2. *Pathological Retrospect.*

By Edwin Goodall, M.D.Lond., B.S., M.R.C.P., West Riding Asylum, Wakefield.

The following notes may, perhaps, be of service to those engaged in pathological work, including the preparation of museum specimens, in asylums:—

Sections of Fresh Cord.—From time to time attempts have been made to obtain sections from the fresh spinal cord, and, as far as I know, satisfactory sections have not hitherto been secured. The procedure introduced by Bevan Lewis for the fresh brain is not applicable to the cord; the requisite fixation of the medullated nerve-tubes in the white columns cannot thereby be obtained. I find that pyridin has the necessary fixing power. De Souza* and Vassale† have used pyridin as a hardening reagent for brain and cord. The method‡ of use now referred to is, however, quite different. Briefly it is as follows:—Sections are made from the ether-frozen fresh cord, and floated on to water. They must not be allowed to dip at any part beneath the surface, for if they do wrinkling occurs; if water lies over the whole upper surface of the knife-blade they will not sink when floated off. They are taken up from the water as soon as possible with a perforated lifter, and floated on to pure pyridin (Merck) contained in a dish at hand. Here the sections stiffen. When fairly stiff push them beneath the surface of the pyridin. They lie in this 12-24 hours (possibly less time would suffice). I have usually left them 24 hours. Passed thereafter into water, it is observed that the sections keep unwrinkled, though they become again flexible; the elements of the white matter are fixed. Wash thoroughly in water (2-4 hours, changing occasionally), stain, wash again, and pass the sections into weak pyridin (diluted with water), thence into stronger, and thence into pure pyridin. In this the section becomes dehydrated and cleared in a few seconds. Mount in balsam dissolved in pyridin. I have now sections prepared by this method six months old, and they are perfectly preserved. For staining various anilin dyes are suitable. Most are dissolved out pretty quickly by the pyridin, and therefore the sections should be over-stained. Kernschwarz, diluted to one-fourth its original strength, stains in a few minutes. It does not come out in pyridin. It sometimes produces a black ppt. on the specimen in course of time, which is unfortunate, as it is otherwise an excellent stain for these sections. Ten minutes in kernschwarz

* "Zeitschr. f. wiss. Mikroskopie," Bd. v., Heft. i.

† "Rivista Sperimentale di Freniatria," Vol. xvii., Fasc. iv.

‡ A preliminary note of this appeared in the "Med. Chronicle," January, 1893.

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may be followed by ¼-½ hour in picrocarmine, or a day or more in purpurin. Another combination is anilin blue-black (¼ per cent. aqu. sol.), 20 min., and picrocarmine, half-hour. By this method the spinal cord can be removed, cut, and sections stained and mounted within the day. Hitherto my experience has been chiefly with cords of the lower animals, cut within an hour of death; in two cases the human cord has been cut. In each of the latter the autopsy took place 24 hours after death, and in each the elements were seen to have their proper shape, and to be fixed. The nerve-tubes, when this method is used, are found tightly packed together, without the intervening spaces seen in chrome-hardened preparations, and in immense numbers. Between the larger tubes lie collections of small ones; these are obscured if the staining has been overdone. The great difficulty presented by this process is this—when the sections, passed from water into pyridin, have been a few moments in the latter, the cornua become mapped out, in many instances, by minute air-bubbles. These it is often impossible to get rid of by agitation; if allowed to remain any time circular area corresponding to the bubbles in size are left indelibly stamped upon the grey matter. Very frequently, but not always, I have avoided this formation of bubbles by cutting the sections into water which had been thoroughly boiled in a flask, and rapidly cooled before use, the flask being well closed after boiling by india-rubber cork and paraffin. If then air bubbles collected on the cornua they were mostly got rid of by agitating the section in the pyridin. It is to be hoped this difficulty may be thoroughly surmounted, as I believe the process promises to be of practical service.

Museum Preparations. Glycerin-Jelly as a Mounting Medium.—My object here is to draw attention to glycerin-jelly as a mounting medium for healthy or diseased sections and pieces of nerve-tissue in the fresh state, and for portions of diseased cerebral meninges and blood-vessels. The preparations in our collection include pieces and sections (the latter either of microscopic thinness or 1-2 m.m. in thickness) from various cerebral regions, complete brains of rodents (rat, rabbit), sections of the whole brain of cat and rabbit, and various specimens of diseased lepto-meninges. Sections of fresh pons, medulla, or cord could probably be equally well preserved. On this point I have no experience, but as the method, after a year's trial, proves satisfactory, it is proposed to try it on a large scale. I believe that most tissues mounted in jelly have been previously hardened. In the museum of the Yorkshire College, Dr. Jacob, of Leeds, recently showed me a number of jelly preparations, amongst which were a few specimens of fresh liver and lung; so that our preparations, if novel, are only so in that they have to do with cerebral structures. Their age varies between six months and one year; the tissues are perfectly preserved. It must, however, be acknowledged that the

