Original Communications.

DIABETES TREATED BY SACCHARINE FOOD.

By GEORGE CORFE, M.D.

In the postscript to a paper lately read before the Bath and Bristol Branch on Diabetes, by Dr. W. Budd, the following judicious remark is made by that gentleman:—"There are few maxims in philosophy which are entitled to more respect, than that which inculcates caution in drawing deductions from single instances." In the spirit of that suggestion I beg leave to communicate the following particulars to the profession.

When I perused the details of the case which forms the subject of Dr. Budd's paper, I felt satisfied that the views inculcated were based on a safe principle, and that they were not "meteoric," although they came upon Dr. T. Williams "with convulsive and startling effect," which seems to have been communicated to his two diabetic patients, on whom Dr. Williams made a short trial of the saccharine treatment.

The following case was under my care at the period when Dr. Budd's remarks were published, Nov. 14th, 1857.

A tradesman in an adjoining county, aged 40, married, with seven children, tall, dark and spare, with black eyes and hair, and a tawny skin, evincing the true phosphatic diathesis, complained, October 1st, 1857, of weakness in knees, dryness of the throat and tongue, which was covered with a dirty fur, and so clammy that he was unable to eat solids; also of thirst, with emaciation, and frequent desire to pass urine. These symptoms had been creeping on him five or six weeks, prior to which period he had enjoyed excellent health. On desiring him to pass some urine, it was ascertained to be loaded with sugar, was amber-coloured, and of specific gravity 1042. There was unequivocal evidence of solidification of the apex of the upper lobe of the right lung. The patient had lost one brother, at the age of 29, with tuberculosis, and a sister, aged 40, with diabetes. His father died at 75, and his mother is still living, aged 85. The patient is the youngest of eight children.

He was immediately put under the following treatment:—

R. Creasoti $\mathfrak{m}\mathfrak{i}\mathfrak{v}$; mist. acac. 3 ss; aquæ carui 3i. M. Fiat haustus ter in die sumendus.

In addition to the above, he was directed to take a tablespoonful of cod-liver oil in milk after each meal. The usual diabetic diet, consisting of underdone meat, greens, eggs, milk, and bran biscuits, was prescribed, together with a total abstinence from saccharine, farinaceous, and amylaceous substances.

The urine voided averaged five pints in twenty-four hours. I was enabled to test the urine of six of the children, and found them all free from sugar except in one, a boy, 5½ years old, where the quantity was small, but marked by the usual tests.

From this period to December 1st (two months) the patient became more or less dispirited at the manifest downward course the disease was assuming. The urine gradually increased in quantity, and the specific gravity ranged from 46 to 52, his vigour was fast waning, the disease assumed a most formidable character and threatened to cut short his life in a few weeks. By the aid of polarized light Professor Heisch ascertained that the urine at this period contained 100.28 grains of sugar in 1000 parts, or less than two ounces in each pint. I observed, that in the most successful cases related by Dr. Bouchardat, his treatment allowed grape sugar, in the form of sweet fruits, although he forbade cane sugar, as well as starch and farina. (*Un Mémoire sur le Diabète sucré ou Glucosurie*, par Dr. A. Bouchardat. Paris: 1846.)

This physiologist asserts that the pancreatic juice contains the principle analogous to diastase, by which it converts starchy substances into dextrine and glucose, and thereby allows their absorption into the animal economy. He insists on the following points deduced from a series of experiments:—

1st. That substances containing proteine, gelatine, etc., are digested in the stomach more especially; that these substances, when dissolved, are immediately absorbed by this organ, and from thence passed into the blood. Dr. Bouchardat designates this process the *stomachic digestion*.

2nd. Fatty substances, softened by animal heat, rendered milky or emulsified (*émulsionnées*) through contact with bile, are absorbed in the intestines by the lacteals: this he terms the *intestinal digestion*.

3rd. The solution of fecula is obtained by a principle which

acts on it as diastase, and which is chiefly secreted by the pancreas; this solution first begins in the stomach, but is specially accomplished in the intestines; and the liquid which is the produce of this solution is absorbed, not by the lactiferous tubes, but partly by the vessels of the stomach, and in a much greater degree by the minute intestinal branches of the rudimentary portal vein. This Dr. Bouchardat designates *mixed digestion*. He is the first physician who proposed the moderate use of saccharine substances in diabetes; as apples, pears, cherries, gooseberries, raspberries, strawberries, raisins, and ananas. He assures us, that if we withhold amylaceous and farinaceous food from patients suffering from glucosuria, and substitute bread made from gluten, according to his formula (p. 311) the glucose formation subsides. (*Supplément à l'Annuaire de Thérapeutique pour 1846*, par le Dr. Bouchardat.)

