies in different countries—as does also the actual type of disease. This lack of uniformity in nomenclature is one of the causes of the slow progress in the study of this group of diseases up to the present time.

CLASSIFICATION OF RHEUMATIC DISEASES.

The following classification proposed by the British Ministry of Health in its report (J. Alison Glover, 1924) is now generally adopted.

GROUP A.

1. Rheumatic fever.
2. Subacute rheumatism.

GROUP B. Non-articular manifestations.

3. Muscular rheumatism (myalgia), including fibrositis, pleurodynia, and torticollis.
4. Lumbago; classified alone on account of its occupational interest.
5. Sciatica and brachial neuritis.

GROUP C. Chronic joint changes.

6. Rheumatoid arthritis (infective peri-arthritis).
7. Osteo-arthritis.
8. Gout, acute and chronic.
9. Chronic joint changes unclassifiable.

GROUP A.

With Group A I do not propose to deal, since both the etiology and the treatment tend to have separated this group clinically from the others to a very large extent.

GROUP B.

We must first briefly consider the etiology of non-articular rheumatism. When a muscle is at rest its reaction is alkaline, whereas when it contracts it gives out heat, and sarcocactic acid and succinic acid are produced. In the normal tissues these are quickly got rid of by oxidation with the production of CO₂. In order that this may occur, however, it is essential that these waste products of muscular activity should be removed in the shortest possible time from the site of their formation. If there is a block in the lymphatic drainage system these substances, accumulating locally, will become irritants, and the response of the tissues to irritation is inflammation. The results of this inflammation appear in the small nodules and thickened fibrous bands which are generally found in these conditions. These differ, however, from ordinary fibrous tissue in the fact that they can be massaged away.

Although in this group the bacteriological "focus of infection" is believed by many to be the underlying causative factor, no one has yet demonstrated any specific organism recoverable from the nodules. Infective foci if found would naturally be dealt with in every case. The most efficient local forms of treatment in this group are hydrological and physical, particularly if sweating can be induced. The principles of these methods will be described in more detail later. Of other general methods, rest, avoidance of cold and constipation, and the adoption of a diet well balanced in both its chemical and vitamin content are the most important.

GROUP C.

The majority of rheumatic patients seen in out-patient departments come within this group, excluding those whose arthritis can be traced to some specific cause, such as tuberculosis, dysentery, gonorrhoea, or the pneumococcus. Many who originally come complaining of vague though distressing gastro-intestinal symptoms will be found to develop chronic joint changes ultimately. At St. Mary's Hospital

*A paper read to the Westminster and Holborn Division of the British Medical Association, March 18th, 1930. A cinematograph film illustrating some hydrological methods of treatment was shown (by courtesy of Mr. John Hatton of Bath).

I have traced the history of a certain number of sufferers with arthritis back for some two years; in about 70 per cent. the primary reason for seeking medical aid was either gastro-intestinal or a complaint of "giddiness." Little attention seems to have been paid to this association of chronic rheumatism with digestive disorders.

If we may omit the consideration of gout (since the literature on this subject is vast, and on the whole better known) we have left for consideration rheumatoid arthritis, osteo-arthritis, and "chronic joint changes unclassifiable."

The term "rheumatoid arthritis" is perhaps one of the most misused in the whole of medicine. It is now generally accepted to mean a disease commonest among, if not confined to, young women, particularly those who follow an indoor occupation, and characterized by a process of "atrophy"—rarefaction and softening of the articular ends of the bones which enter into the affected joints. When the muscles and tendons surrounding the joints retract, considerable deformity will result. In addition, there is usually a considerable wasting of the muscles themselves, and extensive involvement of the periarticular tissues. The joints most commonly affected at first are the smaller joints of the fingers, the metacarpo-phalangeal and wrist joints, and often the maxillary joints. The lesions appear gradually and tend to be symmetrical; they advance progressively and there is in most cases an accompanying secondary anaemia. The etiology is obscure. In the Ministry of Health's report the condition is assumed to have an infective origin, but we all see many cases in which no such origin could be assigned with justice. Infection accounts for the cases seen in male patients, together with a certain and possibly large proportion in the females; the remainder would appear to result from metabolic disturbances—probably from some "endocrine imbalance." This supposition is supported by the observations of Pemberton, and Pringle and Miller on the lowered glucose tolerance found in these cases. The joint effusions are invariably sterile.

