

**Oxaluria / by Dr Debout d'Estrées.**

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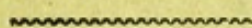
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# OXALURIA

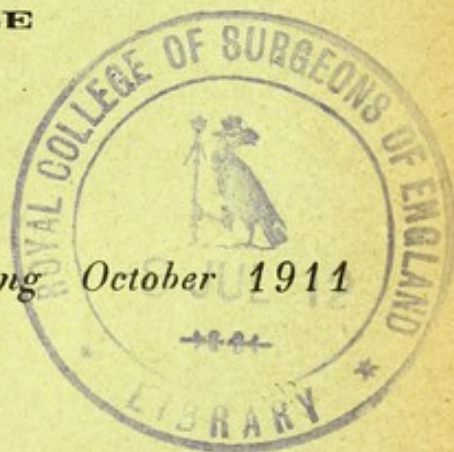
BY

Dr DEBOUT D'ESTRÉES

OF

CONTREXÉVILLE

*Paper Read at the XV<sup>th</sup> Meeting* *October 1911*

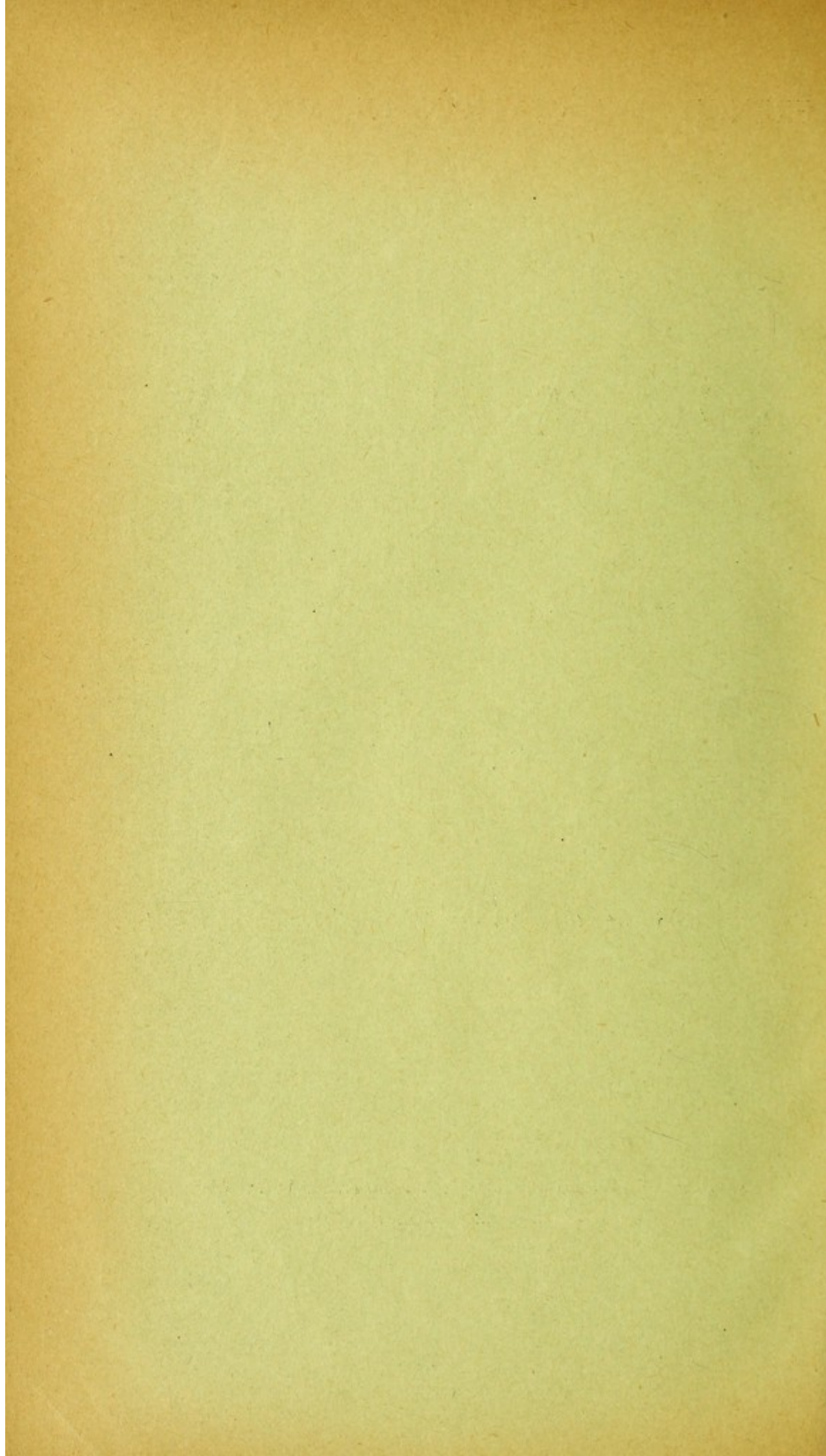


