exchange taking place depends on the size of the particles; the larger the particles, the less the exchange. This indicates that exchange takes place on the crystal surface. Heating of the $BaCO_3$ sample or preparing it by some method giving very large crystals will make exchange negligible.

References

1. ARMSTRONG, W. D. and SCHUBERT, J. *Science*, 1947, **106**, 403.
2. YANKWICH, P. E. *Science*, 1948, **107**, 681.

Modifications of the Rabbit Ear Chamber Technique[1]

J. J. Ahern, W. R. Barclay, and R. H. Ebert

Frank Billings Medical Clinic, Department of Medicine, University of Chicago

The rabbit ear chamber provides a valuable technique for the microscopic study of living vascular tissue over a period of weeks or months. The basic design has been described (*1–3*), but in the course of the past three years various modifications have been made which simplify the procedure. Since the changes may be of help to others using the method, they are presented here.

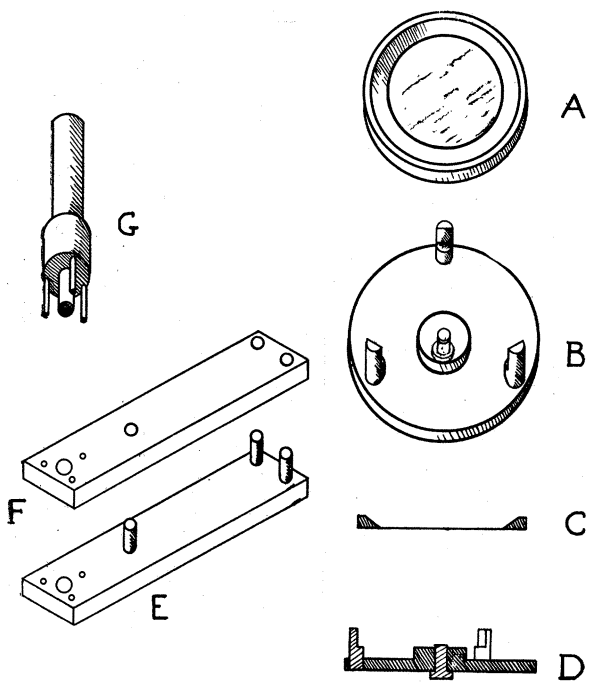

FIG. 1.

A modified chamber has been designed, constructed entirely of Plexiglas except for a mica cover slip. The cover slip's supporting ring (*A*) has an outside diam of $\frac{7}{8}$ in. and an inside diam of $\frac{5}{8}$ in. It is 0.080 in. thick. The top is beveled at the angle shown in cross section (*C*) to prevent high power objectives from striking the edge of the ring. A piece of clear mica 50–60 μ in thickness is glued to the supporting ring (*A* and *C*).

The chamber base (*B* and *D*) has a diam of 1 in. and the base plate (*B* and *D*) is 1/16 in. thick. A central observation table $\frac{1}{4}$ in. in diam projects 3/32 in. above the base plate. If access to the thin layer of tissue on the table is desired, a removable plug with a shaft diam of 1/16 in. may be made to fit loosely into a hole drilled through the base plate and central table (*B* and *D*). It is important to have this fit loosely, because serum which seeps around the plug makes it difficult to remove the plug after new tissue has grown onto the observation table.

The cover slip ring (*A* and *C*) fits tightly onto three notched Plexiglas pegs (*B* and *D*), 0.109 in. in diam, inserted at the periphery of the base plate and cemented with glacial acetic acid. The notches (*D*) are elevated .002 in. above the level of the table. The height of the notches above the table determines the thickness of the new tissue which grows between the cover slip and observation table and eliminates the need for buffers previously described (*1, 2*). After the ring has been snapped into place, it is secured by a drop of Lucite in chloroform over each peg.

The operative technique for inserting the chamber has been described (*1, 2*). To insert the chamber, four holes are punched through skin and cartilage near the tip of the pinna; a central hole to accommodate the central table and three peripheral holes for the pegs. A steel punch (*G*) has been designed to cut the four holes at one time and insure an exact fit. Three peripheral punches are attached to a handle in the exact positions of the Plexiglas pegs and made 0.015 in. larger than the diam of the pegs. A fourth punch, 0.015 in. larger than the central table diam, is attached centrally. The punches are $\frac{3}{4}$ in. long and have notched ends. A Plexiglas guide (*E, F*) permits visualization of vessels when holes are punched and keeps the ear perfectly flat. The guide is made in two pieces, each $5\frac{3}{4}$ in. in length, $1\frac{1}{4}$ in. wide, and $\frac{5}{8}$ in. thick. Steel connecting pins, $\frac{7}{8}$ in. long and 3/16 in. in diam, connect the two plates when in use. Punch holes are placed at one end and are made 0.001 in. larger than the diam of the corresponding punch. The end of the ear is slipped between the two plates and when the template has been placed so that the central artery is adjacent to the central hole and no major vessels will be cut by the punches, the plates are pressed tightly together. The guide is then held firmly against the table and the holes are punched.

[1] This investigation was supported by a research grant from the Division of Research Grants and Fellowships of the National Institutes of Health, U. S. Public Health Service.

References

1. EBERT, R. H., FLOREY, H. W., and PULLINGER, B. D. *J. Path. Bact.*, 1939, **48**, 79.
2. EBERT, R. H., AHERN, J. J., and BLOCH, R. G. *Proc. Soc. exp. Biol. Med.*, 1948, **68**, 625.
3. SANDISON, J. C. *Amer. J. Anat.*, 1928, **41**, 447.