had previously determined to open the trachea, and the operation was immediately performed.

The boy being properly placed, I raised a fold of skin, and, dividing it, formed a longitudinal wound in front of the trachea, extending from the first ring to the upper part of the sternum. By thus lifting up the skin, I escaped wounding a large turgid vein, which lay in the subcutaneous tissue; and the extent of wound not only gave facility to the future steps of the operation, but allowed the blood to flow readily over the chest, instead of accumulating in front of the trachea. This organ was soon laid bare, and with but little hæmorrhage. The violent struggles and cries of the patient for a time frustrated the attempts to fix the windpipe; but when this was done and cautiously punctured by the side of my finger, I enlarged the opening upwards through three rings with Cooper's hernia knife, which for this purpose answered very well. An immediate rush of air from the chest inflated the cellular tissue around the wound, and over the neck and left side of the face. Some blood collected in the air tubes, and occasioned much distress to the little patient. He was immediately raised to the sitting posture, and I passed a large male elastic catheter into the chest, which not only secured the ingress and escape of air, but acted as a sound in searching for the foreign body, which I could not discover. The breathing now became calm and the boy quiet; the catheter was then removed, and the patient placed in a proper position in bed, where he remained constantly watched for twenty-four days. Nothing distressing occurred, and the wound gradually closed.

On the twenty-fourth day, he said he felt the plum-stone passing from the left side of his chest into the trachea. This was followed by a most violent convulsive cough, croupy breathing, hurried and obstructed circulation, and all the distress and alarm that would naturally affect a sensitive child under such circumstances. The free state of the stone, and the impending danger, urgently called for an artificial opening in the trachea, which I made; and through it, after the expulsion of some mucopurulent fluid streaked with blood, the plum-stone was forced out during a fit of coughing. At once the little sufferer was relieved, and nothing of moment occurred to prevent his recovery at the end of about three weeks.

This case corresponds in its symptoms, treatment, and results, with a few others which have been recently recorded; and, collectively, they afford strong evidence in favor of tracheotomy, as our best resource in those trying cases where imminent danger and intense suffering demand our best-directed efforts. Though the performance of this operation cannot yet be considered the rule of practice, it is more than probable that future experience will sanction it, and prove the correctness of those pathological views which have led to its adoption. Mr. Porter, in his remarks on "the abnormal anatomy of the larynx" (*vide* "Cyclopædia of Anatomy"), observes—"It is probably a new observation, at all events it is one of great pathological interest, that spasm of the glottis may be produced by the presence of a foreign body lodged within the bronchia." He cites two cases illustrative of this statement, and of the practical

value of tracheotomy as the surest and speediest means of relief, though the expulsion of the foreign body was delayed some weeks. About the same time, Mr. B. Travers published in the twenty-third volume of the "Medico-Chirurgical Transactions," a very interesting case, treated upon the same principles with success; and, in his concluding remarks, observes—"In section of the air tube, the escape of the foreign body appears to me to be a calculation secondary in importance to that of affording a prompt and effectual relief to the process of respiration. It is evident that the powers of life depend on this issue, and that these may be secured for a time by an artificial opening, although the source of irritation be still present."

CASES OF DIABETES.

By CHARLES F. FAVELL, M.D.,

Physician to the Sheffield General Infirmary, &c.

The following brief account of three cases of diabetes is curtailed from the much more extensive notes of my case-book. It appears to me that each possesses a peculiar interest—the first from the post-mortem examination which I succeeded in obtaining, the second from the effect of treatment, and the third from the mode of death.

