how the presence of such a large proportion of nitrogen is produced, although knowing the small proportion of nitrogen which exists free in the blood of warm-blooded animals it seems probable that an actual metabolic process must be brought into play. But we may fairly conclude from these analyses that the presence of a large proportion of nitrogen in the mixture of gases contained in any viscus does not necessarily imply that the origin of that gas is the atmospheric air. If one can argue that what is the case in cold-blooded vertebrata is probably true as regards warm-blooded animals it seems that we must reconsider our deductions concerning intestinal gases based on the fact of the predominating volume of nitrogen in both gastric and intestinal flatus; in other words, we have no right to assume that when we find nitrogen in about the same proportion as it exists in air that that nitrogen is the nitrogen of the air and that the other constituents have been altered by the peculiar nature of the environment, in the stomach the oxygen being replaced by carbonic acid gas, and in the intestines by hydrogen, carbon-dioxide, and marsh gas.

THE TREATMENT OF LACHRYMAL OBSTRUCTIONS BY STYLES.

[By R. SHALDERS MILLER, F.R.C.S.,
Windsor.

THIS little section of surgical therapeutics has probably been less successful than the operative treatment of other disorders of the eye and its subsidiary apparatus.

Since 1877, when I first became a clinical assistant at Moorfields, it has been my habit to treat all organic strictures of the lachrymal duct—that is, all parts of the outfall from the lower *punctum lacrymale* to the exit in the inferior turbinate sinus of the nose—by means of styles, in most cases permanently retained. Except for temporary wear, they should be made of pure platinum wire, about 25 gauge, and I always make them myself for each individual case. The shape, direction, and length of the nasal duct being variable, this special adaptation is the key to success in the use of styles, which consist of a vertical stem, with a short arm bent at or about a right angle to the stem. Usually this arm is made double by recurving the wire back to the stem, so that the arm consists of two thicknesses of wire, parallel and quite close together, the recurved part lying vertically beneath the other. In this way the slit in the edge of the lid is just filled up, but no metal is visible unless the lid be everted. Sometimes the furrow produced by slitting up the canaliculus is very shallow; then the arm of the style is single.

The length of the arm should be such that it completely but easily fills the slit-up canaliculus; it must not be tight. The stem should always be long enough to project through the lower opening of the ductus ad nasum in the inferior nasal sinus. The measure can be readily taken by passing a probe. The practical effect of a style in maintaining the patency of the lachrymal exit depends upon the lateral movements of the lower lid, imparted by those long straight muscular fibres which take origin at the tendo palpebrarum, and run horizontally outwards to the surface of the malar bone, and are anatomically quite separable from the oval bundles of the orbicularis proper. The tubular styles of the instrument makers are worse than useless; they soon become choked with mucus and dust. Also, in the case of the grooved styles, the necessarily thin edges of the furrow cause irritation and the production of a granulation which stops the way. The stem of a style should not be straight except in the case of a very short duct, but somewhat concave outwards.

The lower opening of the duct may be obstructed by an excessively incurved lower turbinate, but even this is scarcely an excuse for turbinotomy. I have found no difficulty in pushing a probe through the turbinate bone, and a style, made long, follows. Some of my patients have worn a platinum style for eight or more years without its ever having been removed from the moment of its first introduction.

In every case of lachrymal abscess a style ought to be used, for a time at least; in most instances it is needed permanently, but a temporary one must be first inserted of a form modified

according to the amount of swelling in the part. Such style may be of lead or silver, and several different forms and sizes are sometimes desirable in succession, to suit the changing size and shape of the lid and canthus. I have found it necessary to make an eyed probe of lead, pass it through the duct and anterior naris, and, by means of a thread attached, pull a fine drainage tube through, and thus restore a lachrymal passage that had been obliterated by an encysted abscess for sixteen years. A platinum style was afterwards worn with a perfect result.

The wire has been drawn for me by Messrs. Curry and Paxton, and by Messrs. Coxeter and Son, and I have used some yards of it. It is well annealed, and very easy of manipulation.

PERFORATING ULCER OF THE FOOT.

By CAREY COOMBS, M.D.,
Castle Cary.

