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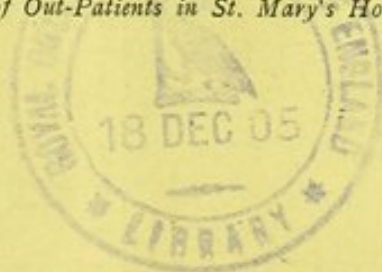
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THE TREATMENT OF GOUT IN ITS VARIOUS
FORMS.

By ARTHUR P. LUFF, M.D., B.Sc., F.R.C.P. (LOND.).

Physician in charge of Out-Patients in St. Mary's Hospital.



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GOUT is a disease which is due to faulty metabolism, probably both intestinal and hepatic, as the result of which certain poisons (possibly the purins and other bodies, but of which we at present know but very little) are produced and lead to an auto-intoxication, which is an early factor in the development of the gouty condition. This auto-intoxication coincides with or is followed by, in the majority of cases, a deposition of sodium biurate in certain of the joints or tissues, which constitutes the climax of the gouty attack. I cannot but think that with our increasing knowledge and experience of the disease, uric acid and its salts will in all probability have to be relegated to a position of subsidiary importance in the pathogenesis of gout. The joint-manifestations are probably dependent upon much more general and much larger conditions than a mere excess of uric acid in the blood. The deposition of sodium biurate is possibly merely the sign of the disease, not the essence of it.

As regards the treatment of gout, in the first place it should be borne in mind that no routine treatment can be adopted which is suitable to all cases. The nutritional condition of the patient, his habits, surroundings, and mode of life, constitute factors that must necessarily modify the treatment of individual cases, and with gout, as with so many other diseases, it will be found that each individual case requires separate study and frequently special treatment. Quite apart from the treatment of an attack of gout, which is a comparatively simple and easy matter, must be considered the treatment of the condition or conditions which led up to the attack. In connection with this point it must be remembered that the gouty individual is one whose general metabolism is unstable, and that this instability may be present in one or more of the great physiological systems—the digestive, the nervous, the circulatory, &c. The

question which of these systems is primarily and mainly at fault should always be a matter for patient investigation, and one must then endeavour to improve the metabolism of that system by suitable medicinal, dietetic, and hygienic treatment.

The treatment of gout should have for its aim the following objects :—(1) The treatment of the gouty paroxysm in cases of acute gout, and the relief of the pain as speedily as possible ; (2) the treatment of the subacute or chronic condition and the prevention of the recurrence of an attack, which may be effected by the promotion of the elimination of uric acid and the other purin-bodies, by checking any excessive formation of these bodies that occurs in some subjects, and by careful attention to diet and general hygiene ; and (3) the treatment of the affected joint or joints with the object of removing the uratic deposits and of preventing permanent deformity.

In all cases of gout a very careful examination of the urine should be made in order to ascertain whether there is any organic kidney-affection. The indications of such affection of the kidneys are the existence of a certain amount of polyuria, a low specific gravity of the urine—usually from 1007 to 1016—the presence of a small quantity of albumen (which, however, may disappear for some time and then re-appear), the presence of a few granular casts if a careful microscopical examination is made after centrifuging the urine, and a diminished daily excretion of uric acid and generally of urea. It is most important carefully to examine the urine for traces of albumen, and for the presence of casts. For the latter purpose the centrifugal machine should be used, as the casts, when present, usually occur in but small numbers, and are otherwise very slow to settle.

THE TREATMENT OF ACUTE GOUT.

For the treatment of the gouty paroxysm the limb should be placed in the horizontal position, or slightly elevated above the level of the body, and a cradle should be arranged so as to take the weight of the bed-clothes off the affected part. To alleviate the severe pain felt in the affected joint, warm packs should be arranged round it, consisting of cotton-wool saturated with a soothing lotion, and then lightly covered with oil-silk.

I have found the following lotion most useful in relieving the local pain :—

Sodii Carb.	-	-	-	-	-	3 iv.
Linim. belladonnæ	-	-	-	-	-	3 ii.
Tinct. opii	-	-	-	-	-	3 iss.
Aq. ad	-	-	-	-	-	3 viij.

A small portion of the lotion should be mixed with an equal quantity of hot water, and then poured on cotton-wool previously arranged round the joint. The pack should be changed every four hours. In connection with the acute paroxysm no attempt at local depletion—such as the application of leeches to the inflamed joint, blistering, or incisions—should on any account be made, owing to the great liability of thereby extending the inflammatory condition, and so producing subsequent ankylosis or deformity.

