

## AN ADDRESS ON THE THERAPEUTICS OF THE URIC ACID DIATHESIS.

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(Concluded from page 19.)

In the next place, we must pass on to consider the more important medicinal agents which have been proposed for the treatment of this diathesis and its various morbid manifestations, and, first of all:

*Colchicum.*—I would ask you to consider the use and value of colchicum. This drug has been much discredited of late years, and if one of the results of this discussion is to remove that discredit, it will, in my opinion, have done practical medicine a real service. That the drug may have frequently been misused, I do not doubt; that it may have been administered without a due and discriminating regard to what I have referred to as the "constitutional element" in the therapeutic problem, I am also ready to admit; for I have read criticisms of the use of colchicum by physicians who certainly must either have had very few opportunities of observing its effects in appropriate cases, or they must have made but indifferent use of such opportunities as they have had.

When acute uratic arthritis was a much more common disease than it is now, over-doses of colchicum were probably not infrequently had recourse to, and with ill consequences, but it has never fallen to my lot to observe, or come within hearing of, any of those ill effects which some physicians have asserted to be the common consequences of the use of colchicum. I should hesitate to speak in this way if my individual judgment were at variance with that of other physicians who have had a far greater experience in this matter than I have, but I find that most of those who have had the largest opportunities of forming an opinion of the value of colchicum in gouty affections are advocates of its use. Garrod has given his verdict in its favour after the most searching and careful examination of its action; and so cautious and sound a practical physician as Sir Thomas Watson not only advocated its use as a curative, but also as a preventive measure. I need hardly say in this city, your great master, Graves, held the same views. Lecorché, in his recent valuable and exhaustive treatise on gout, after relating the details of the numerous experimental investigations he has conducted into the action of colchicum, thus sums up: "In concluding this study of the effects of colchicum, we assert, as the outcome of our physiological researches and our clinical observations, that colchicum constitutes the specific *par excellence* for gout; that it may and ought to be used in the treatment of that affection both in the acute and chronic form."

Professor Bartholow, of Philadelphia, gives one of the best practical accounts of the effects and uses of colchicum that I have met with:

"In small doses," he says, "it increases the mucous and glandular secretion of the stomach and intestines, and probably, also, of the liver, kidneys, and skin. . . . It increases the flow of urine, of the solid constituents, as well as of the water, and promotes the cutaneous transpiration. . . . It is indicated when a prompt elimination of waste is required. . . . It relieves the pain, diminishes the swelling, and shortens the duration of acute gout. In order to accomplish these results, it is not necessary that the more harsh and violent physiological effects of the drug be produced. Sufficient should be given to increase secretion from the skin, the intestinal mucous membrane, and the kidneys, but nausea and vomiting should be avoided. Combination with an alkali increases the therapeutic effect." He gives the very moderate dose of twelve minims of the wine of the seeds, with forty minims of aromatic spirits of ammonia, every three hours, until some physiological effect is produced. He adds: "Combined with saline purgatives, it quickly relieves the constipation, hepatic congestion, and headaches of gouty subjects. It is useful in gouty bronchitis; it often relieves neuralgia occurring in gouty constitutions; it relieves by setting up an eliminative process."

This description so entirely agrees with my own observation, that I find little to add to it. There has existed some difference of opinion,

which experimental tests have failed to settle, as to the action of colchicum on the renal secretion. My own opinion is that it acts somewhat differently in different individuals and under different circumstances. Its most constant action is, I believe, on the hepatic secretion. Again and again when the motions have been hard and clay-coloured from the absence of bile, I have seen a few doses of colchicum restore the natural dark colour due to a proper admixture of that secretion. Then I think I have observed it act sometimes as a diuretic, and sometimes as a diaphoretic, and, when it acts more especially on the skin, the renal secretion may appear to be diminished by it.

Graves thought, and Lecorché supports the view, that it prevents or checks the formation of uric acid in the system, and this it may do by its decided action on the liver. My own view is that it acts more or less on all the excretory organs; that it is a stimulant to excretion; and as I regard the gouty constitution as one whose fault is especially a sluggish and imperfect retrograde metamorphosis, and delayed excretion generally, not necessarily of uric acid alone—colchicum is in a special sense its remedy by promoting the elimination of waste products. Lecorché's experiments proved that it diminished the acidity of the urine, and decidedly increased the amounts of soda and potash in that secretion.

The prejudice against colchicum has induced Ebstein to make the extraordinary statement that it is preferable to relieve the pain of the gouty paroxysm by hypodermic injections of morphine. He says they act "quicker, more easily, and with less danger." I join issue with him utterly. The internal use of opiates in gout I consider, except under exceptional circumstances, indefensible. In a disease of defective elimination, you would be giving a drug which depresses in a remarkable manner the function of all the excretory organs but the skin. A very small dose of morphine will, especially in the gouty constitution, produce clay-coloured alvine evacuations, sometimes for days.

Colchicum then, I maintain, is one of the most valuable remedies, when judiciously given, for most of the morbid manifestations of this "uric acid diathesis," and so far from being a dangerous vascular depressant, I have shown, in my hospital practice during the session just past, that in a case of chronic gout with subacute exacerbations, moderate doses of colchicum restored regularity and strength to an irregular and feeble pulse. I trust, then, that the absurd prejudice against this most valuable remedy which has been excited in the minds of the public will be removed, for I find many gouty persons who, much to their own disadvantage, positively refuse to take colchicum, because they have been told it is "such a dangerous drug."

I observe in the last number of the JOURNAL of this Association a report by Dr. Taylor, of Brussels, on the action of colchicum on the elimination of urea and uric acid, in which he appears to have shown that the amount of both these substances in the urine is largely increased by the administration of this drug.<sup>1</sup>

Next, as to the salicylates.

