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POLICY STATEMENT

The purpose of the *Newsletter* is to provide a central source of information about nonhuman primates and related matters, which will be of use both to the community of scientists who use these animals in their research and to those persons whose work supports such research. Accordingly, the *Newsletter* (1) provides information on care, breeding, and procurement of nonhuman primates for laboratory research, (2) disseminates general information and news about the world of primate research (such as announcements of meetings, research projects, sources of information, nomenclature changes), (3) helps meet the special research needs of individual investigators by publishing requests for research material or for information related to specific research problems, and (4) serves the cause of conservation of nonhuman primates by publishing information on that topic. As a rule, the only research articles or summaries that will be accepted for the *Newsletter* are those that have some practical implications or that provide general information likely to be of interest to investigators in a variety of areas of primate research. However, special consideration will be given to articles containing data on primates not conveniently publishable elsewhere. General descriptions of current research projects on primates will also be welcome.

The *Newsletter* appears quarterly and is intended primarily for persons doing research with nonhuman primates. Back issues may be purchased for \$2.00 each. (Please make checks payable to Brown University.)

The publication lag is typically no longer than the 3 months between issues and can be as short as a few weeks. The deadline for inclusion of a note or article in any given issue of the *Newsletter* has in practice been somewhat flexible, but is technically the fifteenth of December, March, June, or September, depending on which issue is scheduled to appear next. Reprints will not be supplied under any circumstances.

PREPARATION OF ARTICLES FOR THE *NEWSLETTER*.--Articles, notes, and announcements should be submitted in duplicate and all copy should be double spaced. Articles in the References section should be referred to in the text by author(s) and date of publication, as for example: Smith (1960) or (Smith & Jones, 1962). Names of journals should be spelled out completely in the References section. Technical names of monkeys should be indicated at least once in each note and article. In general, to avoid inconsistencies within the *Newsletter* (see Editor's Notes, July, 1966 issue), the scientific names used will be those of Napier and Napier [*A Handbook of Living Primates*. New York: Academic Press, 1967]. For an introduction to and review of primate nomenclature see the chapter by Maryeva Terry in A. M. Schrier (Ed.), *Behavioral Primatology: Advances in Research and Theory* (Vol. 1). Hillsdale, NJ: Lawrence Erlbaum Associates, 1977.

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A NATIONAL CHIMPANZEE PLAN

Jo Fritz

Primate Foundation of Arizona

In 1978, the Interagency Primate Steering Committee (IPSC), which is an association of representatives from various governmental agencies that have national and international interests in the conservation and supply of primates, established a Task Force on the Use of and Need for Chimpanzees. This Task Force, which met in Washington, DC in May of that year, made the initial recommendations for a National Chimpanzee Plan. The Plan's major goal is the establishment of a self-sustaining breeding population that will assure chimpanzees for the future. The recommendations and conclusions of this Task Force are published in the *Report of the Task Force on the Use of and Need for Chimpanzees*. (Copies of this Report may be obtained from the IPSC, Division of Research Services, National Institutes of Health, Bldg. 31, Room 4B30, Bethesda, MD 20205.)

In June 1979, the IPSC sponsored another meeting to further develop the suggestions and recommendations for a National Chimpanzee Plan. I was invited to join this *ad hoc* panel of consultants, which met in Bethesda, MD. These consultants represented many fields of expertise, including genetics and statistics, reproductive physiology, reproductive behavior, husbandry and management, and health. This meeting was particularly exciting in that it seemed to open the doors for communication between the various institutions which house chimpanzees. More important though, were the participants themselves. There was a feeling of mutual unanimity and a strong desire to work together on a continuing basis. The need for an exchange of scientific, technical and management information, which would be of benefit to the chimpanzee and the institutions housing them, had always been there. Now, thanks to the IPSC, the first step toward changing need into fact had been taken.

