A Membrane Mounting Aid for Use with Beckman Po_2 Electrodes

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Because of their relatively "crinkly" nature polyethylene and polypropylene membrane materials are difficult to mount on the ends of polarographic oxygen macroelectrodes. The directions given by the manufacturer for mounting the membrane by means of the mounting tool furnished are somewhat difficult to execute and unfortunately frequently result in a wrinkled membrane placed over a partially lost drop of electrolyte containing bubbles. Use of the simple membrane holding tool described here makes flawless first trial mountings the rule rather than the exception.

The tool is fashioned from one of the individual plastic cases in which 12 ml. disposable plastic syringes (Monoject, Roehr Products Co., Inc.) are packaged. The end of the syringe case body is sawed off as indicated by the dotted line (fig. 1) and that portion of the case cap central to the raised plastic ring is bored out. These two pieces constitute the tool. When a piece of membrane material is held over the mouth of the case body and the cap is put on, a flat unwrinkled membrane surface presents through the hole in the cap. With the case held cap end down, a dropper is introduced through the hole in the upper end and a drop of electrolyte solution is placed directly on the membrane. The electrode is then inserted through the same hole until its end gently depresses the middle of the membrane causing the drop of electrolyte solution to run to the center and surround the electrode tip. Because of the way the membrane is gripped between the inner side of the case cap and the outer side of the case body and stretched over the inner raised plastic ring of the cap, no wrinkles form when it is depressed by the electrode tip. The cup end of the nylon mounting tool furnished by the manufacturer is brought up beneath the membrane and the O-ring is pushed into place in the normal manner. The cap of the syringe case is removed and the excess membrane material around the periphery of the O-ring is cut away. Finally, the electrode is withdrawn through the upper end of the syringe case.

The material of which these syringe cases are made is chemically inert and thermostable so that the tool can be either gas sterilized or autoclaved to permit its use where a membrane must be sterilely mounted (*e.g.*, on a monitoring electrode in the extracorporeal circulation system of a heart lung machine or hemodialysis apparatus).

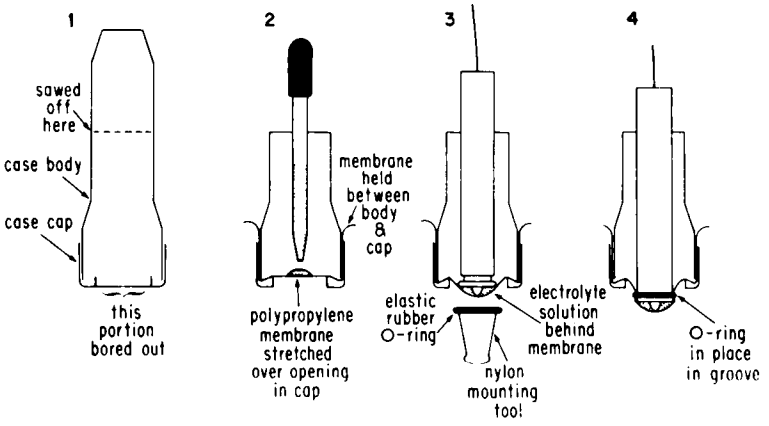

FIG. 1. Axial sections of membrane holding tool illustrating steps in membrane mounting process.