*Salicylates.*—We ought in this discussion to be able to determine, more accurately and decisively than has hitherto been done, the real value and applicability of the salicylates in the treatment of uricæmic affections. In the first place, it seems to me impossible to accept the exaggerated estimate of their value advanced by Professor Germain Sée, who has asserted that sodium salicylate is the best remedy for gout in its acute or chronic forms. Ebstein remarks that when he has used this salt in acute uratic arthritis, the inflammation has disappeared very quickly from one joint, to re-appear immediately in another, even when the administration of the salicylate was continued. Lecorché says he has found it useful in acute gout, though altogether inferior to colchicum, it lessens the pain and the violence of the paroxysms, but in no way shortens the attack. In cases of chronic gout with tendency to the production of deformities from deposition of urate of soda (tophi), and to constantly recurring subacute attacks, he considers it valuable. Given, he says, in such cases, from time to time, in the intervals of the attacks, in doses of sixty to eighty grains a day, it increases notably the amount of uric acid excreted in the urine, and so eliminates from the blood the excess of urate of soda. In a great number of cases, he asserts, he has been able by its use to (1) prevent attacks; (2) to prevent the formation of ankyloses and to cause already existing stiffness of joints to disappear; and (3) to facilitate the absorption of uratic deposits. To obtain these good results it was

<sup>1</sup> In a still more recent number of the JOURNAL (August 27th), Dr. J. McG. MacLagan, of Hexham, claims to have demonstrated this in a thesis published in the *Edinburgh Medical Journal* of December, 1851, and January, 1852; and still more recently Dr. MacLagan has shown that the paper alluded to was absolutely and entirely his own, although reproduced without a word of indication as to its original authorship.

necessary "to continue, imperturbably, for months the use of salicylate of soda in doses of sixty to ninety grains daily, only allowing the patient four or five days' interval every twelve to fifteen days, then returning to the medicine with the same regularity." He has found it of "enormous service" in the treatment of gouty asthma, angina pectoris, and cystitis. It should not be employed when there exist evidences of interstitial nephritis. Professor Bouchard (p. 316) considers it a valuable medicine in the treatment of acute gout, relieving pain and sometimes shortening the attack, but he considers its employment dangerous when there is any tendency to cardiac degeneration or when the kidneys are involved. In uric acid deposits, he says, like benzoic acid, it favours the elimination of uric acid, but does not lessen its quantity. He considers its action obscure and its prolonged use attended with great inconvenience, and that it is scarcely applicable to the treatment of uric gravel, and but little employed in chronic gout or in uratic deposits about joints.

Latham thinks salicylic acid often of service in gout, when unaccompanied by renal disease or albuminuria, and he believes it to act by seizing, in the system, either upon glycosin or its antecedent, and so removing an essential constituent of uric acid, and thus preventing its formation in the body. Lecorché, however, states that he has observed an enormous elevation (*hausse enorme*) of the amounts of urea and uric acid in the urine as the result of the administration of salicylate of sodium, that this elevation usually appears within the first twenty-four hours, but may be delayed for 48 or 72 hours, and that it lasts for three or four days, when a progressive diminution sets in. He also states that the amount of phosphoric acid increases, and diminishes in the same manner and at the same rate. It is difficult to reconcile Latham's view of the mode of action of salicylic acid with those observations of Lecorché.

I have little to add, from my own observations, to the testimony of these authorities; I should prefer myself to treat attacks of acute gout with colchicum, and until more fully convinced than I am at present of the value of the salicylate of soda in chronic gout, I should prefer the employment of a less depressing remedy. I believe it is chiefly of value in those cases in which the uric acid and the rheumatic diathesis are combined.

The benzoates, in the next place, require a brief examination.

*Benzoates.*—The benzoates of sodium and lithium have been largely employed in the treatment of uric acid deposits since their advocacy by Garrod. Latham has stated that benzoic acid acts by combining with glycosin and so preventing the formation of uric acid, and that it passes off in the urine as hippuric acid. The value of the benzoates has, however, been warmly contested, and I am myself, by no means, convinced of their efficacy. It has been stated by Brunton, that if benzoic acid is given it is found unchanged in the blood, that the change into hippuric acid occurs in the kidneys. Senator speaks of the "temporary popularity" of benzoates of soda and benzoic acid as "based on chemical theories, some of which were wholly erroneous," and adds that these "remedies have fallen into just oblivion." I can, however, testify that these benzoates are much used in France and in this country, as remedies for the uric acid formation, and I would ask you to consider whether they are of value or not. Very brief also must be my reference to guaiacum.

*Guaiacum.*—The high commendation given by Garrod to the use of guaiacum in chronic articular gout has found but few adherents. Ringer, in the ninth edition of his well-known work, does not even mention this drug; and it has received very slight consideration from other authorities. Yet Garrod has spoken of it as having afforded "striking benefit in numerous cases of chronic gout. I could relate," he says, "many hundreds of similar cases in which guaiacum has proved especially valuable; in some its action is almost magical. I have now for twenty years or more employed guaiacum very extensively in the treatment of chronic gout. I believe in some thousands of cases, and there is no remedy of which I can speak so confidently." There is certainly no one in Europe who has so good a right to speak as to the merits of any remedy for gout as Sir A. Garrod, and it is a little remarkable how little attention has been paid to this recommendation. I have certainly found the drug give great relief to the muscular pains of persons who were undoubtedly subjects of this diathesis. A more universally accepted remedy is iodide of potassium.