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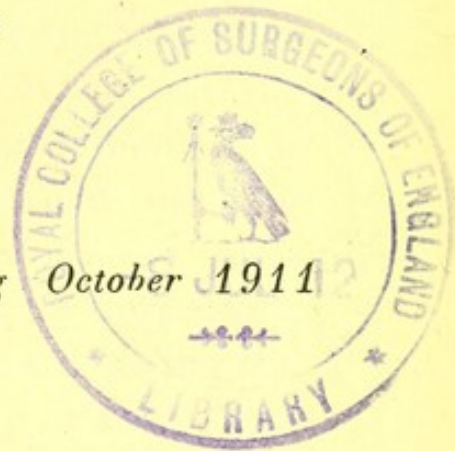
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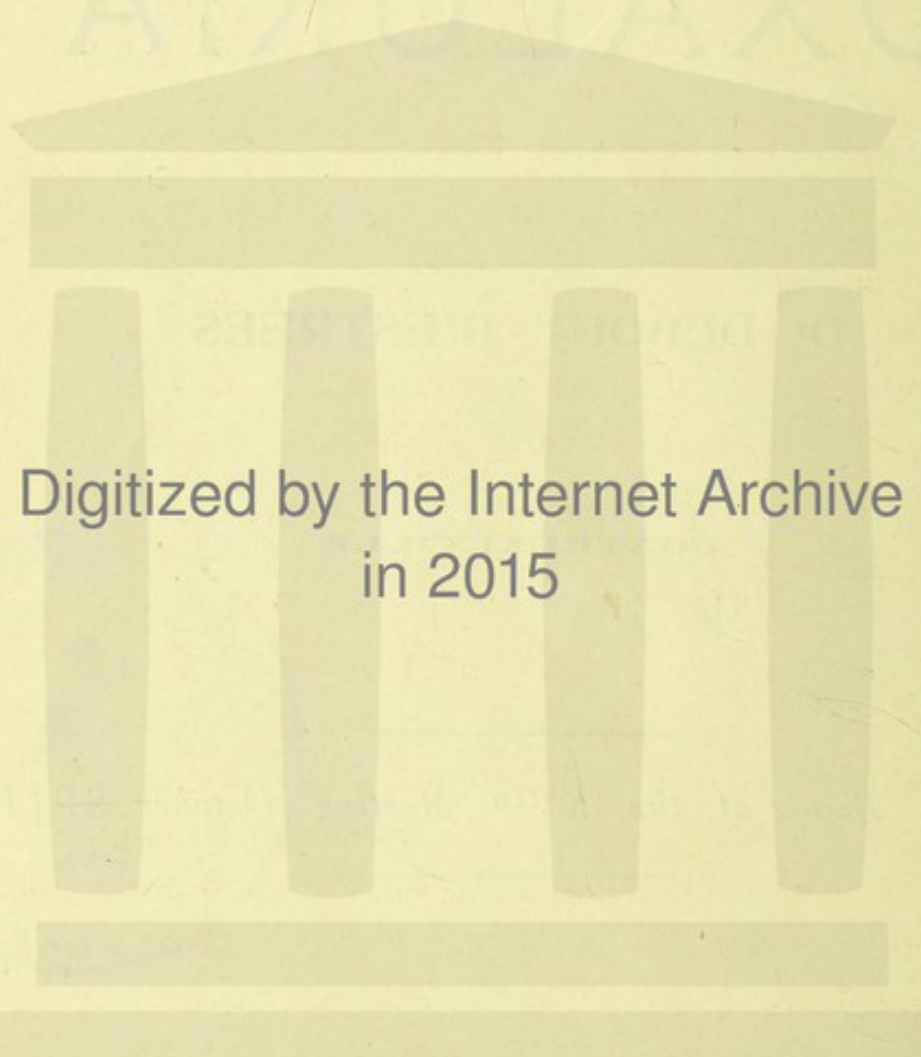
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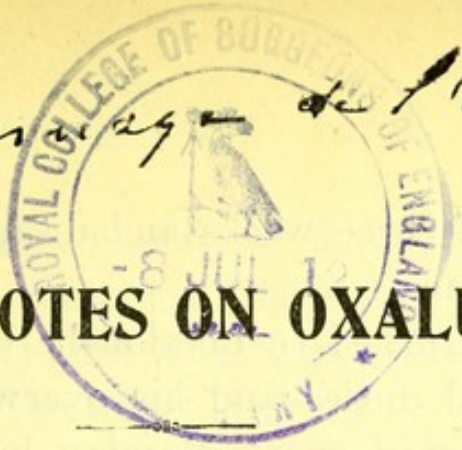
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## SHORT NOTES ON OXALURIA

