On the Science of Comparative Sociology

Maternal Behavior in Mammals (Wiley, New York, 1963. 357 pp. $8.75), edited by Harriet Rheingold, is an important book in that it attempts the first general review of the basic behavioral system concerned with maternal care in mammals. That it is becoming more and more fashionable to write such reviews in teams is probably a response to the rapidly increasing progress of scientific research, which makes it almost impossible for one person to do an up-to-date review of a broad field.

To be effective, a joint effort requires careful editing as well as competent contributors, and this volume meets both criteria. As to the adequacy of the sample, the examples are confined to infrahuman placental mammals. These include 11 different species, from five different orders, representing approximately half of the major orders of placental mammals. Of the missing groups, some, such as elephants, whales, and bats, would be quite difficult to study, leaving only two major omissions —the Insectivores and the order Perissodactyla (to which horses and other odd-toed ungulates belong). The marsupials are, of course, entirely missing. Seven of the species described are domestic or laboratory animals. The book thus includes a good representative sample of the commonly available mammals.

The information supplied for each species varies with the interests of the authors. In the first paper, on the ubiquitous laboratory rat, Rosenblatt and Lehrman include an excellent quantitative survey of changes in maternal behavior and report interesting experiments on the effect of the age of young upon maternal behavior and on the relationship between lactation and behavior. King continues with his report of studies on a wild rodent recently brought to the laboratory and demonstrates extensive difference in maternal care between two subspecies of deer mice. Ross, Sawin, Denenberg, and Zarrow emphasize genetically determined differences in maternal behavior among rabbits. Schneirla, Rosenblatt, and Tobach have made an intensive study of parturition and the development of the nursing-suckling relationship in cats. Rheingold, in her quantitative descripton of the elementary variables of maternal behavior in the dog, demonstrates a precipitous decline in such things as the amount of contact, the time spent nursing, the amount of licking, and so on. The quantity of maternal care obviously reaches its peak in the neonatal period, whereas punishment of puppies reaches its peak at 6 weeks of age, when final weaning is taking place. Thus, for the pup, there is an obvious relationship between maternal care and developmental periods.

Hersher, Richmond, and Moore describe experiments on the critical period for the formation of the maternal bond in sheep and goats, an interesting phenomenon found in several of the herd animals, which limits maternal care to the female's own offspring. Altmann reports the results of studies on two wild ungulates, the highly social elk and the more solitary moose. Both species show a close association between mother and young until the birth of additional young the following year. At this point the young elk, which has become accustomed to group life because its mother stays with the herd, joins a male or female herd fairly readily, but the young moose, which has developed relationships with only its mother, suffers repeated rejections until it leaves her for a semisolitary existence.

Harlow, Harlow, and Hansen describe their experiments with the effect of early social experience on later maternal behavior, together with the development of normal maternal behavior in the rhesus monkey. In this case, unlike that of the moose, there is never a complete rejection or separation between mother and infant, and the loose association between mother and offspring is maintained for many years. Jay's superb studies of the wild Indian langur monkey show that the behavior of the mother and the behavior of other adults changes markedly with changes in the appearance of the infants. This suggests that the evolution of social organization in primates has been accompanied by marked differentiation of form as well as behavior. This in turn may be related to the importance of sight in primates as opposed to that in certain other mammals. Finally, DeVore presents an excellent picture of maternal behavior as it exists in a naturally formed baboon group. The birth of the young attracts the attention of the entire social group, and their care, which is one of the strong integrating influences of the baboon society, affects the behavior of both males and females.

In this volume, as in most multiauthored books, there is no attempt to generalize findings, although the different articles are integrated in the sense that there are many cross references. But, if I may attempt to generalize a bit, the most obvious relationship between the maternal behaviors of these widely variegated species is that behavior is related to the special social organization and ecological niche of each species. For example, once the nest is built and the young are born, maternal behavior in the rabbit consists of a single daily visit, of only a few minutes, during which the young are nursed. For an animal that is extensively preyed upon and helpless to defend its young, it is obviously adaptive to stay away from them as much as possible. At the other end of the scale, there is the 24-hour a day contact between primate mothers and their young offspring, which is correlated with the highly social nature of these species, whose members spend their entire lives within the same social group. Such a generalization, however, is only a beginning; we need much more information on many other species before we have the basic materials for building a genuine science of comparative sociology. Rheingold's *Maternal Behavior* is a firm foundation, and future workers will do well to build on it.

J. P. SCOTT

Center for Advanced Study in the Behavioral Sciences, Stanford, California