Prior to this meeting, inventory information was requested from institutions which house chimpanzees. This inventory was done with the cooperation of the International Species Inventory System (ISIS). The *ad hoc* group reviewed the preliminary demographic data from the inventory and made recommendations for additional data to be collected and analyzed. Special attention would need be paid to the genetic aspects of the captive chimpanzee population. This would include an effort by the various institutions which breed chimpanzees to attain a more even distribution of offspring numbers per male.

The group also noted the need for additional meetings in order to bring the Plan closer to fruition. Management of the total captive

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population would require the cooperation of all the institutions, as well as identification of the many areas where additional information and study was needed.

In June 1980, an *ad hoc* Task Force Workshop was held at Tanglewood, Winston-Salem, NC. I also served as a member of this Task Force. A general introductory and review session was held and then participants divided into three subgroups: one for demography, a second for reproduction, and a third for behavior. Each subgroup defined specific goals and recommendations which would be essential to achieve a self-sustaining population.

Dr. U.S. Seal (ISIS, Minnesota Zoological Garden), Chairman of the Demography Subgroup, reported that the up-dated census data revealed approximately 1,235 captive chimpanzees in the U.S. It was agreed that more demographic information was needed and that this should be done on a continuing basis. ISIS had completed the census of captive chimpanzees and now was beginning to provide vital information regarding the population. For example, there were only four captive born males that were identified as breeders. That kind of information is essential to the Plan. Why were there only four? What was their history? What had been done wrong? How could it be corrected? ISIS had its work cut out for it as its scope in the Plan broadened.

Dr. Charles E. Graham (Primate Research Institute, New Mexico State University), Chairman of the Reproduction Subgroup, discussed the many problems in both male and female infertility and a need to progress further and faster in the field of artificial insemination. The sexual inadequacies of the captive population needs to be further explored to determine both the physiological and psychological problems which exist and how (or if) they can be corrected.

Dr. Terry Maple (Georgia Institute of Technology, Atlanta), Chairman of the Behavior Subgroup, listed many areas that must be further researched. It appears as if one of the major problems in developing future breeders may be the manner in which many of the present population are housed, and the lack of opportunity for psychological and social development. It was recommended that a behavioral handbook be written which would assist those interested in assuring the maximal normal reproductive potential of the chimpanzees in their care. Use of the handbook would begin to protect and provide for the normal socio-sexual development of future generations. The Behavior and Reproduction Subgroups also emphasized the extreme need for training programs for chimpanzee biologists.

Once again, the feeling of unity in the group was strong. Each person gave freely of his special talents and knowledge. They acknowledged the problems and outlined areas where further investigation is mandated. Everyone was aware that there were no easy solutions, yet all were willing to forge ahead and meet the problem head on. (A published report on this

meeting at Tanglewood is also available from the IPSC at the address given above).

In early January 1981, the Primate Foundation of Arizona hosted a behavioral workshop, which was sponsored by the IPSC. Three and one-half days were devoted entirely to the development of the Handbook, which had been recommended. The workshop participants were knowledgeable in captive and wild chimpanzee behavior and captive management. They were: James W. Ebert, (CDC--Hepatitis Laboratories, Phoenix), Jo Fritz, Paul Fritz (Primate Foundation of Arizona), David K. Johnson (Veterinary Medicine and Surgery Section, NIH), William B. Lemmon (Institute for Primate Studies, Oklahoma), C. James Mahoney (LEMSIP, New York University Medical Center), Terry Maple (Georgia Institute of Technology), and Thomas L. Wolfle (Veterinary Resources Branch, DRS, NIH). We attempted to cover all possible aspects of captive behavioral management. The discussions were tape recorded for later condensation into Handbook chapters.

Hopefully, the Handbook will serve as a guide to improvement in the quality of life for captive chimpanzees. This will mean many of the behavioral problems created by captivity should be eliminated and the socio-sexual potential of each animal will become greater. The Handbook, one giant step for apekind, will become fact in early 1982 and will be distributed by the IPSC.

