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Peter Hamilton is the founder of the Liforce Foundation, an ecology organization formed in 1980 to raise public awareness of the interrelationship of human, animal and environmental problems.

Peter was born and raised in Vancouver and pursued an art career after attending Vancouver City College. His art, music and poetry focused on human problems such as pornography, racism and world hunger. An exposure to animal suffering led him to extend his circle of compassion and ethical concerns to, as Peter puts it, "include our fellow creatures with whom we share this planet."

Peter has been responsible for reducing and ending some cases of chronic confinement of primates in research laboratories and exposing the plight of primates in vivisection laboratories. He provided better methodology for eye experiments at UC San Francisco which ended the restraint periods of up to six weeks; was instrumental in ending chronic chairing at the University of British Columbia; and had baboon B43 released after four months of continuous restraint at the University of Western Ontario.

Liforce trains investigators to work in a responsible, peaceful manner to improve the health research system so people and animals need not suffer. Their "Alert for Life" campaign informs the public that they can confidentially provide information about any unethical or scientifically unsound experiments and lab practices with people or animals.

Reducing the Suffering of Primates in Captivity: Testing Toys for Primates

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The macaques used in the toy tests were individually housed in steel-mesh cages.

Although it is impossible to completely fulfill the social and behavioral needs of primates in captivity, the Liforce Foundation is dedicated to reducing their boredom and suffering by giving them behavioral toys until primates are no longer kept in captivity.

Liforce has encountered a lack of interest on the part of the scientific community to implement improvements for primates' well-being. Therefore, we believe there is a need for "watchdog" organizations to provide their expertise and to represent the public's concern. Of course, the contribution that such organizations can make is dependent upon the responsiveness of the research institutions.

Present low-cost, piece-meal attempts are insufficient to enrich the primates' impoverished environments. Therefore, extensive funds and time will have to be spent on creating progressive programs.

Recent amendments to the US Animal Wel-

fare Act recognize that primates are capable of not only physical suffering but of psychological suffering. While some researchers are optimistic and report great successes in enriching primate environments, it has been Liforce's observation that although there is a place for employing enrichment techniques such as behavioral toys, the overall efficacy of these techniques is limited. The real issue should be addressed: should primates be imprisoned for the alleged benefit of humankind?

Test Toys

The behavioral toys tested to date include Berchet "Teething Rattle" (#10095) and ambi "Active Baby" (set #E 610), and two of the Fisher-Price Child Development Toys, "Chime Ball" (#1150) and "Turn and Learn Activity Center" (#156), as described in Peggy O'Neill's article **Human-Animal Communications and Interaction** (PsyETA, Volume One, 1987).



Both Diana monkeys, housed in a zoo enclosure, showed great enthusiasm and interest in looking into the mirror on the "Turn and Learn Activity Center" #156.



The canine-bearing primates in the research laboratory test environment chewed through "Chime Ball" #1150. The Diana monkeys in the zoo enclosure broke open a "Chime Ball."



As the cages in the research laboratory were without resting boards, the toy #156 provided a perch for sitting and elevation.

Test Environments

Primates kept in a zoo and one research laboratory were given the behavioral toys. These captive primate situations were chosen so we could compare isolation housing in small cages to group housing in small indoor/outdoor enclosures.

For a three-day period in December 1988, the Fisher-Price toys #1150 and #156 were introduced to a few primates kept in an indoor/outdoor environment in the Stanley Park Zoo, Vancouver, Canada. The indoor floor was covered with straw following an earlier Lifeforce recommendation to allow the primates some semblance of their natural activity of foraging through their immediate environment. The outside floor remains bare cement.

Since December 1988 toys #1150 and #156 have been used by a group of seven wild-caught primates (six *Cynomolocus* and Rhesus) used in psychology experiments in a US university. They are individually housed in steel-mesh cages (illustrated in photograph A).

In April 1989 toys #10095 and #E610 were added to the trial.

Effects of Enrichment

Zoo: Upon introduction, the first group of five Debrazzas observed the devices but made no attempt to interact. After 20 minutes the objects were removed and introduced to a pair of Diana monkeys. During the 30 minute observation period the male juvenile immediately exhibited great enthusiasm for the objects. The adult appeared to be interested but handled the objects infrequently (see photograph B).

During the observation period, the male juvenile primarily handles #156 which appeared to be able to withstand a lot of abuse. He took a bucking-horse position and with his two hind legs repeatedly kicked the object around the enclosure. Both monkeys appeared to be most curious with the mirror side of #156.

