

position. All the patients have, however, experienced an anodyne effect from the hot-air baths, and have borne temperatures of 70°, 80°, and 100° C. without discomfort.

Internal remedies play a very small part in the treatment of polyarthritis. There are, however, some patients who believe that they have noticed a favourable effect from iodide of potassium, and I have therefore tried this drug in some cases. In other cases I have used ichthyol in doses of 30-60 centigrammes daily, and think that I have seen a beneficial effect from it upon the general health, appetite, etc. It is, however, difficult to obtain any proof that this is the case.

REMARKS UPON THE VALUE OF URANIUM
NITRATE IN THE CONTROL OF GLYCOSURIA.

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As a result of Dr. Samuel West's experiments upon the internal administration of salts of uranium, we are probably most of us now familiar with the valuable auxiliary that we possess in this metal in the therapy of diabetes. These experiments were detailed in a paper read at the annual meeting of the British Medical Association, 1895, and in another published in the following year.* The former paper includes a summary of what is known as to the physiological action of the drug, and this, up to the present, appears to be far from complete. As regards its use in medicine, it seems that it was first used in the treatment of diabetes soon after and in consequence of some observations, made as long ago as 1851, upon the effect of its prolonged administration in small doses. My attention has been further kindly drawn, by Dr. Julius Mickle, to a book published more than thirty years ago, in which the late Sir George Duncan Gibb recommended the use of the effervescing nitrate of uranium in throat affections connected with a saccharine urine. But despite the fact that the drug was therefore employed to some extent by

* *British Medical Journal*, August 24th, 1895, and September 19th, 1896.

physicians nearly half a century ago, it is to Dr. West that we are indebted for its present-day use as a powerful agent in the control of glycosuria. The cases which he describes at length in his two papers are eight in number, and the conclusions, as to the effect of the drug, which he arrives at, after extended observation, are that (i.) it diminishes the thirst, (ii.) reduces the amount of urine passed, and (iii.) reduces the percentage of sugar; but he finds that, like all other drugs, it cannot be relied upon to produce equally good results in all instances indiscriminately. Still, on carefully reading through these eight cases, I can find none, except the last one of his second series, in which the drug entirely failed to ameliorate some of the symptoms; and, in that particular case, its failure was apparently due to inability to push its administration, owing to the marked idiosyncratic dyspepsia produced. In the cases where the drug only slightly reduced either the polyuria, the thirst, or the output of sugar, its systematic employment nevertheless always seemed greatly to improve the patient's general condition and to stay the progress of the symptoms.

At the time when Dr. West's first paper appeared, it happened that I had, under my charge at Banstead Asylum, a considerable number of cases with a saccharine urine—some with mere glycosuria, and others with true diabetes; and, in view of the successes recorded in that paper, and with the approval of Dr. Claye Shaw, the Medical Superintendent, nine of those patients were put through a course of uranium nitrate in gradually increasing doses, commencing with gr. iij twice daily, always after food, and never in less than an ounce of water. No case showed any resulting gastric or intestinal troubles; nor was albuminuria discovered in any patient in whom it had not previously been observed, and in such cases the percentage of albumen was not found to increase.

These nine cases have already been published in the *Journal of Mental Science* for January, 1896, and April, 1897. They formed part of a series of thirty-two cases whose mental and physical condition was there described by me at considerable length, with the object of discussing the possibility of any causal relationship between their mental

symptoms and the diabetes or glycosuria from which they were found to be suffering. I do not, however, propose to recapitulate, in any degree of detail, the features there recorded of these cases, except those which are essential to enable the reader to follow my meaning. If reference be made to the latter of these two papers, it will be seen that passing allusion is, here and there, made to the employment of uranium nitrate; but it is only mentioned there as the agent adopted to free the urine from sugar and allay other diabetic symptoms, enabling us thereby to come to some sort of a conclusion as to whether or not the mental derangement was at all dependent on the existence of diabetes. No mention was made of the dosage, and its duration, required in the several cases. Dr. West's eight patients, *plus* one other recorded by Dr. A. Burton,* are the only ones that have come under my notice in print; and although I am not sure that I can add any actually new facts to those already enumerated by Dr. West, I yet feel that, in view of the comparatively small number of cases in which the result of a trial of uranium has been published, a brief account of its use in our hands at Banstead may not be without value.