The preliminary treatment should be directed towards eliminating infection if present. The teeth should be x-rayed, and those radiologically and clinically "found wanting" should be removed. As much digestive disorder is probably caused by removing the teeth as there is arthritis cured by it; we may, however, bear in mind the adage that "uneasy lies the tooth that wears a crown." Damp and draughts should be excluded from workrooms and dwelling houses. Since the patients generally have a lowered sugar tolerance, it is wise also to exclude excess of carbohydrates from their diet. Ray has pointed out that as most persons with rheumatoid arthritis have been forbidden to eat "red meat," they will have come to depend largely on the carbohydrates, and will need to be persuaded back towards the paths of protein, fat, and adequate vitamin content (especially vitamin B). Bread, sugar, jam, pastry, and potatoes are best omitted.

Permanent deformity in this form of arthritis is more to be expected than in any other forms of arthritis. Early and effective splinting is therefore a *sine qua non* of treatment. The subsequent indications are mostly hydrological and physical, and will be dealt with separately. Lately I have investigated the therapeutic value of blood transfusion in rheumatoid arthritis, in certain cases with gratifying results that will shortly be published.

Osteo-arthritis is now considered to be entirely unrelated to rheumatoid arthritis, and the term "arthritis deformans," which formerly included them both, is becoming obsolete. The lesions in osteo-arthritis are primarily those of cartilage and bone, rather than of the periarticular tissues and joint capsule; the cartilage may, in fact, become entirely replaced by fibrous tissue. The trouble is generally confined to one or two of the larger joints, such as the hips, shoulders, or knees; and constitutional disturbance is noticeably lacking, though the local joint pain may be severe—usually only on movement. The ends of the bones enlarge and osteophytes form round the edges of the articulations. Briefly, osteo-arthritis may be considered as a "hypertrophic" arthritis, and the rheumatoid form as an "atrophic" arthritis. The various forms of spondylitis generally described are all osteo-arthritic manifestations in the spine.

Osteo-arthritis occurs considerably later in life than the rheumatoid and infective forms of arthritis; often in association with arterio-sclerosis, high blood pressure, and local trauma. The evidence on which an infective origin is assigned to this disease seems to me to be unconvincing. A metabolic disturbance, often in combination with slight persistent trauma, seems to be the effective cause in most cases.

The aims of treatment in this group must be to promote the elimination of those products of metabolism which tend at this time of life to be retained more than previously, and for this reason spa treatment is of very real benefit to this class of patient. The local treatment is mostly directed towards relieving pain and improving the functions of the skin and muscles by hydrotherapy and massage, and later by electrotherapy. Finally, if osteophyte formation proceeds apace, steps must be taken to ensure that the inevitable fixation of the joint occurs in a suitable position; orthopaedic measures, both operative and instrumental, may have to be undertaken. It is also very important to deal with any undue increase of body weight, particularly in the so-called "climacteric arthritis," which is generally included under this heading.

PRINCIPLES OF TREATMENT.

So many therapeutic methods are advocated for use in the rheumatic diseases that it may be profitable to consider those that are most usually employed, and to try to correlate their underlying principles.

Removal of Infective Foci.

The subject of the colon as a source of sepsis is not so simple as was at one time imagined. Most normal persons can, according to Cruickshank, produce a copious growth of streptococci from their stools by the expedient of taking a mild purgative or a carbohydrate diet. One of two main types of bacterial action may obtain in the bowel, the fermentative or the putrefactive, the occurrence of either depending largely on the diet, and being capable of alteration by this means, or by implantation of the *Bacillus acidophilus*; such alteration is sometimes of considerable therapeutic benefit to the patient, even in the absence of definite colitis. Though but little is known of the degree to which retention of faecal contents may influence the arthritic process, experience teaches that it is often wise and beneficial, in the presence of stasis, to aid in their elimination, whether it be by purgation or colonic lavage, or treatment at a spa possessing sulphur or purgative waters.