For the internal treatment of acute gout colchicum is one of the most valuable drugs that we possess. It should be especially used for acute gout, and for subacute attacks supervening on chronic gout. If it be used continuously, tolerance is apt to be acquired, and then the drug ceases to act. At the commencement a large dose of thirty to forty minims of colchicum wine should be given, followed by a mixture containing in each dose ten to twenty minims of the wine with from forty to sixty grains of citrate of potassium, which should be administered three times a day. The citrate of potassium, which is given for its combined properties of acting as a diuretic and of diminishing the acidity of the urine, may, if desired, be given as an effervescing mixture, using thirty grains of potassium bicarbonate to twenty grains of citric acid. Colchicum reduces the gouty inflammation, relieves the pain, and shortens the attack. It should only be taken under medical advice, and should never be given in such doses as to produce extreme depression : after the inflammation of an acute attack has subsided the doses of colchicum should be gradually diminished until it is left off.

From three to four grains of "blue pill" should be given the first night, followed by a dose of Epsom salts in the morning. Mercury should be given only in sufficient doses to produce its cholagogue effect, as owing to the possibly defective action of the kidneys the mercury absorbed into the general

system may be eliminated with great difficulty. In my opinion it is advisable in the treatment of gouty patients in the acute or subacute stages to avoid the use of saline purgatives owing their efficacy to salts of sodium, on account of the power possessed by all sodium-salts of diminishing the solubility of sodium biurate. In the employment of purgatives for gouty patients the great object is not to produce powerful purgation, but to relieve portal congestion, since a congested condition of the liver means that excessive quantities of glycocine and purin-bodies remain in the circulation, with the consequent production of an excessive quantity of uric acid. A pill containing either two grains of euonymin or a quarter of a grain of podophyllin, combined with a grain of extract of hyoscyamus and a grain and a half of the compound extract of colocynth, will, in many cases, be found to be very useful.

If the pain of an acute attack of gout is so severe as to prevent sleep, chloral, sulphonal, or trional may be given, or a full dose of extract of hyoscyamus given with blue pill at night will, in some cases, act as a very useful anodyne. The administration of opium or morphine should, if possible, be avoided owing to the risk of its deficient elimination, and also on account of its diminishing the amount of urine, and its tendency to derange digestion and to check hepatic metabolism.

DIET IN ACUTE GOUT.

During an attack of acute gout a diet must be given which shall tend to check the abnormal metabolism of the gastrointestinal tract and of the liver, which shall be non-irritating to the kidneys, and which shall be one that diminishes as far as possible the production of the purin-bodies. For the first day or two of an acute attack the patient should be restricted to a milk-diet, which may consist of milk, bread-and-milk, and tea made with boiling milk instead of with water. Weak tea with cold toast thinly buttered may also be taken. The free drinking of hot or cold water, of Salutaris water, or of some mineral water free from sodium-salts should be encouraged. The milk-diet should be continued until the acute inflammation is subsiding, which stage is indicated by the lessening of the pain, and by the pitting on pressure of the affected parts. No alcohol in any form should be given during this stage, unless

there are strong reasons for its administration, such as a weak action of the heart and a feeble, irregular pulse, when a little well-matured whiskey or brandy, diluted with Salutaris water, will prove the best form of alcohol. Beef-tea and any of the meat-extracts or essences should be avoided at all times by gouty patients, owing to the tendency they have to irritate the kidneys, and to introduce into the circulation waste nitrogenous bodies. With the subsidence of the acute attack the patient may return to a more liberal diet, but care should be taken to avoid anything indigestible. The dietary suitable for gouty subjects after the acute attack has subsided will be considered later on.

THE TREATMENT OF SUBACUTE AND CHRONIC GOUT.

Means of Checking the Excessive Formation of the Purin-Bodies.—These consist in careful attention to diet and regimen, in the promotion of the metabolism of the liver, so as to check the excessive production of the antecedents of uric acid, and in the relief of congestion of the portal system, which can be effected by keeping the bowels open at least once a day. In addition to colchicum, which may be given in small doses, guaiacum may very usefully be administered as an alterative which stimulates the metabolism of the liver, and also affords relief to the portal system. From five to ten grains of guaiacum resin should be given in cachets two or three times a day, according to the effect on the bowels, since guaiacum sometimes acts as a laxative. The method of administering the powdered guaiacum resin in cachets is far preferable to giving the tincture of guaiacum in a mixture, as in the latter form a nauseous medicine is produced, and the precipitated resin tends to cling obstinately to the tongue and fauces. In cases of chronic gout the colchicum may very conveniently be administered in the form of a pill, given three times a day, containing one-sixtieth of a grain of colchicine, combined with one quarter of a grain of extract of nux vomica and one grain of extract of gentian. Colchicine, however, should not be given in cases of marked interstitial nephritis, as in such cases a fatal result has been known to follow its administration in medicinal doses. If constipation occur, a sulphur-and-guaiacum tablet, or a dose of compound liquorice powder,

should be administered at night. An occasional dose of blue pill and euonymin, followed by a purge of Epsom salts, will be found useful. If the patient is suffering from atony and debility of the stomach, nux vomica or strychnine may be given with potassium citrate. Iron-preparations are not as a rule well tolerated by the gouty, but if anæmia is present the citrate of iron and ammonium or the carbonate of iron will be found the best to administer.