*Iodide of Potassium.*—I am satisfied we are but imperfectly acquainted with all the services that can be rendered in the manifestations of the uric acid diathesis by iodide of potassium. Its use in chronic arthritic affection is widespread, but it has its most important applications, I believe, in the less easily recognised degenerative changes dependent on this diathesis. I allude especially to the renal and vascular changes. I believe the iodide of potassium, if long

continued in fairly large doses, has a remarkable influence in retarding the progress of those degenerative vascular changes dependent on the gouty constitution, and which, as I have had occasion to observe, if left untreated, sometimes advance with great rapidity. I am not one of those who, whenever iodide of potassium is found to be of great service in relieving morbid conditions, at once sees a vision of constitutional syphilis. In cases of well-marked vascular and renal changes, with albuminuria, some of which bear signs of former arthritic affections, I have found iodide of potassium, in daily doses of fifteen to thirty grains, continued for a few weeks, and repeated from time to time, of remarkable value in improving the general condition, and I have, not unfrequently, seen the albumen disappear from the urine, or be reduced to a mere trace. How the iodide acts in these cases I am not prepared to say; it certainly promotes the action of certain of the excretory glands, and sometimes acts as a powerful diuretic. Its influence in promoting the elimination of deposits in the tissues is established by its power of removing lead and mercury from the system in cases of chronic intoxication by these metals. Latham has suggested that it prevents the conjugation of glycosin with other substances, and exerts also a solvent action on uric acid. It is necessary to "feel one's way" with regard to dose, some constitutions requiring a much larger one than others. I repeat that iodide of potassium is a valuable remedy, not only in the chronic and subacute arthritic affections of this diathesis, but also in the graver but less apparent arterial and renal changes. I should be glad to hear further evidence for or against this view.

The important group of alkaline remedies must next occupy our attention.

*Alkalies.*—The use of the various alkalies in the treatment of the uric acid diathesis has received almost universal sanction, and the only difference of opinion that exists, is as to which is the best alkaline salt to employ. They act: 1. By increasing the alkalinity of the blood, and so preventing the deposition in the tissues of acid urates. 2. By their solvent action they further the removal of such uric acid deposits as may have taken place. 3. By their diuretic action they promote elimination by the kidneys.

I have said their use has received "almost" universal sanction, for I believe Latham does not look with favour on the use of alkalies in gout. He considers there is danger of the oxidation of uric acid into oxalic acid, when the alkalinity of the blood is increased; and that so long as glycosin passes unchanged into the blood, oxalic acid will be formed by the action of alkalies.

The employment of the salts of lithium for these purposes has acquired a wide popularity; for my own part, I am disposed to think we are, nowadays, inclined to exaggerate the value of the lithium compounds as compared with those of potash and soda, although the equivalent of lithium is low, and the necessary dose is small, most of its preparations are far less soluble than those of potash and soda, and I fail to see any decided advantage in being able to give 4 grains of carbonate of lithia instead of 8 grains of bicarbonate of potash, supposing they have the same solvent effect on uric acid, and even Garrod does not claim so large a relative superiority as this for the lithia salts.

The diuretic effect of the bicarbonate of potash is, I think, more constant and reliable, especially when given with hot water containing a little milk, which quite conceals its taste. But when we are invited to select a mineral water for the treatment of these affections solely and especially because it contains, say, a tenth of a grain of chloride of lithium in a pint, in preference to another which contains 15 grains of bicarbonate of soda, we are running the risk of becoming the slaves of fashion.

Ebstein maintains that the chloride of lithium has no solvent action on uric acid, and that if a mineral water contains the carbonate in very minute quantities, it becomes wholly converted into chloride in the stomach, and is, therefore, so far as the lithium salt is concerned, quite without efficacy.

Sir William Roberts has also expressed some misgivings as to the superiority of the salts of lithium as solvents of uric acid deposits.

Lecorché, while he admits the powerful solvent effects of the lithium salts on uric acid, states that the results of his observations as to their diuretic and alkalising properties were not so marked as those of Garrod, and that he had failed to render the urine alkaline by their means. Lecorché has much to say in favour of the use of bicarbonate of soda, which he prefers, as a solvent of acid urates, to either the salts of lithia or potash. He maintains that its prolonged use in large doses is much safer, and is better borne by patients.

"Taken internally, it combines with the uric acid which exists in the blood in the form of an acid binurate, and forms a neutral "urate of soda," which is much more diffusible, and in this form it is elimi-

nated by the kidneys. He also points out that the bicarbonate of soda, as well as the other alkaline bicarbonates and sulphates, diminish the decomposition of nitrogenised substances in the body, and that these compounds are "*les médicaments par excellence de la diathèse goutteuse.*"

The superiority of the soda compounds in dyspeptic states, in gastric and intestinal catarrhs, and in disturbance of the functions of the liver so common in the subjects of this diathesis, is admitted by Garrod himself. I am convinced from my own observations that a combination of these alkaline salts acts often more efficaciously in removing an acid condition of the fluids than either of them alone. I am fully convinced of the value of the salts of lithium in the treatment of the uric acid formation, but I by no means see the necessity of depending exclusively upon them, as there is a tendency to do; indeed, I am convinced that in many instances of this diathesis a combination of soda and potash salts acts better, and in some even the soda salts alone. It will be interesting to hear what has been the experience of the eminent practitioners here present as to the relative value of these three alkalies.

It has been suggested that we have been to blame in allowing the compounds of lime and magnesia to fall into disuse in the treatment of the gouty constitution. Salts of magnesia are found in many of the mineral springs which enjoy a reputation in the treatment of this diathesis, and many gouty patients have testified to me of the great use they have found in frequently taking a dose of Gregory's powder. The startling effects produced by the Contrexéville springs, the chief constituents of which are sulphate and carbonate of lime, in some of the most serious forms of vesical and renal calculous affections, connected with the uric acid diathesis, should lead us to examine and consider what may be the solvent effects of lime salts generally in these affections.

Closely connected with the use of alkalies in this diathesis is the employment of mineral waters.

*Mineral Waters.*—The use and efficacy of the several classes of mineral waters which have been advocated for the treatment of the gouty diathesis may well engage a share of our attention. There is one thing which strikes one forcibly in approaching this subject, and it is that nearly every kind of mineral water that exists has been recommended in the treatment of the gouty constitution. The carbonate of soda waters of Vichy, the chloride of sodium springs of Homburg, the sulphate of soda waters of Carlsbad, the lime waters of Contrexéville and Bath, the sulphur waters of Harrogate and Aix, the indifferent thermal waters of Buxton and Gastein, and even the iron waters of St. Moritz: while there are a vast number of other springs, like those of Royat, which base their claim to be considered as remedies for the maladies of this diathesis, upon the salts of lithium they contain.

