nearly cicatrised. A line extended round the entire lateral portion of the scalp, from the mastoid portion of the temporal bone to the posterior angle of the parietal, and upwards along the lambdoid suture, from the inner angle of the superciliary ridge of the frontal, outwards to the external angle; the centre within this line continued quite hard and immovable. Not knowing how long she might continue in that state, and having no one to nurse her, I recommended her to go into hospital. She became dissatisfied in the County Infirmary, and left it in about a fortnight. I saw her some time afterwards, on August 1st, when a part of the frontal bone, about two inches square, was exposed. The bones were slightly movable, as if they had separated at the sagittal suture. The eschar on the cheek had separated. The eyelids were contracted, the conjunctiva everted, dragging the eye outwards. Her general health appeared good; she was able to take plenty of nourishment. To counteract the fetid odour, I applied a lotion of carbolic acid. She continued going about doing her household duties; and I did not again see her until she sent for me on October 1st. She complained "that the bones of her head were falling off". I found the right parietal and half the frontal separated from those of the opposite side, to the extent of about an inch, and slightly movable. I did not like to interfere with them then, fearing some serious result; but on October 3rd, the bones having separated a little more, I removed the whole parietal and half the frontal. The inner surface was covered with

Fig. 2.—Portion of bone removed: outer surface.

a thick curdy matter, and the depressions for arteries, etc., obliterated; the surface of the dura mater was covered with florid granulations, and a quantity of fetid pus came away. I could neither see nor feel any pulsation in the meningeal arteries. On making slight pressure on each side of the head, a quantity of pus welled up from between the

Fig. 3.—Portion of bone removed: inner surface.

hemispheres. She felt no inconvenience, neither headache, nor any other cerebral symptoms. Her appetite continued good; she said "she could eat a pound of chop for dinner, and take two pints of porter in a day". I washed the surface with a weak carbolic acid lotion, after which I applied water dressing, and kept it covered with gutta-percha paper, in lieu of oiled silk, which gave the surface a clean healthy granular appearance. In ten days, I changed it for zinc dressing, which I still continue to use. It was slowly healing from the margins; no pus escaped now from the situation of the superior longitudinal sinus; it was healed over to the extent of three quarters of an inch in width. The surface occasionally bled from the slightest touch. She complained of pain and soreness through the eye, but none in the head.

On December 2nd, I grafted skin on the surface of the granulation on four different places; three became attached, the other fell off.

Only once since writing the above notes (December 7th, 1874) did she have any symptoms of an urgent nature, when she became feverish, vomited, and was slightly delirious (December 9th, 1874). These symptoms, however, quickly subsided; and, from that date to the present, she has continued in good health. I exhibited the patient at the South of Ireland Branch of the British Medical Association on January 9th, 1875, when she accurately described her state from the time she recovered consciousness after the injury, and did not appear in the least to have suffered from any mental impairment. She then remained in Cork, at the Ophthalmic Hospital, under Dr. H. M. Jones's care, for about three weeks, during which time she enjoyed excellent health. It was while in the hospital that the photograph (Fig. 1) was taken. On the day I write this postscript to the case (April 13th, 1875), she is quite well. The new skin has grown nearly over the entire of the exposed surface. It was astonishing how successfully the grafting acted in this instance. She goes about at her ordinary duties, complaining of no pain or any ill effects from the terrible accident. I am not aware that any case has ever been put on record in which recovery took place, when, from any cause, such complete destruction of the cranial bones and extensive exposure of the brain has ensued.

A CASE OF DIABETES INSIPIDUS TREATED BY (1) JABORANDI AND (2) ERGOT.

By SYDNEY RINGER, M.D., F.R.C.P.,

Professor of Materia Medica in University College, and Physician to University College Hospital.

THIS was a well marked case of this disease. The patient was for some time under the care of my friend Mr. William Murrell, who has kindly supplied me with the following notes.

William S., aged 38, has been under occasional observation since May 1874. The intermittent nature of his treatment was owing to the fact that he resided some miles from town. Notes of his condition were taken at every visit. It would be tedious to give the notes in full, and a classification of the chief points has, therefore, been attempted. The patient's own expressions have in most instances been used in the description of his symptoms. Respecting his paternal grandparents, the patient knew nothing. His maternal grandfather died at the age of 82 of consumption. He used to spit up a "good quantity" of blood every morning. The patient remembered him well, and had often seen the blood in his chamber utensil when he washed it out. His maternal grandmother was always very healthy, and lived to the age of 92. The patient did not think that either of his mother's parents passed an unusual quantity of urine. The patient's mother was subject to cough, with expectoration. When from 40 to 41 years of age, she commenced passing large quantities of urine. The patient was sure that she habitually passed more than he had ever done. He did not think that she passed urine quite so frequently as he did; but she used to make more at a time. This lasted about four years, when she died. She never received any treatment, and the patient could not say whether her urine contained any sugar or not. The patient's father died, aged 60, from a "bad leg". He never suffered in any way from his urine.

