

TECHNICAL NOTE

TRANSPARENT CASTS OF THE LABYRINTH AN IMPROVED METHOD OF PREPARATION

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A METHOD of preparing a cast of the osseous labyrinth suitable for anatomical study was devised by A. A. Gray¹, and is described in *The Labyrinth of Animals*. The method is a lengthy one, involving meticulous care in technique and purity of reagents. The resulting specimen consists of a celloidin cast of the osseous labyrinth in which the membranous labyrinth can be seen as a transparency, suspended in xylol by a silk thread looped through one of the semicircular canals and gummed to the stopper of the specimen jar. The preparation is highly suitable for photography as evidenced by the excellent photographs of the labyrinths of man and the lower animals which appear in Gray's work on the subject. Unfortunately, however, such preparations are very fragile, the semicircular canal which supports the labyrinth frequently breaking off. For this reason they do not allow of transport from place to place without considerable risk of damage. The preparation in time becomes progressively opaque, owing to the hygroscopic nature of the fluid. Considering the rarity of these specimens, the time and expense necessary for their preparation and their value as an instrument of research, it was decided to try to evolve a technique which would overcome these drawbacks.

The following method has been devised, in which the labyrinth is mounted in the centre of a transparent block of hardened celloidin which protects it from injury. Moreover, the celloidin causes no significant impairment of photography (Fig. 1), and up to date, after a period of eighteen months, the specimen remains transparent.

TECHNIQUE

A. *Obtaining the Labyrinth Cast*

1. Obtain a fresh temporal bone at autopsy and cut down with a saw to as small a size as possible without opening into the labyrinth.
2. Remove the stapes.
3. Place in 10 per cent. Formol saline for four days.

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TRANSPARENT CASTS OF THE LABYRINTH. AN IMPROVED
METHOD OF PREPARATION—E. W. PEET

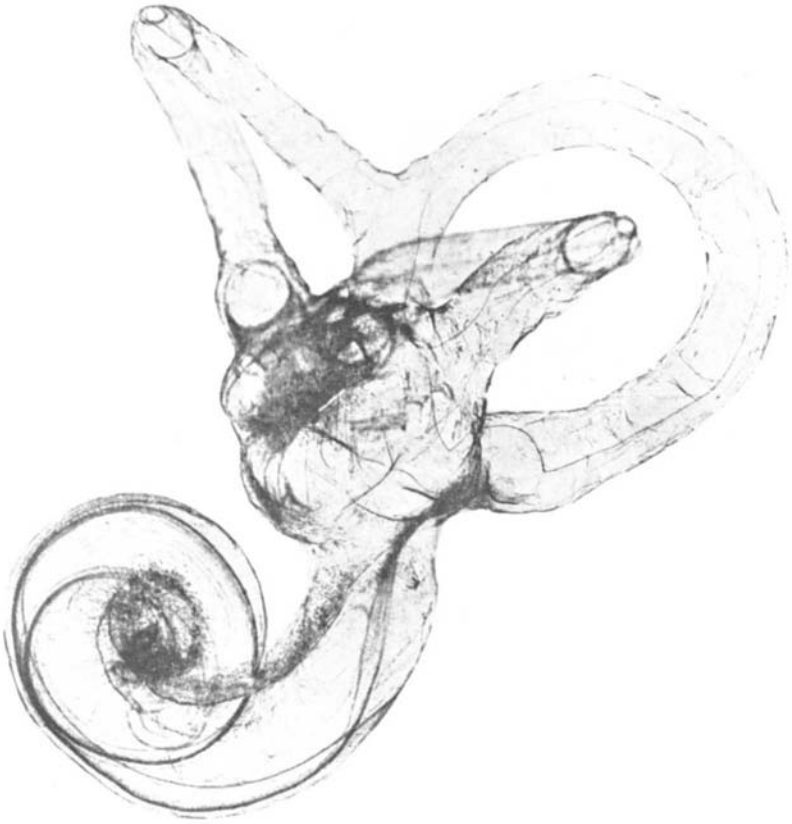


FIG. 1.

