A PERMANENT SMEAR TECHNIQUE FOR ANIMAL TISSUES

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The use of smear preparations is one of the oldest and most effective methods for studying cell structures, even antedating sectioning technique. It enables one to observe entire cells rather than portions of them in contrast to sectioned tissues.

Belling ('26), Darlington ('32), McClintock ('29), Sax ('31), and Steere ('31), have recently revived the use of smears to great advantage in cytological work, especially for the study of chiasmata phenomenoa. Only McClintock and Steere. however, have been able to make their smear preparations permanent and their studies deal with plant cells.

The method here outlined is a modification of Belling's aceto-carmine technique. Smears are made by pressing fresh grasshopper (*Melanoplus*) testes between slides. The slides are separated by sliding them apart so that the smear remains as thin as possible. After all connective tissue is removed from the slides with a dissecting needle, the slides are placed, smear down, in a solution of one part acetic acid to three parts absolute alcohol. The solution should cover only the under surface of the slides, for otherwise the tissues will fall off while in the solution. Within three hours the tissues become completely fixed and are ready for staining. However, immersion for as much as twelve hours in the fixative has not been found to be injurious. The slides are then removed from the fixative and immersed in a hot solution of Belling's aceto-carmine for three to four minutes. The stain is then drained off and the slides passed in order through the following series of solutions: one part acetic acid to three parts absolute alcohol; one part acetic acid to six parts absolute alcohol; one part acetic acid to nine parts of absolute alcohol; abosolute alcohol. Preparations are allowed to remain in each solution about one-half minute, and are mounted from absolute alcohol in diaphane.

Smears prepared by this method will keep indefinitely and are excellent to bring out chromosomal relations. The cell structure is not disturbed and the stain is of such a nature that the study of chromosomes lying closely adjacent to each other is not difficult.

LITERATURE CITED

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