J. Fluid Mech. (1971), *vol.* 45, *part* 2, *p.* 416
Printed in Great Britain

REVIEW

Circulatory and Respiratory Mass Transport. Edited by G. E. W. WOLSTENSHOLME and JULIE KNIGHT. J. and A. Churchill Ltd., 1969. 310 pp. £3.50.

Rarely does a text-book or the proceedings of a symposium or meeting leave the reader with the impression that science is a kind of process rather than a set of interconnected bits of information; text-books fail through presenting the subject as a completely integrated entity, and a volume of proceedings is usually a collection of papers lacking deeper inner connexions. Happily, that is not the case with this volume, which records the proceedings of a symposium sponsored by the CIBA Foundation. The book gives a view of the state of art in the area and leaves no doubt that we observe a snapshot of a rapidly changing action; perhaps the next moment will bring a dramatic solution of some problems already at hand.

The first section is devoted to mass transport in tissue spaces and the main problems concern the mechanism causing the movement through pores in tissue (A. C. Guyton) and the global description of the movement which may or may not be treated like the flow through a porous medium (J. R. Philip).

The variety of the problems concerning mass transport in blood vessels is much richer. Those include the flow in large vessels: there appear here a number of new and not understood phenomena of flow of suspensions or even of single particles (S. G. Mason and H. L. Goldsmith), the influence and properties of the elastic walls (M. G. Taylor), and the problems of measurements of velocity profiles *in situ* (D. L. Schultz *et al.*). A quite different approach is needed for the analysis of the motion in narrow capillaries (M. J. Lighthill, C. G. Caro *et al.*), and on this question a new idea of treating the flow from the standpoint of lubrication theory seems to be of special importance. Besides the mechanical problems there are closely related to them questions concerning the mechanism of exchange of substances through the wall of the vessels (E. M. Renkin) and the behaviour of red cells as a carrier of haemoglobin (A. C. Burton).

The third section deals with mass transport in the lungs. Here the main point is the character of flow of the gas in the pulmonary tree at different levels of the lungs (J. Mead, J. B. West *et al.*) and the problem of particle deposition in respiratory tracts (B. Altschuler, P. R. Owen).

A full account of the discussion is published and is as informative as the papers themselves.

This valuable Symposium, an example of useful scientific co-operation between specialists in physiology and mechanics, was led by C. G. Caro and M. J. Lighthill. The reviewer strongly recommends this volume to all people working already in the subject or those who intend to begin their work in this old-new field of knowledge.

RICHARD HERCZYNSKI