In June 1981, a National Chimpanzee Plan workshop was held at Bastrop, TX. This is the home of the University of Texas' chimpanzee facility and there the chimpanzees themselves gave impetus to the participants. The three subgroup chairmen (Drs. Graham, Maple, and Seal) presented current status reports on the recommendations which were made in North Carolina. Dr. Seal reported that ISIS had expanded the census and is generating both historical and current data on the captive chimpanzee population. It seemed as if each time a report was presented ISIS was asked if the data base could be further expanded to cover additional areas of needed information. The Behavior Subgroup presented the outline for the Handbook and Dr. Maple made a detailed report on the subject matter and the progress. It was also reported that several traineeship programs in chimpanzee behavior and biology had been implemented. The Reproduction Subgroup chairman, Dr. Graham, reported on an extremely successful meeting on Infertility in Male Great Apes, which had been held in Atlanta, GA in November 1980. The reports, of course, covered a great deal more, but for the most part, it was all on the positive progress of the groups and delineating the next major areas for intense concentration.

The most curious part of this meeting, or perhaps not curious at all, was my feeling that the animal was finally being put back together. In each of the other meetings, while group unity was strong, it was as if the animal was also divided into subgroups. The participants were intensely interested in their part of the animal. At this meeting you heard, time after time, "That was what I was going to say", or "Our group also had

that recommendation", or "Their report covered a lot of what I was going to say", or "If you get that information, our group can use it too". The groups were overlapping eagerly and the total picture was beginning to come into focus. If ever a group of people was going to genetically, reproductively, and behaviorally manage a captive population of animals as optimally as present knowledge permits, this is the group. The issues have been as complex as the animal, but the solutions are being found. This group of "chimpanzee people" have dedicated themselves to finding these solutions and I don't think anything could slow down their forward momentum. I have great appreciation for the IPSC. They had the foresight, they created the atmosphere, and they continue to make the meetings and the progress possible.

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REQUEST FOR INFORMATION ABOUT PREDATION

Several recent articles in the *Laboratory Primate Newsletter* (Caine et al., 1979, 18 [1], 25-26; Hughes & Lang, 1980, 19 [3], 11-12; Kessler et al., 1980, 19 [2], 9-10; Rhine et al., 1981, 20 [2], 5-7) have reported predatory behavior in captive primates. We suspect that many investigators witness these, but do not report them due to their seemingly anecdotal nature. Therefore, we have initiated a survey of predatory behavior in captive primates in order to ascertain how common it is. If anyone has witnessed captive predatory behavior, please help us by writing to the address below. A short questionnaire will then be mailed to you, which we ask that you complete and return to us. Susan Clarke and G. Mitchell, Department of Psychology, University of California, Davis, CA 95616.

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GUIDELINES FOR TRANSPORTATION OF NONHUMAN PRIMATES

The Interagency Primate Steering Committee has developed a document entitled, "Guidelines for the Transportation of Nonhuman Primates." The recommendations contained in this publication are intended to serve as guidelines for those dealing with the transportation of nonhuman primates. These guidelines are available from: Executive Director, Interagency Primate Steering Committee, Bldg. 31, Rm. 4B30, NIH, Bethesda, MD 20205.

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PATTERNS OF EJACULATION IN MALE MACAQUES (*MACACA MULATTA*,
M. RADIATA, *M. FASCICULARIS*) AND A
REQUEST FOR FURTHER INFORMATION

We have been studying single-mount (SME) and multiple-mount (MME) ejaculatory patterns in three species of male macaques. An ejaculatory sequence was defined as a series of any number of mounts, on any female or females, complete with intromission, ending in ejaculation on the final mount. An ejaculatory sequence was defined as beginning after a prior ejaculation or after 20 minutes of observation on the focal male in which it did not associate with any females. Termination of the sequence was determined by observation of fresh semen on the male and/or female. Any ejaculatory sequence in which ejaculation occurred on the first mount was considered SME, all other ejaculatory sequences were counted as MME.

