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. pyrogallie 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

the brain, and on this account I believe indeed that it furnishes what has for long been a great desideratum, especially for the study of the morbid changes occurring in this tissue element in insanity. The sections may be satisfactorily counterstained in various ways, hæmatoxylin especially giving good results. The nerve cells are beautifully preserved and stain fairly well. As yet, however, I have not been able to obtain satisfactory staining of the chromatic granules of the protoplasm. It seems probable that this circumstance is due, as indicated above, to the strength of the formalin in the hardening solution, and that, if this was reduced to about 2 per cent. these granules could be readily coloured by the stains generally employed for the purpose.

A RAPID METHOD OF FIXING AND STAINING BLOOD FILMS.

By G. LOVELL GULLAND, M.A., B.Sc., M.D., F.R.C.P.E.,
Assistant Physician to the Royal Infirmary, Edinburgh.

[From the Laboratory of the Royal College of Physicians, Edinburgh.]

THE method by which permanent microscopical preparations of blood are made is generally that devised by Ehrlich or one of its numerous modifications. These methods all involve the preliminary drying of the blood film on the cover glass. The hæmoglobin of the red corpuscles is then fixed, either by prolonged heating to between 110° and 120° C., as in the original method, or by treating the dried film with alcohol and ether, corrosive sublimate, or some other fixative. The process, in any case, is long and troublesome. Muir's method,¹ in which the films are fixed without drying by dropping them into a saturated solution of sublimate, was a great advance, inasmuch as it gives a much more accurate fixation of leucocyte structure than can ever be obtained by drying, while the red corpuscles, though they often show a certain amount of shrinkage, are less deformed than by Ehrlich's method. But the process is a long one if it is carried out as advocated by Muir, whilst if, in the attempt to shorten it, the washing out of the sublimate is not thoroughly done, crystals are apt to appear in the finished preparation.

It has been my aim, therefore, for some time past to discover a method which should give an accurate fixation, which should be as rapid as possible, and which should yet be sufficiently flexible to prevent preparations being spoilt by even considerable deviations from the exact method. The last point is essential if the method is to be of use to practitioners who are not specially skilled in microscopical technique. I trust that this will be the case, for I am convinced that many interesting blood cases go unrecorded for want of an easy way of staining and preserving blood films.

In its most rapid form the process is as follows. A small drop of blood, drawn in the usual way, is taken up on the centre of a cover glass held with forceps, and distributed evenly between that and another cover. The utmost care must be taken to avoid all pressure, as the after-appearance of the red corpuscles depends almost entirely upon the way in which this manœuvre is carried out. The covers are then gently and rapidly slid off one another, and dropped with the wet side downwards into the fixing solution. This is made up of:

Absolute alcohol saturated with eosin ...	25 c.cm.
Pure ether ...	25 c.cm.
Sublimate in absolute alcohol (2 grm. to 10 c.cm.) ...	5 drops (more or less)

The quantity required for use at one time, which may be 5 to 10 c.cm. for four cover glasses, should be poured into a wide-mouthed bottle or flat dish, and may be used several times over if it be preserved from evaporation. (I generally keep the three liquids in different bottles and make up the required amount in the above proportion just before using it.) The fixation of the elements is practically instantaneous, but the cover glasses should be allowed to remain in the solution for at least three or four minutes, to fix the film to the cover. They are then taken from the solution by forceps (steel forceps will do), and washed rapidly but thoroughly by waving them to and fro in a small basin of water. They are then stained for one minute (not longer) in a saturated watery

solution of methylene blue, and again rapidly washed in water. Next they are quickly dehydrated in absolute alcohol, which at the same time removes the excess of methylene blue, cleared in xylol, and mounted in xylol balsam on a slide.

The whole process need not occupy more than six or seven minutes, but on the other hand any portion of it may be prolonged without injury to the specimen. The fixation may be continued for twenty-four hours, the washing for the same time, but if the staining with methylene blue be prolonged for more than a minute or two it becomes necessary to use an inconveniently large amount of absolute alcohol to remove the excess of the stain, and the eosin is apt to be washed out at the same time. The red corpuscles are stained pink, nuclei a deep blue, the bodies of the leucocytes in varying shades of pink; the eosinophile and basophile granules in the leucocytes are well brought out; the blood plates are stained a fainter blue than the nuclei, and organisms are also well stained.

This is simply the most rapid clinical form of the method. Any other acid stain which is soluble in alcohol and not precipitated by sublimate may be used instead of eosin, and the stain may be omitted from the fixative altogether, so that the cover glass after fixation in the alcohol-ether-sublimate may be stained in any way that is desired.

The method is no less useful for fixing pus, sputum, and anything else which can be spread in a film, only with these it is generally advisable to prolong the fixation.

The cover glasses used must be scrupulously clean; the simplest way of ensuring this is to put them for a few minutes in glacial acetic acid, then wash them with plenty of water so as to remove the acid thoroughly, and dry them with a fine handkerchief. A large quantity should be treated at one time and stored up.

The thinner the film the better the fixation. As it is not possible in specimens mounted in balsam by whatever method exactly to reproduce the appearance of red corpuscles as seen in freshly drawn blood, it is desirable to control balsam preparations by examining fresh blood, or still better by pricking the finger through a drop of 2 per cent. osmic acid solution, and examining the preparation thus made as a fluid mount. This is specially desirable where the red corpuscles are altered in shape to a slight extent; greater degrees of poikilocytosis can easily be made out in balsam preparations.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

TRANSILLUMINATION IN THE DIAGNOSIS OF EMPYEMA OF THE ANTRUM OF HIGHMORE.

In March, 1896, I saw a patient, a young woman, in whom I found good reason for suspecting the presence of pus in the right maxillary antrum. I therefore made an exploratory puncture with a Lichwitz's trocar through the outer wall of the inferior meatus, and established the diagnosis by washing out the antral cavity with weak carbolic lotion syringed through the trocar, and finding that the fluid as it escaped through the ostium and anterior nares was rendered turbid by a quantity of foul-smelling curdy-looking pus. I had previously ascertained that the nasal fossa was free from discharge. This procedure was undertaken for the purpose of diagnosis only, and it was intended to follow it up by making a permanent opening in the alveolus, but to suit the convenience of the patient this was postponed; and when I saw her again shortly afterwards the one syringing had apparently practically effected a cure, as she stated she had lost her symptoms and had had no discharge. On examining the nose there was no sign of pus, therefore it was decided to defer making the alveolar opening for the time being. Since then I have seen her at frequent intervals, but have never succeeded in discovering any pus in the nares, though she has suffered from slight postnasal catarrh, which made her think that her old discharge was flowing backwards into the throat. The other day she was examined by means of the transilluminator, with the result that a "very decided absence of the suborbital

¹ *Journ. of Anat. and Physiol.*, vol. xxvi, 1892.