If each of these springs, so different in composition, is of value in the treatment of the uric acid formation, we should, naturally, look for certain conditions common to them all. What are these?

1. There is the quantity of water, more or less pure, taken into the body under regulated conditions daily. I have already attempted to estimate the value of this remedy.

2. There is, in many of these spas, the altered mode of life; the regular exercise in the open air, the modified diet, the early hours, the absence of business cares.

3. In many foreign spas there is the drier and hotter Continental climate, and

4. The stimulating effect to excretion and "tissue change" which the baths, douches, frictions and manipulations applied, at most of them, induce.

These are conditions, and not unimportant ones, common to most mineral water cures; and in the "indifferent thermal" springs which are chiefly applied to the relief of the chronic joint affections, deposits, deformities and loss of muscular power dependent on uratic inflammations the thermality and modes of application of these hot springs are probably the chief operative agents. I need only, for the purposes of this discussion, refer very briefly to the most typical examples of these resorts.

1. Vichy may be taken as the type of purely alkaline waters, its chief and all-important constituent being bicarbonate of soda (also Vals, Ems, Neuenahr, Apollinaris). We have already considered the importance of dilute alkaline solutions in the treatment of uric acid conditions. Whether the small amount of arsenic contained in the Vichy springs has any curative influence, I will leave with you to determine.

Durand Fardel, after more than forty years' experience at Vichy, satisfied himself that its springs "are extremely efficacious in gout

(regular acute gout), and absolutely curative in uric acid gravel." I gout, he says, it should only be employed in the intervals between the attacks. He appears to consider its good effects to be attributable to the influence of the soda in promoting a normal and regular nutritive metabolism. The water, when drunk and also when taken in the form of a bath, renders the urine alkaline or greatly diminishes its acidity, according to the quantity taken. Durand Fardel denies that it exercises any debilitating influence, as was asserted by Troussseau, and repeated by others, unless it is improperly and injudiciously applied.

The cases best suited to Vichy are gouty dyspeptics, fairly vigorous, with a tendency to pass acid urine, with deposits of urates and uric acid. It is also very efficacious in promoting the evacuation of renal (uric acid) calculi.

2. I will next refer to Carlsbad, as it is one of the special resorts of the gouty. Its waters, as you know, are hot, but of varying temperature, and contain considerable quantities of sulphate of soda, carbonate of soda, and chloride of sodium. It is a common error to regard these waters as powerful and very "lowering" purgative springs. They are no doubt aperient, but when properly administered only gently so, and it is often found necessary at Carlsbad to add a teaspoonful of the Carlsbad salts to the first glass of the water to ensure an action of the bowels. These springs have a remarkable action on the liver, and they have been especially utilised in the treatment of the gouty constitutions when this is associated with hepatic congestion, hemorrhoids, and "abdominal plethora." Dr. Kraus asserts that he has found its waters "indicated in all cases of gout," and their use "attended with the most remarkable results." He specifies, however, those cases in which vascular and renal degenerations have set in, as well as the weak and debilitated, as requiring very careful supervision. For my own part I should not advise any regular mineral course in such cases; it is exceedingly undesirable to surcharge with water, even for a short time, the vascular system when it is the subject of degenerative changes. Dr. Kraus also states that recent gouty deposits "will generally disappear during or soon after the use of the Carlsbad waters, but that they have no influence over chronic indurations." I regard the Carlsbad course, when accompanied as it is with the employment of the hot mineral or mud baths, as exceedingly valuable in promoting elimination by all the chief excretory organs of the body, skin, kidneys, and intestines, and that in this way it stimulates a complete and normal nutritive metabolism and promotes the discharge of the waste products of imperfect metamorphosis.

3. In the next place we have the large and important group of springs in which the chlorides, and especially the chloride of sodium, are the chief ingredients. Leamington in this country, Homburg and Kissingen on the Continent, may be taken as examples of cold springs of this class; Nauheim and Wiesbaden of hot ones. There exists some difference of opinion amongst physicians as to the precise value in uric acid conditions of these common salt waters. The hot springs of this class are generally admitted to be valuable in chronic rheumatic conditions, but there is some hesitation in admitting their utility in gouty states. In the treatment of gouty articular deposits, Ebstein and others estimate highly the hot springs of Wiesbaden, applied as baths, and also drunk hot. Ebstein quotes the experiments of Pfeiffer to show that the water of Wiesbaden greatly increases the renal excretion and the quantity of urea excreted.

Homburg and Kissingen are especially applicable to chronic dyspepsias, gastric catarrhs in gouty persons, whose gout, however, does not assume a very serious aspect. The waters are diuretic and slightly aperient; they are considered to "promote tissue change," to promote elimination, to check the tendency to obesity, and to "ward off" the more serious gouty affections.

4. The most difficult waters to comprehend are, to my thinking, those earthy waters containing chiefly sulphate and carbonate of lime, like the cold springs of Contrexéville. Those very "hard" waters we should scarcely be disposed to consider, at first sight, as valuable uric acid solvents, yet this is precisely the property that is especially claimed for these springs. I have visited personally most of the important spas of Europe, and have remarked that the springs at nearly all of them are administered by the physicians who practise there in moderate and sometimes in quite small quantities. But it is quite otherwise at Contrexéville; here the first thing that struck me was the very large size of the glasses, each holding about twelve ounces, and the large number of glasses that many patients were ordered to drink. As many as eighteen glasses a day are occasionally ordered by physicians, and over-zealous patients will occasionally add half a dozen more on their own account!

One of the objects of passing this large quantity of fluid through the urinary passages is, no doubt, to mechanically dislodge and carry away

calculous deposits lodged in the kidneys; and it is indeed remarkable the success which frequently attends these efforts. But is it possible that this water exercises any solvent effect on the surface of these calculi, or on uratic deposits in the system? I was assured by the able physicians in practice there that in gouty persons large quantities of uric acid are secreted during, and sometimes for a long time after, the course. Is it a mere "lavage" or washing of the blood? They think not.