Oxaluria determines nearly always hematuria which is only produced quite exceptionally in uric acid Gravel.

Hematuria produced by oxalate of lime can take place without calculi and only by crystals visible under microscopic Examination.

My opinion on this subject was absolute before it was ascertained by Radioscopic examination, but it was necessary that it had been controlled by Radiography to enable me to bring before the "Association française d'urologie" two Examples demonstrating that my opinion is correct.

The first case, a very interesting one refers to a young English Clergyman. This patient used to have every Monday an hematuria lasting only twelve or fifteen hours. As vicar of an important, Parish in London and working very hard during the week he had to give an exceptional mental effort to prepare and deliver his Sunday Sermon. This brain overwork used to produce on the Monday abundant oxalic crystals and consecutive hematuria of a short duration and the Tuesday the urine did not contain any trace of blood.

He came to Contrexéville in July 1885, I found in my analysis a very abundant deposit of microscopic oxalic crystals. They gradually diminished during



the cure of three weeks and disappeared before he left the place.

When returned to London he resumed his same professional duties and his overwork; The Hematurias returned every Monday but were also produced by violent Exercise. Another cure at Contrexéville stopped the renal bleeding and enabled him sharp exercise without hematurias, but I advised the patient to leave his hard work in London and to take an easier parish in the country which he did and the renal bleeding ceased.

I saw once more this patient in 1904 in Contrexéville where he came as Chaplain of the English Church. His Hematurias had ceased entirely and he never passed any calculus from his Kidneys no Radiography has been made neither in London nor in Contrexéville where it did not exist in those days.

But the other case I have observed in August 1911 is quite different.

A young naval officer came from Malta to Contrexéville after having had two nephritic colics with hematurias and a third one took place on his arrival No calculus was expelled either in London nor at Contréxeville and two Radiographies made in London and at Contrexéville did not show the slightest trace of calculi either in the kidneys ureters or bladder notwithstanding the most careful investigations made by Dr Jossierand, director of our service of Radiography. The urine which I analysed directly after the last crisis of renal colic only contained very big crystals of oxalate of lime — the size of these crystals were quite exceptional as with an



enlargement of 250 diameters they attained the size of a *square centimeter*. These are the biggest I ever saw since forty years that I have made analysis of my patients at Contrexéville.

I therefore conclude that it may be admitted that *hematurias can be produced in oxaluria without the presence of a renal calculus*. I may add that oxaluria is becoming more and more frequent; it was quite an exception in the first fifteen years of my practice in this health ressort of the Vosges where the patients of all nations come to expel their renal calculi. It was then only in American patients that I used to meet oxaluria. I therefore went in December 1888 to United states and read a paper on oxaluria before the Academy of Medicin of New-York which I will hereby reproduce as it has never been published in besides in the *New-York medical Record*.

*This paper runs as follows :*

“The excessive production of oxalate of lime in the economy is a subject the explanation of which offers one of the most difficult problems to the physician.”

So wrote our deceased master, Professor Bouchardat. To-day the problem is still not solved, and I must confess that after a professional experience of twenty years in a town where, on account of its mineral springs, patients afflicted with gravel congregate, coming from all parts of France, I am still unable to clearly define the principles which govern the formation of oxalate of lime in the human system.