The patient was the eldest of a family of seven, four girls and three boys. He was apparently not very clear as to their relative position as regards age, but remembers each individual perfectly. His eldest brother was now about 30, and, for the last three years, he had spat blood in considerable quantities. He was formerly in the army, but was discharged on account of bad health. He was described as being a "drunken beggar"; but was not known to suffer in any way with his urine. His youngest brother was "taken bad" when he was about 21. He had a cough, and spat a good deal of blood, and was said by the doctor to be in a decline. He only lasted six months or so, and was quite a skeleton when he died. The patient had three sisters living who were said to be well and strong. They had no cough, did not spit blood, and did not pass an unusually large quantity of urine. The youngest sister died when she was about 20. About two years before her death, she began passing large quantities of urine, often a pint or more at a time. The ordinary chamber-utensil "was not a bit of good to her", and she was always obliged to have a big pail kept in her room. She had a nasty cough, but the patient thought she never spat any blood. Respecting his cousins, the patient could not say much; two or three of them on his mother's side died of "decline", but were not known to have suffered from diabetes.

Place of Birth.—The patient was born at Aberdeen. His

was a soldier, and they were constantly changing their quarters, so that the patient never remained long at any one place.

He was a private gardener, and had always lived in good families. He could not say that he had ever been particularly overworked.

Habits.—He had lived well; rather better, he supposed, than most people. He had been a strong healthy man, accustomed to boxing, wrestling, and active out-door exercise. He had never been a drinker; had, in fact, always been rather careful in what he took in the way of stimulants, seldom exceeding a pint of half-and-half in the day.

Temperament.—He was of a strikingly lively temperament. It was rare to see him "out of sorts"; even when he knew that he was steadily progressing downwards, he exhibited no despondency.

Social Condition.—He had been married fourteen years. He had had seven children; they were all living with the exception of one which died from whooping-cough. The youngest, a girl, had been born since the patient had suffered from diabetes, and was now four months old. When six or seven weeks old, she began passing large quantities of urine—"twice as much as she ought to,"—but this condition, after lasting seven weeks, passed off, much to the relief of the parents. The other children suffered from wheezing on the chest, but not in any way from their urine.

Previous Illnesses.—The patient had measles and scarlet fever when a child, and small-pox when about 13. He had no recollection of any blow or fall upon the head or abdomen.

Mode of Origin.—About Christmas 1873, the patient was told to go after a carriage, and give the occupants some money which had been accidentally forgotten. He ran as hard as he could for four miles before he came up with them. He was, he says, dripping wet, and the perspiration was "regularly running off him". Before he had time to get cool, he was asked to drive a pony-chaise home, a distance of six miles. It was a bitterly cold day, with a nasty east wind blowing, and, before he had gone far, he felt all of a shiver. He was so bad that he had to pull up and get some ginger brandy; but that had no effect, and he kept on "in a regular tremble" all the way home. For a fortnight after this, he "felt very queer"; had no appetite; could hardly keep about, and was always very drowsy and sleepy. At the expiration of that fortnight, his excessive thirst commenced. He drank then more than he has ever done since. He used to drink "a good gallon in from two to three drinks". For the first three days, he passed hardly any urine; but, on the morning of the fourth day, he awoke with a strong desire to urinate, and got up and passed "the best part of a pot full". From that time to this, he had passed large quantities of urine. Four or five months later, he suffered from cough, and for the first time spat blood, on one occasion nearly half a pint. In about ten months from the commencement of his illness, he noticed that he was losing flesh. His weight had always been about 9 st. 2 lb.; but, in a few months, he had lost nearly two stones. About a year later, his appetite fell off considerably. The excessive dryness of the skin had troubled him from the time he commenced passing the large quantities of urine.

A detailed description of the patient's symptoms will now be given.

Urine.—The quantity of urine passed in the twenty-four hours when not under active treatment varied from nine to twenty-two pints. The average quantity passed during five days in May 1874, when he was under constant supervision, was twelve pints five ounces; the largest quantity being fifteen pints, and the smallest nine pints five ounces. About a year later, the patient was habitually passing twenty-two pints in the twenty-four hours. He usually passed urine two or three times during the hour, and was on this account unable to go to church or to any place of amusement. It may be mentioned that the diagnosis of the case was first made by observing that the patient had a slop-pail under his bed, in addition to two ordinary chamber-utensils.

