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O. A. Saunders—the scientific achievement

FROM the point of view of this journal, the most important achievement of Owen Saunders is that he and Ernst Eckert founded it. No doubt part of the initiative came from Robert Maxwell, who was then laying the foundation of his scientific publishing empire; and the persistent endeavours of Aleksei Vasilievich Luikov were an essential ingredient. However, it was Saunders and Eckert who chose the editors and who set the journal moving in the direction that it has since followed.

Owen Saunders went on to do many other things of public interest, some of which are referred to in Hugh Ford's article in this issue of *IJHMT* (pp. 1435–1436); and more can be learned from the "Second Owen Saunders Lecture: International Flame Research" by Jack Chesters, published in the June 1975 issue of the *Institute of Fuel.*

Science, however, is a solitary and private activity, so one can often learn most about a scientist by looking at his earliest works, when he was still unencumbered by supervisory responsibilities. A list of Sir Owen's publications is appended to this article. I will refer to just two typical ones, concerned respectively with radiation and natural convection.

The first is "Notes on some radiative heat transfer formulae" published in the August 1929 issue of *Proc. Phys. Soc.* Of the many interesting features of the article not the least is the by-line: "Received April 25, 1929 and in revised form June 26, 1929". And it was published in August! Knowledge of heat transfer may have been rather primitive 55 years ago; but referees, editors and printers all worked faster, it seems, than we do in 1984.

The formulae in the article are of a kind which will nowadays be found in undergraduate textbooks; but they are in those books because Saunders and his contemporaries derived them, recognized their importance and expressed them in usable forms.

Pioneers are often undervalued because their hard-won discoveries have become commonplace, rather as Shakespeare is thought by the ignorant to be uninventive because his plays consist merely of strung-together quotations. Saunders was one of those pioneers; and his 1932 book *The Calculation of Heat Transmission,* written with the collaboration and guidance of Margaret Fishenden, has been drawn upon by numerous later textbook authors. Their own textbook, entitled *An Introduction to Heat Transfer* and published by Oxford University Press in 1950, has been copied by many.

The second article I will refer to is "Effect of pressure upon natural convection in air", published in the November 1936 *Proc. R. Soc.* (Received April 1936, by the way; so the Royal Society could also publish fast in those days.) Apart from the work of Petavel, published in 1901, this was the first systematic study of the effect of pressure on natural-convection phenomena; and, because the results were appropriately expressed in terms of the dimensionless groups which we would now call the Nusselt and Rayleigh number, they provided a valuable confirmation of the laws of similarity.

I well remember coming across this paper while I was a research student, and being inspired by it to believe that high-pressure experiments on models of correspondingly small geometric scale would provide a cheap and effective means of predicting the performance of heat-exchange equipment. As it turned out, the practical obstacles of this line of advance proved to be major ones, and nowadays computer simulations are usually preferred to those provided by physical models. Nevertheless, the notion that one may predict the behaviour of one piece of equipment by studying the behaviour of another, is one of the most provocative ideas in applied science; and it came alive in my own mind after reading Saunders' paper.

Saunders transmitted his interests in natural convection to several of his students, one of whom, Alan Ede, became one of the first editors of this journal; and his concern with radiation found practical employment in his long involvement with the International Flame Research Foundation.

It is perhaps a pity that Sir Owen's career as a 'private' research worker had so soon to make room for the more 'public' one of department head, chairman of many committees, and consultant at large. However, he was one of the few specialists in heat transfer in the United Kingdom at a time when the importance of this subject achieved full recognition among engineers; and it was his good or ill fortune to have been called by his former research chief, Professor Lander, to Imperial College, which was later designated as Britain's pacemaker for the expansion of technological education.

Even Isaac Newton accepted the position of Director of the Royal Mint; so Owen Saunders has followed a respectable precedent in shouldering in his later years public responsibilities. Certainly he has shown no sign of being weighed down by them, or of allowing them to transform him into an administrator rather than a scientist. Having resisted their pressures until his 80th birthday, he can surely do so indefinitely.

D. BRIAN SPALDING

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