Another interesting point about the use of these sulphate of lime waters is the decidedly purging effect they often exercise at Contrexéville. This is at once apparent by the abundant and handy provision made for such accidents. Is this the result of the mere overflow and passage through the intestines of undigested water, as is maintained by practitioners at rival springs; or is it that this large quantity of water carried (when taken, as it is, in the morning fasting) immediately through the hepatic portal circulation stimulates a free secretion of an abundance of thin, very fluid bile, which acts as a quick purge when it reaches the intestine? or is it that both these events happen? Several patients who were trustworthy observers assured me that their alvine evacuations were distinctly "bilious," and not merely "watery."

I am not aware that our own Bath waters have ever been administered cold, for the same purpose and in the same quantity as the somewhat similarly composed springs of Contrexéville. I do not see why they should not be, and as the latter is anything but an attractive resort, I feel sure that all English patients would much prefer passing three weeks at Bath if they could be sure of obtaining the same amount of benefit there.

5. The local treatment of gouty deposits, of gouty deformities, and gouty neuralgias, which is often attended with such marked advantage at such thermal springs as Buxton, Gastein, Wilbad, Bath, and Aix, owes much of its success, no doubt, to the thermality of those springs, and especially to the frictions, douches, and manipulations there employed. And in the case of the indifferent springs, the ingestion of a certain amount of warm water daily acts, no doubt, as a useful solvent and eliminant.

6. The sulphur springs, as those of Aix and Harrogate, find their appropriate application in those numerous instances of the gouty constitution which are accompanied with cutaneous eruptions, as psoriasis and eczema. Uriage, with thermal springs rich both in sulphur and chloride of sodium, and with a hot and dry atmosphere, I have known prove very valuable in such cases. Harrogate, which also has springs of similar composition and a more bracing climate, finds one of its numerous applications in these cases.

The feebly alkaline lithiated waters of Royat, those of Baden-Baden, the arsenical and alkaline springs of La Bourboule, the weaker carbonate of soda waters of Ems and Neuenahr; these and numerous other springs may be doubtlessly advantageously employed in the treatment of the uric acid diathesis, in some of its various manifestations.

With respect to the use of drugs simply for their purgative effects, I should like to say that purgatives are useful only in so far as they are the means of ensuring the discharge of excrementitious matters from the system; it would be a grave mistake in the treatment of these morbid states to allow the alvine and hepatic excretions to remain locked up in the bowels, or, in cases of abdominal plethora and portal engorgement, not to take steps to relieve that congestion; but it is equally an error to drain away the serum of the blood by drastic purgatives after we know that the bowels have been completely emptied of excrementitious matters.

One of the most complete and satisfactory purgatives in these cases is a pill at night consisting of half a grain of extract of colchicum and 2 grains of watery extract of aloes, followed in the morning by a large teaspoonful of Carlsbad salts in a tumblerful of hot water.

I am disposed to think if we employ colchicum that we rarely require to use mercurials in the treatment of these affections.

Diuretics and diaphoretics, also, are useful as stimulants of excretion. As a diaphoretic a very hot bath with bran is a most useful agent.

The use of opium should be as much as possible avoided, because of its influence in checking excretions generally.

In the foregoing remarks I have endeavoured to bring before you most imperfectly, I am well aware, some of the chief practical considerations in connection with the treatment of the uric acid diathesis. The subject is itself so wide an one that it has been necessary to avoid, as much as possible, entering upon disputed points in pathology; it has, however, been needful to allude to certain theoretical views, in order to make our therapeutic discussions distinctly intelligible.

I have not attempted to treat exhaustively any of the points upon which I have thought it necessary to touch, my duty being to stimulate discussion by opening and not exhausting the several questions involved in this subject.

I may have (in the opinion of many here present) overlooked or inadequately represented remedial measures which they have found of great value. I can only say we are here to learn of them, and that personally I shall esteem myself indeed fortunate if these few imperfect suggestions, drawn from my own small field of observation, should be the means of opening the rich storehouses of their varied experience and ripe wisdom for the benefit of those who suffer and the enlightenment of those who heal.