Characters.—The urine was examined at frequent intervals, but varied little in its characters. It was usually of a light straw colour, clear, with no deposit; odourless, very faintly acid, and of a specific gravity ranging from 1.002 to 1.005. It contained no albumen and no sugar. It decomposed very rapidly, and became extremely offensive after standing for even a short time. An estimation of the urea showed that it contained, on an average, about $\frac{3}{4}$ per cent.

Thirst.—This was one of the patient's most distressing symptoms. During the first year of his illness, he used generally to drink about six quarts of water in the day, in addition to tea and coffee. He had drunk as much as twenty-two quarts in the twenty-four hours. He had measured it on several occasions when this had been the quantity. He seldom drank less than a quart at a time. He went out as much as possible, to "keep away from the water". He generally kept a little pebble in his mouth to check the sensation of thirst. His sufferings when he was unable to get water were very great. He said he should never forget one day, when he was left alone in the house without any-

thing to drink. He was laid up at the time, and too weak to get about. For about an hour, he was pretty comfortable, but then became very thirsty. He bore his thirst as well as he could, hoping that some one would come to him; but it finally became so intolerable, that he suddenly caught up his chamber-utensil and took a long deep draught of his urine. During the day, he drank the urine he passed seven times. It was at last so salt, that it hardly quenched his thirst at all.

Appetite.—The appetite was extremely poor. The patient often went for days together without touching meat. Whilst under treatment in a hospital, he had so little appetite that he obtained permission to stay in his ward during the dinner hour, instead of going to table with the other patients. On one occasion on which he was seen, he stated that he had had nothing to eat but half a halfpenny biscuit for four days. He had money in his pocket, and could get anything he wanted in the way of food; but "he had no appetite, and could not eat anything".

Bowels.—The patient was usually a week or more without having a motion, and had sometimes gone from a month to six weeks. The fæces were extremely hard, and were passed with the greatest difficulty. There was occasionally a little blood in the motions.

Skin.—The skin was very dry, with the exception of the feet. The patient said he could walk as fast as he liked, even in the hottest day in summer, without perspiring about the body. The feet, however, were constantly damp, and the secretion from them was so exceedingly offensive, that he had to change his socks two or three times a day. The feet itched very much, and were often "almost raw". He was never troubled with the dryness of skin or offensive secretion from the feet before this illness. For the last two years, he had suffered greatly from boils at the back of the neck "each spring and fall". With this exception, he had had no cutaneous eruption. The patient's hair was always "very dry and crisp".

Pain.—The patient had not suffered much pain during his illness. He had at times complained of pains in the legs and loins; but these had usually been of short duration.

Cold.—He was always cold. As soon as he got away from the fire, he came over all of a shake.

Loss of Flesh.—As already stated, the patient very rapidly lost flesh, and in a few months was reduced from 9 st. to 7 st.

Cough.—The cough had never been a prominent symptom. It had troubled him chiefly in winter, and was seldom accompanied by much expectoration.

Hæmoptysis occurred on some half a dozen occasions, but never whilst he was actually under observation. It was stated to have been once about half a pint, but was ordinarily, judging from the patient's description, from three to four ounces.

Physical Examination.—There was nothing very striking in the patient's appearance; nothing, at all events, which would excite a suspicion of the disease from which he was suffering. A physical examination of his chest showed nothing abnormal. The temperature was taken in the mouth and rectum and under the tongue; but there was no fever.

Previous Treatment.—The patient had had a great deal of general treatment—quinine, cod-liver oil, etc.—without deriving any benefit.

Treatment by Ergot.—The ergot was first tried in June 1874. The dose was twenty minims of the liquid extract taken in water three times a day. In a fortnight, the urine was reduced from fifteen to eight and a half pints, and in six weeks to between six and seven pints. The medicine was then discontinued, but the urine passed did not exceed seven pints daily for four months. It then increased in quantity; in January, it had returned to the old amount. The ergot was given for the second time in July 1875, the dose being on that occasion fifteen minims of the liquid extract every three hours. In a fortnight, the urine fell from twenty-two to twelve pints. The thirst was less troublesome, and the patient said "the medicine had made a good two quarts difference in his drink". The appetite was improved, and the patient was able to get about better. The bowels were opened more frequently, and the motions were softer. The medicine was discontinued in consequence of his admission into the hospital.

On the publication by Dr. Laycock of two cases of diabetes insipidus successfully treated by jaborandi, Mr. Murrell sent this patient into University College Hospital, that we might test this drug.