Means of Promoting the Elimination of Uric Acid and other Purin-Bodies.—This may be effected by medicinal treatment, and by diet and regimen. Citrate or bicarbonate of potassium should be employed as a diuretic, which increases the volume of the urine and at the same time diminishes its acidity. The use of the potassium-salt may with advantage be pushed until moderate alkalinity of the urine is produced, as by such means the quadriurates are rendered more soluble and more stable than they are in acid urine, and so the tendency to the deposition of uric acid or sodium biurate in the kidney-tissues is removed. Free diuresis should also be encouraged by the drinking of sufficient quantities of water. A patient suffering from gout should avoid the excessive use of common salt at table, owing to the power it possesses of diminishing the solubility of sodium biurate, and thereby hastening the precipitation of that body.

The Use of Alkalies and the Salts of Alkalies.—Of the potassium-salts used in the treatment of gout the citrate and the bicarbonate are the two most commonly employed. As to the beneficial effects of employing a potassium-salt in conjunction with colchicum in the treatment of acute and subacute gout I am fully assured, and my experience is that of the various potassium-salts the citrate is the most useful. If given in sufficiently large doses it tends, by its conversion in the kidneys into the carbonate, to diminish the acidity of the urine, which is generally high in connection with the gouty paroxysm, while at the same time it increases the solvent power of the urine for the uric-acid salts, and so assists their elimination. In addition, as I have experimentally shown, the presence of a potassium-salt both delays and inhibits the conversion of the soluble gelatinous sodium biurate, which is the form in which the biurate is first present in the blood, into the

comparatively insoluble crystalline biurate. In this way the deposition of the latter in the tissues is inhibited, and so further time for the elimination of the biurate is offered. I do not however, wish to contend that the above-mentioned are the only explanations of the beneficial action of potassium-salts in the treatment of gout. In addition they have their uses in the gouty state on account of their stimulating action upon metabolism, of their remedial action upon the gastric and hepatic functions, and of their diuretic effect.

As regards the use of sodium-salts they are certainly beneficial in some gouty conditions, but since they are directly detrimental to the removal of gouty deposits I am of opinion that those mineral waters should be avoided which owe their activity to those salts *when the removal of gouty deposits is the main object of treatment*. But in cases of sluggish action of the liver, of gastro-intestinal catarrh and torpor, of gouty dyspepsia, and of other forms of irregular gout where there are no appreciable uratic deposits in the joints, mineral waters containing sodium-salts are undoubtedly beneficial, owing to the action of those salts as hepatic and gastro-intestinal stimulants.

As regards the use of lithium-salts in the treatment of gout, my opinion is that they are not so useful as the potassium- and sodium-salts. The lithium-salts have not the same inhibiting effect on the conversion of gelatinous sodium biurate into the crystalline form as the potassium-salts have, while at the same time they have no better solvent effect on gouty deposits. The great objections, however, to the use of the lithium-salts is their greater toxicity and depressing action on the heart as compared with the potassium-salts. They consequently have to be given in such small doses that I am very doubtful as to whether in such doses they possess any remedial effect at all. On the other hand, I constantly meet with patients suffering from cardiac depression as the result of the excessive and continued consumption of lithia-tablets, which are so persistently, so speciously, and so wrongly vaunted as curative of gout.

In the treatment of the gouty state associated with disturbance of the functions of the liver the most important consideration is the restoration of that organ to its normal state of activity, and here the alkaline sodium-salts are especially

useful. There is no better treatment at the outset than a dose of blue pill or calomel at night, followed by a dose of Epsom salts or Carlsbad salts in the morning. Subsequently a pill containing a small dose of "blue pill" or calomel combined with euonymin and colocynth will be found most useful. In such cases of gouty hepatic inadequacy a mixture which I have found most beneficial as regards its stimulating effect on the metabolism of the liver, and also of the gastro-intestinal tract, is one containing sodium bicarbonate, gentian, and nux vomica, taken a quarter of an hour before meals.