Technical Note

- Dehydrate by immersion in the following reagents :—
70 per cent. alcohol for 24 hours.
90 per cent. alcohol for 24 hours.
95 per cent. alcohol for 24 hours.
Absolute alcohol for 48 hours (change once).
- Immerse in alcohol and ether (equal parts) for 48 hours (change once).
- Immerse in 2 per cent. celloidin for 1 month.
- Harden by the chloroform vapour method and scrape off the celloidin from the surface of the bone.
- Transfer to 56° C. melting point wax for seven days, changing the wax several times. Allow the wax to harden.
Scrape the wax thoroughly from the surface of the bone.
- Immerse the specimen in 50 per cent. HCl until maceration is complete (about ten days) when the wax cast of the labyrinth can be lifted from the residue. Wash in running water and allow to dry by placing in a cardboard box for not less than a week.

B. *Embedding in a Celloidin Block*

- Prepare a paper box of the following dimensions : $2\frac{1}{2}$ in. high by $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. (approx.). Half fill with 2 per cent. celloidin and harden by the chloroform vapour method.
- Scoop out celloidin from the surface to a depth of half an inch. Lower the wax cast into this excavation. (Figs. 2 and 3.)

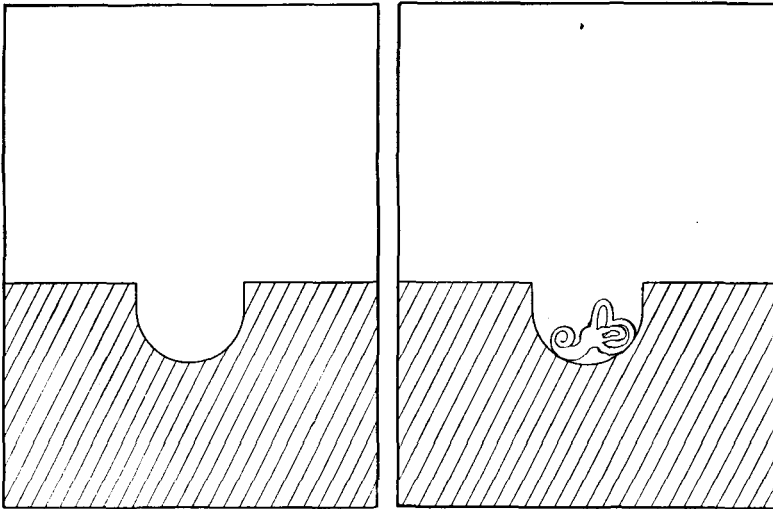


FIG. 2.

FIG. 3.

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3. Fill the box with 2 per cent. celloidin and immediately harden by the chloroform method. Remove paper from block.
 4. The block of hardened celloidin with the wax cast in the centre is placed in successive changes of xylol until the wax has been dissolved.
 5. Place block in benzene and change at intervals until the celloidin is glass-clear.
- Trim the block to the size required (Fig. 4) and mount in the museum jar on a platform of hardened celloidin as shown in Fig. 5.

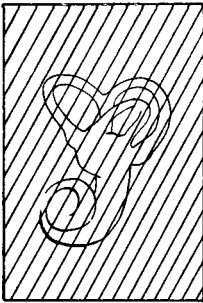


FIG. 4.

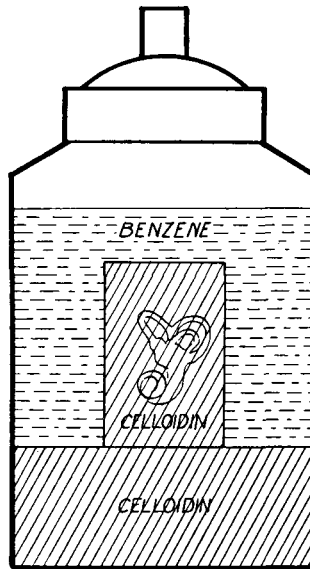


FIG. 5.

Fill jar with benzene and seal.

The most successful sealing medium used by the author up to date is a saturated solution of shellac in spirit.

REFERENCE

- ¹ GRAY, A. A., "The Labyrinth of Animals", Vol. i, 1907.