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.

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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 manoeuvre 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.