

and the mass was simply a fibrous pus-secreting capsule, about six inches long by four inches wide, filled with pus, communicating with the bladder by a thickened ureter. The pus contained tubercle bacilli, bacilli coli communis, and streptococci. The left kidney presented evidences of subacute parenchymatous nephritis, but not of tuberculosis. The bladder wall was thickened, the mucous membrane eroded, at several points showing ulcers with raised and overhanging edges. The author considers that the case shows (1) that renal tuberculosis may be idiopathic; (2) that it may be confined to the kidney; (3) that the golden opportunity for cure is lost in the failure to recognise the disease in its early stages before the bladder is involved, and when a nephrectomy would promise the best results.

II.—DIABETES.

13. Pathology and treatment of diabetes.

Pavy, in a Supplementary Croonian Lecture (*British Medical Journal*, II., 1897, p. 1494), reiterates and expands his views on points in connection with the pathology and treatment of diabetes. The questions first presented for solution are: How does carbohydrate normally become disposed of in the system? What is it that gives rise to its unnatural escape in the urine?

It has hitherto been believed that the carbohydrates undergo oxidation in a direct manner in the system; that the liver was endowed with a glycogenic function, which provided a supply of sugar to be conveyed to the tissues for oxidation when carbohydrate matter is lacking in the food. The systemic blood conveying the sugar must pass through the kidneys in part, and it was believed that the capacity for tolerating a certain amount of sugar in the blood existed, but if the sugar rose above a certain proportion it was excreted in the urine. No such toleration can be admitted to exist; if sugar is present in the blood it will be eliminated by the kidneys. For freedom from diabetes, carbohydrate matter must be prevented from reaching the general circulation as sugar. Conversion of the carbohydrate matter must take place between the alimentary canal and the point where the portal blood-stream obtains entrance into the general circulation. Most physiologists believe that the alimentary sugar is converted by the liver into glycogen. The author cannot agree with this view. He considers that the first influence exerted on the ingested carbohydrate is by the ferments of the alimentary canal, which hydrolise and convert the insoluble into a soluble form, and thus prepare for absorption. On being absorbed, the carbohydrate is brought within the sphere of influence of living matter. In the

villi, which constitute the seat of absorption, there are active cells with which the absorbed carbohydrate falls into close relation, and subsequently it permeates the cellular structure of the liver, which thus, as it were, stands in a position to exert a supplementary action, and to complete, before the general circulation is reached, whatever may have escaped completion in the villi. If the disposal of carbohydrate by the exercise of protoplasmic power should not be properly effected—if, in other words, the circumstances be such as lead to the faulty accomplishment of protoplasmic action; or, if even with a natural state existing, as far as the system is concerned, it should happen that the system is unduly taxed by the ingestion of an exceptionally large amount of carbohydrate in a readily absorbable form, especially at a period of fasting, sugar will be permitted to reach the general circulation, and in proportion as this occurs, sugar will be found in the urine. Carbohydrate which escapes being transformed into fat or synthesised into proteid by the villi of the intestine is carried to the liver, there to be transformed into glycogen, and stored up to be gradually transformed into fat or synthesised into proteid. That it should be retransformed into sugar, to be discharged into the general circulation and conveyed, as such, to the tissues for oxidation is, Pavy considers, incompatible with the condition of the urine in health. The conversion of carbohydrate into fat is illustrated in the rabbit, after a full meal of oats, when the lacteals can be seen to be engorged with milky chyle, the fat in the oats being quite insufficient to account for the phenomena, the carbohydrate, according to the author, having been converted into fat by the villi of the intestine. The villi of the intestine are thus of great importance in relation to the assimilation of food. Within the villi an extensive building-up of proteid goes on, through the instrumentality of protoplasmic action, and a synthesis of carbohydrate into proteid matter, and the proteid-carbohydrate matter is then placed in a position to be susceptible of transport through the body. In the graver form of human diabetes, as well as in experimental pancreatic and phloridzin diabetes, sugar is drawn from a source other than the food, from the locked-up store of carbohydrate which exists, ready to be set free when the requisite agent for effecting the purpose is present. After every meal it has been shown that there is an increased amount of sugar in the portal vein. If no further provision for conversion of this sugar existed, glycosuria must be produced. The liver, however, intervenes, and a supplementary action checks the flow of sugar into the general circulation. If the supplementary action is incomplete, the blood and urine are

influenced, and glycosuria is produced. The entry of sugar into the general circulation constitutes the unnatural and not the natural occurrence.