Vaccines.

Vaccine therapy in arthritis has been, on the whole, disappointing. How far this should be considered to be due to incorrect selection of cases and organisms, and how far to incorrect expectations of the results likely to accrue, is a matter which it is difficult to judge. That in certain cases the results may exceed our expectations is a matter of experience. It is perhaps not sufficiently realized that even if a focus of sepsis is found, it is not of necessity the only existing focus, or the focus causing the arthritis; and to expect a vaccine to restore function to a contracted or ankylosed joint, as many appear to do, is absurd.

Non-specific Protein Therapy.

For some years the injection of T.A.B. vaccine, milk, or other proteins has been advocated in the treatment of arthritis, the rationale being that a high degree of leucocytosis is thereby achieved. Good clinical results are said to occur, but they tend to be of a temporary nature. It has been suggested that it is by reason of their protein content, rather than of their specificity, that vaccines operate for good.

Diet.

The belief that diet is of great importance in the treatment of rheumatic conditions, though up to a point well founded, has proved a source of considerable revenue to the vendors of the various "nature cures" which from time to time become popular. Most of our scientific knowledge of the value of dietetic methods in arthritis is recent, and we owe it to Pemberton and his co-workers in America.

Some fifty years ago the idea arose that this group of

diseases was due to the presence of uric acid in the blood stream, and foods whose end-products included uric acid were forbidden. Chief among such foods are glandular organs (liver, etc.) and "red" meat. Most of us must have suspected at times that these foods were less harmful than was generally supposed; it is therefore interesting to note that the American workers find that in cases with an accompanying anaemia they are actually indicated, for the reason that, as in pernicious anaemia, they regenerate the blood and resistive powers. The basis of most of the "cures" advertised is a period of actual or partial starvation. The belief that the lower bowel plays an important part in the etiology of the rheumatic diseases has led to the establishment of "Plombières clinics," or, as the Americans call them, "colon-filling stations." The fact that undoubted benefit often follows colonic irrigation suggests that it is worth trying to control the formation of harmful end-products so far as possible, both quantitatively and qualitatively, by means of dietetic limitation and selection. The association of dyspeptic disorders with rheumatism has also been noted, and in view of both of these indications for a lowered diet we are driven back some way towards these empirical "cures" in our effort to lighten the load on the internal organs. Experience does, in fact, show that limitation of diet, particularly the carbohydrate constituents, is a successful adjunct to other treatment, except where there is an obvious focus of active infection.

The chief foods to restrict are bread, potatoes, rice, pastry, jam, and sweets. Vegetables are valuable as "bulk" in a restricted diet, while fruit and small doses of cod-liver oil will furnish the necessary vitamin content. An additional benefit from such a diet is a reduction in weight in the obese patient, and a consequent lessening of the physical load on his lower joints.

Drugs.

Certain drugs appear to be of use in selected cases, the chief among them being the following.

(a) *The Iodides.*—This group seems to benefit a minority of arthritics considerably, and may therefore be tried in the treatment of most cases. Colloidal iodine seems ineffective; the same is true of tincture of iodine, though, if we may judge from the reports of the patients themselves, the French 1908 codex tincture, administered in milk (5 minims thrice daily), is of benefit. This may be due to its potassium iodide content.

(b) *The Salicylates.*—These drugs have declined in popularity; their "specific" action has never been very noticeable in cases of chronic rheumatism and arthritis. As aspirin they are useful for their analgesic properties. They appear ultimately to increase the misery of the patient's plight by interfering with his appetite and digestion, and causing also a considerable degree of depression. If used they may be combined with the iodides in one mixture. Recently ortho-iodoxy benzoic acid—a drug closely akin to salicylic acid—has been much lauded in America and France for its prolonged effect. Another and somewhat similar drug recommended by Poynton is tolysin, which lacks the depressive action of the salicylates.