Further Treatment of Chronic Gout.—The enlargement and tenderness of the gouty joints is due to two causes—the deposition of sodium biurate in the cartilages and fibrous structures, and a chronic inflammatory thickening of the fibrous tissues. For the reduction of this last-mentioned thickening, as well as for painful gout of the sole of the foot, and for gouty neuralgic affections, iodide of potassium given internally is a useful remedy. This drug should not, however, be regarded as a solvent of gouty deposits, and it is contra-indicated if advanced kidney-disease exists. It should be given in doses of five to ten grains three times a day, and may usefully be combined with from five to ten minims of tincture of iodine.

THE LOCAL TREATMENT OF GOUTY JOINTS.

If much swelling of a joint persists, the limb should be elevated as much as possible, and a light flannel bandage applied to the joint. If the œdema persists, the hot douche followed by sponging with a cold strong solution of common salt will be found serviceable. The application of the so-called solvents of uric acid externally to affected joints is useless, as they are not solvents of sodium biurate. Careful massage and gentle exercise of the stiffened joints should be employed, but only when convalescence is fairly established. For the stiffness and thickening of joints, careful rubbing with Iodide of Potassium and Soap Liniment or with the Compound Camphor Liniment may be resorted to. The thermal baths of Bath, Buxton, Harrogate, Strathpeffer, Llandrindod Wells, Aix-les-Bains, and other spas, and mud-baths, are useful in the treatment of cases of chronic articular gout. Treatment by means of baths should, however, be avoided by patients suffering from

acute gout, by elderly patients, and by those suffering from any serious cardiac affection.

BATHS AND MASSAGE.

A sedentary life and deficient exercise conduce to gout, owing to a lowering of general metabolism, to depressed vigour of blood-circulation, and to impairment of movement of the lymph in the lymph-channels. Since the lymph-circulation is mainly carried on by muscular movements and respiration, the beneficial influence of massage and muscular movements on many gouty subjects becomes readily intelligible. Massage should never be resorted to in cases of acute gout, as such treatment not only aggravates the disease at that stage, but also causes severe pain; it should be reserved for the more chronic cases. Massage produces an increase in the amount of blood and lymph passing through the tissues concerned, both during massage and after its cessation. This increased circulation improves the nutrition of the affected tissues, promotes absorption of deposits, and restores physiological activity. In cases of subacute or chronic gout, where the joints remain swollen and œdematous and are the seat of considerable deposits, much benefit is frequently derived from massage and galvanism. The affected joints should be massaged, each one for a few minutes, and then galvanism (five to ten milliamperes) applied to each joint for a few minutes with the negative pole over the affected region. The galvanism is then to be followed by a few minutes' massage. Under this combined treatment the œdema and the deposits frequently disappear rapidly. Probably the beneficial effects are due mainly to the increased circulation of blood and lymph induced, and the consequent absorption that takes place. I have also found in many cases that a decidedly beneficial influence on gouty joints is produced by radiant-heat baths, followed by electrical treatment in the form of cataphoresis to the affected joints.

Radiant-heat and superheated-air baths increase the oxidative processes within the body, as is shown by the increased elimination of carbon dioxide from the lungs, and also by the increased metabolism of the body in general. They also stimulate the circulation both of the blood and

lymph in the affected joints and so lead to improved nutrition of the parts. This curative action undoubtedly continues after the treatment has been left off. Such treatment therefore is better given intermittently—say, six baths on alternate days; then intermit for two or three weeks and so on. These baths improve the atrophic condition of the muscles. They cause a temporary elevation of the body-temperature, marked reddening of the skin of the part treated, profuse local or even general perspiration, quickened pulse, lowered arterial tension, and generally considerable amelioration of the pain, and in some cases complete disappearance of it for a time. Radiant heat has a greater penetrative effect than other forms of heat, and, in my opinion, the effect is more stimulant. In cases of acute or subacute gout the pain, as a rule, recurs at varying intervals after a bath, but usually with diminished severity; and in favourable cases a progressive reduction of the pain occurs after the use of subsequent baths. Undoubtedly many cases of chronic gout do not show much improvement after the use of radiant-heat or superheated-air baths, and I have frequently experienced great difficulty in selecting the cases most likely to be benefited by it. As a general rule my experience has been that cases of chronic gout of long standing, with considerable deposits in the joints, do not derive much benefit from these baths. For such cases undoubtedly much more good can be done by the employment of vapour-baths, followed by massage of the affected joints, a method of treatment which is frequently most useful in producing softening and absorption of the deposits. It should, however, be borne in mind that radiant-heat baths seem to set up improved circulatory and trophic changes in the joints, which apparently are maintained for a prolonged period of time after the baths have been discontinued. Certainly I have seen in several cases, after a course of twelve or eighteen radiant-heat baths had resulted in but slight improvement, and the baths had been abandoned in despair, a progressive improvement maintained for weeks and even months after the discontinuance of the baths, an improvement which in some cases has progressed to more or less complete cure. If only one limb is the seat of gout, the question arises as to whether that limb should be locally treated by being placed in a small specially-constructed bath,

