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An Account of two Cases of the Diabetes Mellitus, with Remarks, as they arose during the progress of the Cure; to which are added, A General View of the Nature of the Disease, and its appropriate treatment, including Observations on some Diseases depending on Stomach affection, and a Detail of the Communications received on the subject, since the dispersion of the Notes on the first Case. By John Rollo, M. D. Surgeon-General, Royal Artillery. 2 Vols 8vo. London. 1796.

THE Diabetes Mellitus, though sometimes terminating in recovery, is yet well known to be a disease which has in general resisted every remedy hitherto recommended for its removal. Every attempt, therefore, to improve the practice in that affection, may justly be considered as deserving particular attention. The ingenious author of the work now before us,

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recommends

recommends a mode of treatment, which, in some instances, has been decidedly productive of remarkable benefit. It may justly, therefore, be considered as well meriting a fair trial in future cases.

The first case here related, is that of Captain Meredith, of the Royal Artillery. When he came under Dr Rollo's care, on the 16th of October 1796, he voided about twelve quarts of urine in twenty-four hours. This urine, seven quart-bottles of which he had preserved, having been voided during the course of the night, was of a light straw colour, had no urinous smell, but emitted somewhat of a violent flavour, and was very sweet to the taste. He was affected with excessive thirst, and had drank, during the day, seven or eight quarts. His tongue was somewhat whitish, but moist: there was a cleanness in his mouth, and he spat a white frothy saliva, of a sweetish taste. His appetite for food was variable, sometimes unusually keen, particularly at uncommon times, as during the night. His face was flushed, his skin dry, but not unusually

unusually warm, and his pulse did not exceed eighty-four strokes in the minute.

He was frequently sick, and threw up a viscid matter, of a bitterish taste, but with some sweetness. After eating, he complained of a pain of his stomach, which in general continued about half an hour.

He complained of a constant pain in the region of the kidneys, extending forwards, but more particularly in the right, in which there seemed to be a greater fulness and tenderness to the touch. There was likewise a retraction of the testicle, with a weakness, sense of coldness, and at night an œdematous swelling of the leg on the same side. He also complained of a pain and tenderness of the great toe. He felt also a singular fluttering sensation in his belly, extending from the situation of the kidneys.

He was regular in his bowels, though sometimes inclined to costiveness. His stools were of a greenish colour, and had no unpleasant smell. The prepuce of the penis did not retract. It had a whitish appearance, with excoriation and foreness, but was not swelled. His gums were reddish,

and had the appearance as if affected by mercury. The teeth felt to him loose. There was a fulness about the eyes, with a turbid yellowish cast, and he had slight occasional headaches.

He had not been particularly restricted in diet, which consisted of animal food and vegetables; and he drank from a pint to a bottle of port wine daily. His other drink was toast-water. He used exercise, both in the way of riding and walking; but he could not walk above two miles without much fatigue.

At this time thirty-six ounces, Troy weight, of his urine, analyzed by Mr Cruickshank, yielded by evaporation three ounces and one dram of saccharine extract, of the appearance of molasses, but thicker. According to this proportion, his whole urine for a day, would have yielded twenty-nine ounces Troy weight; an astonishing quantity to be separated daily from the system. Treating some of this extract with the nitrous acid, Mr Cruickshank procured the saccharine or oxalic acid. With a smaller proportion of the acid, it produced

duced a substance which, in appearance, taste, and smell, could not be distinguished from honey.

Two portions of blood, about four ounces each, were taken from his arm. These in appearance exactly resembled what is described by Dr Dobson, excepting that the serum did not impart a sensibly sweet taste. The crassamentum of the first cup had a slight buffy coat; the crassamentum of the second had more. The buffy coat in both was of a bluish colour, similar to what mercury sometimes produces. A portion of blood from a healthy person, drawn on the same day, was placed in the same room, and in the same circumstances with one of the portions of diabetic blood. In two days the diabetic blood assumed a caseous appearance on the surface, and the whole mass became dry and resinous, without having undergone any apparent putrefactive process. At the end of sixteen days, it remained in the same state; whereas the healthy blood exhibited evident marks of great putrefaction in four days; and it became necessary to throw it away on the seventh.