In diabetes sugar gets into the urine from the food by a diminished assimilative power on the part of the individual. This is well exemplified in some individuals in whom any excess of carbohydrate in the food will result in glycosuria, while if the carbohydrate be kept within a certain limit the urine may remain sugar-free. The capacity for assimilating carbohydrate varies notably in different individuals, but each individual has a more or less fixed capacity. In restricting the diet in a case of diabetes the object is to bring the carbohydrate within the limit of the individual's power of assimilation. The author warns medical men of the need of care in selecting the artificial foods prescribed for diabetes as so many are valueless, and in their use only lead to disappointment. Much reliable information on the suitability of the dietary prescribed can be got from the careful examination both of the day and night urine. The removal of sugar from the urine by reduction of the carbohydrate in the food does not mean the cure of the disease. What is wanted to cure is restoration of the assimilative power; if this were restored the patient would be able to take ordinary diet without its leading to the appearance of sugar in the urine. It is not the mere waste occurring in the discharge of sugar which constitutes the great source of trouble in diabetes; it is the state of the system. The blood containing sugar has circulated through the system, and its constitution being altered interferes with the nutritive and other processes of life. When the elimination of sugar in the urine is not under control, showing the presence of a large quantity in the blood, the danger to be feared is coma. When, however, the excretion is under control coma need not be feared. To control the excretion by means of the diet cannot be otherwise than right. Food is the great factor in the treatment of diabetes. By an intelligent regulation of the diet the excretion of sugar and the progressive loss of weight may be controlled in the milder forms of diabetes. These forms of diabetes are more or less of alimentary type. In the graver forms, where regulation of diet does not control the carbohydrate excretion, the sugar is derived from the tissues as well as from the food. The glucoside constitution of the nitrogenous principles of the body supplies an intelligible source for sugar, all that is wanted being a pathologically-developed ferment possessing the power of breaking them up and liberating their sugar molecule.

14. Treatment of diabetes.

Murdock (*Medical Record*, New York, Oct., 1897) advocates the treatment of diabetes by limited diet. The beneficial effects of very limited diet were noticeable in the siege of Paris when, according to Bouchardat, sugar entirely disappeared from the urine of diabetics under the restricted siege diet when, up to the time of the siege, the glycosuria had been persistent. Murdock records the case of a lad who was passing six pints of urine daily loaded with sugar and with a specific gravity of 1040. During three months of ordinary diabetic treatment the patient lost ground. The diet was then greatly curtailed in quantity, and rapid improvement followed. On any increase of diet relapse took place. A still greater reduction in the quantity of food was then made, the patient being always kept ravenously hungry. Improvement was steady and marked. At first under the treatment there was slight loss of weight, but the loss was soon regained, and then followed marked general improvement. The appetite became keen, but the patient lost the insatiable craving for food, and the thirst disappeared. The amount of urine fell to 40 oz. daily, with a specific gravity of 1020. Murdock's observations are supported by Hirschfeld (*Medical News*, New York, January, 1898), who calls attention to the relation between obesity and diabetes. Very stout people will often show glycosuria after a meal containing a fairly large quantity of carbohydrate. If these fleshy diabetics be treated for obesity the sugar will often disappear from the urine without any strict diabetic diet. The author throws out the suggestion that the diabetes which so often follows traumatic neurosis may result from excessive diet, combined with lack of exercise.

15. Treatment of diabetic coma with saline infusions.

Oliver (*Lancet*, Aug. 13, 1898) quotes a case of diabetic coma successfully treated with saline infusions. The patient, a man 30 years of age, had suffered from diabetes for eight months. Coma supervened somewhat suddenly. Two and a half pints of a saline solution was transfused slowly into the median basilic vein. Consciousness gradually returned. For three days the urinary secretion remained scanty, but thereafter it rapidly increased. Three weeks afterwards there had been no recurrence of the coma.

Lépine (*Lyon Medical*, No. 31, 1898) records another case where the treatment was followed by rapid amelioration of the symptoms.

[The rationale and technique of the treatment were fully dis-

cussed in "The Year-Book, 1897," p. 114. The injections, preferably into the cellular tissues, have, in the hands of numerous observers, proved of great value in the immediate treatment of diabetic coma.]