Unfortunately both toys were left with the monkeys overnight and during the second evening toy #1150 was broken open (photograph C). #156 was not damaged.

Research Laboratory: When the toys were first introduced, it was reported by the research staff that one juvenile male primate immediately used his canine teeth to remove the seam in the middle of the ball #1150 and during the next few days chewed through one side (photograph C).

The toys were then withdrawn until the researcher removed the canine teeth as he had planned for the protection of staff and students. When reintroduced for periods of one to two days there was less destruction. Other #1150s were not damaged and #156s had parts removed to protect the monkeys, or the monkeys themselves removed or chewed various parts. The "Berchet teething rattler", #10095, was not used because the plastic ball in the middle was immediately removed and the teething part chewed. One of the Ambi "Active Baby", #E610 (the ball in a tube which rattles and rolls, introduced in April 1989) is still being utilized.

As the cages were without resting boards, the toy #156 provided a perch for sitting and elevation (photograph D). This toy also provides some tactile stimulation and the mirror side

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The behavioral toys did appear to invoke both curiosity and positive stimulation in some of the primates. Here we see a juvenile interacting with toy #156 in the beginning of the trials (December 1988).



An adult finds some moments of relief from routine laboratory life. Note that after five months of use the plastic on side of toy #156 is deteriorating.

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appeared to be interpreted by the individual as another primate.

Concluding Observations

Zoo: The brief study was abandoned due to a lack of interest on behalf of the zoo staff and the unavailability of employees for supervision. It would be to the benefit of the primates to conduct further studies to determine if other species, such as the smaller Spot-nose Guenons, would accept the toys and not break them.

It was most unusual that the Debrazzas showed no interest in a new object being introduced into their territory. Normally all Old and New World primates are highly inquisitive, curious creatures and would investigate an introduced novelty. These zoo monkeys exhibited markedly abnormal behavior which is likely due to the continuous lack of psychological stimulation caused by captivity. Primates in an impoverished environment will have to be introduced to a richer environment in order to return to a more normal behavior.

Over the period of time in which this sample of zoo display monkeys was observed, it soon became evident that the devices just may not be feasible in open areas in which primates have the opportunity to use force or a hard surface to break open this type of device. Although other

researchers are more optimistic and report success in the use of Fisher-Price toys in field experiments, in reality the use of behavior toys may prove, as we observed, to be restricted in very limited applications to situations found in research laboratories.

There should be close monitoring of the monkeys and the toys should not be left overnight during the trial period. Even though the Chime Ball broke, the Activity Center may be durable enough to withstand a less aggressive, weaker primate species.

Research Laboratory: With caged primates we have encountered problems that lead us to believe that even the most durable toys are not unbreakable by some primates. The successful use of a behavioral toy over a prolonged period must address the specific needs of the individual primate in his artificial environment; hence, a general toy program is probably not feasible.

Juvenile canine-bearing primates have demonstrated that they will use their canine teeth to get at visual objects within the toys. It appeared that the primates probably did not ingest any plastic parts. However, some plastic was found in the drainage system but it may have fallen through the cage floor because none of the primates were noticeably injured (e.g. no bloody stool). The Berchet “teething rattle” (#10095) was chewed after removal of canines and its use is not recommended. In general, as most research laboratories remove the canine teeth of wild-caught primates, it would be wise to introduce the behavioral toys after this procedure is performed.

Although our appearance during brief observation and photographic sessions would disrupt their routine unattended behavior, the behavioral toys did appear to invoke both curiosity and positive stimulation in the primates (photographs E and F).

Further studies, which may include remote video-taping of their interaction with the devices without the presence of people, will continue in the fall of 1989.

Primate Pals Projects

In future trials or discussions with those who possess primates, we will be promoting Life-force’s Primate Pals Project to promote environmental enrichment programs. This will include the use of anti-boredom devices such as raisin boards to provide treats as well as stimulation, use of bedding to allow for foraging behavior, interesting, nutritional food such as fresh fruit, vegetables, raw sugarcane and nuts, and various behavioral toys used in conjunction with activity areas.

Although, as previously stated, normal living patterns of captive primates cannot be artificially created, we are also considering environmental changes which may mimic their natural environment. This would involve the use of lighting to mimic the diurnal/nocturnal light cycle within their climatic zone and color the room in order to reduce stress or to simply create change, the use of recorded sounds which represent their native habitats, and non-reflective cage partitions to create private areas.