TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the rheumatic diseases met with in general practice.

PHYSICAL METHODS OF TREATING RHEUMATISM

BY

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PART I

The syndrome of chronic rheumatism—pain, limitation of movement, and deformity—results from affections of either articular or non-articular structures. The former include alterations in the cartilaginous surfaces, synovial strata, ligaments, and capsules of the joints, while under the latter are reckoned disorders of the white fibrous tissue, from which are derived the coverings of the muscular bundles, their fascial expansions and tendinous attachments, as well as the sheaths of the nerve trunks. In its earlier stages the syndrome is mostly associated with inflammatory changes in these structures, but later it becomes related to the persistence of inflammatory exudates and their subsequent organization into fibrous bands and adhesions which seriously interfere with the smooth working of the muscles and the joints under their control. The changes briefly outlined above are aetiological dependent on certain pathological conditions, such as stasis in capillary areas, inactivity of the skin, and a deficient sweat secretion; all of which provide indications for the various kinds of physical treatment to be described below.

In the selection of methods care has been taken to exclude any form of treatment that is not obtainable in the average general practice. The baths can all be given in any house in which a "slipper" bath is installed, and no special apparatus is needed for the performance of massage and movements or for the administration of packs; the necessary equipment for electrotherapy is usually available in one way or another in most practices. The physical methods of treatment to be considered are: (1) complete and partial immersion baths; (2) packs of various kinds; (3) radiant heat; (4) electrical treatment; and (5) massage and manipulation.

Complete Immersion Baths

A complete immersion bath requires from fifty to sixty gallons of hot water in the ordinary household or slipper bath. The temperature ranges between 100° and 108° F. The duration depends on the temperature; at the lower levels for from ten to fifteen minutes, and at higher degrees a very few minutes, will suffice owing to the risk of causing faintness. In all cases a cold wet towel should be wrapped round the head of the patient as the bath is entered to prevent a headache or feeling of oppression, which is so apt to occur when this precaution is neglected.

BRINE BATHS

A brine bath can be prepared by adding about 6 lb. of common salt or Tidman's sea salt to fifty gallons of hot water. This is equivalent to the average saline content of the sea, but not nearly so strong as the Droitwich natural brine. The temperature should be fairly high, 104° F. or over, in order to induce free perspiration. The patient should remain in the bath for from ten minutes to a quarter of an hour, after which

he is well packed up in blankets for an hour so that the sweating may be continued. It is always advisable, if practicable, to give a brine bath the last thing at night so that the patient may retire to bed directly after and not interrupt the sweating. If there is any difficulty in getting the patient to perspire, the previous administration of two teaspoonfuls of sp. aeth. nit. will generally overcome it.

MEDICATED BATHS

A mustard bath is prepared by adding from a half to one ounce of mustard to each gallon of water. The required quantity should be mixed with a little cold water before its addition to the bath. Colman's mustard bath cartons containing the exact amount necessary for a bath are very convenient. The temperature should be about 103° F. and the duration from ten to twenty minutes, depending on the degree of toleration possessed by the patient's skin.

The high specific heat of water, which renders it such an admirable medium for the transference of heat from one body to another, may be increased by the addition of salts of various kinds. The practical point arising from this is that a mineralized bath will "hold" heat better than one of plain water. The same applies to a pack of mud or a linseed-meal poultice. Whether any of the mineral constituents of a saline bath are absorbed by the skin is a moot point.

Rationale of Treatment

If the temperature of the bath is very high a momentary constriction of the peripheral vessels takes place, which may induce shivering and a sensation of cold. This quickly passes off and the skin becomes reddened from the collateral hyperaemia that ensues. In a hot bath of moderate temperature this phenomenon does not occur, as the cutaneous vessels dilate at once. The peripheral hyperaemia thus induced has the effect of breaking down vascular stasis, which is one of the associated pathological changes in many rheumatic conditions.