or whether the "entire body" bath should be used. My experience is that the "whole body" bath is in all cases the most useful, with, in the case of the radiant-heat bath, an extra localisation of the heat- and light-rays on the affected part. That means, according to my experience, that the more extensive the surface to which the heat- and light-rays are applied the better is the result. When the ordinary radiant-heat or superheated-air baths are not obtainable, very good results may be obtained at home by the use of an ordinary blanket-tent with a small opening at the top to let out the hot air saturated with moisture. The hot air is supplied by a ring bunsen gas-burner, or by a large spirit-lamp with a flue passing through an opening in the blanket at the foot of the tent.

Cataphoresis is useful in many cases of chronic gout with considerable deposits in the joints, and also in many cases of obstinate rheumatoid arthritis. It consists of the electric transfer of fluids through the joints from anode to cathode. The best fluid to use in cases of gout is a solution of potassium bicarbonate. The padded negative electrode should be placed on the back or chest, and the positive electrode, which should be button-shaped and padded, and which is kept wet with the saturated solution, should be applied to the joint. Currents of from 10 to 30 milliamperes may be employed. For the treatment of gouty neuritis constant-current baths are usually most beneficial; radiant-heat or superheated-air baths followed by the use of the constant current generally do an equal amount of good. In the acute or subacute stage of gout, or, when a slight attack of gout has just started, I consider the use of the Turkish bath most undesirable. I have known of its employment in such cases being followed by an exacerbation of the attack and extension to joints not at the time affected. This is a point which should be borne in mind by medical men, as many patients on the first appearance of an attack of gout are apt to have immediate recourse to the Turkish bath, and it is well that they should be warned of the danger they thereby incur.

The Treatment of Gouty Eczema.—In the treatment of this form of irregular gout special attention should be given to two details. One is to see that the bowels are freely opened, which at the outset may be secured by the administration of blue pill

or calomel followed by a saline ; the other point is that entire abstention from alcohol is most desirable, at all events during the treatment and persistence of the eczema. It is best that any form of alcohol should be abstained from, but the prohibition applies more especially, in my experience, to the red wines. I have met with several cases occurring among gouty individuals past the middle age of life in whom two or three glasses of claret or burgundy will in the course of a few hours cause the development of an eczema. During the irritative stage of dry gouty eczema I have found the application of a lotion consisting of liquor plumbi subacetatis 3j, liquor carbonis detergens 3j, aqua sambuci ad Oj, most soothing, especially if followed by the use of a simple dusting-powder such as cimolite powder. For the acute moist type of eczema a similar lotion, but with a preparation of opium replacing the tar-solution, is advisable. In cases of gouty pruritus, or, as it is sometimes termed, latent gouty eczema, the severe itching is frequently relieved by the use of carbolic-acid lotion. When the eczema is in a chronic condition much benefit is usually experienced from immersion in sulphur-baths, such as those of Harrogate, Strathpeffer, Aix-les-Bains, &c. After the bath the skin should be carefully dried, and a dusting-powder such as cimolite powder freely applied. In cases of gouty eczema and gouty pruritus a careful dietary must be enforced, care being taken to forbid all articles which the experience of the patient in the past has shown to produce dyspepsia. Persons who are subject to attacks of gouty eczema should avoid such acid fruits as strawberries, gooseberries, apples and pineapples ; rhubarb also should be excluded from the dietary. As regards the medicinal treatment of gouty eczema, my experience is that it is not necessary to give the ordinary anti-gout remedies, such as colchicum, &c. It is much more important to treat the dyspepsia and the catarrhal condition of the gastrointestinal tract, which are generally present as associated or causative conditions, by the administration of subcarbonate of bismuth with the bicarbonate of sodium or the bicarbonate of potassium.

Treatment of Insomnia.—Insomnia is a fairly common symptom in gouty patients. As a rule, it is not complete, but consists of restlessness, interspersed with varying intervals

of light or broken slumber. In such cases attention should always be paid to the condition of the patient's pulse, and to the possible existence of albumen in the urine. If, as is frequently the case, the pulse is found to be of high tension, the administration of blue pill or calomel, followed by a saline purge, will probably prove most beneficial.

With regard to the use of tobacco, the majority of gouty patients may be permitted a moderate indulgence in smoking, but it should be avoided entirely by those who suffer from paroxysmal attacks of the gouty heart.

PREVENTIVE TREATMENT OF GOUT.