The man was very thin. His thirst was most distressing. He would drink three to four pints of water at a time. His skin was very dry, except his feet, which, strange to say, perspired profusely, enough to annoy and trouble him. He was easily tired. His mouth was generally distressingly dry. In other respects, he was fairly well, and no disease could be detected in any of his organs. His temperature varied between 98 and 99 Fahr. His appetite was bad; his bowels obstinately confined; his sexual powers were not diminished. We kept him some days without any treatment. He

was then put on infusion of jaborandi (one drachm to six ounces), and this treatment was continued for forty-four days. The dose was from time to time increased till he took several times daily a dose enough to produce in healthy people very profuse perspiration and salivation. As will be seen, the jaborandi had no effect on the quantity of urine; but his mouth was moister and more comfortable, and, though the jaborandi never produced copious perspiration, it kept the skin comfortable, and, after exercise or eating, or hot drinks, he perspired rather freely. The sweating of the feet soon ceased after taking jaborandi. The medicine did not make him spit. After it had been clearly proved that the jaborandi was useless, he was put on ergot for the third time with considerable success. The results of the treatment will be seen in the following table.

Date.	Quantity of urine in litres.	Treatment.	Date.	Quantity of urine in litres.*	Treatment.
Aug. 12 ..	9.0600		Aug. 30 ..	10.0600	
" 13 ..	10.0600		" 31 ..	10.0500	Four drachms every 3 hours.
" 14 ..	8.0500		Sept. 1 ..	11 ..	Five drachms every 3 hours.
" 15 ..	11.10		" 2 ..	10.0500	Six drachms every 3 hours.
" 16 ..	10.0250		" 3 ..	11 ..	Five drachms every 3 hours.
" 17 ..	10.0100		" 4 ..	9.0600	
" 18 ..	10.0100		" 5 ..	11.20	
" 19 ..	11.600		" 6 ..	10 ..	One ounce every 3 hours.
" 20 ..	11 ..		" 7 ..	10 ..	
" 21 ..	10.0100	Two drachms of in- fusion of jabor- andi every 4 hrs.	" 8 ..	11 ..	
" 22 ..	11 ..		" 9 ..	10.0500	
" 23 ..	10.0600	To be given every 3 hours.	" 10 ..	11 ..	
" 24 ..	10.0250		" 11 ..	11 ..	
" 25 ..	11 ..		" 12 ..	10.0500	
" 26 ..	10.0600	Three drachms every 3 hours.	" 13 ..	11.0500	One ounce every 2 hours.
" 27 ..	10.0600				
" 28 ..	11.0250				
" 29 ..	11.0600				

From the 14th to the 30th inclusive, the amount varied between 10.0500 and 9.0250

Octr. 1 ..	10 ..	One ounce and a half every 2 hrs.	Octr. 16 ..	6.0300	
" 2 ..	11 ..		" 17 ..	6.0600	
" 3 ..	11 ..		" 18 ..	6.0500	
" 4 ..	11 ..		" 19 ..	5.0800	
" 5 ..	11 ..	Ergot begun.—30 minims of liquid extract of ergot every 3 hours.	" 20 ..	6.0200	
" 6 ..	12.0800		" 21 ..	6.0200	
" 7 ..	12 ..		" 22 ..	5.0900	
" 8 ..	11.0800		" 23 ..	5.0700	
" 9 ..	11.0500		" 24 ..	5.0400	
" 10 ..	11.0500		" 25 ..	3.0500	
" 11 ..	11 ..		" 26 ..	2.0800	
" 12 ..	7.0900		" 27 ..	1.0600	
" 13 ..	7.0700		" 28 ..	1.0100	
" 14 ..	6.0500		" 29 ..	0.0700	He left the hospi- tal, and the ergot was discon- tinued. He came as an out-pa- tient in a week. The urine had not increased.
" 15 ..	6.0400		" 30 ..		

When he was in the hospital, the urine was free from albumen or sugar. The specific gravity varied between 1000 and 1006; but as the quantity became less, it rose to 1017.

It will be seen from the foregoing notes that this well marked case of diabetes insipidus was uninfluenced by jaborandi, whilst on three occasions the quantity of urine was very greatly reduced by ergot.

CHLOROFORM AND ANÆSTHESIA.

By JOHN SMITH, M.D., F.R.C.S.E.,
Surgeon-Dentist to the Queen for Scotland.

SINCE the publication of Dr. Lauder Brunton's communication, in which he alludes to the administration of chloroform in insufficient quantity as a cause of danger, some attention seems to have been drawn to the subject in respect to this and other points.