It is a fact that in our country deposits of the oxalates are as rare as they are common in the



United States, and it is for this reason that I am eager to bring before you, for your judgment, the paper that I have the honor to submit this evening.

The proportion of patients suffering from oxaluria in France is forty-seven per thousand of gravel, as observed at Contrexéville, while it is eighty per cent. among those American patients, who, suffering from gravel, came under my care on the continent.

The uric-acid calculi so common among us are, on the contrary, the exception with those of your countrymen who were under my professional care.

My experience concurs with that of the best authorities of both nations; for while in Paris Professor Bouchardat found, on analysis, calculi in one hundred and forty-three cases in a thousand, and Dr. Leroy d'Etiolles thirty-three times in two hundred and fifty-two cases, with oxalate of lime as a nucleus, in *this* country Dr. Bigelow found forty-three cases in a hundred.

Before we look for the cause of these differences let us make a rapid review of the principal theories which have been advanced from time to time to explain the formation of oxalate of lime, bearing in mind that this salt, when chemically pure, is white, while that of the calculi, of which it is a component part, is in nearly every instance black (mulberry calculus), owing to the presence of the coloring matter of the blood.

I have, however, occasionally met with some forms presenting a white color, as illustrated by the two specimens which I submit to you herewith. But in oxaluria, renal hæmaturia is the rule, while in uric-acid gravel it is the exception.



Various theories have been advanced to explain the formation of oxalate of lime in the system. Prout (an English author) considers the oxalate of lime so produced as the result of imperfect assimilation of oxalic acid contained in the food; this being true also in the case of sugar, and possibly albuminous and oleaginous food.

The German chemist Lehmann has advanced another theory; he admits that the oxalate of lime may be traced to vegetable food containing oxalic acid, and that the same result might be produced by beers rich in carbonic acid, by the double carbonates, and by the alkalis in combination with organic acids. Aside from the oxalate derived from ingesta, Lehmann admits that a certain quantity is formed spontaneously in certain pathological conditions, and he attributes its formation to a modification of the respiratory function.

The carbonic acid in this case mingling with the blood in excess would prevent its complete oxidation. We will not dwell on the theory of Schmidt, who looked for the origin of oxalate of lime in the mucous membrane of the urinary organs, nor on the theory of another German author, Beneke, who is of opinion that oxalic acid is the direct outcome of a suspension in the successive physiological transformations which nitrogenous foods undergo. To this author, therefore, oxalic acid would appear to be an element existing temporarily in the urine in the physiological state, finally becoming oxidized, and undergoing a change into carbonic acid. When through some cause this oxidation is prevented, oxalic acid appears in the urine.



The exaggerated ingestion of nitrogenous food, want of exercise in the open air, catarrhal conditions of the mucous membrane of the stomach, are some of the causes assigned by this author. In fine, the nervous system is not a stranger to the production of oxaluria. All the causes which depress it cause a delay in metamorphosis, and stand in causative relation to the production of oxalic acid.

But the exaggerated ingestion of nitrogenous food, or lack of exercise, are just as likely to produce uric-acid gravel. Why, then, should there be a formation of oxalic acid ?

According to Dr. Beneke this would depend on the time at which the transformation of nitrogenous materials in the blood into urea ceased, when there would be at once a decrease of urea, uric acid, and oxalic acid. According to his views the uric acid derived from the nitrogenous materials of the blood divides into two parts, one being transformed into urea and oxalic acid, the other eliminated in the form of uric acid. In the physiological state the oxalic acid would be transformed into carbonic acid.

But let us suppose that, through one of the causes cited above, oxidation be prevented, then there would be elimination of oxalic acid. Therefore, according to this author, the matter resolves itself into a simple question regarding the precise time at which the transformation ceases.

According to Maclagan (an English author), it is the nervous system which is active in the genesis of oxalate of lime, especially when there is a retardation of the respiratory function.

Owen Rees thinks that the oxalate of lime does



not exist primarily in the urine, but that its presence there is due to a secondary formation, because of a simple molecular transposition which takes place between the elements of uric acid and the urates.