I have now had a considerable experience of the prophylactic effects of guaiacum resin, and I must confess that I know of no drug which is more useful in the preventive treatment of gout. Its action is probably due to its stimulating effect on hepatic metabolism, thereby increasing, as it undoubtedly does, the elimination of uric acid. The form in which I prefer to give it, is that of the powdered resin in cachets, commencing with doses of 5 grains three times a day after meals, and gradually increasing the dose to one of 10 or 12 grains. In this form it can be taken without any discomfort to the patient, whereas if administered in the form of the tincture in a mixture a most nauseous medicine results.

Quinic acid is a comparatively new drug, which in various forms of combination has been put forward as possessing some beneficial action in the treatment of gout. It diminishes the output of uric acid in the urine, but simultaneously increases the excretion of hippuric acid. My experience of the different combinations of quinic acid is somewhat limited, but so far I am inclined to think that they are of decided use in the treatment of certain forms of chronic gout. The administration of fruits frequently reduces uric-acid excretion, a result which has been attributed to the effect of quinic acid. Gowland Hopkins considers that this diminution is due to interruption of some synthetic process, rather than to a mere effect on excretion.

After convalescence, as much exercise as possible, short of fatigue and discomfort, should be taken in the open air. Cycling is an excellent exercise for the gouty, since it furnishes

good muscular movement in the open air without the gouty joints having to bear the weight of the body.

DIET.

No hard-and-fast lines as to dietary can be laid down in the treatment of gout. Each individual must be carefully considered as regards his habit of body, his capacity for the digestion of different articles of food, the amount of exercise he is able to take, and the nature of his work. Derangements of the gastro-intestinal tract constitute a most important factor in the development of acute, chronic, and irregular gout. It is, therefore, of the utmost importance to secure and maintain a healthy condition of the gastro-intestinal mucous membrane, and a normal daily evacuation, in order to guard against auto-intoxication, which is undoubtedly an early factor in the development of the gouty condition. The individual who is subject to gouty attacks can certainly diminish the number and severity of the attacks, and in many cases can prevent their recurrence, by careful attention to diet, to the quality and the quantity of fluid taken, to exercise, and to a sufficient daily action of the bowels. It is my custom to question closely each gouty patient that I see, not only as to the nature of the beverages taken, but also as to their amount; and my general experience is that the great majority of individuals suffering from gout take an insufficient quantity of water to drink. Consequently there is an insufficient flushing of the liver, kidneys and other organs and tissues, and therefore imperfect removal of waste and toxic products. More especially does one find this insufficient consumption of fluid among female patients, in many cases due to the absurd and erroneous belief that a diminution in the amount of fluid taken tends to keep down the body-weight and to prevent the occurrence of obesity. Taking from my case-books ten consecutive cases of gout occurring in ladies whom I carefully questioned as to the amount of fluid consumed per diem, I find that amongst these ten the amount averaged only 26 fluid ounces; this included all fluid, whether taken as water, tea, coffee, soup, wine, ale, &c. The amount is obviously insufficient for the proper flushing of the system. For the treatment, as well as for the prevention, of the gouty condition

the free consumption of water apart from meals is most desirable.

As regards the question of meat it must be remembered on the one hand that animal foods constitute to the majority of people the most attractive and appetising forms of diet, and are therefore likely to be taken in excess; hence the necessity for limiting the amount to be taken. But on the other hand it must be borne in mind that it is most desirable to increase the combustion and the oxidative powers within the tissues. In my opinion it is absolutely erroneous to exclude from the dietary of the gouty such articles as meat, fish, and tea because they are assumed to contain uric acid. I have yet to learn that any uric acid is present in these articles of diet, since the so-called estimations of uric acid in them are not, as I have previously pointed out, estimations of uric acid at all. Moreover, the deduction is an erroneous one that because uric acid is a nitrogenous body, it must therefore be directly derived from nitrogenous constituents of the food, the consumption of which must consequently be avoided. Even if uric acid were present in the articles of food referred to, it would not alter my opinion as to their suitability, considering that they have stood the test of so prolonged a trial. Yet there are some who do not hesitate to call these articles of food, which are so exclusively consumed, poisons, mainly, as far as I can gather, because these foods do not happen to agree with themselves. It is true that there are a few persons whom, without any intention of being offensive, I should describe as physiological degenerates, who find that such articles of food do not agree with them, but it is illogical to argue from such a premiss that therefore they are unsuited to the great majority whose digestive functions are more happily regulated.