Immersion in a bath heated well above skin temperature temporarily abolishes the radiation of heat from the surface of the body; in consequence, this heat accumulates internally and the general body temperature rises. The stimulation of the sweat glands brought about by the heating of the blood usually has an analgesic effect. Whether this is due to the elimination of toxic material in the perspiration or to some unexplained factor associated with the pyrexia it is impossible to say. The basic fact remains, however, that any measure which induces sweating can be counted on to relieve the pain of rheumatic conditions to a greater or less extent. A brine bath not only retains its heat more effectively than one of plain water, thus preventing heat from being radiated too quickly from the surface of the body, but has, on account of its saline content, an additional advantage in the increased stimulation of the sweat glands. To some extent the same applies to a mustard bath, except that the dilatation of the peripheral vessels and the stimulation of the sweat glands is more directly due to the irritating action of the mustard on the skin.

It must be remembered that the full immersion bath is somewhat tiring, and although it is applicable in con-

ditions affecting large areas of the body—crural, lumbar, or brachial fibrositis, or that more or less generalized form, “panniculitis”—care must be taken not to prescribe it in cases in which myocardial weakness, cardiac hypertrophy, true arteriosclerosis, or organic disease of the nervous system are present as complications.

Partial Immersion Baths

Partial immersion baths afford considerable relief from the pain of more localized conditions. They are much less tiring than a full immersion bath, and may therefore be used for more delicate patients.

HOT SITZ BATH

An ordinary “hip” bath is half filled with water at a temperature of 100° F. In front of this is placed a foot bath at a temperature of 105° F. The patient, fully undressed, sits in the hip bath and places the feet in the foot bath. Both patient and baths are then covered with blankets. Once the patient is comfortable, a cupful of water is removed and replaced by gently pouring a cupful of boiling water down the side of the bath. This should be repeated every minute until the temperature of the bath water reaches 110° F. The patient remains in the bath for from ten to twenty minutes; then he is thoroughly dried and put to bed between blankets.

The bath causes profuse perspiration, as the thermal stimulus applied to comparatively small areas of skin affects the whole body surface. It is very useful as a substitute for a full immersion bath. Considerable relief has been obtained from its use in gluteal fibrositis in its earlier stages, and later on the bath is followed by massage.

The hot mustard sitz bath is prepared by adding a half to one ounce of mustard to each gallon of water, as described for the full mustard bath. It is a more intensified form of sitz bath, and the indications for it are very much the same.

HOT LEG BATH

The hot leg bath may be given in any suitable vessel, such as a large bucket, capable of holding enough water to cover the leg below the knee. The temperature should be kept at about 108° F. in the manner described above; its duration is from ten to twenty minutes. Many painful rheumatic and gouty affections of the feet and legs derive benefit from its use. Its action may be intensified by the addition of mustard in the proportion mentioned.

GLOVE BATH

The hands enclosed in rubber gloves, a few sizes too large, or the feet encased in rubber socks that reach halfway up the calf, are immersed in hot water maintained at a temperature of from 105° to 110° F. for twenty minutes to half an hour, daily or alternate days, as ordered.¹ Ordinary surgical gloves are used and a waterproof sock can easily be devised. If necessary, an ointment of wintergreen, methyl salicylate, iodine, or menthol can be applied before putting on the gloves or socks. Owing to the retention of heat and the raising of the local internal temperature, it will be found that on removing the coverings of the hands and feet the parts are bathed in a copious perspiration and are much more supple. Massage can therefore be more efficiently carried out as all muscular spasm is relieved.

The immersion in hot water of the hand or foot enclosed in a waterproof covering has the effect of a poultice, an effect vastly different from that which follows their immersion without such protection. Among the many indications for its use are arthritic changes with consequent stiffness, pain, swelling, and deformities in the

wrists, fingers, ankles, and feet; sprains and strains; stiffness following old injuries; fibrositis of the palmar or plantar fascia; in the manipulation of flat-foot when muscular relaxation is required; and in any other condition in which pain and stiffness are prominent symptoms.

Mud Packs

Mud packs are prepared by slowly adding powdered fuller's earth* to a basin of very hot water in exactly the same way as for a linseed poultice. When the required consistency has been obtained the mass is spread out quickly to a thickness of three-quarters of an inch on a piece of linen or calico, covered with some fine muslin, and applied to the affected part. Over all a waterproof sheet and blanket are placed. The pack should remain on for half an hour or longer.