I wish to make a few additional remarks on the matter; and that I am so far qualified to do so, will perhaps be admitted from the fact of an experience in the use of chloroform ever since its introduction in 1847, and a practical acquaintance with it, more or less, in every variety of case in which it ever has been given—over and above that of between three and four thousand times administering it in my own department of surgery. I trust my making such a statement may not be set down to any other motive than to show that I do not speak without sufficient data to entitle me in a certain measure to do so.

First of all, I entirely agree with Dr. Lauder Brunton's views regarding the degree of anæsthesia required for operating safely. In a

communication read by me before the Medico-Chirurgical Society here ten years ago, and published in the *Edinburgh Medical Journal* for 1866, I make the following remarks, which will be seen closely to coincide with those of Dr. Brunton.

"In all cases, anæsthesia, to be either satisfactory or safe, should be complete. I have repeatedly noticed patients, who have had chloroform on different occasions for such operations as came under my own department, express themselves as much less uneasy after a full dose—much less exhausted; and I may mention my own personal experience of this agent to bear out such a statement. So far it is more satisfactory; but it is also more safe. We know that one of the benefits of anæsthesia is the prevention of shock during an operation. We know also that shock tends to interfere with the heart's contractions, by the influence of the cerebro-spinal system on the cardiac ganglia through the par vagum. And this tendency does not always depend on the magnitude or importance of the operation. The operation may be a minor one, and the suffering inflicted very slight. The patient may be unconscious of pain, and yet the heart may, through the ganglionic system, be affected by the operation, and syncope result. . . . There can be no reasonable doubt that, of two patients equally under chloroform, if one be operated on in any way worthy of the term, and the other not, although neither has actually experienced pain, yet the one awakens up in a very different condition from the other: the one has suffered more or less from shock, the other has not."

In the same paper, allusion is made to the fact of the sudden diminution of the heart's action, on the operation being commenced, even during the state of anæsthesia. This I have myself frequently remarked even in tooth-extraction, and the fact has been over and over again observed in the greater operations. It is this tendency to sudden syncope which indicates the necessity for all operations being, if possible, performed with the patient in the recumbent position. In my lectures at Surgeons' Hall here in 1854 and subsequent years, and in the *Handbook of Dental Surgery* published as my class-book, this was, so far as I am aware, inculcated for the first time as applied to dental surgery; while, again, in the paper I am now quoting, I find it stated that "syncope during anæsthesia, as at all other times, is most apt to occur when the patient is in the upright or semi-upright position; and it need scarcely be here said that, in order to diminish the chances of a complication so serious, the horizontal posture should in all cases be the one adopted during the exhibition of chloroform. Such, however, is far from being the position generally chosen for minor operations. The preponderance in these operations of death associated with chloroform is, no doubt, attributable in a great measure to a contrary practice, it being very generally considered not worth while in such cases to make a patient lie down."

With regard to the subject of death from the administration of chloroform, much has been stated calculated to create a very unfair prejudice against it. No agent possessing such power of abrogating sensation can possibly be free from a certain amount of risk in its employment. Thus much, therefore, is to be understood as admitted in speaking of chloroform. But a great deal beyond this has been attempted to be made out. Every death now occurring during an operation in which chloroform has been given is set down to its effect, and sensational paragraphs too often appear in our daily press spreading such ill-authenticated reports. In fact, no deaths under such circumstances are now-a-days attributed to "shock" and other causes which used, before the days of anæsthesia, to be set forth in explanation of such cases, which, by the way, were far more numerous than they now are. But these cases, although fewer, still do occur; and that chloroform is unwarrantably blamed in them is, I fear, equally true.

Dr. Brunton mentions a case where chloroform was to have been given, and in which the patient suddenly died during the operation without its use. As I happen to have been present on that occasion, I may mention that the non-administration of the anæsthetic was not due to the bottle being broken, but to Professor Simpson, who was to have administered the chloroform, not arriving in time. Here the patient died on the first incision being made through the skin over the hernial sac. Shortly before this, again, Dr. John Argyll Robertson here had met with a similar case—strangled hernia—where the patient died while the groin was being shaved, and where no anæsthetic had been given. And, since the introduction and general use of chloroform, did time and space permit, many such cases could be cited where circumstances rendered the administration of any anæsthetic impossible. Even in tooth-extraction, this has occurred; and Mr. Holmes mentions the case of a patient whom the dentist found dead in the chair on returning from a side table, where he had been selecting the instrument to be used. There is very little doubt that, had chloroform been employed

* A litre is = 35¼ fluid ounces.