SIMPLIFIED METHODS FOR MICRO-INCINERATION OF TISSUES

MICRO-INCINERATION of sections of isolated cells or tissues reveals with remarkable clarity the distribution of mineral ash in various parts of the cell. Various parts of the tissues are recognizable;[1] stages of mitosis can be traced;[2] the structural details of ciliates are found to be clearly represented.[3,4] It is a valuable cytological method and should be more widely used.

Many workers are undoubtedly deterred by the apparent need for special furnaces. A quartz tube furnace heated by gas or by electric coil, and with porcelain or platinum supports to prevent warping of the slide, has been recommended.[1,2] Emphasis has been placed on a relatively exact furnace temperature, for instance, 625°–630° C.,[5] and on careful shielding of the slides from dust by means of the quartz tube. The use of special quartz slides has also been recommended.[5]

We have experimented in this laboratory with simplified methods of ashing for cytological purposes. It was found[4] that an ordinary muffle furnace gave very good results. The temperature could be accurately regulated and the sections were effectively protected from dust by inverting Gooch crucibles over the slides. Using this method on *Paramecium,* the finest details could be made out: cilia, basal granules, differentiation between ectoplasm and endoplasm, etc.

Recently an even simpler method has been found to be entirely satisfactory. An ordinary hot-plate with exposed coils, which retails at about two dollars, was used instead of a furnace. The slides were set on the fire-clay rack holding the coils and covered with Gooch crucibles. The slides were incinerated at a dull red heat for about three to six hours. Sections of *Paramecium, Termopsis* and various rat tissues were incinerated with excellent results by this method. No trouble was experienced from warping of the slides when an ordinary hard-glass type was used. Shrinking and cracking of the sections is largely prevented by doing the initial heating slowly, taking two to three hours to bring the slide up to red heat. This may be done with a rheostat or by placing a heavy unglazed porcelain plate between the slide and the hot plate.

The whole procedure is as follows: Fix in formol-alcohol,[3] dehydrate, embed in paraffin, section and spread on a slide by the usual methods. Incinerate three to six hours (two to three hours initial heating, one half to three hours at red heat), cool and seal a cover slip in place with paraffin. Examine with a dark-field microscope, or, if that is not available, by oblique illumination against a black background.

This method is easier than many of the cytological methods commonly taught and does not need to involve any apparatus not found in the ordinary histological laboratory. The simplified micro-incineration method is splendidly adapted for routine laboratory use for class demonstration of the distribution of mineral ash in cells.

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SPECIAL ARTICLES

DEMONSTRATION OF THE CENTRAL BODY IN THE LIVING CELL

IN recent publications, Wilson and Huettner[1] offered conclusive evidence, based on observations of fixed preparations, of the existence of central bodies in Drosophila eggs It is the purpose of the authors to add new evidence of the existence of central bodies based on living material. These findings were obtained in the course of studies, now in progress, on the pole cells of developing eggs of *Drosophila melanogaster.*

In making these studies, the method introduced by Child and Howland[2] for observing the living Drosophila egg was employed. The opaque, chitinous chorion was first removed with a sharp needle, leaving the naked egg with its shiny, transparent and tough vitelline membrane intact. The egg was then placed on a coverslip on which a thin layer of Ambroid cement had been previously spread and baked to complete dryness. Ambroid solvent (amyl acetate) was next applied on the ambroid near the egg in such quantity as to allow only a thin film of dissolved ambroid to spread under the egg. Since amyl acetate is a very volatile liquid, the ambroid under the egg dried in a short time, leaving the egg securely fastened to the coverslip. The egg was now surrounded by a drop of any desired medium and the coverslip was inverted, placed on a depression slide and sealed with vaseline.

Using this method, the living egg could be observed, with the aid of the microscope, under any desired magnification. Great care was taken that the egg should suffer no injury while being prepared for observation. Such injury could occur:

[1] A. Policard, *Protoplasma,* 7: 464, 1929.
[2] G. H. Scott, *Bull. d'Histol. Appl. Phys. et Path.,* 7: 251, 1930.
[3] E. S. Horning and G. H. Scott, *Jour. Morph.,* 54: 389, 1933.
[4] R. F. MacLennan and H. K. Murer, *Jour. Morph.,* (in press).
[5] E. S. Horning, *Jour. Cancer Research Comm.,* Univ. Sydney, 4: 118, 1932.
[1] SCIENCE, 73: 447–448, April 24, 1931, and *Zeitsch. f. Zellforsch. u. Mikr. Anat.,* Vol. 19, No. 1, 1933.
[2] SCIENCE, in press.