A FEEBLE old woman, aged 72, showed me an ulcer in the sole of her foot about 1 inch long and wide, and $\frac{1}{2}$ inch deep, with hard white edges and a pale pink base. It had existed for thirty years, but she had not asked advice because she was afraid I should "cut it." The removal of some fragments of carious bone and the use of carbolio lotion gave her much relief, and the ulcer grew less.

The illustration shows the ulcer and the deformity of the foot resulting from the loss of phalangeal and metatarsal bones, but the shortening of the other foot is much more marked. In thirty years I have met with about twelve cases of this disease, about half of them in the great toe, which has in two cases required amputation. One old man who had lived for several years in Newfoundland, and who had a large plantar ulcer, consented to Pirogoff's operation; but when, under chloroform, the foot was thoroughly explored, so many fragments of the tarsal and metatarsal bones were removed, that it was thought better to leave the greater operation. The foot healed after a few weeks. The interest of this case arises from the family history; the woman's father suffered badly, the uncle slightly, from the disease. Two of her sisters, one brother, her daughter, and a niece have all had sore feet.

The ulcer begins as a swelling like a soft corn, under the great toe or sole; in the centre of this is the opening of a sinus leading down to the diseased bone. The ulcer rarely attains $\frac{1}{4}$ inch in diameter on the toe, but in the sole where

there is much more pressure it may be 2 inches across. Cold, damp, and scanty animal food are its proximate causes. The belief that it is allied to the bone changes in tabetic disease has prompted the use of nerve-stretching for its relief.

Chipault¹ publishes five successful results of stretching the internal and external plantar nerves. (Perhaps this treatment was suggested by the relief given to horses suffering from an analogous disease by neurotomy. Caries of the navicular bone has long been treated in this way.) Boyer, Cloquet, and Nélaton in France, and Hancock in England have described cases, and suggested treatment for perforating ulcer.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL EPITOME, October, 1895.

A CASE OF OBSTRUCTED LABOUR DUE TO CONGENITAL DISEASE OF KIDNEYS.

By WILLIAM JAMES SPENCE, L.R.C.P., L.R.C.S. EDIN.,
Syston, Leicester.

ON January 2nd a message was left at my house requesting me to call whilst out on my round and see Mrs. S., who was expecting to be confined. At about 10.30 I was told that the membranes had ruptured at 8 P.M. the previous day, since which time there had been a continual dribbling of the liquor amnii, with weak pains at long and irregular intervals, but during the last hour and a half the pains had left her.

I found the os dilated to the size of a shilling, and through it I could make out the head presenting normally. I left with instructions that she was to remain in the bedroom, and that I was to be sent for immediately upon the recurrence of pains. Shortly before midnight I was sent for again, and upon arrival found the head somewhat lower and the os all but fully dilated. The pains recurred at intervals of about ten minutes, but were feeble, and little or no progress was made during the next hour or so. At a quarter past 1 I gave her a full dose of ergot, and some twenty minutes later the pains became stronger and more frequent, and as a result the head gradually but slowly descended, and was finally protruded about 2. The umbilical cord passed once round the child's neck, but this was easily rectified by slipping it over the head. The pains continued, and I assisted them by gentle traction upon the child's head, but without avail; the body remained firmly impacted, and no further progress was made. After careful exploration I tried traction upon the axillæ, but there was still no advance. I next brought down the arms, and after strong and continuous traction my efforts were successful and the child was born. As soon as the head was born the child gave three or four gasps, but was dead upon completion of delivery. The child, a female, was fully developed, weighed 9½ lbs., and measured 20½ inches in length. Upon examination of the body the cause of the delay was very apparent; the abdomen was enormously distended with two large indurated masses, one on either side. They occupied both flanks, almost meeting in the middle line, were movable, and could easily be manipulated through the abdominal parietes.

About 4 P.M. the same day, with the consent of the father, I opened the abdomen and removed the masses, which proved to be two enormously hypertrophied kidneys, weighing 25 ounces. An ounce or two of serous fluid escaped when I opened the abdomen, but there appeared to be no other abnormality.