The diet of gouty patients should be simple, that is, the meals should not be made up of too many articles. Simplicity of food means facility of digestion. Certainly meat, even red meat, should not be excluded from the diet. No class of food-stuff is so productive in energy as animal food; and as most cases of chronic gout are suffering from lowered vitality and want of tone, animal food, at all events in moderate quantity, is distinctly indicated. My experience supports the

truth of this view, as I advise in the great majority of cases of chronic gout the taking of at least one meat-meal a day. The exclusion of any article of diet, or of any class of food, without taking into account the surroundings of the case and the peculiarities of the individual is unscientific. Those articles of diet that are known in the individual to favour intestinal fermentation and putrefaction should certainly be avoided, and it may be taken, I think, as a general rule that a sense of discomfort after a meal indicates that some article or articles of food have been taken which are not beneficial to the individual in his present condition. I attach great importance in such cases to the reduction of the starchy articles of food, but not to the total exclusion of, what I believe to be comparatively harmless, the potato. It is remarkable how frequently one hears from gouty patients the emphatic statement, "I never eat potatoes." I must confess that I do not know of any good and sufficient reason for this wholesale condemnation of this common article of diet. Undoubtedly amongst those gouty patients who suffer from an inability to digest starchy articles of diet—in other words, who suffer from amylaceous dyspepsia—a reduction for the time in the amount of starchy foods taken, including potatoes, is desirable; but the recognition of the existence of amylaceous dyspepsia is a fairly easy matter, and when present it can be suitably treated. Certainly those who are gouty and fat should be very sparing in the use of potatoes, as of other carbohydrate forms of food. I wish, however, to protest against the too general exclusion from the food of the gouty of so common and useful an article of diet as the potato. Equally wrong, in my opinion, is the total exclusion of sugar from the dietary of all gouty individuals. Undoubtedly in certain individuals sugar may do harm, as in the cases of gouty persons who are fat, or who suffer from glycosuria, or who are prone to attacks of eczema, and in such it should be cut off; but that is no reason for the exclusion of it from the dietary of all gouty patients, especially those who are at the same time gouty and thin. I know of many gouty individuals who take sugar with absolute impunity. Some gouty subjects undoubtedly digest very badly all starchy articles of diet, and in such fats may well take the place of starches. Fat bacon, properly cooked, is generally well digested by gouty individuals.

A fair proportion of vegetable food should be taken with two meals each day. The choice of vegetables will depend upon the digestive capacity of the patient; but, excepting the potato, as a rule those vegetables that grow above ground are preferable to root-vegetables.

Stated as a general principle, a person who is subject to gout is better without alcohol in any form. There are, however, some who require a little alcohol, either to aid digestion or to enable them to get through their work, and here I am entirely in accord with the advice given by Goodhart, that, if a man requires any stimulant at all, it is a matter he must decide by experiment for himself, for no medical man can tell him. If alcohol is necessary or desirable, the form in which it is to be taken is frequently a matter which the patient can decide better than the medical man; but I would insist upon the importance of definitely limiting the amount to be taken, and of restricting its consumption absolutely to meals. Some patients find that a little whiskey or brandy suits them best, others find a light still moselle preferable, while a few, but in my opinion only a very limited number, find that a light claret agrees best with them. Champagne is a wine which is seldom suited to the gouty, especially if taken daily. Rough cider, that is the completely fermented apple-juice, taken in moderation, agrees well with most gouty subjects, but the bottled or champagne cider, which is imperfectly fermented, should never be used by gouty individuals.

As previously stated, as little complexity as is possible in the meals is the main desideratum in the dietary of the gouty, and in a few intractable cases of chronic gout it may even become necessary to reduce the dietary for a time to the simplest possible condition, namely, to two articles of food—lean meat and water. There are a few cases of *chronic* gout which undoubtedly improve and even recover on an exclusive diet of red meat and hot water. These are generally cases of chronic gouty arthritis which have failed to yield to the ordinary methods of treatment, and which are accompanied by dyspepsia, flatulence, acid eructations, pyrosis, and offensive stools. I have successfully treated a few such carefully-selected cases of chronic gout by the employment of this, the so-called "Salisbury" treatment. It is essential, before placing a patient

on such diet, that the urine should be carefully examined, as any advanced condition of kidney-disease contra-indicates the employment of such a dietary. If the evidence of kidney-derangement is only slight, the adoption of the dietary is not contra-indicated; but the urine must be carefully examined every two or three days, as any considerable increase in the albuminuria would at once be an indication for the discontinuance of this special diet. Gouty patients suffering from organic heart-disease with any failure of compensation should never be placed on this dietary. The dietary consists in the patient drinking from three to five pints of hot water daily, the water being taken from one hour to one hour and a half before each meal, and half an hour before retiring to rest, and from two to four pounds of beefsteak daily. The meat should be freed from fat, gristle, and connective tissue, thoroughly minced, mixed with a little water, and then warmed through with gentle heat until it becomes brown in colour. A little salt and pepper may be added, and the meat eaten in this form or made up into cakes and cooked on the grill. Later on in the treatment part of the steak may be taken grilled, or a grilled lean mutton-chop may be substituted for one of the daily meals. The course of treatment should last for from four to twelve weeks, after which a gradual return to ordinary diet should be made.