In rhesus monkeys (*Macaca mulatta*) (n=5), we observed 11 complete sequences, 91% of which were MME. In bonnet monkeys (*M. radiata*) (n=8), we observed 22 complete sequences, 91% of which were SME. In crab-eating monkeys (*M. fascicularis*) (n=7), we observed 17 complete sequences of which 51% were MME and 49% were SME. We found no individual pattern preference in the crab-eaters. That is, no individual was either exclusively SME or MME. All subjects were housed under identical conditions in multi-male groups, by species, in half-acre outdoor field cages at the California Primate Research Center.

Our findings agree with those of other investigators for rhesus (Kaufman, 1965) and bonnet monkeys (Rahaman & Parthasarathy, 1969), but not for crab-eating monkeys (deBenedictis, 1973; Furuya, 1961-62; Kanagawa et al., 1972). Crab-eating monkeys have been reported to be SME or MME, whereas our findings suggest they are both. Liontail macaques (*M. silenus*) may also show both patterns (Lindburg, personal communication), but results on this species are still preliminary.

The following species have also been reported to show MME: Japanese macaques (*M. fuscata*) (Tokuda, 1961); pigtail macaques (*M. nemestrina*) (Tokuda, 1968); and Celebes macaques (*M. nigra*) (Dixon, 1977). Those reported to show SME are: stumptail macaques (*M. arctoides*) (Goldfoot, Slob, Scheffler, Robinson, Wieland, & Cords, 1975), and barbary macaques (*M. sylvanus*) (Taub, 1980).

Why should such closely related species show different patterns of sexual behavior? It may be that different social or ecological pressures are involved. We are interested in finding out what others know of ejaculatory patterns in primates, whether similar to or different from what we have observed and reported. We have prepared a questionnaire pertaining to various social and ecological pressures that might be involved in the pattern preferences shown by these species. We would appreciate it if those with

information on this topic would request a copy of our questionnaire. Our data concerning the sexual behavior of the three species we studied are available on request.--Carol Shively and G. Mitchell, Dept. of Psychology, University of California, Davis, CA 95616.

References

- deBenedictis, T. The behavior of young primates during adult copulation. Observations of a *Macaca irus* colony. *American Anthropologist*, 1973, 75, 1469-1484.
- Dixon, A. F. Behavior of the "Black Ape" of Celebus (*Macaca nigra*). *Journal of Zoology*, 1977, 182, 63-84.
- Furuya, Y. On the ecological survey of the wild crab-eating monkeys in Malaya. *Primates*, 1961-1962b, 3, 75-76.
- Goldfoot, D. A., Slob, A. K., Scheffler, C., Robinson, J. A., Wieland, S. J., & Cords, J. Multiple ejaculations during prolonged sexual tests and lack of resultant serum testosterone increases in male stump-tail macaques (*M. arctoides*). *Archives of Sexual Behavior*, 1975, 4, 547-560.
- Kanagawa, H., Hafez, E. S. E., Nawar, M. M., Jaszczak, S. Patterns of sexual behavior and anatomy of copulatory organs in macaques. *Zeitschrift fur Tierpsychologie*, 1972, 31, 449-460.
- Kaufman, J. H. A three-year study of mating behavior in a free-ranging band of rhesus monkeys. *Ecology*, 1965, 46, 500-511.
- Rahaman, H., & Parthasarathy, M. D. Studies on the social behavior of bonnet monkeys. *Primates*, 1969, 10, 149-162.
- Taub, D. M. Female choice and mating strategies among wild Barbary macaques (*Macaca sylvanus* L.). In D. Lindburg (Ed.), *The Macaques*, New York: Von Nostrand Reinhold, 1980.
- Tokuda, K. A study on the sexual behavior in the Japanese monkey troop. *Primates*, 1961, 3, 1-40.
- Tokuda, K., Simonds, R. C., & Jensen, G. D. Sexual behavior in a captive group of pig-tailed monkeys. *Primates*, 1968, 9, 283-294.

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NEWS BRIEFS

New Chairman of ILAR

Dr. Franklin M. Loew, chief of Laboratory Animal Medicine and director of the Division of Comparative Medicine at Johns Hopkins University, has been named the new chairman of the Institute of Laboratory Animal Resources of the National Academy of Sciences, effective July 1, 1981.