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When this patient came under Dr Rollo's care, his disease had been of seven months standing. During that time he had taken some remedies, under the direction of an eminent physician at Yarmouth, the principal of which were Peruvian bark and alum. He had fallen away very considerably in flesh and fat; for, in October 1794, when in apparent health, he weighed sixteen stones and eight pounds; and in November 1796, he weighed only eleven stones and eight pounds, shewing a loss by the disease of no less than five stones in weight.

For six months preceding the attack of the diabetes, he was often sick, and vomited at least two or three times a-week; and he frequently brought up from the stomach, during these vomitings, different things which he had eaten several days before. These seemed to be unaltered, and the taste was very generally sour.

He always ate heartily, and drank freely, but not intemperately. He was fond of high-seasoned and fat dishes. He had been subjected to two regular attacks of gout, and had at other times two severe fits of cholic. He had been twice married, and had two children.

children. He was, in the thirty-fourth year of his age, five feet eleven inches high, of a fair complexion, with light-brown hair, and dark-blue eyes.

From an attentive consideration of all the circumstances of this case, what appeared to Dr Rollo to be the principal objects of treatment, were, to destroy the saccharine process going on in the stomach, to promote a healthy assimilation, to prevent the supposed increase of absorption from the surface, to diminish the increased action, and to change the imagined derangement of the kidneys.

With these intentions the following plan of treatment was resolved upon. 1. His diet to consist principally of animal food; for breakfast, a pint and a half of milk mixed with half a pint of lime water, bread and butter; at noon, plain pudding, made of blood and suet only; at dinner, game, and old meats which have been long kept, and, as far as the stomach may bear, fat and rancid old meats, as pork, taking care always to eat in moderation; for supper, the same as breakfast.

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2. For drink, he was allowed daily four quarts of water which had been boiled, and in which was dissolved a dram of the kali sulphuratum. He was strictly forbid to use any other article, excepting these, either in the way of meat or drink.

3. His skin to be anointed with hogs lard every morning. Flannel to be worn next the skin, and the gentlest exercise only to permitted, but confinement to be preferred.

4. A draught to be taken at bed-time, consisting of twenty-five drops of tartarised antimonial wine, and twenty-five of tincture of opium and the quantities to be gradually increased.

5. An ulceration, about the size of half a crown, was directed to be produced, and maintained externally, immediately opposite to each kidney.

And, lastly, his bowels were to be kept regularly open, by a pill of equal parts of aloes and soap.

This treatment was begun on the 19th of October, and, so soon as the 21st, some changes occurred. He made, in twenty-four

four hours, only six quarts of urine, and drank only three quarts of the sulphurated alkaline water. The urine was not so pale, had a cloud in it, and was more urinous in smell. On the 1st of November the urine did not exceed four quarts, while it was of a higher colour, and more urinous smell. His skin was moist and he perspired freely; his stools were large, and very offensive, and he was in every respect much easier, though he complained of much pain from the ulcerated parts of the loins. Imagining that the quantity of alkaline salt, which he took daily in the kali sulphuratum, might have some improper effect on the kidneys, it was resolved to try hepatised ammonia, on the suggestion of Mr Cruickshank, who was of opinion, that it might prove a more certain and active medicine in diminishing the action of the stomach, as well as the action of the system in general. He was therefore directed to take five drops of it, in each half-pint tumbler full of water, which he used as drink. The 1st day he took thirty-five drops at different times, which in the evening, produced sickness and vomiting, with giddiness and drowsiness.

drowfiness. He was therefore directed to leave off the hepatifed ammonia for one day, and then to begin with two drops to each tumbler full of water.

On the fourth, he drank only two pints of water, and made only two quarts of urine, which was not sweet, and deposited a red sandy, or lateritious sediment. On the 5th of November, the opiate at bedtime was discontinued; and on the 8th the rubbing with the hogs lard was left off.

Between the 4th and 14th of November, in consequence of some irregularities on the part of the patient, particularly drinking beer and tea, the disease was to a slight degree reproduced. On the 14th, therefore, an entire abstinence from vegetable matter was directed; nothing was allowed approaching nearer to it than milk; and even this was directed to be left off, and strong beef-tea substituted, should the disease not disappear. This soon produced a favourable change, his urine became again of a much higher colour, and its smell and taste quite urinous.

He afterwards continued for some time

with tolerable regularity on the course already mentioned, and by the 18th of December his disease seemed to be in a great measure overcome; he was therefore desired to eat half a pound of bread as a daily allowance, and to take exercise more freely.