The mother was 41 years of age, and had been married 17 years. She was first pregnant seven years ago. Since then she has had five children born at full term and one miscarriage. The miscarriage occurred a year last July, and she informs me that she was very ill at the time. The labours have all been tedious but otherwise normal. The diseased kidneys were placed in perchloride solution, and two days later I showed them to Dr. Bond, of Leicester, who kindly made sections of them, which he sent up to the Clinical Research Association, of 1, Southwark Street, London Bridge.

Mr. J. H. Targett, F.R.C.S., reported as follows: "Sections of this kidney have the usual structure of congenital cystic disease. I have examined several specimens of this disease

in the fœtus, and they have all the same characters. Multiple small cysts are embedded in the loose vascular connective tissue, in which few glomeruli are to be seen. These cysts are lined with flattened epithelium, which looks like a string of beads when detached from the wall of the cyst. I have also noticed that the pelvis and ureters are very small if not actually impervious in these cases. As a cause of dystocia the condition is well known."

A MODIFICATION OF HELLER'S METHOD OF STAINING MEDULLATED NERVE FIBRES.

By W. FORD ROBERTSON, M.D.,
Pathologist to the Royal Edinburgh Asylum.

IN the BRITISH MEDICAL JOURNAL of November 28th, 1896, in the course of a report of a meeting of the Manchester Pathological Society, a short account was given of Heller's method of staining medullated nerve fibres, on the subject of which a communication had been made by Dr. R. T. Williamson. I had for some time previously been making observations on the staining action of osmic acid upon nervous tissues hardened in the chrome alum-copper fluid used in Weigert's new method for the neuroglia. After reading the description of Heller's method, which is carried out upon sections of tissues hardened in Müller's fluid, I applied the same staining process to the tissues with which I had been experimenting. The results obtained were most striking, the medullated fibres being deep black, and standing out with extraordinary distinctness on a practically colourless ground. I have carefully compared these preparations with others made according to the original Heller's method, and there can be no question of their superiority, the medullated fibres being much darker, and the other tissues more thoroughly bleached. It therefore seems desirable to publish an account of this modification.

Weigert's chrome alum-copper fluid is composed of chrome alum 2½ per cent., copper acetate 5 per cent., acetic acid 5 per cent., formalin 10 per cent. The chrome alum is boiled in the required amount of water, and when dissolved the acetic acid and copper acetate are put in. This solution is filtered when cold, and the formalin is then added. It has recently been pointed out to me that 10 per cent. of formalin is an unnecessarily large proportion of this agent. It has been found that this strength prevents staining of the chromatic granules of the protoplasm of the nerve cells, and that much weaker solutions harden quite satisfactorily. Probably, therefore, only about 2 per cent. of formalin should be used. Harden the tissues in this chrome alum-copper fluid for ten days or longer. Prolonged action of the reagent does not render them brittle. Wash the pieces for some hours in water after removing from the hardening solution for examination. Cut sections either by the celloidin or gum-freezing method. The latter is in most cases quite sufficient for brain tissue. The sections may be preserved in alcohol in the ordinary way. The following is the procedure that I have found most satisfactory in carrying out Heller's process upon these tissues: Place the sections in 1 per cent. osmic acid for half an hour (in the dark), then in 5 per cent. pyrogallol acid for half an hour, ¼ per cent. potassium permanganate for three to four minutes (brain sections for not more than one minute), 1 per cent. oxalic acid for three to five minutes. Wash the sections in water after treatment with each solution. Dehydrate, clear, and mount in balsam.

I have now applied this modification of Heller's process extensively to healthy and morbid nervous tissues, and I am satisfied that it presents great advantages as a method for demonstrating medullated fibres. The staining result is probably as distinct as that furnished by the Weigert-Pal method, and it can be obtained in a much shorter time. The whole process can be carried out within a fortnight from the time the tissues are placed in the hardening solution. The preparations are admirably adapted for lantern demonstration and for photography, and they are suitable for high as well as low power microscopic examination. They show degenerating fibres very distinctly, while tracts in which the myelin has wholly disappeared are colourless. The method gives excellent results with the delicate medullated fibres of