(c) *Arsenic.*—This drug has been much used, apparently with gratifying results. It is chiefly indicated, as are most drugs, in cases of the "atrophic" type, and should be given in small doses, gradually increased, over long periods. Arsenic is particularly indicated in cases with an accompanying anaemia, but is also of use when the blood count is normal, on account of its effect on the general metabolism of the body. Care must be taken when using this drug that the digestion is not disordered by it. Sodium cacodylate (1/4 to 1/2 grain) is probably the most harmless form to use when this point is being considered.

(d) *Thyroid Extract.*—The observation that in rheumatism the basal metabolic rate often tends to be somewhat below normal (G. Holmes, and others) has suggested that there might be a connexion between rheumatism and thyroid deficiency ("suboxidation"), and the prolonged administration of the extract has accordingly been recommended (Llewellyn). Its use is indicated in cases of "climacteric" osteo-arthritis, particularly if there is an accompanying obesity, and good reports are given of the results achieved.

(e) *Sulphur.*—This drug is believed by some, notably Cawadias, to be of value in these conditions; it acts probably by disinfecting the bowel, although it can be shown that the sulphur metabolism of the body is generally disordered.

Physiotherapy and Hydrotherapy.

Although the majority of the principles included under this heading were known to the Romans, the actual methods of applying them have been considerably modified during

the present century, largely as a result of the physiological investigations of the American school, and the pioneer work of Fortescue Fox in England. The term "physiotherapy" includes: heat; general and local massage; exercises, active and passive; electrotherapy; the judicious use of rest; and actinothrapy.

Heat.—Heat applied to the body produces diaphoresis, rise in the pulse rate, an effect on the blood pressure, hyperpnoea, increase in basal metabolic rate and protein metabolism, increase in the relative alkalinity of the blood and body tissues, hyperaemia of the skin, "relaxation" in the muscular tissues, and a general sedative effect. These effects are more noticeable when heat is applied generally; they are also observed to a large extent when only local applications are used. It will be seen that heat may be harmful if applied in unselected cases. The commoner devices for applying heat systematically are the radiant heat cabinet, the hot-air chamber (dry heat), hot baths of various types, the vapour bath, and the mud bath (wet heat). Locally it may be applied by means of electric lamps (radiant heat), infra-red apparatus, the high-frequency current (diathermy), local hot-air baths, mud packs, and douches.

Massage.—Massage is used to increase the blood flow through the affected tissues, to open out the smaller capillary beds, to improve the general or local metabolism of skin or muscle, and to delay or prevent the atrophy of muscle which is so often present, either as a primary condition or as a secondary result of disease due to pain or stiffness. Massage should generally be preceded by general or local application of heat.

Exercise.—Active and passive movement should generally be preceded by massage, and, if the movement of the joint is limited by adhesions, great caution is needed, since inadvertent fracture of the neighbouring rarefied bone may then occur very easily. Carried out in the deep pool or reclining bath such movements are among the most important and most successful operations in hydrotherapy, the warmth allaying muscular spasm, and the weight of the water supporting the limb and protecting it from sudden movement, thus engendering confidence in the patient's mind. Most forms of electrotherapy, such as faradism and galvanism, may also be classed as methods of inducing passive muscular movement. The arthritic of moderate grade should be encouraged to follow any sport that is within his powers, otherwise he may become a chronic invalid and his joints may stiffen rapidly.

Rest.—Local rest for an acutely inflamed joint is provided by nature owing to the pain produced by movement. Systemic rest provides a more difficult problem. From a study of the "prodromal" symptoms of twenty-five patients at St. Mary's Hospital who ultimately developed arthritis, I found that in nineteen fatigue or lassitude was the major initial subjective symptom. This may be attributed either to the increased physical difficulty of "carrying on" under a slowly progressive disability, or to the patient's psychological strain as he visualizes the apparently inevitable approach of complete crippledom. Such a state of affairs suggests the need for great caution in applying exhausting remedies until the patient has accumulated some "reserve" to fall back on. Pemberton aptly parallels the progress of an athlete in "training" to the correct course to be followed in the treatment of these patients: Bromides appear to be useful during this stage of the disease.