NERPRC Dedicates New Annex

A new two-story annex to house up to 400 monkeys used in studies of dietary effects on cardiovascular disease was dedicated at the New England Regional Primate Research Center in Southborough, MA on Friday, September 25, 1981. Construction and equipment of the new facility was made possible by support from two corporations and Harvard University. Frito-Lay, Inc. has funded a study of the long-term effects of dietary salt and saturated and polyunsaturated fats. R. J. Reynolds Corporation through Harvard Medical School, funds a multidisciplinary program in cardiovascular disease which makes use of a selectively bred group of monkeys at the Primate Research Center in its studies. Drs. Robert J. Nicolosi, nutrition division, and L. Howard Hartley, in cardiovascular physiology, coordinate the Center's interacting investigations of diet-related atherosclerosis, hypertension and other heart disease. They have been responsible for development of a breeding colony of hereditary hypertensive monkeys who provide a resource in which to study disease and test therapeutic measures for this serious human health problem. The new Research Center building will provide 600 sq. ft. of animal care space and an additional 800 sq. ft. of laboratories for the joint program studying the relationship of nutrition to heart-related diseases. NERPRC is supported by the Primate Research Center Program, Animal Resources Branch, Division of Research Resources of the National Institutes of Health.

Police Seize Primates at Research Lab; Researcher Charged; Trial Held

In what is believed to be the first raid of its kind, the Montgomery County police in Silver Spring, Maryland, recently invaded a government-funded animal research laboratory and spirited away 17 allegedly abused monkeys.

The police acted on the basis of an affidavit signed by four scientists who had inspected conditions at the Institute for Behavioral Research at the behest of a volunteer student who had worked there since last May.

The National Institutes of Health, which has funded the institute over the past 11 years, immediately launched an investigation of its own to see if its guidelines on the care of laboratory animals have been violated.

Viewers have used the word "appalling" to describe the conditions in which the monkeys were held. However, the institute's chief investigator, Edward Taub, a physiological psychologist, insists that the charges contained in the affidavit are "distortions," that his monkeys, crab-eating macaques, are very healthy and conditions are routine for the type of work being done.

For the past 22 years Taub has been involved in research on the effect of cutting the nerves, or deafferentation, of monkeys' limbs, for which he has received steady grant support from the National Institute for Neurological and Communicative Disorders and Stroke (NINCDS). The purpose is to gain a better understanding of how to rehabilitate stroke victims. Work has also been done on biofeedback with monkeys, with orange juice used as reinforcer, in an attempt to develop a monkey model of biofeedback learning. The institute also houses a biofeedback clinic for sufferers from Raynaud's disease, a disorder in which circulation to the extremities is impaired.

Last May Taub took on as a volunteer worker Alex Pacheco, a master's student at the University of Maryland. Pacheco is also a founder of an animal rights group called People for Ethical Treatment of Animals. He had no prior experience with laboratory animals but he became increasingly distressed over the lot of the monkeys. In late August, while Taub was away on vacation, Pacheco took some photographs and brought them to Michael Fox, a veterinarian and director of the Humane Society's Institute for the Study of Animal Problems. Subsequently, Fox and three other experts, including Geza Teleki, a primatologist who works at George Washington University, visited the laboratory. Fox and the other scientists signed the affidavit that was given to the police.

Fox says he "found the conditions, to put it mildly, appalling." Teleki says that "I have never seen a lab that compares to this in every respect--condition of the facilities, maintenance of the animals, and lack of rudimentary veterinary care." According to Fox, there were "torn limbs, great rips in their arms, and filthy cages." Two of the animals, he said, had chewed off fingers on their denervated hands. One had a broken arm that had been untended and showed signs of infection. There was "old filthy bandage material matted into the floor, and moldy feces in the corners," according to Fox. Broken wires protruded into some of the cages so the animals could lacerate themselves. Fox says that the ventilation was inadequate, and one duct led directly to the area where human patients are treated. The scientists also say they found garbage bins filled with formaldehyde in which floated the decaying bodies of monkeys being kept for histological studies. The surgical suite was found to be filthy and the drugs in the refrigerator were at least a year out of date. Pacheco has also claimed that the monkeys were subjected to pain and that he was "told to torment and frustrate them and watch their reactions."