On the 30th of December, Dr Rollo found that since the 18th he had continued free from the disease. He was now in high spirits, and rapidly gaining flesh. His urine did not exceed two pints in the twenty-four hours. It was often under that quantity, and perfectly urinous. He now weighed thirteen stones and one pound; so that he had gained about a stone and a half since the end of November; which furnished a convincing proof, not only of the removal of the disease, but also of the disposition to it.

After this period, Captain Meredith might be considered as continuing free from complaints. He took exercise freely, both in the way of walking and riding. He ate a sufficient proportion of bread, potatoes, and other vegetables, without any inconvenience. His appetite was good and natural,

ral, and his bowels regularly open. His urine continued perfectly natural, and, in general, did not exceed a quart in twenty-four hours. Of this urine, which was of the ordinary taste and smell, nine ounces were evaporated, and yielded of a brown and pungently saline bitterish-tasted matter, without tenacity, three drams and twenty grains, a product excessively different from the saccharine extract resembling molasses, which his urine yielded in October. The product now obtained was very nearly the same, both in quantity and quality, as Dr Rollo obtained from his own urine, which, he had every reason to believe, was in the healthy state.

About the middle of March, Captain Meredith continuing in a state of health, was ordered on active service; to which he very readily assented, being satisfied that his health now enabled him to execute the duties of his station.

The second case which Dr Rollo has here very minutely detailed, but into the particulars of which we cannot propose to enter,

is that of a general officer in the 57th year of his age, with whom the urinary discharge amounted to ten or twelve pints in the twenty-four hours; and, while the urine had a very sweet taste, he was at the same time subjected to the other common symptoms of diabetes. After his disease had been of at least three years standing, and after recourse had been had to the assistance of several eminent physicians, without benefit, he came under Dr Rollo's care, in the beginning of January 1797.

Nearly the same plan of treatment, particularly with respect to the diet of animal food, was here directed, as in the case of Captain Meredith. In a very short time, a remarkable change for the better was produced. His thirst was diminished, and his urine rarely exceeded two, three, or at the utmost four pints, in twenty-four hours, being at the same time of the natural sensible qualities. In this way he continued to the end of February, gradually recovering flesh and strength. He now resolved on returning to his residence at Portsmouth. He had very great impatience under restriction.

But on parting from Dr Rollo, he was told, that, for preventing the return of his disease, every thing depended on himself; and he acknowledged the truth of the observation.

He bore his journey very well, and arrived at Portsmouth on the 27th of February. But having eaten something improper on the road the day before, he was attacked with a bowel-complaint. On the 6th of March he had a return of his bowel-complaint, from eating beet-root. On the 9th he had the sanction of a physician to eat what he pleased, and to drink wine. The disease was soon reproduced, for his urine became sweet, and was increased in quantity, with a return of thirst and feverishness. Yet this case, Dr Rollo justly observes, adds strength to the conclusions derived from the former case.

From these two cases Dr Rollo draws some general inferences. He concludes,

1. That the diabetes mellitus is a disease of the stomach, proceeding from some morbid changes in the natural powers of digestion and assimilation.

2. That the kidneys and other parts of
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the system, as the head and skin, are affected secondarily, and generally by sympathy, as well as by a peculiar stimulus.

3. That the stomach-affection consists in an increased action and secretion, with vitiating of the gastric fluid, and, probably, on too active a state of the lacteal absorbents.

4. That the cure of the disease is accomplished by regimen, and medicines preventing the formation of sugar, and diminishing the increased action of the stomach.

5. That confinement, an entire abstinence from every species of vegetable matter, a diet solely of animal food, with emetics, hepatised ammonia, and narcotics, comprehend the principal means to be employed.

6. That the success of the treatment in a great measure establishes the five preceding inferences.

7. That the saccharine matter of the disease is formed in the stomach, and chiefly from vegetable matter, as has been shewn by the immediate effects produced by the abstinence from vegetable matter, and the use of animal food solely.

8. That acescency is predominant in dia-

betic stomachs, which continues even some time after the entire abstinence from vegetable matter, and after the formation of sugar; and that while such acescency remains, the disposition to the disease may be supposed to continue.

9. That the saccharine matter may be removed in three days, and, by avoiding vegetable matter, will not again be reproduced; but we are not yet able to state accurately, when the disease, and the disposition to it, can be finally removed.