It may as well be said at once that my results entirely confirm those of Dr. West; indeed, if anything, even a greater degree of success has been attained. For while, as in his series, no case proved itself entirely obdurate to the effect of uranium, in several instances—notably those of glycosuria unattended by any other symptoms of diabetes—the urine could be easily and entirely freed from sugar by its administration, and could be kept so as long as the patient continued the drug. Further, in one severe case of true diabetes, considerable claim may be laid on behalf of the drug that it effected an actual cure; and, in still further accentuation of this general success, it is important and right to add that, in each instance, such was obtained without having had to resort to the aid of anti-diabetic diet. It is true that, before the use of uranium had been recommended, some of the patients had been placed upon a strictly anti-diabetic diet; but, as is so often the case, this was attended with far from

* *British Medical Journal*, September 28th, 1896.

completely satisfactory results, although probably in no place or circumstances can a prescribed form of diet be more readily and rigidly enforced than in a public asylum.

*Case 1 (XII.)** was the patient to whom I incidentally referred immediately above, whose diabetes had been apparently really cured by the action of uranium. He had been the subject of the disease for eight or ten years before he became insane. His mental disorder took the form of intense melancholia, and it was feared at one time that dementia was setting in. At the time of his admission to the asylum, he was excreting about 4,000 grains of sugar daily, in 100 or more ounces of urine. His thirst was great and distressing, and he was rapidly becoming exhausted. Dieting and the free use of codeia were thoroughly tried, but the sugar never fell below a daily output of 340 grains. Usually it was much more, and his thirst continued. The nitrate of uranium was given in a dose of 3 grains twice daily, increased to 6 grains at the end of a week. At the end of three weeks there was only a trace of sugar detectable in the urine, of which 70 ounces was then being passed each day. Meantime all diet restrictions had been withdrawn, and he continued to take 6 grains of the uranium thrice daily for two months, during which time sugar was present in amounts varying from a trace to 100 grains occasionally. However, a dose of 10 grains three times a day was successful in entirely removing all traces of sugar; the urine fell to a normal amount with a sp. gr. of 1,018 instead of 1,034; the thirst ceased, and he became altogether a different man. At the end of another two months the dose was reduced to 6 grains again. No sugar reappeared, but the urine became somewhat excessive in amount and the thirst grew troublesome again. This relapse was only of temporary duration, however, and did not necessitate a return to the larger dose of uranium. He continued to take 6 grains thrice daily for seven months, at the end of which time the drug was discontinued entirely; and five months later the patient was discharged mentally

* The Roman numerals affixed to each case indicate its number in the series of thirty-two published in the *Journal of Mental Science*, for the benefit of those who may wish to have access to fuller details concerning them.

and physically recovered. We have since learnt that a mental relapse unfortunately took place last January—that is, three months after his discharge from Banstead. He is now in Brookwood Asylum, and apparently is a confirmed chronic melancholic; but for our present purpose it is interesting to learn—and I am indebted to Dr. H. N. Cappe for the information—that, though his urine has been repeatedly examined there, it has never once yielded any sugar reaction. If this result may be attributed to the administration of uranium continued over a period of twelve months, it is, I believe, the most complete success with the drug that has yet been recorded.

The following five cases can scarcely be said to be really examples of diabetes, but rather of glycosuria, for they each have always passed a fairly normal amount of urine and have never shown any abnormal thirst. The two in whom the glycosuria still persists show no tendency for this symptom to increase, although one has been under observation for four years, and the other for nearly three years.

Case 2 (VIII.) is that of a man, now aged thirty-one, who has been in the asylum over three years, and who may now be said to be in a state of secondary dementia following an attack of melancholia. At the time of his admission, and while his mental symptoms were acute, his urine almost daily gave a good reaction to Fehling's solution. The amount of sugar in the twenty-four hours would vary up to 200 grains; on rare occasions it would reach 300 grains, and some days would be absent altogether, but never then for more than two consecutive days. In August, 1896, the effect of uranium nitrate, in doses of 3 grains twice a day, was tried. On the fourth day after its commencement the urine was free from sugar, and remained so for nine days. During the following fortnight sugar was present in small quantities about every third or fourth day, after which it remained entirely absent as long as the drug was continued—namely, four months. As no improvement in the patient's mental condition seemed likely, it was then discontinued, and within a week the urine again became saccharine. As a matter of fact, during the last eight months or so, the sugar seems to have permanently

disappeared from the urine without the aid of any drug. This has been coincident with the definite onset of dementia—an interesting point, but foreign to the topic of this present paper.

Case 3 (IX.) was admitted to Banstead Asylum in June, 1894, aged then thirty-seven, and suffering from profound melancholia, which has deepened into a condition of stupor, and in which he yet remains. Sugar can still daily be detected in his urine in amounts varying between 300 and 450 grains. The urine itself has always been of phenomenally small quantity, seldom exceeding 35 oz., and often falling below 20 oz. per diem. By the use of codeia and an anti-diabetic diet the daily excretion of glucose could be reduced, but never to below 130 grains. Uranium, however, when the dose had been increased to 6 grains three times a day, was able to free the urine entirely from sugar, and it remained so for the five months during which the patient took the drug. The sugar reappeared on the fourth day after the drug had been discontinued.