THE USES OF MINERAL WATERS IN THE TREATMENT OF GOUT.

The value of a given mineral water in the treatment of gout depends greatly on the main object with which it is taken. For instance, it may be taken to remove gouty deposits, or to stimulate the action of a sluggish liver and to relieve portal congestion, or for the treatment of gouty dyspepsia, or to relieve the bowels in cases of torpor and gastro-intestinal catarrh, or to act on the kidneys, or to relieve gouty affections of the skin. Now it is manifest that any one mineral water is not likely to produce all these effects, and it is also obviously conceivable that a mineral water which might be most useful to effect one of these purposes might prove most injurious if employed to effect another. No doubt considerable error has arisen from indiscriminately sending gouty patients to a

particular spa without giving due consideration to the question as to whether the water of that spa is suitable for the treatment of the specific gouty disorder from which the patient is suffering. Moreover, it is well to bear in mind that a patient should not be sent to a spa during the acute stage of gout, nor if suffering from marked organic disease of the heart or kidneys.

The use of a mineral water, so far as its employment with the object of removing gouty deposits is concerned, lies solely in its watery constituent, and does not in any way depend on the mineral constituent dissolved in it. As a matter of fact the salts dissolved in some of the natural mineral waters are directly harmful in gout, both by encouraging deposition of the sodium biurate and by checking solution of the gouty deposits. The flushing of the system of a gouty patient with abundant quantities of water is undoubtedly beneficial, since it dilutes the blood for the time, and so tends to prevent uratic precipitation, and at the same time promotes diuresis and encourages elimination. The question, however, naturally arises whether, if the water of a mineral water be its only beneficial constituent for effecting the removal of gouty deposits, the sending of gouty patients to spas for such a purpose presents any advantages over their drinking ordinary water at home. If the conditions of the life of the patient at home and at a spa were the same, there would be no such advantage; but among the special benefits to be derived from residence at a spa must be reckoned the almost undistracted attention that is given by the patient to treatment, the careful dieting that is frequently observed, the change of surroundings, the absence of business or home worries, and the opportunities for the use of thermal baths for the external treatment of articular gout. It should, however, be borne in mind that owing to the undoubted fact that sodium-salts are directly detrimental to the removal of gouty deposits, those springs should be avoided which owe their activity to those salts, *when the removal of the deposits is the main object to be attained*. The springs which contain no sodium-salts, or traces only, are those suitable for such cases. I wish it to be clearly understood that I am by no means condemning the very proper uses to which mineral waters containing sodium-salts can be put for the treatment of many gouty affections of the viscera and other structures, but I wish to emphasise

the point that when the system is flushed with a mineral water with the object of dissolving and removing gouty deposits, then it is undoubtedly advisable to select a water as free as possible from sodium-salts. On the other hand, in cases of sluggish action of the liver, of gastro-intestinal catarrh and torpor, of gouty dyspepsia, and of other forms of irregular gout where there are no appreciable uratic deposits in the joints, mineral waters containing sodium-salts are undoubtedly beneficial, owing to the action of those salts as hepatic and gastro-intestinal stimulants.

CLIMATIC TREATMENT.

A fairly bracing air with a low relative humidity is, in my experience, the most suitable for the gouty. High mountain situations and valleys where there is an excessive relative humidity of the air are alike unsuited to the gouty. Especially is it desirable to avoid exposure to the cold east and north-east winds which prevail in this country in the early months of spring, and which are so apt to be provocative of what has been called a "chill on the liver," a condition which no doubt is brought about by the chilling effects of these winds on the skin, and a consequent reflex affection of the metabolism of the liver-cells. As a winter resort for the gouty I know of no better climate than that of Egypt, where, at Helwan (Helouan), thermal, sulphurous, and saline waters exist, and excellent baths are obtainable. The air of Helwan is that of the desert; the average winter temperature is 60° F.; the relative humidity from November to April is only 30 to 60 per cent.; while the average rainfall for four consecutive winters was only three-quarters of an inch. For the spring, summer, and autumn months we fortunately have for our selection a large number of health-resorts in this country and on the Continent, the climates of which are well suited to the gouty. My experience is that residence by the sea is not suited to most cases of gout, and this especially applies to cases of gouty eczema.
