Int. J. Heat Mass Transfer. *Vol.* 10, p. 555. Pergamon Press Ltd. 1967. Printed in Great Britain

BOOK REVIEW

Proceedings of the 1966 Heat Transfer and Fluid Mechanics Institute. Edited by M. A. SAAD and J. A. MILLER, 444 pp. Stanford University Press, Stanford (1966).

FOR A review of conference proceedings, it is always difficult to determine the features which should be selected for comment. However, the reviewer can fall back, as so often, on Pope's (slightly ungrammatical) advice to critics: "In every work regard the writer's end, since none can compass more than they intend."

What then is the "end" of the "Proceedings of the 1966 Heat Transfer Institute"? And how successfully is it "compassed"? The dust-jacket, which for once is more informative and less self-congratulatory than the editors' preface, states that the papers were "selected on the basis of their fundamental character and the extent to which they enlarge the understanding of heat transfer and fluid mechanics". Which papers possess these qualities in the highest degree? The present reviewer would select three: Kreith's study of friction and heat transfer for rotating cones; Moss and Grey's paper on the augmentation of heat transfer by steady and alternating electric fields; and Duff and Hill's comparison with experiment of theoretical predictions of the rate of condensation of carbon dioxide in a supersonic nozzle. The first enlarges the bridgehead made long ago by von Kármán's theory for the rotating disc; the second reviews previous data and presents new ones in a field which may become of practical importance, and which is unfamiliar to most heat-transfer specialists; and the third, by reducing to order a two-phase phenomenon strongly influenced by nucleation, brightens the lamp of science in a gloomy corner.

Prospective purchasers may ask: "Are there any papers in the volume which I shall want to read in 10 years' time?" If he is wise, the reviewer will hedge: "One or two perhaps". But, if pressed to be specific, this reviewer would single out, but only with a one-in-twenty chance, the paper by T. J. Black entitled, "Some practical applications of a new theory of wall turbulence". The nature of the theory is explained only qualitatively; but there are some impressive-looking graphs on which curves marked "present theory" run through experimental points; and the author proposes incidentally a novel way of deducing shear stress at a wall from the signals picked up by a flush-fitted pressure gauge. It is true that theories of wall turbulence have been so long and vainly sought that the details of the theory will have to be disclosed and scrutinized before many of us will allow ourselves more than the faintest glimmer of hope; but we can at least take some encouragement from the results that are published in this paper.

There are twenty other papers in the volume. Many of them are sound contributions in narrow fields; some might have been selected, by another reviewer, for the special mention accorded to the above four. Since detailed comments would take too much space, one general one will be made concerning the style of English of many of the contributions. Or rather, since readers of this review may prefer to judge for themselves, an example will be given; it is the first sentence of the abstract of one of the papers. "Developed from the fundamental concept of monochromatic radiation absorption and emission of a small volume of air exposed to a deep hemisphere of air strongly stratified with significant variations in vertical gradients of temperature and in moisture content, it is shown that mean magnitudes of absorption over spectral intervals of finite width lead to rates of whole-band spectrum radiation exchange differing from exchange calculated from the difference of net radiation measured by horizontal plates above and below the unit net volume".

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