Professor LATHAM wished at the outset to draw a sharp line of distinction between gout and the uric acid diathesis. The latter could exist and show itself in various ways without developing gout, as in gravel, calculus, etc. For the development of gout there must be first the uric acid diathesis, and then another diathesis superimposed, so to speak, upon it for the uric acid to act upon. He would leave gout out of the question, and confine his remarks to the treatment of the uric acid diathesis alone. Dr. Burney Yeo had stated that an appeal to the therapeutic effects of remedies was, perhaps, the best mode of settling the theory as to the formation of uric acid, and, if time permitted, he thought he could show that the action and effects of all the remedies to which Dr. Burney Yeo had referred in his most exhaustive and interesting paper would lend support to the view of uric acid formation which he (the speaker) wished to bring forward in order to arrive at proper data for the treatment of the uric acid diathesis, it must in each individual case be determined whether the excessive formation of the acid was due (1) to imperfect metabolism in the muscular tissue, or (2) to imperfect metabolism in the liver, and (3) not the least important, a clear conception must be formed as to the constitution and formation of the acid itself. If we were guided by the "teaching of experience," we found the saying "to live on sixpence a day and earn it" summarised, though in an exaggerated form, the pith of that teaching. The following dogma came very near the truth. There must be moderation in all things. Moderate exercise, moderation in diet, and moderation in nervous expenditure, which last included mental work, worry, grief, or anxiety. These were the first rules to be laid down, and if they could be enforced, then we could turn to certain drugs which would materially help us, if necessary, to lessen the excessive formation of the acid, or to promote its elimination. But he would first ask, would scientific investigation help us to understand why this moderation in all things was so essential? He thought it would; and this led him to say a very few words as to the mode of formation of uric acid in the system. It must be borne in mind that, in the tissues and glandular organs, assimilation and construction were going on simultaneously with disintegration and destruction. His view of uric acid formation was that it resulted not from destructive but from constructive metabolism. Let a man be given a dose of benzoic acid, and on examining his urine some little time afterwards, it will be found to contain hippuric acid; that is to say, the benzoic acid had not been destroyed, but had combined in its passage through the system with glycozin—a normal constituent of the bile, and which, in the ordinary course of things, gave rise to urea—forming thus a more complex substance. Now, let uric acid be analysed, and it may be split up into urea and a number of other substances, and by one mode of disintegration it was split up into glycozin, carbonic acid, and ammonia, the two last being derived from urea. Let the process be reversed: let glycozin and benzoic acid be put into a tube and heated; hippuric acid was formed. Let glycozin and urea be put into a tube and heated; hydantonic acid was first formed, and then uric acid. [Crystals of this substance which Professor Latham had produced in this way were shown under the microscope.] He argued from these data that it was either excessive formation of glycozin in the muscular tissue, due to imperfect metabolism, from insufficient action of that tissue, or it was the inability of the liver to transform all the glycozin that was brought to it either from the tissues or introduced as food into the alimentary canal, that led to the formation of uric acid. For the arguments on these points he must refer them to his lectures in the BRITISH MEDICAL JOURNAL for April, 1886, and since published in a separate form. The treatment of the uric acid diathesis resolved itself into this: to diminish in all ways the amount of glycozin brought to the liver, and to promote the function of the liver, so that the normal assimilation of this substance should not be interfered with. By moderate muscular exercise the glycozin in the tissues underwent its proper metabolism. If horses were kept in the stable, their urine contained hippuric acid; if at work, benzoic acid

only was to be found. In some way or other the glycozin was used up, and so theory confirmed practice in advising moderate exercise. If the patient was unable to move, shampooing or massage might be substituted, and perhaps also the occasional use of warm baths might be useful. If the function of the liver was impaired, then, just as in diabetes as little starchy food as possible should be given, so in the uric acid diathesis as little nitrogenous food as possible should be given, but sufficient for the wants of the system should be given, and especially food rich in glycozin, such as jellies, soups made from bones, etc., should be avoided, and all articles of food or drink which, given in excess, might lead to hepatic congestion, should also be avoided. In addition, such remedies as would promote the digestion and assimilation of the food, such as the vegetable bitters, gentian, etc., should be administered; and it should be borne in mind that the function of the liver might be imperfectly performed, either from exhaustion of the liver-cells by overwork or from exhaustion of the nervous system. Nervous exhaustion, shock, worry, or anxiety would put a stop to the action of the liver, and interfere with the proper metabolism of the substances conveyed to it, and thus moderation in nervous expenditure became a factor in the treatment of the diathesis in question. If, after carrying out these suggestions, the formation of uric acid was still in excess, then its formation might be lessened by an occasional dose of calomel, which, causing bilious evacuations, carried off the glycozin in the bile. Gregory's powder and the mineral waters, to which Dr. Yeo had referred, acted beneficially for the same reason. Further, by the administration of benzoates or salicylates, both of which combined with glycozin and were excreted in the urine, the formation of uric acid was lessened, and, if formed still in excess, its solution and elimination would be promoted by the administration of the alkalies, or their citrates, or carbonates, or iodides. Taking this view of the formation of uric acid, the questions as to the use of alcohol, sugar, or fatty food must be answered according to the special conditions of each individual case.—Dr. MYRTLE (Harrogate) said there could be no doubt that there was a uric acid diathesis, and without attempting to offer any explanation as to its cause, as a practical man he would take it for granted that certain individuals formed this acid in great excess, or were incapable of eliminating the normal quantity, which led to its retention in the system and the development of that class of disease spoken of by Dr. Yeo. He agreed with Dr. Yeo that gout was not merely due to uric acid, but something independent of it. He advocated the use of glycerine instead of sugar in those showing a disposition to acidity. He disagreed with Dr. Yeo, in condemning light clarets, and held that those suffering from uric acid and gout should know how to live without requiring the physician to tell them what they were to eat, drink, or avoid. He pointed out the advantages of a dry climate and abundance of sunshine, condemned the use of colchicum in acute gout, or in fact any active treatment during its early stages. As to the amount of Conrexéville water drunk—ten or twelve ounces daily—that should be able to wash out anything it met with. He referred to the extraordinary fact that natural mineral springs of the most opposite character as to constituents and everything else, were found in similar cases to produce the same good results, and called attention to the fact that if patients went to any of these spas with latent gout, they very soon had acute gout developed, showing that mineral waters were not to be trifled with, and that medical men should be careful how they acted in giving advice to those resorting to such spas. As to Dr. Yeo's statement that women were seldom the subjects of gout, he entirely differed, as in his experience women without any gouty history often were the victims of severe and intractable attacks, brought on by grief, anxiety, and overwhelming sorrow. Without doubt these were cases of a neurotic order, as they most frequently appeared in constitutions known as highly sensitive, and in subjects who led most regular, abstemious, and active lives.—Dr. SPENDER (Bath) urged that in the treatment of the uric acid diathesis there should be a few distinct landmarks for our guidance, such as these: the quantity of excretable uric acid and urea ought to be fully maintained; the excretion should be hastened; and the volume of urine increased as far as possible. Touching upon remedies which had not been alluded to by previous speakers, he eulogised phosphate of ammonia, which had been introduced by the late Dr. Basham in 1872 as a remedy for saccharine diabetes; and he (Dr. Spender) had found it equally valuable for the glycosuric storms which alternated with gout. The chloride of ammonium had a wide range of utility, and must be taken in doses of half a drachm three or four times a day, as Dr. Ringer advised, if we were to treat successfully such neural troubles as gouty lumbago, and sciatica. The value of lithium (though perhaps over-rated) was undoubtedly great, because it increased the