Actinothrapy.—Ultra-violet light, in combination with other methods of treatment, may help to produce a satisfactory end-result. It is particularly useful to bed-ridden patients with a certain degree of anaemia and malnutrition, and in conjunction with massage is said to raise their blood count in a remarkable manner.

CONCLUSION.

It will be realized that the range of therapeutic agents in the rheumatic group of diseases is unusually extensive. It will, I hope, also be realized that the multiplicity of these agents does not in this case indicate failure to find a suitable remedy, since it appears to be more and more obvious that the intelligent combination of remedies is the keystone of success, the danger lying in the adoption of any one method of treatment, to the exclusion of the rest.

EPIDEMIC CATARRHAL JAUNDICE.

AN OUTBREAK IN YORKSHIRE.

BY

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AYS GARTH.

No apology is needed for an account of an outbreak of catarrhal jaundice in Wensleydale in the North Riding of Yorkshire when it is stated that more than 250 cases have occurred among a population of only 5,700, living in a part of the valley less than twenty miles long. This paper, it is believed, will help to show the definite spread from case to case rather than from some common source, will confirm the estimation of an incubation period arrived at by Dr. Booth,¹ and will describe unusual points in the clinical characteristics of the disease.

Wensleydale has apparently not been immune from epidemics of this nature in the past; an epidemic of a less serious character in 1910 is remembered. As a recently qualified assistant, jaundice in epidemic form, a zymotic disease unmentioned in my medical curriculum, caused me the greatest perplexity, but my principal assured me that epidemics had frequently occurred in his thirty years of practice. Soon after the date of this epidemic Cockayne's² article appeared, distinguishing the disease from the more serious Weil's disease, and suggesting the name "epidemic catarrhal jaundice."

Lately, an account of an epidemic of jaundice in the Midlands has been recorded in a Ministry of Health publication by Morgan and Brown,³ who sought to establish its leptospiral origin, but without success. A more recent publication by W. G. Booth¹ in *Public Health*, of an epidemic in Surrey, resembles in many ways the one here recorded.

Wensleydale is a broad valley, watered by the River Yore; the altitude of the villages, hamlets, and isolated farms, where these cases were seen, ranges from 600 to 1,000 feet. The water supplies are exceptionally good for a country district, and are separate for each village, the water being neutral in reaction. The district is tolerably prosperous, and there is an absence of poverty with concomitant dirt and ill-feeding. In common with most of rural England, the rat is much in evidence, but there is little likelihood of contamination of foodstuffs, as the standard of domestic cleanliness is traditionally exceedingly high. There is constant communication between the villages, which are united by ties of relationship and friendship, and there is no difficulty in accounting for the spread of an infection, although to trace the actual conveyance of this disease from case to case between the villages has been found difficult.

History of the Epidemic.

The epidemic began in the neighbourhood of Wensley, a village in the lower part of the Dale, in October, 1928. The disease attacked 18 out of 56 children in the Wensley school. No cases appeared in any other of the villages until January 29th, 1929, on which date the disease developed in two boys attending the Askrigg school, ten miles distant from Wensley. Then followed a remarkable spread in this school, 32 out of 81 being affected, the last on July 15th. Bainbridge, the sister village to Askrigg, remained immune until April 16th. The spread of the disease in this village is so significant that it is recorded in full, with dates of commencement of the cases, which appear in monthly crops.

	Illness commenced.
Harold P., school child	April 16th
John T., " " " " " " " " " "	May 14th
Harry B., " " " " " " " " " "	May 16th
Frank P., " " " " " " " " " "	May 19th
Mary M., " " " " " " " " " "	May 22nd
Leonard P., aged 15, " " " " " " " " " "	May 19th
Jas. M., school child	June 13th
Jas. P., " " " " " " " " " "	June 17th
Walter B., " " " " " " " " " "	July 8th
May L., " " " " " " " " " "	July 24th

S. P., aged 32, who began with jaundice on August 24th, and who sold sweets in the village shop, probably at this point preserved the link.