Bags of mud from Pistany are procurable. They are made to fit various parts of the body—shoulders, back, knees, etc. Before use they are dipped in very hot water (120° F.) and applied for three-quarters of an hour or so in the manner described. These packs have an additional advantage in that they can be used over and over again by simply hanging them up to dry after their application.

A mud pack has very much the same effect as a poultice. By its pressure on the skin it tends not only to empty the superficial veins, but also to bring about a general cutaneous stimulation. Tissue vitality being thus stimulated, the absorption of oedematous swellings in the neighbourhood of the joints and among the fascial planes is facilitated. A hot mud pack applied along the back of the thigh or over the buttock is a very efficient remedy in sciatica. It has been repeatedly noted in practice that moist heat is always more effective in sciatica than dry. Swollen and painful knee-joints derive great benefit from mud applications.

CATAPLASMA KAOLIN

Cataplasma kaolin, the formula for which is given in Martindale and Westcott's *Extra Pharmacopoeia*, is perhaps more convenient to apply. The tin container should be placed in a pan of boiling water, and when the contents are hot enough they should be spread thickly on a piece of calico in the manner described for mud. The pack may remain on for several hours, or all night. It is used for very much the same conditions as those for which mud is employed; it has largely taken the place of the old-fashioned linseed poultice. If used hot enough, it is one of the most efficient methods of relieving pain.

MUSTARD PACKS

A level tablespoonful of mustard is made into a paste with tepid water; after five minutes this is made up to a pint with very hot or nearly boiling water. A small towel or piece of flannel is then soaked in this decoction, wrung out, and applied to the affected part. The pack should be left on for five to ten minutes according to the sensibility of the patient's skin. After the removal of the cloth the part should be thoroughly well sponged over to take away the remains of the mustard. It cannot be too strongly insisted upon that in no circumstance should mustard ever be applied to broken skin. Applied along the back of the thigh, over the shoulder or upper arm, or over the chest, the mustard cloth will often relieve the pains of sciatica, brachial neuritis, neuralgias, and pleurodynia—provided in the latter case that the pain is really due to fibrositis of the intercostal muscles and not to a coronary thrombosis.

* China clay will do equally well. It is a matter of regret that more attention is not paid in this country to the supply of muds for therapeutic purposes.

PARAFFIN WAX APPLICATIONS

Solid paraffin wax (obtainable at all oil merchants) is melted in a tin over a gas burner; it melts at approximately 122° F. It is then poured into a suitable receptacle, and, if a hand or foot is to be treated, the part is thrust into the liquid and kept there for fifteen to twenty-five minutes. If sufficient wax cannot be melted in which to immerse a hand or foot, or if a knee, elbow, or shoulder is to be dealt with, the medium must be either painted on with a broad brush or poured on from a small dipper. Six or seven coats should be painted on, each one of which must be allowed to dry before the next is applied. The part is then wrapped up in waxed paper and the whole covered by a mackintosh sheet and a small blanket for the required time. At the end of the application the wax can be readily stripped

off owing to the copious flow of sweat that has taken place on the surface of the skin.

The solidification of the wax squeezes the blood out of the cutaneous vessels and at the same time prevents the radiation of heat from the part which is under treatment. It will be noticed that on removing the wax the skin is quite pale. Paraffin wax is used extensively in painful conditions of the joints—shoulders, elbows, wrists, knees, ankles, and feet. It is generally followed by massage. It has a marked analgesic effect in many non-articular conditions, such as scapulo-humeral fibrositis and bursitis in the same region. Perhaps its most extensive application is in the treatment of deformities of the fingers associated with arthritic changes.

REFERENCE

¹ *British Medical Journal*, 1932, ii, 100.
(To be continued)

PIONEERS IN RESEARCH ON TROPICAL DISEASES

STEPHEN PAGET MEMORIAL LECTURE BY
SIR MALCOLM WATSON

On the occasion of the annual general meeting of the Research Defence Society on June 9th, with Lord Lamington in the chair, the tenth Stephen Paget Memorial Lecture was delivered by Sir Malcolm Watson, director of the Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine. In it he summarized the work of Manson, Ross, and Walter Reed, and although it covered ground which must have been familiar to many in his audience the story was so well retold as to have new fascination.