These views, which were first put forth in 1841, are not quite in accordance with M. Bernard's recent discoveries on the property of the liver to convert fat into sugar, and the power of forming it as readily from fat as from starch-granules; such a view, as Dr. Budd remarks, takes from the present orthodox treatment of diabetes by nitrogenous substances, the plea of resting upon a scientific basis. In our present state of ignorance of the specific action of various agents employed in the assimilation of food, such as saliva, bile, pancreatic and intestinal fluids, we must be content to draw our inferences, in the treatment of the disease, from well authenticated facts in practice, rather than allow our minds to be warped by theoretic views deduced from our imperfect knowledge of the physiology of organs engaged in the digestive process.

To return, however, to the details of the above case. The weight of the patient at this stage was only 114 pounds, and as the symptoms were assuming every day a more dismal character, I resolved on changing the whole line of treatment as follows. He was now directed to take, zinci sulph. gr. ij; cinchoninæ sulph. gr. i; extracti lupuli, gr. ij, in form of pill, with each meal, in lieu of the creasote mixture, and to continue the cod oil. He was desired to use the following articles of diet: fat mutton and beef, and the same meats in form of soups; fresh white fish, boiled; oysters, poultry, game, tripe, and any one of the following vegetables daily, parsnips, turnips, carrots, spinach, greens, brocoli, endive, lettuce, celery, and to abstain from bread and all farinaceous food and potatoes. His drink was directed to consist of a cup of coffee, with half an ounce of candy sugar, in the morning; a table spoonful of rum in a glass of water, with the same quantity of sugar candy and five grains of carbonate of ammonia, at luncheon, and two glasses of claret at dinner. In the evening he was desired to take one ounce of honey on bread, in lieu of butter, and to sup on boiled milk, with an egg, etc.

After having continued this line of treatment from Dec. 17th to the 30th, the following results were obtained: the urine increased from four to eight pints in twenty-four hours, the specific gravity was 1050, it gave proof of containing, by polarised light, 112 grains in 1000 pints, or rather more than two ounces in each pint, and yet he had not lost in weight more than one pound. It should be here remarked, that he frankly acknowledged that he had not followed the directions of treatment in so strict a manner as he could have wished; for although he felt stronger and more lively in mind, he had been to several festive parties, and had eaten freely of potatoes and bread on several occasions, and had drank beer or bottled stout. But after being reprimanded severely for his indiscretion, he faithfully adhered to the prescribed form of dietary. The pills were now increased one grain of each of the sulphates in strength, and on the 17th January the urine had a specific gravity of 1038, containing 83 grains in 1000 of sugar, that is, a diminution of more than a quarter of an ounce in each pint of fluid, and for eight days prior to this report the quantity never exceeded four pints in twenty-four hours. I shall here add the testimony of the patient.

"Jan. 16, 1858.

"MY DEAR SIR,—With this you will receive my report. I have not fully complied in abstaining from bread, but the portion I have taken has been but small; when I have eaten it, I have previously toasted it. My strength I now find daily increasing. At first, the pills made me feel very poorly, but they check thirst, reduce the quantity of urine, etc. I have just been in the scales, and find I weigh 119 pounds.

"P.S. I took some Scotch oatmeal one or two nights. Is that wrong?"

It was obvious from such a report and the analysis, that the disease was not aggravated by the present treatment, and I therefore begged of him to abstain wholly from all farinaceous

food, including bread, until the next report, which has been forwarded to me this day, January 29, and which I transcribe.

"MY DEAR SIR,—Enclosed you will receive my report, which I think will speak for itself. I can now reverse my tale, and say, 'the bones which were once seen are now hidden from sight;' I am, of course, with this increase of flesh much stronger. I feel some little difficulty in walking upstairs, but not to the extent I formerly did by any means; I get a free perspiration, my appetite is good, and the cramps are quite gone. When I meet any one whom I have not seen for eight or nine days, they want to know if my face is not swelled; my clothes, which hung about me as though not belonging to me, I am obliged to alter in the buttons. I have found a good substitute for bread in parsnips. The fat ham had the desired effect on my bowels; of course, it checked my progress in weight, which has gradually risen thus:—

	Weight. lbs.	Urine. Pints.	Fluids taken. Pints.
1858. Jan. 15	120	5	5
" 18	121	4½	4½
" 21	124	3	3
" 25	129½	2½	3
" 28	132	3½	3½

"I can now attend to business comfortably; I can walk four miles an hour well. Perspired freely last night in bed, and exertion to-day induces a moisture also."

The report gives a daily account of the quantity of fluid taken and the amount of urine voided; they are here set down by way of contrast with the increase of weight.

The analysis of the urine this day confirms the foregoing remarks on the positive improvement in health. Instead of presenting its usual amber-coloured clear character, it is now muddy, and deposits some lithates. The muddiness is removed by heat. It is acid, and of specific gravity 1032, and is found to contain only twenty grains per 1000 of sugar; indeed, the indications now are so faint, Mr. Heisch observes, that it is not easy to define the precise quantity, as before, by means of polarised light.