16. Permanganate of potash in diabetes.

Stark (*Medical Record*, New York, December, 1897), in discussing the treatment of diabetes, gives his experience of the use of permanganate of potash as recommended by Monin, of Paris. Fifty cases of diabetes were under observation. The patients were kept on a uniform moderately anti-diabetic diet. Stark finds that, with the exception of a very few cases, no benefit results from the exhibition of the drug. In most cases a mild drug gastritis supervened, rendering the further exhibition of the drug undesirable. The favourable results observed by Monin were never obtained. The author enters a protest against the indiscriminate resort to drugs combined with a sudden stoppage of all carbohydrate foods. In diabetes with rapid emaciation, the sudden stoppage of all carbohydrates may result in disaster. Most good will result from regulation of the carbohydrate in the diet. The best guide to the amount of carbohydrate permissible is to be found in a comparison of the body weight and the sugar elimination. If the body weight increases or remains stationary while the glycosuria remains fixed or nearly so, the amylaceous food is doing no harm; conversely, if the body weight diminishes while the glycosuria increases, carbohydrates are severely contra-indicated.

17. Methylen blue in diabetes.

Some attention has been given to the use of methylen blue during 1898.

Estay (*Bulletin Général de Thérapeutique*, vol. cxxxv., 1898) gives his experience of the drug in several cases of diabetes. The first patient, a man of fifty-three, suffered from glycosuria and albuminuria. Half a gramme ($7\frac{1}{2}$ grains) of methylen blue was prescribed, and under the treatment the albumin diminished and the sugar, which was present to the amount of 6 per cent., lessened, and after eight weeks' treatment had almost entirely disappeared; there was no thirst, and the urine was normal in amount. The second patient, an officer, had suffered since 1872 from excessive thirst, glycosuria, etc. At the end of 1882, in spite of a yearly visit to Vichy and a strict diet, the sugar varied between 28 and 30 grm. per litre. When seen, he suffered from diabetic dystrophia, which entirely prevented him from using his hands, and caused great suffering. Methylen blue was ordered. Under the treatment the sugar diminished, and by the end of five

weeks was a negligible quantity, and the general condition had improved. The author claims for methylen blue an anti-nervine, analgesic and antiglycosuric action.

Pierre Marie and Le Goff (*Gazette Hebdomadaire*, No. 38, 1897) recount the case of a man who had suffered from diabetes for eight years. The urine contained 38 to 40 grm. of sugar per litre. Methylen blue was given by the mouth in doses of 7 to 15 gr. The amount of sugar gradually diminished, and at the end of six weeks had entirely disappeared, and there was marked improvement in the general condition.

18. Jambul in diabetes.

Wilcox (*Medical Record*, New York, 1898, p. 13) points out that jambul has been in use for twelve centuries in India. Outside India it has been but little used, and, when used, administered in insufficient quantities. The disadvantage of the drug given in considerable quantities is the liability to produce constipation. A case of diabetes is quoted where sugar, present to the amount of $5\frac{1}{4}$ per cent., under the use of the drug diminished, and by the end of five months disappeared. The diet during this time was moderately regulated. During the course of the treatment the patient passed through an attack of broncho-pneumonia without any evil results. Experiment has shown that jambul has a distinct inhibitory action on the diastasic conversion of starch, and on the excretion of sugar in experimental diabetes in dogs.

The drug can be administered in 5-gr. to 10-gr. doses thrice daily, and gradually increased, if necessary. Britto (*Indian Medical Record*, 1892) advises as much as a drachm of the fluid extract or powder three times a day; more is liable to give rise to nausea and depression.

[There is still considerable difference of opinion as regards the value of jambul in diabetes. Wilcox thinks that the drug has not had a fair trial, and has not been given in sufficient doses; but observations have been published in Great Britain where $1\frac{1}{2}$ oz. of the extract was given daily without any appreciable diminution in the sugar excretion. In Minkowski's observations the drug was found useless in pancreatic diabetes induced experimentally.]

19. Pancreatic extract in diabetes.

Deguy (*Lyon Médical*, lxxxvi., 1897) notes a case in which the administration of pancreatic extract caused a notable rise in the excretion of sugar, while on ordinary diabetic treatment the excretion of sugar could be controlled. After a period the pancreatic extract was again tried, but its administration was always followed by a marked increase in the glucose excretion.

