MASS PROCESSING OF HISTOAUTORADIOGRAPHIC MATERIAL

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Simple devices are suggested by means of which from 10 to 50 specimens can be coated with emulsion and passed through other solutions simultaneously.

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To obtain comparable results in histoautoradiographic investigations, as with any other method of investigation, the highest possible degree of standardization of all operations must be aimed at. Bearing in mind that the number of specimens in one experiment often runs into hundreds, the processing of all this material manually is not only a laborious operation, but more important, it is difficult to standardize the procedures.*

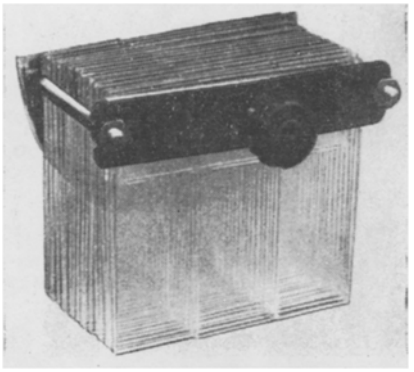

Fig. 1. Stand for 50 slides.

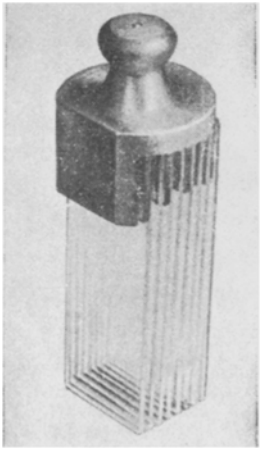

Fig. 2. Clamp for 10 slides.

To make procedures of histoautoradiography less laborious and to obtain maximal standardization, specially constructed stands holding about 50 specimens (Fig. 1) are used and all operations, starting with dewaxing and coating with emulsion and ending with staining, are carried out without removing the slides from the stand. Since drying of specimens coated with emulsion is difficult in stands, the drying process is speeded up by means of a jet of air from a vacuum cleaner. If the work is carried out in a dust-free room, an ordinary fan can be used.

Depending on the test object concerned, slides can be left after staining without cover slips. Tanned emulsion protects the specimens satisfactorily from injury. To make them stronger still they can be dipped in a 4% solution of methyl methacrylate in chloroform [2] or embedded by the usual method in Canada balsam.

The bank (for xylol, alcohol, emulsion, and other reagents) can consist of small exsiccators or crystallizing tanks. A very convenient bank for such work can be made from 1.5-liter bottles (or bottles of any other size depending on the size of the stand), if they are cut off about 10 cm above the base by means of Nichrome wire heated to redness. If a rim made of a piece of rubber hose which is cut off and everted is fitted on the lower end of the bottle, an airtight vessel is obtained which is convenient for work and for keeping volatile fluids.

If a very large number of specimens have to be processed, their development and fixation can be speeded up by placing several stands at a time in the developer and then in the fixer (at intervals of 20-30 sec, allowing for the time for rinsing the specimens in distilled water before immersing them in hypo).

*With respect to constancy of temperautre of the emulsion, developer, and fixer, the development time, and so on.

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The stands with slides should be immersed in the working solutions in a vertical position only, to avoid possible retention of air between the slides.

After removal of the stand from the emulsion, excess of emulsion is removed from the slides with filter paper folded in several layers.

The addition of appropriate materials (plasticator, wetting agent, tanning agent) to the emulsion ensures their uniform distribution over the slides and prevents possible injury to them [1]. The thin layer of emulsion left on the slides becomes gel-like in consistency at room temperature after 2-3 min, and thereafter no displacement of the emulsion can take place.

If the quantity of material is small, to economize in emulsion and reagents, small clamps (Fig. 2) were used, corresponding in size to biological beakers. These clamps have a screw on one side to secure the slides in them. One such clamp can hold about 10 slides.

Slides preliminarily washed and dried so as not to contaminate the reagents were used as interlayers between the specimens in the stands. Slides cut into four parts also were used as interlayers for the clamps.

LITERATURE CITED

1. K. S. Bogomolov, M. Yu. Deberdeev, A. A. Sirotinskaya, et al., Trud. Vses. Nauchn.-Issled. Kinofotoinst. (Moskva), No. 11, 87 (1957).
2. G. I. Roskin and L. B. Levinson, Microscopic Techniques [in Russian], Moscow (1957), p. 168.