CASE I.—William Mallander, aged twenty-eight, a sickle smith, was admitted into the Sheffield Infirmary under my care on April 19, 1839. He is a married man, and has two children. According to his own account he always enjoyed good health till the commencement of his present illness, and has been very sober in his habits. He is accustomed to work near a very hot fire, which has generally occasioned profuse perspiration, and, whilst perspiring freely, he has been in the habit of exposing himself to the cold outer air. About six months since he was seized with pain in the stomach and bowels, which continued for a long time and was accompanied with excessive thirst, so that, he says, he sometimes drank more than six gallons of cold water during the night. During this time he passed a very large quantity of urine in the twenty-four hours. At present he is much reduced in flesh and strength; the appetite voracious; says he is always hungry, but experiences pain and uneasiness at the stomach after taking food; great thirst; mouth dry and parched; tongue clean, but very red; taste impaired; skin dry and constricted; never perspires, but complains of burning of the palms of the hands and soles of the feet; for some weeks has passed from four to five gallons of urine in the twenty-four hours. Urine of a pale straw color, having a smell resembling new hay, and a taste like honey; specific gravity 1.040; on evaporation, it yields a large proportion of solid extract, which has the smell and taste of burnt sugar. Bowels open; motions natural; pulse 90, small, and feeble; says he has never had any pain or uneasiness in his back, but complains of a sense of numbness in the inferior extremities. He was put on an exclusively animal diet; was ordered to be cupped over the region of the kidneys; to have a bath, at the temperature of 100°, every night; and to take the following medicines:—

Infusion of quassia, eight ounces;
Tincture of opium, three drachms. Mix. To take one ounce three times a-day.

Dover's powder, eight grains;
Compound antimonial powder, two grains. Mix.
To be taken every night after the bath.

After pursuing this plan for three days, the quantity of urine was considerably diminished, so that he only passed seven quarts and nearly a pint in the twenty-four hours, and during the same time drank five quarts of fluid; he had had some profuse perspiration; in other respects as before; a quart of urine yielded two ounces and a half of solid extract.

On the 17th the following was the report:—From eleven, a.m., on the 25th, to the same hour on the 26th, he passed nine quarts of urine, which he partly attributed to his having taken some porridge on the evening of the 25th. From eleven o'clock, a.m., yesterday, till the same hour to-day, has passed seven quarts, the urine is of a paler color, and has lost a good deal of its sweet odor; had some perspiration for about half an hour this morning; craving for food diminished; less thirst; complains of a sense of weakness at the epigastrium, where there is also slight tenderness on pressure; tongue clean, but red; pulse 80, of better strength. A drachm of tincture of opium was added to the mixture, and he was to have diluted nitric acid drink.

At the end of another week the report states that he passed six quarts of urine during the twenty-four hours; perspires freely almost every night, although he has omitted the use of the bath; skin not so dry; urine deposits a white sediment after standing for some time, specific gravity 1·040; appetite more moderate; eats a pound of beef steak each day, but says he could not eat more; thirst less; medicine agrees very well. Another drachm of tincture of opium was added.

On the 9th of May he was passing five quarts of urine during the twenty-four hours. The transparency of the urine was much diminished, and it had the consistence of mucilage; for some time after being passed, a quantity of froth accumulated on the surface; it was unchanged by heat or nitric acid; specific gravity 1·042. Another drachm of the tincture of opium was added to the mixture.

The reports from the 9th to the 23rd vary very little, except that for one or two days he had an attack of diarrhoea, and subsequently suffered from a slight pleurisy. On the 23rd the quantity of urine had again risen up to six quarts in the twenty-four hours, but the specific gravity had fallen to 1·036. Another drachm of tincture of opium was added to the mixture, and he was ordered to take fifteen grains of Dover's powder every night.

On the 28th there was a return of the pleuritis; the pain in the side was considerable; the friction sounds distinct; the cough distressing; expectoration moderate; inspiratory murmur very feeble; the quantity of urine as before. He was bled from the arm, had a blister applied to the side, and continued his medicine. The blood was buffed, but not cupped, and the crassamentum easily broken down.

On the 30th he complained of severe pain in the left iliac region, increased on pressure; and the bowels were much relaxed. Eight leeches were applied over the seat of pain. Eight ounces of the serum of the blood drawn on the 28th yielded, on evaporation, two ounces and three quarters of solid chocolate colored

matter, which had a sour smell, resembling old dough.

