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.

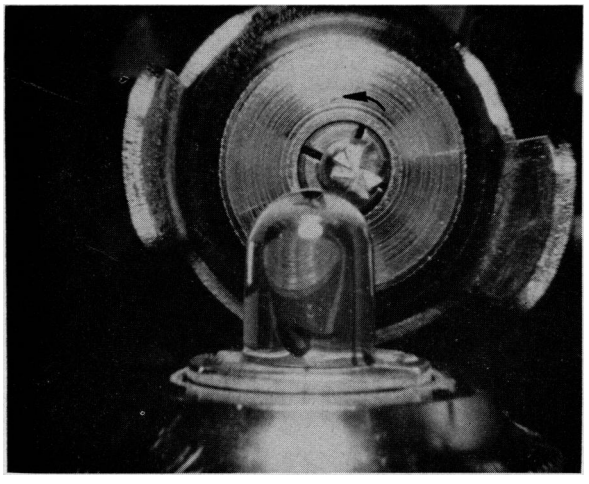


Figure 3. Direction of rotation of burr (arrow) in carrying dust away fom block

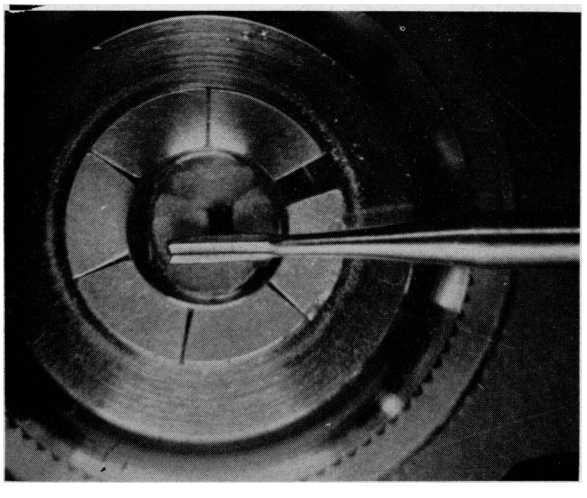


Figure 4. Small burr used for final trimming

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-

tion. The serum proteins adsorb to the overcharged dish and make a bed for the cells. Cloning efficiencies of chick cells without feeder layers are usually much higher on such dishes than on commercial tissue culture dishes.—PROF. HARRY RUBIN, D.V.M., *department of molecular biology, University of California, Berkeley. This invention was developed under Public Health Service grant No. CA-04774.*

Flexible Linkage System

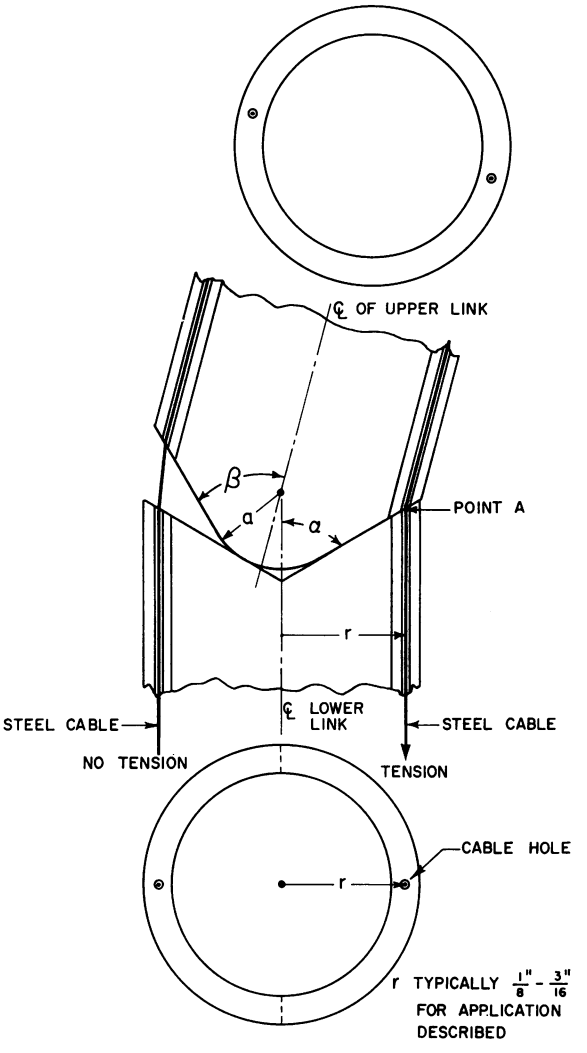
A flexible linkage system with articulated joint, potentially useful in situations involving the need to look inside a relatively inaccessible cavity, has been built. The experimental system was designed as a fiber-optic pharyngoscope for use in examining tissues of the mouth and nasal passages behind the soft palate.

The control cables of the joint (see chart) will not kink when the two elements move, providing unrestricted flexibility in one direction. When many links are used together, a relatively smooth curvature is formed and a probe equipped with this tip can be inserted easily and then flexed for optimum viewing.

The experimental fiber-optic pharyngoscope is controlled by steel cables running longitudinally along the fiber bundle to the main housing. A spring-loaded pulley maintains tension of the cables for all positions of the flexible end.

The optical system consists of a probe containing a light source, a right-angle prism, a lens system, and a fiber bundle to transmit light to a set of viewing optics. The physician can control the brightness of the lamp with a rheostat provided with the instrument.—ROBERT J. GIBSON, JR., *Franklin Institute, Philadelphia, Pa. This invention was developed under Public Health Service grant No. A-2833.*

Flexible linkage for articulated joint



α=angle of V of lower link

β=angle of V of upper link

r=radius to wire both links

a=radius of round nose of upper link

When these quantities are related as shown in the equation, the upper link will rotate and slide on the lower link such that no offset in wire holes will occur at point A. Thus no kink will occur in wire.

$$a = r\frac{\sin\alpha - \sin\beta}{\sin(\alpha - \beta)}$$