

shown that some more or less constant ratio exists between the sugar and urea. Dr. Sidney Ringer examined the urine of two cases of diabetes when fasting and after a meal; the estimations were made hourly, and the results of some of his analyses are represented in the curves on Diagram 1. He finds that by taking the mean of several successive hours the relation of urea to sugar is nearly constant, being as 1 : 2.2, and this holds good for his case in inanition periods and after a non-amylaceous meal.

(To be concluded.)

THREE CASES OF TREPHINING THE SKULL.

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CASE I.—Jas. K.—, aged twenty-three, a healthy, strong man, was admitted to the Manchester Royal Infirmary on May 18th, 1883. A quarter of an hour before admission he had been struck by a falling rope-block upon the forehead; he was knocked down but was not unconscious. On examination it was found there was a lacerated wound over the right side of the frontal bone, about one inch from the middle line and the same distance from the coronal suture. The edges of the wound were jagged and inverted, and at the bottom of it was felt a deeply depressed fracture occupying a space about the size of a sixpence. There were two other slight contused wounds which did not reach the bone. There were no symptoms of compression of any sort, and the man felt well and was loth to stay in hospital. Three hours after admission he was put under chloroform and a crucial incision made over the depression. Hair, blood-clot, and bone were found deeply driven in below the level of the surrounding skull. There was no possibility of elevating the fragments without trephining, so part of a circle three-quarters of an inch in diameter was removed below the depression and several fragments of bone taken away; these were compressing the brain, and some were lodged beneath the surrounding skull. While the trephine was being used a broad, flat, thin raspator was passed between the dura mater and skull, to protect the former from the trephine. The dura mater was not wounded, and there was no bleeding of importance. The brain pulsations were not very well marked, but on removing the depressed fragments the dura mater at once rose to its natural level. The operation was performed antiseptically (Lister), wire sutures and rubber drainage-tube being employed. The subsequent history was very simple: the temperature never rose above 99°, he had no pain or bad symptoms of any kind except a little jaundice on the 20th. On June 1st the wound had healed except at one point, and antiseptics were discontinued. On the 16th he was sent to the convalescent hospital. He was seen again in October and November, and was perfectly well and able to work as an engineer, but his friends had noticed that his temper was quicker than before the accident.

CASE 2.—Wm. B.—, aged five years, a healthy child, was knocked down in the street by an omnibus, and apparently kicked in the head by one of the horses, but the exact mode of infliction of the injury could not be found out. He was admitted on May 17th, shortly after the accident. It was then found that there was a compound fracture of the right parietal bone just above the temporal suture and nearly at its centre. The fracture was deeply depressed and of the nature of a punctured fracture, the depressed area being about three-quarters of an inch square. There was also a linear undepressed fracture exposed in a wound just on the left of the mid-frontal line. The direction of this second fracture was upwards and outwards. There were no symptoms of compression. An operation exactly similar to that in Case 1 was performed, the condition being curiously alike in each case: deep depression of the fragments, which were so firmly locked and driven beneath the surrounding bone that it was impossible to elevate them without trephining. Here, too, hair and clots of blood were matted in among the fragments and beneath the adjacent

bone. The dura mater was uninjured. The child vomited during the operation. Antiseptics (Lister) were employed throughout, and an ice-bag applied outside the dressings. On the morning after the operation the temperature rose to 102°, and remained so until evening, but there were no other bad symptoms. On the 19th the morning temperature was 100.6°, and the evening temperature 100.8°; on the 20th it was 99.4°; and the child had slight pain in the head. Pulse 120. He was dressed twice on the 18th, and again on the 19th and 20th, on which day a small patch of bare bone was found exposed. After this all went on well, the ice-bag was left off on the 28th, and on June 16th he was sent to a convalescent hospital. On Oct. 1st, 1883, he was seen. The wound was quite sound, pulsations perceptible plainly through the scar. His father noticed that he had occasional twitchings of the left leg during sleep, and that "if spoken sharply to he is nervous for the rest of the day." He is fat and well, and shows no signs of the injury except those mentioned.

