

## Book Reviews

*Scanning Electron Microscopy* 1972. Edited by O. M. JOHARI and I. CORVIN. (Pp. viii + 447; illustrated; U.S. \$20.00.) Chicago: IIT Research Institute. 1972.

This volume contains the Proceedings of the 5th Annual Symposium on Scanning Electron Microscopy, held at the IIT Research Institute in Chicago. About two-thirds of the book are devoted to general or mainly non-biological topics, though many of these will be of interest to those biologists who try to take an intelligent interest in their instruments. Almost all biologists will, however, find much of interest in the report of the 'Workshop' on preparation methods for biological specimens. This is introduced by a general review by A. Boyde, who goes on to compare a wide variety of fixation and drying methods on fibroblasts in tissue culture. This is a valuable study which shows that there is still no single ideal method. Several contributions deal with low temperature methods such as freeze-drying, freeze-substitution, critical point drying, freeze-fracturing and freeze-etching. These are techniques that are widely used in other fields and indeed it could be argued that the whole future of biological electron analytical methods depends on their perfection. A study of special anatomical interest is described by workers at the University of California who are investigating the bronchioles and alveoli. They claim that the best results are obtained by perfusion fixation via the trachea with aldehydes at controlled pressure, followed by critical point drying and metallic coating. This method gave good preservation of cilia and microvilli.

A new immuno-labelling technique is described by workers at Ohio State University. This involves coating 0.23  $\mu$ m latex particles with a suitable gamma globulin and incubating them with glutaraldehyde-fixed target cells. The surface distribution of the particles, and hence of the antigen sites, can be demonstrated in red cells and lymphocytes. The method is limited by the relatively large size of the latex particles but improvements in this respect may be expected.

Other papers deal with blood cells, skin and bone.

Altogether it is clear that scanning electron microscopy is a valuable adjunct to other methods of investigation. In a review of a previous volume it was pointed out that British medical scientists are in danger of falling behind in this field through lack of proper support. Unfortunately the situation does not seem to have improved very much. Those who allocate resources still have to be convinced that instruments such as the S.E.M. must be regarded as part of the routine equipment of every university or medical school.

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*Age Changes in the Neuromuscular System.* By E. GUTMANN and V. HANZLÍKOVÁ. (Pp. viii + 195; 49 illustrations; £6.50.) Bristol: Scientechnica. 1972.

This short book begins by surveying the morphological, biochemical and functional changes which occur in old age in the motoneurons and the somatic muscles. It then goes on to discuss the mechanisms influencing the development of senile muscular atrophy and to compare this type of atrophy with others. There is a brief chapter on fitness in old age and on the capacity of the neuromuscular system to adapt itself to the changed circumstances, and finally a discussion on the nature of ageing in the neuromuscular system. The perennial problem of differentiating between programmed and non-programmed age changes is naturally raised, as is the relationship between molecular, cellular, and organismal ageing. The authors conclude that senile muscle atrophy is a distinct form of atrophy, and is primarily due to a decrease in the trophic function of the nerve cells rather than to their death. It is also suggested that this disturbance of the trophic relationship between nerve and muscle cells may be the primary programmed change.

The arguments set out are clear, though perhaps somewhat repetitive, and the book will be of interest to all those concerned with the problems of ageing, whether experimental or clinical.

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