volume of urine, lessened its acidity, and favoured the elimination of the products, which it dissolved in the blood. Lime, as administered in the form of the Bath thermal waters, had a good effect, both in gout and rheumatism, by increasing the alkalinity of the blood, though having no alkalisating effect on the urine. With regard to diet, Dr. Spender insisted on the occasional necessity of entire abstinence from butchers' meat for a few weeks at a time. The action of the skin was best solicited and maintained by daily sponging with very hot water, preferably in the morning. The great therapeutic and hygienic points seemed to be to keep up a regular metabolic action of the system, by supporting the power of the heart and releasing the nervous system from all unfair pressure. In this way we might sometimes abolish the so-called uric acid diathesis by not thinking about it at all, but by thoroughly establishing and strengthening the general health.—Dr. MILNER FOTHERGILL said that, in adopting the term "uric acid diathesis," Dr. Yeo had used a judicious expression. "Gout" and "chronic Bright's disease," the children, often the twin progeny, of that great vaso-renal change which was the outcome of the uric acid formation, were terms rapidly losing their original meaning. The uric acid formation was due to inadequacy in the liver, no matter how brought about, in consequence of which its formation of urea was imperfect, and it reverted to the earlier primitive uric acid formation of the birds and reptiles. This came about in two totally different ways. We were all familiar with the typical gout affecting the hands and feet in robust persons, and due to indulgence in albuminoid food beyond the needs of the system. This was known as "rich man's gout." But there was also "poor man's gout" occurring in spare persons, never guilty of dietetic excess. In such persons the liver was either congenitally feeble, or, as Drs. Budd and Murchison termed it, "insufficient," or was impaired by some disease. In the latter instance, the liver reverted to the early uric acid formation under perfectly ordinary, or even slight, demands, upon it. In dealing with lithiasis, or the uric acid formation, there were several lines of attack, which might be adopted singly; but usually it was well to employ a combination of these measures. The first was to reduce the albuminoid elements of the food to the requirements of the body. These included eggs, the lean of the larger animals, and, to a less degree, cheese and legumes. By this dietetic regimen the labour of the liver in the matter of the metabolism of albuminoids was greatly eased. In other words this was giving the organ physiological rest—that is, such rest as was possible. The dietary should consist of fish, farinaceous matters, fruits, vegetables, and fat in all forms—animal fat, butter, and oil. By so doing the liver was rested as regards albumen metamorphosis. This line of attack could be adopted in all cases with advantage, bearing in mind that it was never well to lower the subjects of the uric acid formation too far. The next line of treatment could also be adopted in all cases. It consisted of an attempt to raise the incompetent liver to a higher platform of functional activity by resort to hepatic stimulants. For prolonged use a compound of strychnine and ipecacuanha as the two bases, with some taraxacum or euonymin, iridin, etc., to which might be added some podophyllin, or other laxative also having an action upon the liver, when some such agent was indicated, which was very commonly. In addition to this medication, some sulphate or phosphate of soda might be taken with advantage. At intervals a mercurial pill at bedtime, with a seidlitz powder next morning, would be found beneficial. These two lines of attack gave good results in all cases. Then followed the resort to the uric acid solvents—lithia and potash. These rendered the insoluble urates of soda and ammonia soluble by taking the place of the latter bases. As urates of lithia or of potash, uric acid was comparatively soluble, and so readily escaped by the urinary channels. The chronic interstitial nephritis (otherwise Bright's disease) found so constantly in connection with lithiasis (the granular, contracted, or gouty kidney) was set up by the irritant presence of excess of uric acid passing through kidneys constructed to cast out a fluid urine. By the conversion of the original urates into the comparatively highly soluble urates of potash and lithia such injury to the kidney was minimised. These uric acid solvents were best borne by stout, florid people of the Norseman type, but were very depressant with spare persons of the Arab or neurotic type, with comparatively large heads and thin flanks. Beyond these, there was a fourth line of attack, namely, plenty of oxygen. Bence Jones held lithiasis to be a disease of sub-oxidation. Certainly uric acid was less highly oxidised than urea. A great deal of the uric acid formation of town life was due to the lack of fresh air and exercise. Of old, after a substantial breakfast, the eater turned out for work or exercise in the open air. His modern descendant, after a substantial meat breakfast, commonly went to his office or counting-house, where he stayed inactive, at a

temperature of 70° F., with a rebreathed air. Could we feel surprised if his liver, under these circumstances, reverted to the uric acid formation of the lethargic Ichthyosarian in his tropical swamp? In such cases of lithiasis or uric acid formation, horseback exercise in the country was the cure *par excellence*. Frequently a stay at some hydropathic establishment was attended by the best results. There remained one more line of attack, namely, the resort to colchicum. No one who had had personal experience of the pains of gout had any doubt about the analgesic effects of colchicum. The ease it gave was simply magical. At the same time, no sufferer from gout in the possession of his senses would resort rashly or recklessly to this potent pain-killer. Infinitely worse was the resort to colchicum to ward off threatening attacks of gout. When the liver manifested a tendency to revert to the uric acid formation, no matter how brought about or in what form or morbid manifestation, the management of the case involved knowledge, thought, discrimination, and the capacity to adapt concrete measures to the wants and exigencies of the individual. —Dr. BURNBY YEO, in reply, congratulated the Association on having elicited from those who had taken part in the discussion such valuable remarks as they had heard on this practical subject. He thought that the view taken by Dr. Latham that the changes were constructive rather than destructive was negated by the fact that so many sufferers from this diathesis showed no signs of defective nutrition, until degenerative arterial changes had been established. He had found colchicum, in small and careful doses, exceedingly valuable in the treatment of those neurotic affections connected with this diathesis. He protested against the use of opium or morphine in acute gout. He considered it was not good practice or good theory to give a drug which arrested secretion in a malady which was one of defective excretion. He thought it most interesting to learn that uric acid had been detected in the secretion of the skin.