Sir Malcolm Watson began with an allusion to the opponents of experimental research. He thought that they could never have seen the things which he himself had seen during his years in the Tropics.

"I have seen cholera sweep away thousands; I have seen men smitten so suddenly by cholera when walking along that they have dropped on the road in agony; and I have known fear of the disease drive hundreds in panic from their homes. I have seen a city so stricken by plague that to enter it was to run a grave risk. I have known whole families killed off by malaria. . . . As a direct result of the researches which some well-meaning but misinformed people would prohibit it has been my privilege to take a part in stamping out many dangerous diseases; so that in some places to a miserable people, half-starved, childless, barely clinging to life, there came health and prosperity and happy children."

Patrick Manson

The lecturer then briefly sketched the work of Sir Patrick Manson on filaria and malaria, and the transmission of these diseases from one victim to another. It was his researches on the filarial worm and its connexion with elephantiasis which led to discoveries that could be called by no other word than epoch-making, and earned for Manson the title of "Father of modern tropical medicine." Malaria was due to a parasite as different from the filarial worm or its embryo as chalk from cheese. The malarial parasite was only one-fiftieth the size of the filarial embryo worm, and once in twenty-four, or forty-eight, or seventy-two hours, according to its species, it divided, as lowly cells did, into many parts, each as complete as its parent. But although the two parasites differed in so many ways, certain facts in their life history suggested to Manson's acute mind that both made the escape from their human hosts by being drawn out of the blood, and living for a period and developing in a blood-sucking insect. He had been struck with one special form of the malarial parasite, the crescent body, which became active only after the blood had been withdrawn from the body, just as the filarial worm became more active and threw off its sheath under similar conditions.

"Most people regarded the crescent as having no significance and thought of the changes seen under the microscope as the agonies of a parasite in *extremis*. But Manson, with greater vision, regarded them as . . . the first stages in the parasite's life outside of man. Once again Manson's deduction was as brilliant as it was to prove beneficial. Living in London, where there was no natural malaria, Manson saw no opportunity of putting his hypothesis to the crucial test—the experiment. Nevertheless, great ideas are immortal: inspiration to great achievement passes from one generation to another, and if Manson's opportunity for experiment were past, as it seemed, fortune gave him Ross and linked the names of Manson and Ross for all time."

Ronald Ross

It was Ross who carried on the experiment, with infinite patience, dissecting and searching the bodies of hundreds of mosquitos until he picked up the next clue. But at length he conclusively showed that the malarial parasite left man by being sucked up through the mosquito's proboscis when the mosquito fed on man, and was injected into another man by the same route after an interval of some ten days. During those ten days in the mosquito the parasite was reproducing itself sexually, and the young found their way to the mosquito's proboscis and so back to man. The later stages of this research were carried out by experiments on birds and with bird malaria.

Thanks to the brilliant deductions of Manson and the patient experiment of Ross, the mode of infection of malaria became clear. As a direct result of the work of these two men many methods were devised for controlling and destroying the insects, bringing about the reduction, in some places the complete elimination, of malaria. By altering the conditions under which the larvae of mosquitos lived the propagation of the insect could be interfered with, and often stopped, at the larval stage of its existence.

"We learned how to say to species 'Come' or 'Go' as we pleased. This work was begun in Malaya. Professor Swellengrebel carried these new ideas of how to control mosquitos and prevent malaria to Java and later to Europe, with brilliant success; Dr. Darling took them to the United States; Dr. Ramsay introduced them on a large scale with outstanding results into India. So one discovery leads to another, and the whole world benefits. Already we can claim to have saved a million lives and an incalculable amount of sickness and misery as a direct result of the researches of Manson and Ross on malaria alone; and we are only at the beginning of the practical application of these discoveries."

Walter Reed

Finally the lecturer touched on the work of Walter Reed, head of the Yellow Fever Board appointed by the U.S. Government to inquire into the yellow fever attacking the troops in Havana. Of the four medical men who constituted the Board, one, Jesse M. Lazear, died of yellow fever contracted from a mosquito which he