Int. J. Multiphase Flow Vol. 17, No. 4, p. ix, 1991
Printed in Great Britain

0301-9322/91 $3.00 + 0.00
Pergamon Press/Elsevier

PROFESSOR THOMAS J. HANRATTY ON HIS 65th BIRTHDAY

Professor Thomas J. Hanratty is a native of Philadelphia, born on 9 November 1926. We join his wife of 35 years, Joan, and his five children in wishing him a joyous 65th birthday.

Hanratty's education in Chemical Engineering started at Villanova University, in Philadelphia, where he received a B.Ch.E. degree in 1947. In 1979 that university presented him with an honorary doctorate. After his undergraduate degree, Tom joined the Fischer & Porter Company as a fluid dynamics specialist. That company was the inventor and at that time the leading manufacturer of rotameters (variable area flowmeters).

Hanratty then accepted an assignment at the Battelle Memorial Institute to develop methods for making rocket fuels. To this day he has continued a real interest in liquid hydrazine. While at Battelle, he pursued a graduate education through evening courses. He received a Master's degree in 1950 from Ohio State University. In 1984 that university presented to him the Distinguished Engineering Alumnus Award.

Hanratty journeyed to Princeton University to pursue the Ph.D. degree. His research under Richard H. Wilhelm was in chemical reactor engineering. The central role of fluid dynamics in this area accounts for his later research interests. He completed his Ph.D. in 1953 and joined the Department of Chemical Engineering at the University of Illinois.

During his 38 years at Illinois, Hanratty developed into an authority on turbulence and two-phase flow. He pioneered the development of electrochemical techniques to study flow close to a wall and mass transfer to a wall. These techniques have opened up new possibilities in experimental fluid dynamics and, as a consequence, are used worldwide. Our knowledge of how turbulence is born and how it can be controlled have been improved significantly.

Two-phase flow has been a subject of research by Hanratty for over 30 years. About 50 of his 145 publications have been devoted to detailed studies of wave formation, droplet formation, droplet recapture and friction during gas–liquid flow in a conduit.

His work in heat and mass transfer has involved the study of the influence of natural convection on flow fields and the development of new theoretical frameworks to examine turbulent transfer of heat and mass. Of particular note is his use of Lagrangian methods, instead of the usual Eulerian, to predict the spatial distribution of diffusing species. He has developed a more rigorous description of how the phenomenon of turbulence controls the transport of heat or mass at a boundary.

Hanratty has routinely taught courses on fluid flow, heat transfer and applied mathematics to both undergraduates and graduate students. Nearly 70 Ph.D. theses have been produced under his direction. Numerous M.S. theses and undergraduate senior theses also have been completed.

His activities have resulted in numerous honors and awards. He received the Colburn Award from the American Institute of Chemical Engineers only four years after joining the faculty of the University of Illinois. The AIChE also presented to him the William H. Walker Award in 1964 and the Professional Progress Award in 1967. The American Society of Engineering Education gave him the Curtis McGraw Award in 1963 and the Senior Research Award in 1979. He was elected to the National Academy of Engineering in 1974. In 1986 he was recognized by the Chicago Section of the AIChE with the Ernest W. Thiele Award for Chemical Engineering Practice.

Hanratty was the first chemical engineer in the U.S.A. to be appointed to a Shell Distinguished Professorship, 1981–1986. But of special pride to this writer was the recent creation by the University of Illinois Alumni of an endowed chair, the James Westwater Professorship in Chemical Engineering. The first recipient is Professor Hanratty.

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