[It is a little difficult to accept Deguy's results, as other observers have obtained no results by the administration of pancreatic extract by the mouth, the ferment being apparently destroyed by the hydrochloric acid of the gastric secretion. Good results have been obtained, however, by the hypodermic use of the extract ("Year-Book, 1897," p. 114).]

20. Glycosuria as the result of the administration of thyroidea.

Some years ago Strauss found that the administration of thyroidea had but a slight influence in the production of glycosuria. Bettman, however, came to an opposite conclusion, finding alimentary glycosuria in a large percentage of cases after the administration of thyroidea, and instanced observations upon himself. Mawin (*Berlin. klin. Wochenschr.*, 1897, No. 52) has investigated the question again, working with twenty-five healthy individuals. He finds that the occurrence of alimentary glycosuria under the administration of large and rapidly increasing doses of thyroidea is a relatively rare occurrence. It cannot therefore be considered that the presence of glycosuria is evidence of the intensity of the action of thyroidea, as might have been supposed on theoretical grounds, had glycosuria been a frequent symptom. Other injurious influences may produce glycosuria in individuals in whom thyroidea does not. Thus glycosuria was present in a case of pneumonia two days after the crisis, while the administration of thyroidea on the sixth day produced no glycosuria. Even in patients whose disease has a natural tendency to show glycosuria as a symptom, a negative result was got with thyroidea, as, for example, in obesity and Basedow's disease. The author therefore concludes that the symptom is not common, and that it only occurs where there is a natural disposition to the production of glycosuria.

21. Necrosis of glandular epithelium in diabetes.

Ludwig (*Centr. für innere Med.*, 1897, No. 43) reports a case where necrosis was found in the glandular epithelium of the intestine. The patient was a woman, thirty-six years of age, whose family history was bad; the father having died of cirrhosis of the liver, one brother of diabetes, another of pulmonary disorder, and a sister of erysipelas. She herself had repeatedly suffered from attacks of facial erysipelas. For a period of five weeks there had been noticed increased thirst, increased hunger, and increased elimination of urine. There was rapid emaciation, loss of strength, languor, headache, and vertigo. The knee-jerks were preserved. There were physical signs of consolidation at the left apex, with some scanty sputum but no tubercle

bacilli. The urine contained albumin, sugar, and acetone. The patient became gradually worse and died. *Post mortem* the epithelium of the upper portion of the ileum was found discoloured in small areas, readily detachable, and in some places actually wanting. Further down the intestine there were transverse losses of substance, with distinct limitation and a hæmorrhagic necrotic base. A number of areas with a similar appearance were also present in the large intestine. Microscopically the lesions were seen to be in the cylindrical epithelium of the tubular glands. There was deep-seated cellular and purulent inflammation of the glandular epithelium, together with necrosis. It was concluded that the lesion was the result of toxic influences related to the primary disorder.

22. The blood tests in diabetes with aniline colours.

Bremer (*Medical Journal*, New York, Dec., 1897) gives an account of a method for the diagnosis of diabetes by examination of the blood. Briefly stated, the method is as under:—

- (1) Prepare thick films of blood on cover slip or slide.
- (2) Fix by exposure to heat for ten minutes, the temperature in the hot chamber being raised to 135° C.
- (3) Place the film in 1 per cent. aqueous solution of Congo red or methylen blue for two to five minutes.

In the case of diabetic blood the film does not take on the stain. Check observations should be made with healthy blood, when the film will be found to stain deeply.

If Biebrich scarlet be used as the stain, the films from healthy blood will be found unstained, while diabetic films have taken the stain deeply.

23. Aniline colour test for the urine in diabetes.

Bremner (*Medical Journal*, New York, 1897) discusses the chemical behaviour of eosin and gentian violet toward normal and diabetic urines. In the *Centralblatt für innere Medicin*, No. 13, 1898, he returns to the question, and describes a simpler method of procedure. Two clean reagent glasses are taken, with 10 c.cm. normal and 10 c.cm. diabetic urine. To each a small quantity (0.5 mgr. or less) of finely powdered gentian violet is added, so that the colouring matter lies in the central part of the surface of the fluid. In non-diabetic urine the powder floats on the surface, and forms a light violet cloud, which disappears on gentle shaking, to form an insoluble dust-like precipitate, which falls to the foot of the glass. The urine remains unstained, or, at most, but faintly tinged with colour. The behaviour of diabetic urine is quite different. The upper part of the fluid becomes rapidly

coloured, more or less deeply, blue or blue violet. On shaking, the colour does not disappear, but diffuses through the fluid. The more grave the glycosuria, the more intense and rapid the reaction. When this colour reaction is present in a urine of high specific gravity, it is a certain indication of glycosuria.