"What really curdles me," says Fox, "is that this place year in and

year out has passed USDA [Department of Agriculture] inspection." The Animal and Plant Health Inspection Service of the USDA makes periodic unannounced inspections of animal facilities to see if they conform to the requirements of the Animal Welfare Act of 1966. The most recent inspection was in April, when the inspector reported a few minor cleanliness-related problems such as peeling paint. The facility was reinspected on 15 September, 4 days after the animals had been removed, and only three "minor deficiencies" were noted by the USDA inspector.

Taub denies almost all the allegations of his former worker and acknowledges only that "a situation did develop in the lab relating to cleanliness." He says he left for a 2 1/2-week vacation on 21 August during which people came in to feed and clean only half the time they were supposed to. A subordinate failed to notify Taub of the problem because he didn't want to disturb his vacation. "This is what is technically called a housekeeping problem based on personnel breakdown," says Taub. The laboratory has only one full-time employee, a graduate student, besides Taub, and six part-time workers. Taub told *Science* that when he returned from vacation he was too busy with paperwork to inspect the animal quarters. The next thing he knew he was "standing helplessly by" while the Montgomery County police removed all his monkeys as well as samples of food and feces and an assortment of records, including slides and videotapes. "If they can do this in my lab on the basis of unconfirmed and distorted evidence...they could do that in virtually any lab in the country," says Taub.

As for the allegations in the affidavit, Taub claims that the lesions on the monkeys are only those that are unavoidable in work where the useful limb is bound to the body in order to compel the animal to use the deafferented one. No pain is involved. Otherwise, he said, "we have an extremely healthy colony" with no diseases and only one death in the last 2 years.

He said that the bodies kept in the formaldehyde vats were not decaying because bodies cannot decay if they are in formaldehyde. Taub acknowledged the "stench" described in the affidavit but said that is the way things are with monkeys. He said no surgery has been done in the past 2 years, which is why all the drugs are out of date.

No criminal charges have been filed. A police spokeswoman said a "nationally renowned expert on primates" was being flown in to examine the monkeys after they have settled into their temporary facility.

At NIH, according to William Dommell of the Office for the Prevention of Research Risks, the reaction has been one of "total surprise." When the last grant application from Taub was reviewed, in early 1979, officials paid a visit to the site and said the facility was well suited to the project. The institute's own animal care committee, whose members were selected by the institute and approved by NIH, last inspected the premises

in November 1980 and registered no complaints. Taub, who has a \$60,000 grant from NINCDS this year, is regarded as "an outstanding behavioral scientist" who does "frontier work" in his area, according to Michael Goldberger, a neuroanatomist at the Medical College of Pennsylvania who does similar work with cats. Taub is past president of the Biofeedback Society of America and was on the founding committee of the Federation of Behavioral Medicine Societies.

Teleki and other scientists fear that this case will be used by some people to increase antagonism between researchers and animal rights activists. That is why he emphasizes that the problems with the institute have to do with basic handling of the animals, and not with the procedures called for under the research protocol.

Fox and Teleki both say that the case illustrates the need for NIH to adopt new requirements for laboratories that receive federal money.

The monkey seizure will undoubtedly supply grist for witnesses at hearings on laboratory animals to be conducted this month by the House Committee on Science and Technology. Several new pieces of animal protection legislation have been introduced, including a Research Modernization Act, which would encourage investigators to use computer simulations, tissue samples, and invertebrates instead of vertebrate animal subjects. [By Constance Holden, from *Science*, 1981, 214, 32-33. Copyright 1981 by the American Association for the Advancement of Science.]

Edward Taub, the scientist whose monkeys were seized from his laboratory after an animal rights group alleged mishandling, has now been charged with violation of Maryland's Animal Cruelty Law. Trial has been set for 27 October.