CASE 3.—O. M.—, aged ten, a strong and healthy boy, was admitted to the infirmary on May 17th, 1883. He had fallen twenty feet into a pit, and struck his head against some stones at the bottom. He was taken up in a semi-conscious state, and removed to a neighbouring house, where he soon recovered consciousness. He vomited while he was being removed to the infirmary, which he reached about four hours after the accident. On admission he was found to have a lacerated wound of the scalp over the right side of the frontal bone about two inches from the middle line, and two inches in front of the coronal suture. On examination of the wound a sharply depressed fracture of the skull was found occupying an area the size of a shilling; there was another small scalp wound a little further back on the opposite side of the head. The boy had no symptoms of brain injury, and only complained of soreness in the wound. Three hours and a half after admission he was anaesthetised (chloroform), and the fracture exposed by three radiating incisions through the scalp. The hair and clot were found to have been forced in between the fragments, which were most depressed about the centre of the fracture, while at the circumference the depressed bone was tilted under the unbroken skull in such a way as to prevent the elevation of the fragments without trephining. A little more than half a circle of bone was removed from the sound skull immediately behind the fracture by a small trephine three-quarters of an inch in diameter. The fragments were now easily elevated, and it was found that near the centre of the depression the dura mater had been torn, and the brain wounded; here also dirt had been ground in between the fragments. The brain rose to its proper level when the depressed bone was removed, for there was no clot beneath the skull. There was rather free arterial bleeding from a meningeal vessel in the torn dura mater. As it was found difficult to seize the bleeding point, small bulldog forceps were so applied as to clip the bleeding vessel against the bone. The wound was partly closed with wire sutures around the forceps, and a rubber drainage-tube inserted. The operation was performed antiseptically (Lister). The patient was sick during the operation. On the following day the dressing was changed, and the clip forceps removed; he had had a good night and felt quite well. Temperature 99.6°. On the evening of May 20th (third day) the temperature rose to 101.6°, and on the morning of the 21st to 102.2°, but the boy said he felt perfectly well. Evening temperature 103.4°. The patient was slightly delirious.—22nd: Evening temperature 102.4°. Some headache. The wound was dressed, and over the rent in the dura mater a little projection like a blood-clot was noticed.—23rd: Temperature 100°. A slight trace of bile in the urine. The blood-clot mentioned above was found to be a hernia cerebri.—30th: The temperature had gradually fallen to normal and the hernia cerebri had attained the size of a cherry; there were no brain symptoms.—June 5th: The antiseptics were discontinued; the hernia had increased to the size of a small walnut; pressure was applied by means of a plate of sheet lead. No other bad symptoms had appeared.—June 9th: The hernia cerebri was pressed down to the general level of the granulations.—28th: Patient still doing well; no symptoms had appeared. He was sent to the convalescent hospital with a granulating wound one inch and a half by three-quarters of an inch.—Sept. 30th: The granulations had been kept down by pressure; a small piece of necrosed bone was removed.—Oct. 26th: The wound was healed, and the boy was quite well, but was reported to be

more irritable than he used to be, and to be easily thrown into a passion when teased.

Remarks.—Several cases have lately been published and observations made to show that the old classical rule—in compound depressed fractures of the skull with or without symptoms elevate—is not one to be universally followed, and that such cases if treated antiseptically may be safely left to nature. It is so important that this question should not be left unsettled that we think these cases are worth recording, more particularly because they illustrate several other points of interest. First, the three fractures were very much, even curiously, alike, all partaking of the nature of punctured fractures, though not actually so. In all the depressed bone was driven beneath the edge of the surrounding bone, and so locked that elevation without trephining was impossible. Next, in all a quantity of hair and blood-clot was driven in and entangled among the fragments in such a manner that it was only found on removing the loose pieces. Again, in none of the cases were there any marked symptoms. One had slight concussion, but otherwise the entire absence of any signs of severe injury was most marked. Two of the three cases were children. In one the dura mater was wounded and the brain lacerated, yet, except for the slight transitory unconsciousness, he showed no signs of injury. As regards the mode of operating, the use of the raspatory to protect the dura mater is an important matter; it simplifies the operation, and minimises risk. The trephine can be worked freely without any fear of injury to the dura mater, and the flat thin blade of the raspatory can often be insinuated beneath the bone, even where it is impossible to elevate without trephining.