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blood-tint has in a measure faded.* Quite exceptionally moulds have developed to a slight extent upon the surface of the jelly, but no damage to the specimen itself has resulted; though the moulds gain a footing, it appears that the soil is unfavourable to their further development. In these rare instances the specimens were transferred to fresh jelly, and this has remained sterile. The following is the formula for the jelly: Best French gelatine, 8-10 gram., glycerin 25 c.c., sat. sol. boracic acid 75 c.c. Dissolve the gelatin—cut up—in the boracic solution by heat, add the white of an egg, and apply heat until the albumen has separated out thoroughly; add the glycerin. If the fluids are contained in a flask floating in water, to which the heat is applied, but little loss by evaporation occurs. Filter through a hot-water filter. The jelly should be quite clear. It will have a slight yellow tinge. If this is thought undesirable less gelatin must be employed; the proportion stated above is that employed for gelatin culture-media, which remain solid in this climate throughout the year, and show no shrinkage for a very considerable period. The preparations are put up in glass vessels; Soyka's, Petri's, or Esmarch's dishes are convenient. Pour a little of the melted jelly into the vessel, let it rest, arrange the preparation on its surface, and cover with more jelly. If a fresh section of brain is to be mounted direct from the freezing microtome, it may be floated on to saturated boracic acid solution; the glass vessel, half-filled with set gelatin, is passed into the fluid beneath the section, and the latter arranged with a camel-hair brush on the jelly. The vessel with its section is then withdrawn, excess of fluid allowed to run off, and melted jelly (not too hot) is poured in up to the brim, care being taken to prevent floating of the section. It appears to me best not to seal down the lid of a vessel containing glycerin-jelly preparations; fresh jelly can then be added from time to time as necessary. None has yet been added in the case of our one-year-old preparations, as no appreciable shrinkage has occurred. A very good background to these preparations of fresh brain is obtained by painting the back and sides of the glass vessel employed with black bicycle varnish.

Plaster Casts of Brain.—These may be made as follows: Place the brain in a suitable position in a basin, pour over the surface melted paraffin (hard quality), sufficiently warm to ensure penetration into the sulci; it must not be allowed to approach too closely the setting point; on the other hand, too, great heat must, of course, be avoided. The pouring is done deliberately. Finally the brain is completely hidden by solid paraffin, which also fills in the space between it and the basin-wall. This procedure occupies from four to five minutes. As soon as the paraffin is well set, cut

* Thoma's fluid ("Centralbl. f. Allgem. Pathol.," 1891, p. 401) is said to preserve the blood-tint better than any medium hitherto recommended.

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through the portion surrounding the brain down to the bottom of the basin, in a complete ring round the organ. Place the basin and contents into cold water; the paraffin sets hard. Now remove from the water, and turn out the brain, covered by its paraffin cap, using a strong scapel for the purpose. By a little shaking the cap can be separated from the brain; from its inner aspect numerous ridges and processes are seen projecting; these correspond to sulci. By this means a mould of the brain is obtained. Fill this mould with good plaster of Paris, made up to the usual consistence of a cast with water. When the plaster is thoroughly set place the whole in water in a saucepan, and heat. The paraffin melts away, leaving a cast of the brain. The convolutions and sulci are well mapped out; the under surface is quite flat. Any little holes—sometimes such are seen, 1-2 mm. in diameter—may be filled up with plaster. Expose the cast to a gentle heat to dry it. Subsequently it may be painted of the same tint as a Giacomini preparation. Abnormal disposition of gyri, difference in size of hemispheres, local atrophy and depressions, gaping sulci, and other lesions may be represented by this method with accuracy. Good fresh sections may be obtained from brains which have been subjected to this process provided they were not notably softened beforehand.

(To be continued.)

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3. *German Retrospect.*

By W. W. Ireland, M.D.

On the Influence of Diseases of the Ear upon the Development and Course of Insanity.

The following is taken from a *resumé* of Dr. Bjeljakow in the "Wjestnik Psych." (viii. Jahrgang, Heft 2), as given in the "Allgemeine Zeitschrift für Psychatrie" (xviii. Band, 1 Heft). Dr. Bjeljakow, who has studied the subject in a hospital of St. Petersburg, has confined his observations to cases where there was distinct inflammation of the middle ear. Out of 135 post-mortem examinations which he made during four years 17·12 per cent. suffered from internal otitis. Of these one of the patients had melancholia, one paranoia hallucinatoria acuta, eight paranoia hallucinatoria chronica, two secondary dementia, three epileptic insanity, four general paralysis, one acute delirium, one senile dementia, and three hebephrenia. The author, at the end of his paper, gives the following conclusions:—

1. An inflammatory process of the internal ear is frequently the cause of mental derangement, especially of insanity accompanied

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