I will not dwell upon the works of Vu'pian and Gallais, in France, and of Ralfe, in England, but will conclude with the opinion of Professor Bouchard, which is that the oxalate of lime increases in all diseases in which there is a disturbance of the processes of nutrition, and that acid fermentation, with production of oxalic acid, takes place in children into whose food potatoes enter largely, retarding or interfering with the natural functions of the digestive organs, fermentation commencing in the stomach and continuing in the intestinal tract, the alkaline juices of which it neutralizes. This explains the frequency of oxaluria among the children of poorer classes.

I will not encroach upon your time with any further quotations, but will proceed to formulate what I believe to be, in our present knowledge, the nearest approach to truth, in this most interesting question regarding oxaluria.

1st. Oxalate of lime is a body that may be present in normal urine to a greater or lesser extent, owing to the influence of certain foods.

2d. Uric acid is frequently found, together with oxalate of lime, in urinary sediments in gravel as well as calculi.

3d. Oxalic acid owes its existence to the presence and incomplete oxidation of uric acid.

4th. Alkaline mineral waters having lime as a



base, present the most effective means at our command to cure oxaluria.

This last assertion is to be credited to Dr. Bouchardat, professor of hygiene, faculty of Paris. No evidence is required to establish the correctness of the first proposition. You will readily find crystals of oxalate of lime in urine twenty-four hours after the ingestion of food containing the salt in large quantities, as, for instance, rhubarb, tomatoes, sorrel, etc. ; indeed string beans, oranges, celery, green fruits, apples, and water-cress contain it in notable quantities.

The second point touching the co-existence of uric acid and oxalate of lime in the urine does not call for special proofs. No one who has made an analysis of the urine of a patient suffering from gravel has failed to discover, on microscopical examination, crystals of oxalate of lime associated with uric acid. Moreover, I will venture to say that there is no one present who has not met calculi with a nucleus of oxalate of lime surrounded by uric acid, and those rarer specimens in which deposits of oxalate of lime were found surrounding a nucleus of uric acid.

The specimens of gravel which I brought from Contrexéville, and which I have the honor to place before you, and which were voided per *vias naturales*, show two rather exceptional features. In one you will find that oxalate of lime is deposited on two sides of a uric-acid calculus, in the other the stone seems to be formed of two distinct parts, namely, uric acid and oxalate of lime.

Regarding the third statement, Wöhler's experi-



ments would seem to confirm this. He injected uric acid into the veins of dogs, employing the urate of ammonia, and as a result found oxalate of lime in the urine. This justifies the inference as above regarding the presence of this salt in man.

The records of the clinic at Contrexéville will serve to further demonstrate the correctness of this assumption.

In fact, without citing cases which would increase the length of this paper beyond its scope, I think that the one fact which those of our confrères, who, like Dr. Keyes, visited the Vosges last year, were in position to verify, will suffice. A patient presents himself whose urine is of high specific gravity, from 1.028 to 1.032 (Sir Alfred Garnod spoke to me of a case in which it had reached 1.040), and showing on analysis the presence of crystals of oxalate of lime alone. Eight days later the specific gravity of the urine is from 1.023 to 1.026 and uric acid is discovered in the form of fine crystals, together with oxalate of lime. Fifteen days later the specific gravity has fallen to 1.015, and on microscopic examination uric acid is found exclusively. What further proof is necessary to show that oxaluria and the uric-acid diathesis are of common origin? The same facts obtain in diabetes, as explained by me in an article in *The Lancet* of May 22, 1887.

Why, then, does the French patient present the complication of uric acid, and the American oxalate of lime? May I be permitted to suggest the causes, and ask you whether you agree with me?

Uric acid is found in patients ill through heredity, overfeeding, and sedentary habits.



Oxalate of lime is found in dyspeptics, in men whose nervous system is exhausted, and in those who take large quantities of food containing the salt.

Is not this the case with your countrymen ?

While the French, sedentary by taste or by profession, give themselves up too willingly to high living, the Americans live too fast, fatigue their nervous system beyond reason, without giving their digestive apparatus that proper care and attention which it deserves.

I believe that I am correct in formulating this opinion, based upon an experience of twenty years in cases of gravel, and I lay it before the members of your honorable body, whose kindly aid and valuable counsels I trust may be accorded me.

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Such was the paper I read the 8<sup>th</sup> of December 1888 before the Academy of Medecine of New-York. Since then the cases of Oxaluria have been much more frequent amongst French and English patients sent to Contrexéville. I think the cause of it comes from overwork and fatigue of the nervous system as we become more and more like Americans.

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