10. That there are two circumstances to be considered in this disease, which we may separate in the progress of the treatment. As it has been shewn, that though the formation of sugar was prevented, yet the increased action of the stomach remained, and maintained the defect of assimilation, which prevented nutrition. Hence two objects occur in the cure; for it is not yet determined, whether the preventing the formation of sugar, by an entire abstinence from vegetable matter, and the use of animal food, with fats, if properly persevered in, might not ultimately comprehend the other, namely,
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the removal of the morbid action of the stomach.

11. That the lungs and skin have no connection with the production of the disease.

12. That the quantity of urine is probably in proportion to the quantity of fluids taken in, and has but little dependence on absorption of fluids, from the surface of either skin or lungs.

13. That though the disease has been shewn to consist in an increased morbid action of the stomach, and probably too great a secretion, with vitiation of the gastric fluid; yet the peculiar or specific condition of either, as forming the disease, is acknowledged to lie in obscurity, and must remain so till the physiology of healthful digestion be properly explained and established.

14. That the first case had only been of about seven or eight months duration when the treatment commenced; but the second case had been upwards of three years continuance. The age of the one was thirty-four; of the other, fifty-seven;

circumstances which constituted material differences, though they seemed not to create corresponding difficulties in the treatment, so far as the direct removal of the complaint was concerned. They may however retard, in the one instance, the entire restoration of health.

15. That, in both cases, deviations occurred in the management, and were respectively followed by reproductions of the disease, and, though disadvantageous to the patients, have confirmed our views of its nature and treatment.

16. And, lastly, That from both cases we may warrant this general conclusion, that the diabetes mellitus is so far understood as to be successfully cured.

To these histories and observations, Dr Rollo has subjoined some remarks respecting the diabetes mellitus, which have been communicated to him by different correspondents, since the dispersion of his notes on the case of Captain Meredith. With regard to the causes of the disease, he observes, that from Dr Falconer's letter it appears, that one case was produced by excessive indulgence

dulgence in spruce-beer; that in one patient of Dr Cleghorn's, the disease seemed to have arisen from hard work when recovering from a fever, and in another from his being much addicted to the use of large quantities of sugar; and that the patient whose case is related by Dr Gerard, had been subject to pyrosis, and an excessive discharge under the form of perspiration, previous to the attack of diabetes.

With regard to the nature of the disease, Dr Rollo observes, that the appearances found by Dr Baillie, on dissection, an account of which will probably soon be published, may have been sequelæ of the disease. Mr Abernethy, he remarks, found the serum of the blood in diabetes to be turbid; and observed, that sugar taken into the stomach increased the saccharine matter in the urine.

With regard to the treatment, Dr Rollo informs us, that in one case of diabetes mellitus, Dr Duncan found fat meats serviceable; that Dr Falconer recommends mephitic alkaline water; that Dr Beddoes mentions a case where Bristol water cured

the disease; but that Dr Currie, who has seen several cases of the disease, never saw one of these cured in which the urine was sweet.

The case of James Walker, treated in the Royal Infirmary of Edinburgh, by Dr Hope, shews, according to Dr Rollo, the good effects of animal food. The treatment in this manner was begun on the 29th of December, when the daily quantity of clear urine of a sweet taste amounted to thirteen pounds. On the 31st of the month, two days only after the commencement of this treatment, the quantity of urine was reduced to five pounds, and it had acquired a strong urinous smell. The two cases treated at Glasgow, by Dr Cleghorn, shew also the good effects of a diet consisting entirely of animal food; and prove also the influence of commotion in the bowels on the quantity of urine. But the most striking case, Dr Rollo observes, is that related by Dr Gerard of Liverpool, from which it appears, that in diabetes there is no absorption of fluids by the skin, and that animal food alone, if duly persevered in, may cure the disease,

disease, though such perseverance be only of a very limited duration.

Dr Rollo concludes his remarks on diabetes, by observing, that hepatifed ammonia appeared to him to be a very powerful medicine. But it must, he tells us, be prepared according to Mr Cruickshanks's method. The ammonia must be pure, and completely saturated with the hepatic gas. To produce its narcotic effects, full and sudden doses of it must be given; but these require judgement, and an acquaintance with the exhibition of the medicine.

It should not be mixed up in draughts, or in any other form, as it is readily decomposed; but it should be dropt from the phial, at the time of using it, into a proper vehicle, and taken immediately. Distilled water is, he thinks, the best vehicle.