THE USE OF A TRANSLONGITOME IN MAKING AND INTERPRETING ALTERNATE TRANSVERSE AND LONGITUDINAL SERIAL SECTIONS

BOTANISTS and zoologists have long recognized the difficulty encountered in interpreting the relationship of parts in transverse and longitudinal sections made from two different pieces of tissue. An alternating two-plane cutting attachment to be used in a rotary or sliding microtome has been developed by the writer. This instrument has been named a "Translongitome" at the suggestion of Dr. E. J. Kraus, Botany Department, University of Chicago. This device makes it possible to cut alternate transverse and longitudinal sections from the same block of tissue so that the alternate sections come from the microtome knife in one continuous ribbon.

The translongitome is fastened into the microtome clamp in relation to the microtome knife as shown in Fig. 4. This makes the sector swing through a 90-degree arc in a plane parallel to the knife edge. The hinged sector automatically locks or releases for each predetermined position. It is necessary to set the microtome to cut one half of the thickness desired as each face of the block is cut on alternate strokes. After adjustments are made for the two faces to come to the knife in the same plane and the paraffin trimmed for the correct width of ribbon the microtome is turned with a quick movement, stopping with the translongitome up each time and the sector shifted to the reverse position by means of the handle. The detail of the locking device and two-plane adjustment is not shown in the diagram.

Figs. 1, 2 and 3 indicate the method of preparing the paraffin block for attachment to the translongitome. Fig. 4 indicates a portion of the paraffin ribbon coming from the microtome knife. This paraffin ribbon is prepared in the usual manner and studied as serial sections. Fig. 5 shows the finished slide as the longitudinal and transverse sections appear in separate rows. It may be observed that the upper edge of the transverse sections matches the extreme lower edge of the longitudinal sections. Observation under the microscope of course makes these edges appear to be the inner rather than outer edges. A particular bundle or structure in transverse section will appear closer and closer to the cutting edge after each successive cut and when it reaches the cut edge it will appear in the next longitudinal section. It is always possible to determine the direction of the longitudinal cut with respect to the structure and to know the structure involved from the adjacent transverse sections. The cut edges show practically no disruption of parts, and it is possible to take a photomicrograph of a successive transverse and longitudinal cut edge and to match edges part for part or even cell for cell.

Slides prepared by this method are of great assistance in interpreting and determining relationship of parts in original research and are especially helpful in instruction in vascular anatomy.

D. M. CROOKS

UNIVERSITY OF ARIZONA

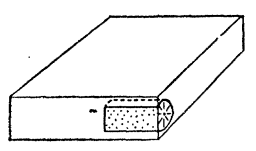

FIG. 1.

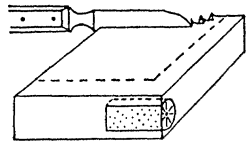

FIG. 2.

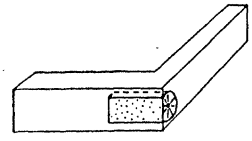

FIG. 3.

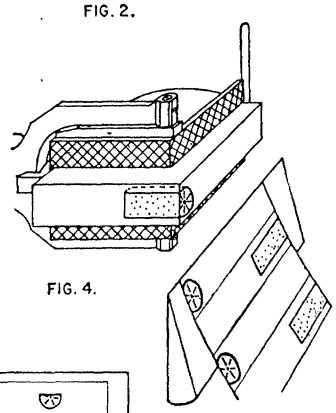

FIG. 4.

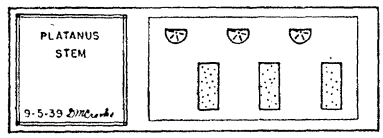

FIG. 5.

BOOKS RECEIVED

Calcutta School of Tropical Medicine and the Carmichael Hospital for Tropical Diseases, Report, 1938. Pp. 193. Bengal Government Press, Alipore.

DERANIYAGALA, P. E. P. *The Tetrapod Reptiles of Ceylon. Vol. I, Testudinates and Crocodilians.* Pp. xxxii + 412. 137 figures. 24 plates. Colombo Museum, Ceylon. Rs. 10/.

HENDREN, LINVILLE L. *A Survey of Physical Science. Part I, Physics and Astronomy.* Pp. x + 556. Illustrated. *A Survey of Elementary Physics.* Pp. x + 393. Illustrated. University of Georgia Press, Athens.

Mellon Institute Bibliographic Series. *Bulletin No. 4; A List of Books, Bulletins, Journal Contributions and Patents by Members of Mellon Institute, 1911–1938.* Pp. v + 242. The Institute, Pittsburgh.

National Research Council of Japan. *Japanese Journal of Botany; Transactions and Abstracts. Vol. X, Nos. 1–2.* Pp. v + 211 + 30. Illustrated. *Japanese Journal of Geology and Geography; Transactions and Abstracts. Vol. XVI, Nos. 1 and 2. July, 1939.* Pp. viii + 204 + 80. The Council, Tokyo.

PILSBRY, HENRY A. *Land Mollusca of North America, North of Mexico. Vol. 1, Part 1.* Monograph No. 3 of the Academy of Natural Sciences of Philadelphia. Pp. xxvi + 573. 377 figures. The Academy, Philadelphia.

STRECKER, EDWARD A. *Beyond the Clinical Frontiers.* Pp. 210. Norton. $2.00.

WHEELER, RAYMOND H. *The Science of Psychology.* Pp. xviii + 436. 78 figures. Crowell. $2.75.