On the following day he had lost the pain; the bowels only moved twice; motions natural; passed six quarts of urine, specific gravity 1·040. Another drachm of tincture of opium was added to the mixture, and on June 4th a drachm more was added.

June 6. He was perspiring freely, and passing five quarts of urine in the twenty-four hours, specific gravity 1·036.

On the 8th he was again seized with diarrhoea, but had no pain.

Infusion of quassia, six ounces and a half;
Tincture of opium, one ounce and a half. Mix.
To take one ounce three times a day.

On the 11th he had a return of severe pain in the bowels, unaccompanied by diarrhoea; there was no drowsiness during the day; slept well at night; and passed only three quarts of urine in the twenty-four hours, specific gravity 1·042. The pain and uneasiness in the bowels continuing, the mixture was omitted on the 13th, and he was ordered to take

Calomel, two grains;
Opium powder, half a grain. Every three hours.

He continued this for three days without any pytalism being produced, and the pain having then entirely subsided, the calomel and opium were discontinued, and he began to take quinine. He remained in the house till the 25th, passing rather more than four quarts of urine, specific gravity 1·038, and then, at his own desire, was made an out-patient. He continued at home (in the country, about six miles from Sheffield) till August 9th, when he was again admitted into the house. He was then passing between five and six quarts of urine in the twenty-four hours, specific gravity 1·040, and decided symptoms of phthisis had developed themselves; the emaciation was very great. He remained in the house till the end of the month, with very little variation in the symptoms, and then, at his own request, was again made an out-patient. He lived for about two months after leaving the infirmary; and, thirty-six hours after death, I had an opportunity examining his body.

Post-mortem Examination.

The emaciation was extreme. The whole of the adipose tissue was entirely absorbed.

Chest.—The pleuræ on each side were closely adherent. The lungs were tubercular throughout, and contained several large cavities. Heart externally pale, right side natural, left ventricle thicker than natural, and the mitral valve slightly indurated.

Abdomen.—Stomach much smaller than natural. The lining membrane greatly thickened, and of a dark color. Towards the pyloric extremity the vessels much congested. Several tubercles were observed on the peritoneal surface of the right lobe of the liver, but they did not penetrate its substance. Liver natural in size, color, and consistence. Gall bladder full. Mucous membrane of small intestines much congested, and in some places ulcerated. Mesenteric glands greatly enlarged. Spleen remarkably small. The right kidney larger than natural, but the left nearly three times its natural size, lobulated, of a darker color, and much firmer texture. Coats of the bladder much thickened, and the bladder considerably larger than natural. The head was not examined.

The recital of this case has occupied so much larger a space than I anticipated, that the others must necessarily be postponed till next week. In the meantime, it may not be unprofitable briefly to advert to three topics, which must necessarily present themselves to the contemplation of every one who attentively peruses the foregoing account.