[The reaction does not seem to offer many advantages over the ordinary sugar tests, save that with practice the test can be rapidly applied. The possibility of fallacy must be remembered, for an abnormal solubility of colouring matter may be present in urine which contains an increased proportion of the products of metabolism.]

24. Levulosuria.

Sekeyan (*Thèse de la Faculté de Paris*, 1897-8), writing on the different forms of diabetes, describes a form of levulosuria attended by marked general symptoms. There is mental depression and tendency to suicide, insomnia, and marked general weakness. The urine contains a levorotatory sugar, and reduces copper in alkaline solutions. The condition is not fatal, and readily yields to treatment, which consists in a diabetic diet, the administration of arsenic and alkalies, with suitable hydropathy.

III.—MISCELLANEOUS.

25. The genital phenomena of renal calculi.

Abrahams (*New York Medical Journal*, 1897, p. 349), writing on the genital phenomena of renal calculi, records several cases in which genital phenomena were the only indications of the presence of renal calculus and its most painful manifestation—colic. In the first case the patient, a male, was suddenly attacked with intense pain in the testicle, nausea and collapse. The testicle was intensely tender, and there was some swelling of the epididymis. The symptoms were entirely relieved some days afterwards by the passage of bloody urine, with the *débris* of a calculus. The second patient complained of pain and swelling of the testicle. Under treatment he made little progress till one day he was seized with a definite attack of renal colic with intense testicular pain. On passage of a calculus the pain and orchitis entirely disappeared. Two patients were women who complained of intense pain in the stomach, vomiting, and tenderness over the ovarian region. On examination in both cases the left ovary was enlarged and tender. In both the condition was considered acute oöphoritis. On the passage of a large quantity of bloody urine, containing broken calculi, the symptoms vanished and the ovarian swelling rapidly disappeared. The author accentuates the necessity of remembering the possibility of a renal condition as the cause of an acute

attack of pain and swelling in the ovary or testicle when attended by no history of sepsis or trauma. He records a similar case met with in a child, and advances the view that possibly some of the obscure cases of orchitis seen in children may be due to renal calculi, which are known to be common at that time of life.

26. Alkaptonuria.

This rare and peculiar condition first described by Bodeker in 1861 (*Ann. Chem. u. Pharm.*, 1861) has received lately some attention. Hirsch (*Berlin. klin. Wochenschr.*, No. 40, 1897) describes the case of a young woman, 17 years of age, who was admitted to the hospital for a feverish gastric catarrh. From this she recovered in two days. On the morning of admission the specimen of urine obtained was noticed to be of a dark brown colour. The colour appeared to be darker than in carboluria, and to be of a brownish, not a greenish, tinge. The patient had not been taking any drugs of the phenol group. The urine was dark in colour when passed, and the colour deepened on standing. There was a slight reduction of Fehling's solution. An acid was extracted from the urine which (1) in alkaline solution gave a dark brown colour, (2) reduced an ammoniacal silver solution in the cold, (3) reduced Fehling's solution in the presence of heat, (4) with very dilute iron chloride solution gave a blue colour. The substance was present in the urine for two days, and then disappeared.

Futcher (*New York Medical Journal*, January, 1898) gives a full *résumé* of the literature of the subject, and recounts a case which had come under his observation. The patient was a robust, healthy-looking man, 57 years of age. He had repeatedly made application to insurance companies for policies, but had always been rejected owing to the alleged presence of sugar in his urine. He consulted several specialists, who assured him that he was suffering from diabetes. He went to Carlsbad, where he was treated for the disease, though he had had none of the usual symptoms of diabetes, such as thirst, emaciation, large appetite, and polyuria. The urine showed a peculiar, deeply-pigmented, reddish-brown colour, and had a slightly aromatic odour. The specific gravity was 1023, the reaction acid. There was no albumin present. On the addition of a few drops of the urine to boiling Fehling's solution, the mixture immediately became of an inky-brownish colour, and on further boiling there was distinct copper reduction. The fermentation test and Bötger's test were negative, and no osazon was formed with phenyl-hydrazin. The urine was optically inactive; it deflected neither to right nor left. The addition of an alkali to the urine caused a marked deepening of the colour. On standing exposed to the air in a test-tube the