I refrain from any comment on the above facts, which are quite unprecedented in the treatment of this intractable disease. Upon a review of upwards of one hundred cases of diabetes, it has never fallen to my lot to witness such a marked, rapid, and satisfactory improvement, by any line of treatment, as that now under consideration.

59, Berners Street, Middlesex Hospital, January 30th, 1858.

ON THE MORTALITY OF INFANTS IN FOUNDLING INSTITUTIONS, AND GENERALLY, AS INFLUENCED BY THE ABSENCE OF BREAST-MILK.

By C. H. F. ROUTH, M.D., Physician to the Samaritan Free Hospital for Women and Children; late Physician to the St. Pancras Royal Dispensary; etc.

PART II.

ON THE ADVANTAGES AND DANGERS OF WET-NURSING.

In a former paper which I had the honour of reading before the Medical Society, I spoke of the causes of mortality in foundling hospitals, as opposed to those which obtain in a general population, and dwelt in particular on one—want of breast-milk. My remarks tended to show that the evil influence of this cause had been greatly exaggerated; the mortality being, in fact, rather due to other contingencies which I then enumerated. I purpose now to consider the mortality of children as influenced by the diet selected, and to treat it especially under three heads.

- I. As influenced by the kind of breast-milk supplied.
- II. As influenced by the quality of any other animal's milk or compound given as a substitute.
- III. As influenced by the vegetable food which is usually employed.

On the last occasion I had to allude to the little advantage usually derived from hospital experience to the profession. I have now to allude to one of the honourable exceptions, viz., the first and second Reports of the Clinical Hospital for the Diseases of Children, in Stevenson Square, Manchester, prepared by Drs. Merei and Whitehead, and kindly sent to me by the former gentleman. These are most able and philosophical documents, not a fact being asserted which is not substantiated

by accurate statistical researches—documents like those which might be yearly produced by every hospital, and confer endless good to thousands. I shall first, in a short summary, quote a few of those results which bear upon this portion of my subject.

1. In regard to age, seizures, and deaths, taking the two years together.

	Seized.	Died.	Per cent.
Under 6 months	256	42	16.1
6 months and under 12	271	25	9.2
1 to 2 years	450	57	12.6
2 to 3 years	285	13	4.5
3 to 4 years	655	14	2.1
Total	1917	151	7.8

From this it will be seen that mortality is greatest under six months, and that under two years the preponderance of deaths is very great.

2. From the first report there were treated—

Developmental disorders, viz.:	Cases.
Feeble and retarded development, including complication, with anæmia and slight degrees of rickets	59
Rachitis of decided forms	28
Constitutional debility, including slight complications, with anæmia, but no disorders of development	27
Diseases of the abdominal organs:—	
Disordered digestion (loss of appetite, sickness, costiveness, diarrhoea)	76
Diarrhoea (mucous, serous, bilious)	85
Dysentery	18
Sporadic cholera	2
Enteritis	2
Rheumatism of stomach	1
Habitual constipation (severe)	3
Mesenteric disease	4
Chronic enlargement of liver	4
Hepatitis	1
Making a total of cases of disease of development and of abdominal organs in 530 patients	310
Or per cent.	58.4
Deaths	34

Taking, however, the 34 deaths from various causes, 10 happened to children with bad development; diarrhoea was present, either as principal ailment or as a complication, in 20, i. e., 60 per cent. In 24 of the 34 fatal cases, i. e., 70 per cent., there was morbid localisation in the abdominal cavity.

From the second year's report, of 1548 patients, there were affected with—

Digestive disorders	249
Atrophy	116
Developmental debility	256
Rickets	74
Total	695
Or per cent.	44.9

The greater number were dismissed cured: 93, however, died.

Of 117 deaths from all causes, 93 deaths, or 79 per cent., were from diseases arising from defective or faulty nutrition, which was partly the direct and partly the co-operative cause of the fatal issue.

Of these 93, 11 had a full supply of breast-milk up to nine months; but seven of the respective mothers had been delicate or sick, and only four healthy: 19 children had had a more or less sufficient supply of breast-milk, and bread food along with it, and from earliest infancy; 59 were brought up from birth or earliest infancy on bread food, in addition to scanty breast-milk; and 4 had no breast at all. Consequently, only a very small proportion of those who died (a little above 4 per cent.) had enjoyed a fully favourable alimentation.

The breast-milk of feeble or sickly women, and scantily secreted, judged according to its effects upon the respective nurselings and its chemical examination, is, in the great majority of cases, decidedly of unwholesome quality.

Altogether, about 60 per cent. of the children treated in this institution were brought up in an unfavourable manner.

From these statements will at once be perceived the extensive operation of two noxious agents—insufficient and unwholesome breast-milk, and early bread-feeding.