Case 4 (X.) is now dead. He was admitted into the asylum, aged sixty-six, suffering from alcoholic dementia, and died two and a half years later. Up to the last his urine daily contained sugar, in amounts varying between 115 and 370 grains, except for the time during which he was taking uranium. This, in doses of 6 grains twice a day, caused the sugar entirely to disappear. The patient's state was so feeble, however, that we hesitated to continue the drug.

Case 5 (XXIII.) is one of stupor, coming on five years ago in a young man, then aged twenty-three. The exciting cause appeared to be excessive masturbation. Sugar has throughout been present in his urine in amounts varying between 40 and 90 grains per diem, but in an intermittent fashion. Sometimes it would be present on two, three, or four consecutive days, and then absent for a day or two. He was placed upon uranium in August, 1896, along with Case 2, and practically the remarks which have been made upon the effect in that case again exactly apply here. In his case the urine continues to show a sugar reaction in the above-described intermittent manner, but the drug has been discontinued for many months.

Case 6 (XXVII.) was a printer, aged fifty-two, and was an example of melancholia associated with most vivid persecutory aural hallucinations, probably the result of chronic alcoholic excess, of which he presented many physical signs as well. Sugar was present in the urine in amounts ranging from 90 to 350 grains daily. Uranium nitrate in doses up to 6 grains thrice daily had very little effect, but when the dose was increased to 9 grains the glycosuria ceased to exist, and did not return while the patient remained in the asylum. He was eventually discharged at the request of his friends, and has, I believe, since committed suicide.

The remaining three patients are cases of true diabetes. Each is inclined to obesity—the man to a marked degree—and each, when not under treatment, complains of distressing thirst and much genital irritation, and passes 120 oz. or more of urine, containing upwards of 4,000 grains of sugar. The treatment by uranium in each instance has been only partially successful. In Cases 7 and 9 it entirely relieved the thirst and irritation, to a less extent also in Case 8, but in neither instance was it able to diminish the output of sugar by more than 50 per cent.

Case 7 (XVIII.) is that of a woman, admitted in 1892, aged fifty-two. Uranium has not been, for accidental reasons, given to her in larger doses than 9 grains thrice daily, and its failure to have the power of reducing the daily sugar excretion to below 2,000 grains is therefore not fully proved. And the same observation applies to—

Case 8 (XXII.), a woman admitted eight years ago, at the age of fifty-seven.

Case 9 (XX.) is that of a man, admitted eighteen years ago, at the age of forty-four. He weighed 13 stone when only twenty-one years old, and now maintains a fairly even weight of between 18 and 19 stone. His urine was not examined till the year 1895, when a very ravenous appetite caused diabetes to be suspected and found. At the time when he was ordered uranium he was passing 156 oz. of urine with a specific gravity of 1,030, and containing 4,400 grains of glucose. A three-weeks' course of 6 grains twice daily of the drug reduced the glucose by 200 grains. He then took that dose thrice

daily for two months, at the end of which time the sugar had fairly steadily fallen to 2,600 grains; the urine to 130 oz., with a specific gravity of 1,026. The dose was cautiously increased up to 30 grains thrice daily, and this he continued to take for a year, at the end of which time he regularly passed about 76 oz. of urine daily, containing from 1,760 to 2,000 grains of sugar.

This case is interesting in demonstrating the large amount of a salt of uranium which can be easily tolerated without any unpleasant symptom. I was also by it able to confirm another of Dr. West's statements—namely, that the drug does not apparently get into the general circulation; for he was good enough kindly to arrange with Mr. Kennedy Orton (of St. Bartholomew's Hospital) for an analysis of a sample of this patient's urine, taken during the last month of the twelve during which he was receiving 90 grains of uranium daily. Mr. Orton reports that he was unable to discover any compound of uranium in the sample submitted to him, despite the fact that uranium can be readily detected, even in so great a dilution as 1 in 2,000.

In conclusion, I may add that none of my patients suffered any appreciable loss of weight during their treatment with uranium, nor, on the other hand, can it be said that they gained any weight.

UNUSUAL ASPECTS OF TERTIARY SYPHILIS.

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AMONG the many forms and manifestations of tertiary syphilis, none are more important and more difficult to recognise than those in which the central nervous system or the lungs are involved. The three following cases are so instructive from the practical point of view that they appear to be worthy of publication.

On March 10th, 1889, I was called to a gentleman, Mr. V., who had been found unconscious in his bed the same morning.