



117. Instability of a round jet. This shadowgraph shows a 1/4-inch jet of carbon dioxide issuing into air at a speed of 127 ft/s. It is laminar as it leaves the nozzle at a Reynolds number of approximately 30,000. One diameter

downstream it shows instability, formation of vortex rings, and transition to turbulence. Photograph by Fred Landis and Ascher H. Shapiro

DIFFUSION OF VORTICITY :

$$\frac{D\vec{\omega}}{Dt} = \nu \nabla^2 \vec{\omega}$$

118. Instability of a round jet. Smoke gives a different view of the flow above, at a Reynolds number of about 13,000. The wavy instability of the vortex rings and their subsequent breakdown is similar to that in figure 114. Photograph by R. Wille and A. Michalke, courtesy of H. Fiedler