1. *What was the Cause of the Diabetes?*—The pathology of this generally incurable affection is even yet very imperfectly understood. Some writers place the seat of lesion in the kidneys, others in the stomach, others in the chyle vessels, others in the bowels, others ascribe it to self-pollution; whilst M. Bouchardat attributes the origin of the disease to suppressed perspiration, the acids from which, he supposes, become associated with distaste in the digestive apparatus. It is not necessary to make any observations on these various theories. I prefer endeavoring to ascertain what was the *point du depart* in the preceding case, and we shall then see how far it supports or illustrates one or other of these different views. My patient was a married man with two children, and had heretofore enjoyed good health. He worked near a hot fire, and usually perspired profusely. We do not learn, from the history of the case, that there was any sudden suppression of the perspirable matter, although he was in the habit (as most workmen in this neighbourhood are) of passing out of his hot workshop into the open air whilst the perspiration was very profuse. We often see men who work at the furnaces go deliberately into the cold, outer air, whilst the perspiration is literally streaming from their bodies. That it is occasionally checked, by such exposure, there can be no doubt; but diabetes is by no means a common disease amongst this class of persons; on the contrary, it is of very rare occurrence. But, on examining the case, we find that his complaints commenced with *pain in the stomach and bowels*, accompanied by thirst. When he was admitted into the infirmary his mouth was parched, and the tongue red (some evidence of gastric irritation). During the course of the disease the gastro-enteritic mucous membrane was often the seat of irritation or inflammation, and after death the lining membrane of the stomach was found to be excessively thickened, whilst the entire viscus was considerably contracted, the intestinal mucous membrane being also greatly injected, and partially ulcerated. I confess that to me it appears to be in the highest degree probable that in this case the *point du depart* was a subacute gastro-enteritis, in consequence of which the assimilating powers of the stomach were impaired, sugar was formed, and afterwards absorbed, and, being carried into the general circulation, operated as a stimulant to the kidneys. These organs, I believe, in the course of time became hypertrophied, in consequence of constant overaction. These views, I need scarcely remark, are very similar to those entertained, in reference to the general cause of diabetes, by Dr. Barlow and some other writers.

2. *The Effect of Treatment.*—When Mallander was first admitted into the infirmary, he was passing between four and five gallons of urine, of specific gravity 1.040, in the twenty-four hours. A line of practice was immediately adopted, and steadily persevered in, during the time he remained in the house. During this period there were occasional variations in

the amount of the secretion, both with respect to quantity and specific gravity. At the time he was made an out-patient it had, for several days, amounted to four quarts and a pint, having a specific gravity of 1.038. Some degree of amendment had obviously been effected, but by no means sufficient to encourage any hope respecting the ultimate result. The warm baths appeared to have a good effect, since copious diaphoresis was speedily induced. Perhaps the Dover's powder and antimony contributed to this. Opium was not pushed to any considerable extent, as he never took more than fifteen grains a-day. The administration of opium in diabetes has been carried to a greater extent by Dr. Elliotson than by any other physician with whose writings I am acquainted. In one case he gave as much as *forty-five grains three times a-day*, but the quantity of urine remained steadily above the healthy standard (six pints per diem, it had been eight or ten), and the specific gravity ranged between 1.040 and 1.050. Dr. Warren, who may be regarded as the great advocate of the opium treatment, rarely gave it in larger doses than six grains twice a-day.

3. *The Post-mortem Appearances.*—Morbid anatomy has hitherto thrown but little light on the etiology of diabetes. Perhaps the foregoing account will not add much to the information we already possess, but it is nevertheless not devoid of interest. The complication of phthisis with diabetes has often been remarked. In the present case, the deposition of tubercular matter was very great, for not only were the lungs studded with tubercles, but they were also met within the peritoneal covering of the liver, and the mesenteric glands were very much enlarged, doubtless in consequence of tubercular disease. The kidneys were in a state of hypertrophy; a condition which Andral believes to be the most frequent morbid change met with in diabetes. The stomach and intestines, moreover, afforded the most decided evidence of having been the seat of long-continued disease. The changes observed in the bladder were unquestionably secondarily induced. Here, then, we perceive a lengthened chain of morbid changes. The question again presents itself, which should be regarded as the first link? My own mind is satisfied, and I leave the simple facts for the careful consideration of others.

Sheffield, August 24, 1843.

CASE OF RUPTURE OF THE LIGAMENT OF THE PATELLA.

By JONATHAN TOOGOOD, Esq.

The rupture of this ligament is an accident of such rare occurrence, that the following case, drawn up by the patient, may not be uninteresting to the Association. I have lately had an opportunity of examining the limb, which presents the following appearance. The ligament has been torn from its attachment to the tibia; the patella is drawn up, and become fixed in front of the thigh; the knee-joint is, therefore, quite uncovered; no bandage can be borne, as it is found materially to impede the motions of the limb:—

"Sir,—The accident to my knee, which happened