GRANTEE INVENTIONS

Technique for Trimming Blocks

An improved technique has been used for trimming plastic embedded blocks for ultramicrotomy. A hand-held high-speed hobby drill (*A*) is employed as described by Zacks (*1*) in conjunction with a dissecting microscope (*B*). A fluorescent illuminator is useful but not essential.

The block to be trimmed is placed under the microscope at 10× to 15× (fig. 1) in a holder (*C*). The drill, fitted with a small cutting burr (*D*), is brought into the field of view from the lower right (fig. 2). Thus, the dust created by cutting the block is carried away from its face (fig. 3). The drill, which operates at 27,000 rpm, cuts through the block quickly and smoothly. The microscope enables the operator to see exactly how close the burr is to the tissue.

When the block face must remain as large as possible so that a thick section can be used for light microscopy (as when seeking a glomerulus in renal tissue), trimming can be executed by this method. Similarly, a smaller burr (*E*) can be substituted, the magnification increased to 25×, and the block trimmed to a very small face (fig. 4). A razor blade is then used to expose the face of the block.

During the embedding procedure, tissues are allowed to gravitate from top to bottom of the capsules (*2*). The tissue sometimes fails to reach the bottom and remains on the side of the capsule, making the trimming procedure difficult with conventional methods. In such instances a small circular saw (*F*) is used to remove excess plastic and the block trimmed as described previously.

A foot-operated rheostat (*G*) will free both hands to manipulate the block and the drill. The drill is operated at maximum speed as slower speeds give unsatisfactory results.

This technique is a simple and precise way to trim blocks for ultramicrotomy. The entire

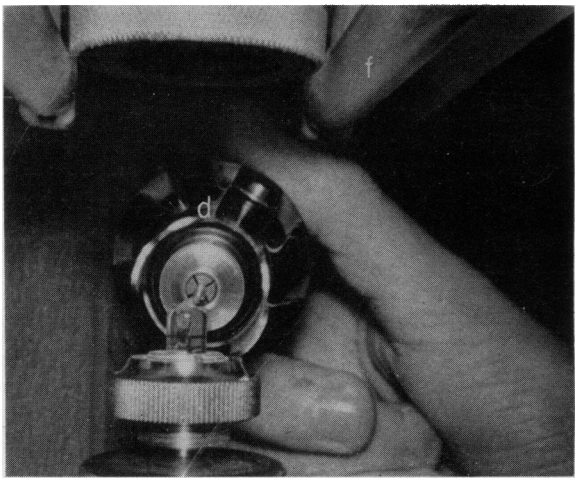

Figure 1. Block in position beneath microscope with drill d and fluorescent light f

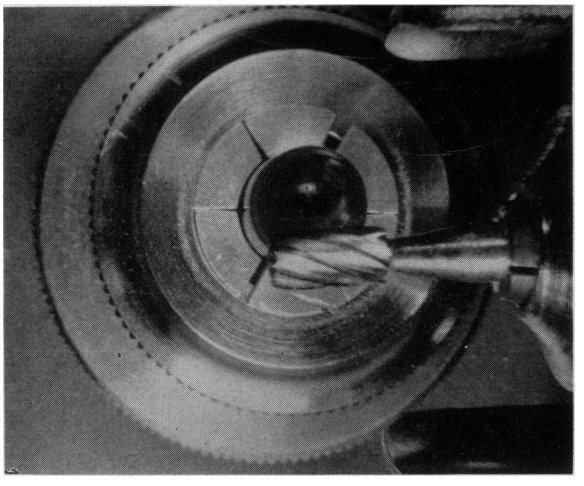

Figure 2. Burr brought to block from lower right

procedure is carried out under a microscope and eliminates the need for specially designed equipment (*3*).—HERBERT R. THOMAS, *electron microscopy technician, and* DR. R. E. YODAIKEN, *associate pathologist, department of pathology, Buffalo General Hospital, Buffalo, N.Y. This technique was developed under Public Health Service grant No. AM-08334-03.*

REFERENCES

(*1*) Zacks, S. I.: High speed trimming of plastic-embedded blocks for ultramicrotomy. Stain Techn 37: 257–258 (1962).

