

From one of our reporters at the meeting of the American Association for the Advancement of Science in Denver

## Fear on the visual cliff

The visual cliff is one of the more ingenious devices used by psychologists to test the perceptual abilities of infants. It consists of a flat-center board with a solid surface on one side and a drop off, or cliff, on the other side. Infants old enough to crawl (six months and older) are placed on the center board and then called by their mothers from different sides of the board. The infants can see the drop off but cannot fall because a flat sheet of glass extends out from the center board. When mothers call from the solid side, the infants usually crawl toward them. When mothers call from the cliff side, the infants do not move out onto the glass surface. They can feel its solidity but can also see the cliff. Apparently they can perceive the height and are afraid of crawling over the edge. These experiments, published in the early 1960s, demonstrated depth perception in infants and led some researchers to suggest that humans are born with an understanding and a fear of heights. Infants younger than six months, those too young to crawl, could not be tested on the visual cliff, but experiments with newly hatched chicks and other animals did lend support to the theory that fear of heights is inborn. Ongoing visual cliff experiments suggest that this may not be the case.

Joseph J. Campos and his colleagues at the University of Denver suggest that human infants do perceive depth (at least crudely) at an early age; but that they do not show fear of heights until sometime after they have learned to crawl and have had some experience with the world. This conclusion is based on experiments with several groups of different-aged infants tested on the visual cliff. Nine-month-olds showed clear fear of heights. None ventured across the deep side of the cliff, but all crossed the shallow side. Younger infants, those tested shortly after they began crawling, showed a different response. At first, almost half (7 of 15) crossed to their mothers over both sides of the cliff. They were retested at two-week intervals until almost nine months of age, at which time all showed some fear of height. Six refused to cross the deep side, even though they had done so freely in the previous sessions. These results suggest that fear of heights is not innate, but that it develops only after children have had some experience with locomotion.

## Depression in bonnet monkeys

Monkeys are easily depressed. Harry Harlow and others have demonstrated quite clearly that depression results when infant rhesus and pigtail monkeys are separated from their mothers. These animals are then used as animal models of depression. I. Charles Kaufman and Andrew J. Stynes of the University of Colorado Medical Center in Denver now report the first known instance of a clear-cut depressive reaction to separation in the species, *M. radiata*, the bonnet monkey.

In pigtails, the response to mother loss consists of an initial stage of agitation followed by social withdrawal, unwillingness to play, slowness of movement, increased self-mouthing and a collapsed self-clasping posture. Bonnet infants in similar situations show some degree of agitation but not the depressive withdrawal. They make contact with other adults, and this seems to provide adequate substitution. The fact that bonnets do not get depressed has been interpreted by some as indicating either a species-specific immunity to the depressive reaction or that the infants' attachments to their own mothers were weak. Believing these explanations to be inadequate, Kaufman and his colleagues devised an experiment calculated to interfere with the usual social structure of the bonnets. Bonnets and pigtails were caged together for more than a year. Then all of the bonnets except a five-month-old infant were removed. This infant, who

had previously engaged in social play with the young of both species, became agitated when his mother was removed. He vocalized for three days and approached the pigtails repeatedly but was ignored. On the fourth day his posture collapsed and he huddled alone. Unable to elicit social support from the pigtails, the bonnet developed the typical depressive response seen in other species.

## Koko: The signs of language

A good deal of success has been attained in teaching chimpanzees to communicate with humans. They have learned to use sign language, to punch messages into specially designed computer keyboards and, in rare cases, to mouth a few words. For several years now, Francine Patterson of Stanford University has been having striking success teaching a less likely primate to communicate. Koko, a lowland gorilla at the San Francisco Zoo, has learned to use more than 225 signs. This is surprising since gorillas have been described as intractable, negativistic and intellectually disadvantaged in comparison with chimps.

A number of innovations have marked Koko's progress during her four and a half years of training (beginning at one year of age). She has invented signs and names for novel objects; she talks (signs) to herself; engages in imaginative play using signs; has used language to tell lies (usually after getting into mischief), to express her emotions and to refer to things displaced in time and space. All of these abilities have been considered at one time or another as being unique to the human language. A standardized language comprehension test has been used to assess Koko's ability. The test consists of 40 large cards on which are printed four or five line drawings representing objects, attributes or relationships between objects. At age four and one-half years, Koko responded correctly to 43 percent of the 30 most difficult items, matching the norm for educationally handicapped children of the same age.

It is probably too early to draw any conclusions from this and similar projects, but it is becoming clear that humans differ from apes only in degree, not in kind, as far as the ability to use, create and transmit sign language is concerned.

## Home birth: Making the decision

Natural childbirth has become increasingly popular during the past decade, and in recent years there has also been a trend toward home deliveries. Katherine Cavallari Malm of the University of Illinois at Chicago Circle has interviewed 13 couples before and after their home deliveries in order to examine the decision-making process surrounding a home delivery. Four major factors were involved. Commitment to natural childbirth and breastfeeding was foremost. All couples used natural childbirth methods to the fullest. No medication was used during labor, and breastfeeding was the rule for the group. Second, all couples expressed negative opinions about hospitals and doctors. Only two persons had actually had traumatic experiences with the hospital system. The others simply did not like hospitals and expressed the feeling that childbirth was not an illness but was treated as such by the health care system. Half of the couples cited money as an important factor. In all, the total cost of a home birth is approximately one-third less than a hospital delivery, from conception to the first birthday. The fourth factor influencing the home birth decision was the degree of contact with others who had experienced home birth. Eleven of the couples sought out friends or acquaintances who had had home delivery and who would support their decision to do so. After delivery, the couples explained that they had felt relaxed and in control.