

METHOD OF PREPARING BURIED GLASS-COATED METAL ELECTRODES FOR ELECTROENCEPHALOGRAPHY

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No convenient and reliable method is yet available for making glass-coated metal buried electrodes for electroencephalographic investigations in the laboratory. Glass-coated electrodes possess advantages: they are straight, resilient, and smooth; they have excellent insulation properties; they are chemically inert relative to the animal's tissues; and, finally, they are easily sterilized. A simple and convenient method of making these electrodes requiring no special equipment is proposed.

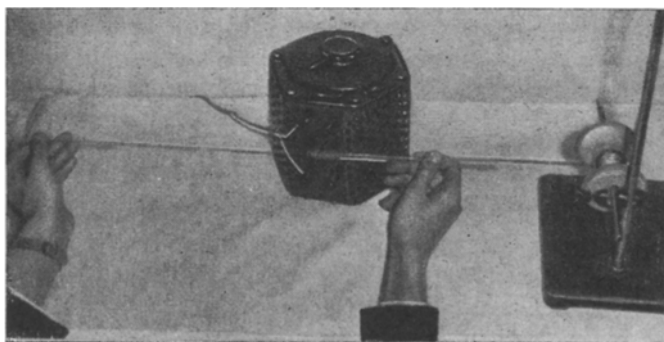


Fig. 1. Making glass-coated metal buried electrodes for electroencephalography.

Any autotransformer giving sufficient power to heat a Nichrome wire coil about 1 mm in diameter may be used. The coil, 40-45 mm in length and 12-14 mm in diameter, must have tightly wound turns. The metal wire to be made into the electrode is introduced in a 1-ml measuring pipet and the pipet is placed inside the coil. One end of the wire introduced into the pipet is fixed with the finger, and the other (of any length) must be left free. The coil is then heated by raising the voltage gradually. The pipet must not touch the walls of the coil. The glass of the pipet gradually softens and begins to be drawn out. Slowly and evenly the experimenter begins to move the hand fixing the end of the wire to the pipet away from the coil. With the other hand he holds the pipet still. The wire must be able to be fed into this end freely. The stationary end may then be handed to an assistant, who draws out the glass-coated electrode as far as he can grip the wire (see figure).

We usually draw out in this manner, at one operation, 5-10 m of wire coated with a thin layer of glass, and then divide it (with pliers) into the required lengths. Electrodes can be made from them by any method convenient to the experimenter.

Glass-coated electrodes made from wire 100 μ in diameter have a diameter of about 200 μ .

Double electrodes can be made in a similar manner. Two glass tubes fitting freely one inside the other are needed (they can be drawn from thick pipets in the same coil). The walls of the tubes must be about equal in thickness, but not too thin. The free ends of the wire are introduced into each tube, and the tubes are placed one inside the other and into the coil. Both tubes must be held with the fingers by both

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ends simultaneously; this is done by making the inner tube slightly longer. The subsequent manipulations are the same as those carried out when making single electrodes, but in this case some skill is necessary.

Inspection of the finished glass-coated wire and of the electrodes made from it is best done under a loupe.

We use glass-coated electrodes made as described above for stimulation and for studying the electrical activity of the subcortical structures.