#### REMARKS ON A CASE OF ACUTE INTESTINAL OBSTRUCTION DUE TO THE PRESENCE OF A MECKEL'S DIVERTICULUM, SUCCESSFULLY TREATED BY LAPAROTOMY.

By A. F. MCGILL, F.R.C.S.,

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On March 5th, 1887, I saw, in consultation with Dr. Glaister, of Rothwell, a collier, aged 30, who had been suffering from complete intestinal obstruction for nine days. We learnt that while at work on February 25th he was suddenly seized with severe abdominal pain; he walked home, and on taking a glass of water immediately vomited. From that time he passed neither fecal matter nor flatus from the bowel, and vomited everything that he took by the mouth. The symptoms were not of the severest type, as he had long intervals in which he was free from pain and sickness; vomiting was, however, induced by every attempt to take food. His abdomen gradually increased in size, and his general condition much deteriorated. He was treated in the usual manner, chiefly by opium and large injections. When I saw him the abdomen was immensely distended, and numerous coils of intestines were distinctly visible. He was in a feeble and almost moribund condition, extremely wasted, and with a quick thready pulse. The case was apparently one of intestinal obstruction, situated in the small intestine, and due to some mechanical cause. We advised his removal to the Leeds Infirmary, where I operated the same evening. The operation is described as follows in the Infirmary notes:

"The patient being placed under chloroform, the rectum was first examined, with a negative result. The skin of the abdomen having been thoroughly cleansed, an incision was made in the median line, extending from a point one inch above the symphysis pubis upwards for three inches. The peritoneal cavity was opened, and a small amount of clear serum escaped. Through the opening the right hand of the operator was passed into the abdomen, and its cavity was thoroughly explored. As nothing to account for the obstruction was found, the incision was enlarged upwards for an inch or more. The intestines were then allowed to escape; when about three feet had escaped from the peritoneal cavity, the junction of the distended and empty intestine was seen. At this point a Meckel's diverticulum, much dilated and about six inches in length, was seen, passing downwards and forwards, to be attached to the fundus of the bladder. A loop of collapsed intestine passed under the diverticulum, the obstruction being caused by the twisting of the bowel at the point where the diverticulum was attached. The loop slipped from under the diverti-

culum with slight traction, and the distended portion could be seen emptying itself into the part previously empty. The intestines with much difficulty were returned into the abdominal cavity, and the wound closed with silk sutures.

The patient passed a small amount of flatus during the night, and was somewhat relieved the next morning. During the day he became worse, and the vomiting returned. As the passage of flatus had entirely ceased, and the abdomen was very large and distended, a saline purgative (Rochelle salt) was given. A large quantity of flatus was passed, and the patient's condition much improved. He went on perfectly well till the tenth day, when a small amount of fluid fecal material escaped from the upper corner of the wound. This continued for a fortnight, when the discharge ceased, the wound rapidly healed, and he left the hospital perfectly well.

Several points in this case call for remark.

1. The attachment of the diverticulum to the fundus of the bladder has not, so far as I know, been hitherto described.
2. The obstruction was due to the twisting of the bowel at the point of attachment of the diverticulum, and not to compression of the gut under this band. In this case the diverticulum was a cause of volvulus, which in its turn was the cause of the obstruction.
3. The treatment by laparotomy does not now require to be defended, but the mode of operating is not as yet quite determined. According to Mr. Treves the method adopted in this case should be condemned. In his own words, "the practice of allowing the bowels to escape is absolutely bad." It is no doubt, when practicable, preferable to operate without permitting the bowels to escape, the shock of the operation being thus much diminished.

In a case under the care of my colleague, Dr. Churton, I operated in this manner. A middle-aged woman had suffered from acute symptoms of intestinal obstruction for five days. Having opened the abdomen, I was fortunate enough to immediately find a firm fibrous band, which was the cause of the obstruction. This I divided with scissors, and straightway closed the abdomen. The patient had not a bad symptom, and left the hospital in a fortnight well.

But in many cases it is impossible thus easily to discover the cause of the obstruction, and then the surgeon should not hesitate to allow the intestines to leave the abdominal cavity. The danger of the operation is no doubt increased, but we are almost sure not to leave a remediable cause undiscovered. This happened to me about two years ago; I failed during operation to find a Meckel's diverticulum, which had caused obstruction for five days, and the patient, a boy of 15, consequently died. We may occasionally find the cause of obstruction by intra-abdominal examination, but in the majority of cases this method is ineffectual, and the intestines must be allowed to escape.

A second point connected with the operative treatment of this case is the leaving the diverticulum untouched. It might appear at first sight advisable to divide it and sew up the divided end. This would have taken some considerable time, and the prolonged operation might have caused a fatal result. It appears to me to be preferable to leave the diverticulum in position, even though this exposes the patient to the risk of another attack of obstruction.

4. No opium was given, but a saline purge was administered with apparent advantage. The administration of opium as a routine measure after abdominal operations is, in my opinion, much to be deprecated. It seldom does good to the patient, and it lulls the surgeon into a false feeling of security. Unless called for by severe pain, opiates should not be given. In this case the administration of a purgative, which immediately caused the expulsion of a large amount of flatus, did much good, and apparently turned the scale in favour of recovery.

5. This case well exemplifies the great difficulty with which the abdomen is closed in operations for conditions associated with excessive intestinal distension. Though every care was taken to prevent such an accident, it is evident that a small portion of the intestinal wall was caught in the upper angle of the wound. The fistula thus formed soon closed, and, beyond delay in healing, little harm was done. In another case we might not have been so fortunate. It has been suggested that in some of these cases it may be advisable to evacuate a portion of the intestinal contents through a small incision in the intestinal wall. The increased severity of the operation and the risk of septic infection of the peritoneum seem to contra-indicate this procedure. It should only be adopted when all other means of closing the abdomen have failed.

**SUPERANNUATION.**—Mr. Alexander W. McLeod, late medical officer for No. 1 district of the Fulham Union has obtained a superannuation allowance of £35 per annum.