(*2*) Luft, J. H.: Improvements in epoxy resin embedding methods. J Biophysical and Biochemical Cytology 9: 409–414 (1961).

(*3*) Isaac, P. K.: Mechanical trimming of embedded blocks for ultramicrotomy. Stain Techn 39: 225–227 (1964).

EQUIPMENT REFERENCES

(*A*) Moto-tool, No. 3, Dremel Manufacturing Co., Racine, Wis.

(*B*) Dissecting microscope, American Optical Cycloptic, Buffalo, N.Y.

(*C*) Sorval holder, No. MT-1189, Ivan Sorval, Inc., Norwalk, Conn.

(*D*) Cutting burr, No. 194, Dremel Manufacturing Co., Racine, Wis.

(*E*) Cutting burr, No. 111, Dremel Manufacturing Co., Racine, Wis.

(*F*) Circular saw, No. 199, Dremel Manufacturing Co., Racine, Wis.

(*G*) Rheostat, No. 226, Dremel Manufacturing Co., Racine, Wis.

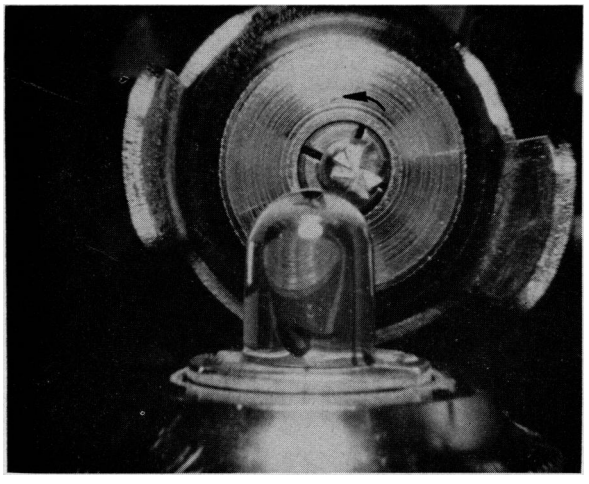

Figure 3. Direction of rotation of burr (arrow) in carrying dust away fom block

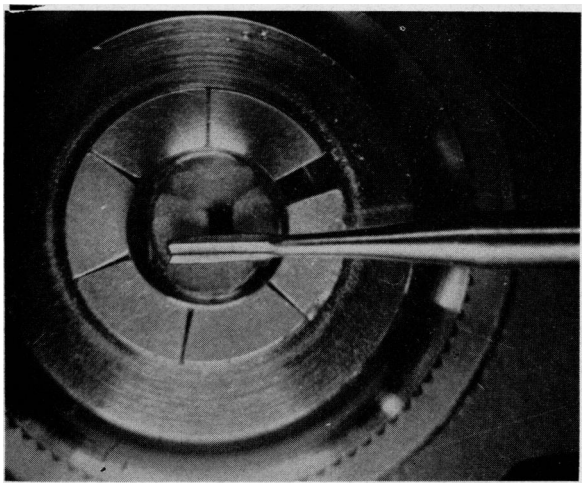

Figure 4. Small burr used for final trimming

Altering Bacteriological Plastic Petri Dishes for Tissue Culture Use

Ordinary polystyrene plastic petri dishes cannot be used for the culture of vertebrate cells because the cells do not spread effectively on such dishes. The negative charge on the dishes is apparently too low to support cell spreading. The charge can be greatly increased by sulfonating the polystyrene. This can be done by covering the bottom of the dish with reagent grade sulfuric acid (H_2SO_4) for about 30 minutes at room temperature. The H_2SO_4 is then poured off and washed away with tapwater. Ten percent sodium carbonate (Na_2CO_3) is added for 15 minutes to neutralize the residual H_2SO_4. The dishes are then washed with distilled water and sterilized with ultraviolet light. Such dishes support the growth of trypsinized chick embryo cells at least as well as do the commercial tissue culture dishes.

The extent of charge on the dishes can be greatly increased by leaving the H_2SO_4 on the dish overnight at 55° C. After washing, the overcharged dish is covered with 50 percent serum in a balanced salt solution for 1 hour. This is then washed with a balanced salt solu-