1011-92-104   **R. A. Eftimie*** (`reftimie@math.ualberta.ca`), Department of Mathematical and Statistical, Sciences, University of Alberta, Edmonton, Alberta T6G 2G1, Canada, and **M. A. Lewis**, **G. deVries** and **F. Lutscher**. *Group Formation in Self-Organizing Collectives of Individuals.*

Swarms of insects, schools of fish, flocks of birds and herds of ungulates are familiar examples of aggregation phenomena. The interactions between individuals are governed by three types of social forces: attraction towards other members of the group, repulsion from them, and a tendency to align with neighbors. I will present a mathematical model (described by a nonlinear system of partial differential equations) that takes into consideration these social forces to study group formation. Linear stability analysis and numerical simulations are used to explore the behavior of the model, and reveal a wide range of spatial patterns that can form, depending on the choice of model parameters. The observed patterns can be related to the daily activities of animal groups, such as foraging and traveling. (Received August 19, 2005)