The questions arising from these cases are: 1. Would these patients have recovered without any operation? 2. If so, was the operation merely unnecessary, or was it hurtful? and is it wise to leave such cases to nature, aided only by careful dressing &c.? It is no doubt perfectly possible that recovery might have taken place in all three instances. There appears to be a very wide margin of possibility of survival after head injuries, especially, of course, in the young. Such possibility is, however, in our opinion, not sufficient to contraindicate operation. As to the operation being hurtful, no doubt there is a deficiency in the skull greater than would have existed if there had been no trephining, and there is the risk of wounding the dura mater during the operation. Apart from these considerations the operation seems to have no injurious tendencies, and where the dura mater can be protected in the way described the risk of damage to it is very small; it is simply a question of care. The reasons why we think the operation in these instances was not only not hurtful but necessary, and why we should urge operation in all such cases rather than reliance upon antiseptics only, are, first, it would have been impossible to clean the wounds of hair, clot, &c., without elevation and removal of the fragments; secondly, without operation it would not have been discovered that a point of bone had penetrated the dura mater and torn the brain; thirdly, prolonged suppuration must have occurred before the dirt and fragments of bone could be got rid of; and, finally, the presence of the depressed bone would not only tend to produce meningitis at the time, but would very probably lead to subsequent mischief, epilepsy, and so forth. The balance of evidence appears clearly to be in favour of elevating in all such cases, and we cannot but regard the policy of leaving them alone as unsafe and unwise, more especially since it is impossible to say what the exact nature and extent of the injury is until such exploration is made. Two other points are worthy of notice. First, two of the three patients had jaundice a few days after the injury; it is well to be prepared for this condition, which probably is simply due to sudden confinement to bed of a previously healthy and active person. Secondly, the perfect success which attended the treatment of a condition sometimes so much dreaded—viz., hernia cerebri, by the simple pressure of a piece of sheet lead.

We are indebted to Mr. Hardie, during whose absence the cases were admitted, for permission to retain charge of them throughout their course.

A DISTRESSING case of suicide took place at Chertsey a few days since. A pupil teacher in an infant school, suffering under nervous depression from, it is alleged, overwork in her studies, threw herself into the Thames and was drowned.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

GUYS' HOSPITAL.

CASES OF EPITHELIOMA ORIGINATING IN CHRONIC ULCERS
OR IN CICATRIX.

(Under the care of Mr. BRYANT.)

CASE 1.—*Chronic Ulcer of Leg, with exposure of Tibia; Epithelioma in Ulcer; Amputation at Knee-joint; Cured.*—George L—, aged thirty, a schoolmaster, was admitted on Jan. 17th, 1882, into Job ward. He had never had gonorrhœa or syphilis; had always been healthy, and moderate in drinking. Fifteen years before admission a piece of timber fell across his legs, both of which were fractured. The left leg was broken only in one place and was cured in seven weeks, but the right never thoroughly recovered. After two years it was so far well that he could stand upon it, but there was a discharging sinus from which at times pieces of dead bone came away. During the last three years this sinus had grown bigger and more troublesome. The right foot and leg had not grown since the accident.

On admission the state was as follows: The right leg is shorter than the left, measuring 13 in. from the inner side of the head of the tibia to the tip of the inner malleolus, against 14½ in. On looking at the leg from the front the lower third of the tibia bows inwards, and the fibula, which seems to have grown since the accident, bows outwards. The right foot measures from the tip of the great toe to the end of the heel 8½ in., against 9½ in. on the left. The right ankle is ankylosed. Over the lower third of the front of the leg is an irregular scabby surface, with a red raised edge. In the centre of this the bone can be distinctly felt.—Jan. 19th: Leg to be dressed with a solution of boracic acid (ten grains to the ounce).

Feb. 14th.—A dirty yellow scab which had covered the wound for the last five or six days came off. Beneath it there was a creamy yellow pus-like discharge, which displayed under the microscope a number of epithelial cells. There were no enlarged glands.—27th: The patient has a sore-throat and cold. The raised edge of the wound looks more malignant every day.

On Feb. 28th, with the patient under an anæsthetic, Mr. Bryant performed Stephen Smith's amputation through the knee-joint, leaving the patella. Several arteries were twisted; but the main trunk, which seemed to have been divided just at its bifurcation, was secured with a catgut ligature. The wound was washed out with iodine water, and its edges were adjusted and stitched. Examination of leg: The large surface exposed during life was found to be composed chiefly of dried and corneated epithelium. On raising this epithelium the wound was dry on the surface, and moist and white in the deeper parts. The bone was exposed, and in one part it was already bare; it was rough, but the surface was not soft or carious. The epitheliomatous margin was to the inner side, and was placed chiefly over the soft parts beyond the edge of the bone. It was raised, and composed chiefly of white, fatty epithelial cells, with a superficial growing and rather translucent part. The bone here was a little more irregular than elsewhere; the depressions were rather rougher. Out of these cavities the same soft epithelial material was lifted, leaving the cavity clean. The floor of these cavities even was not soft. The ankle was ankylosed through cartilaginous surfaces being adherent, the ligaments also were stiff and allowed no movement at all. There was here no active disease. Bone much thickened; union in good line. Medullary canal large, ½ in. to ¾ in. wide, and filled with marrow, rather firm; it existed above and below the site of the fracture for about 2 in. The bone was uniformly dense and close at the seat of old fracture. In the posterior part at this point was an oblique groove lined by fibrous granulating tissue and containing a very small porous