

## A SIMPLE AND RAPID METHOD FOR MOUNTING SERIAL SECTIONS FOR ELECTRON MICROSCOPY

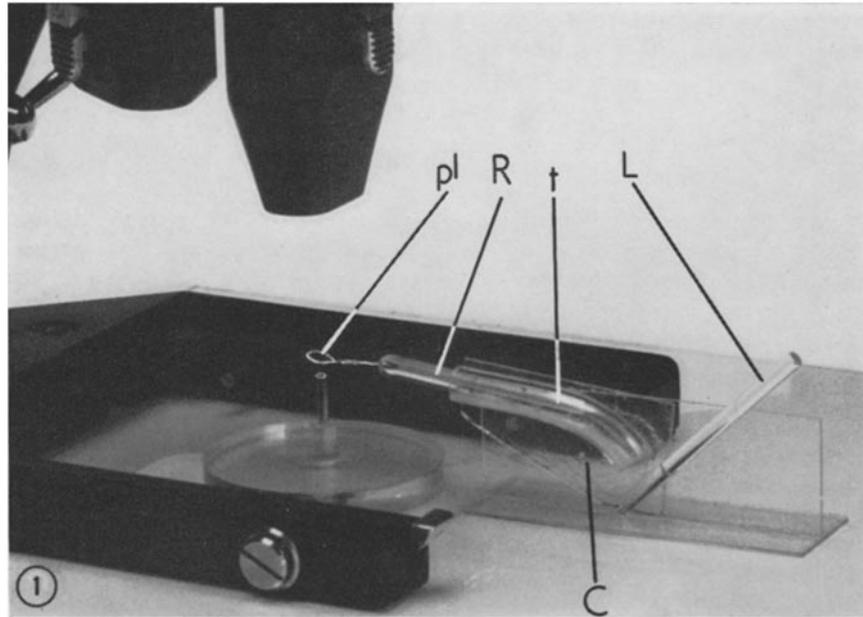
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A considerable need has been felt for a simple and reliable method of mounting serial sections for electron microscopy. Techniques so far published have necessitated special optical and micro-manipulative equipment.

An extremely simple and inexpensive micro-manipulator capable of very fine movements in three dimensions was first described by Goldacre (1954). It consisted of several glass microscope slides, lubricated with a viscous grease, sliding

upon one another. The degree of control provided by this device has proved more than adequate for the orientation of serial sections on slit grids.

The micromanipulator, which takes only a few hours to construct, is illustrated in Fig. 1. It consists of two standard glass microscope slides, glued together with epoxy glue at right angles to one another giving an inverted T. This is attached by its flat surface to a sheet of plate glass by means of a spot of grease. A third, smaller piece of



glass, *C*, is attached to the vertical arm of the *T*, also by a spot of grease. To this third piece of glass is glued a lever, *L*, and piece of bent tubing, *t*. A glass rod, *R*, carrying a platinum loop, *pl*, is conveniently held by friction in this bent tube. The diameter of the platinum loop should be about twice that of the grid. A clear plastic column of the same diameter as the grid is mounted on a base also attached to the plate glass with a spot of grease. A low power microscope is focused directly on the top of this column.

The following technique was found to be suitable: formvar films were prepared by coating a slide with a 0.3 per cent formvar solution in ethylene dichloride and by floating the resultant film on to water. Platinum loops coated by picking up pieces of this formvar film were allowed to dry and then used to pick up the ribbons from the water bath of the microtome knife. Orientation of ribbons on the formvar film is not critical at this stage. The glass rod carrying the loop is attached to the micromanipulator. A slit type grid is made sticky by coating with a 1 per cent solution of low viscosity polyisobutene in xylol (Drummond, 1950) or with very dilute histological albumen. The grid is then placed on top of the perspex column which, together with the manipulator, is then adjusted so that the slits in the grid are

parallel with and directly below the ribbon. The loop is then slowly pushed down over the grid leaving the formvar film carrying the sections attached to the grid, and the ribbon oriented along the slit. If required, the grid may then be carbon coated.

By means of this method only a few extra minutes are necessary, above the time required for sectioning, for the routine mounting of serial sections.

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