1056-76-737 **Stephen Childress*** (childress@cims.nyu.edu), 251 Mercer Street, New York, NY 10012.
Symmetry and locomotion in theory and experiment.

Locomotion in fluids depends strongly upon the Reynolds number Re, and significant changes in the mechanisms of propulsion occur when Re is in the intermediate range 10-100. In these cases analysis of flows is extremely difficult and experimentation, both numerical and physical, can play an essential role. We illustrate this by studying the onset of forward flapping flight as a mathematical bifurcation in a frequency Reynolds number. Observations of a antarctic pteropod, as well as a simple laboratory experiment, confirm this bifurcation for flapping bodies with fore-aft symmetry. Some recent experiments on hovering flight of asymmetric bodies in an oscillating ambient flow will also be described. (Received September 16, 2009)