Events have been moving swiftly since police removed the 17 macaque monkeys from the Institute for Behavioral Research in Silver Spring on 16 September on the initiative of Alex Pacheco, a young animal rights activist who had been doing volunteer work at the laboratory. Police acted on the basis of an affidavit from four scientists Pacheco asked to survey the lab in Taub's absence in August (*Science*, 2 October, p. 32). The court placed the animals in the care of Ingrid Newkirk, a Maryland humane official who, in turn, had them deposited in the basement of the home of Lori Lehner of the county humane society. Both women are associated with Pacheco's group, People for Ethical Treatment of Animals.

The animals did not stay at Lehner's long, however. On 18 September Taub obtained a court order to have the monkeys returned to the laboratory. Shortly thereafter, the monkeys were kidnapped by persons who apparently did not want them sent back to Taub. Distraught, Taub held a press conference at which he said his monkeys might be killed and offered a \$450 reward for their return.

Meanwhile, negotiations were being carried on in secret between law officers and unnamed animal rightsers. Geza Teleki, a George Washington University primatologist who was one of the four to sign the affidavit, acted as an intermediary in the negotiations. Finally, on Saturday, 26 September, the animals were brought back to the laboratory, unharmed, by persons whose identities have been withheld.

Taub is now charged with animal cruelty, presumably on the basis of reports by two zoo veterinarians who examined them before they were kidnapped from their temporary quarters. The vets, Janis Ott, of the Brookfield Zoo in Illinois, and Phillip T. Robinson, of the San Diego Zoo, reportedly found that several of the monkeys require special care in the form of antibiotics and vitamin supplements. The state's attorney's office confirmed that there were problems with the monkeys, but said no details were being publicly released.

Taub has been using the monkeys in limb deafferentation research designed to benefit stroke victims. He says only about ten people in the country understand the problems attendant to the procedure in which nerves in one arm are severed, and that the charges are based on "a total misunderstanding of the nature of the research we have been doing...."

The week before he was formally charged with violation of the Maryland law, Taub expressed the fear to *Science* that his reputation would be ruined in what he regarded as a setup by animal rights activists. He called them a "reckless and ruthless group of people...who will stop at nothing to achieve their objective [halting all animal experimentation]." The group describes itself as being opposed to all painful research with animals. [By Constance Holden, from *Science*, 1981, 214, 165. Copyright 1981 by the American Association for the Advancement of Science.]

At the time of this writing, Dr. Taub and an assistant had waived their right to a jury trial and oral arguments were presented by both sides in the case to a Montgomery County, Maryland, District Court judge, over a period of several days, ending October 31. The judge then gave both sides until November 16 to submit written arguments. A verdict will be rendered after that. Dr. Taub and his assistant have been charged with a misdemeanor which carries a maximum fine of \$1,000 and/or a maximum of 90 days in jail.--Ed.

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PRIMATE RESEARCH INSTITUTE, NEW MEXICO STATE UNIVERSITY

The Primate Research Institute, located at Holloman Air Force Base, New Mexico, has recently affiliated with New Mexico State University. Originally the Aeromedical Research Laboratory of the U. S. Air Force, it was later administered by Albany Medical College as the International Center of Environmental Safety.

The Institute manages the world's largest research colony of chimpanzees (240 animals), and maintains large macaque and rodent colonies. Clinical chemistry, hematology, pathology, and radio-immunoassay laboratories provide baselines for study in primates and lower mammals of the efficacy and safety of new drugs, and toxicology of commercial chemicals and environmental pollutants. The highly equipped analytical chemistry and metabolism laboratories permit identification of potentially toxic metabolites of such compounds and analysis of the body's ability to eliminate or detoxify them. Primate models with metabolism closely similar to man are especially important for assessing the risk to humans of potentially toxic compounds.

Reproductive biology and developmental endocrinology are other areas of major effort where primates have found a special role, particularly for studies of fertility control and of endocrine maturation. A breeding program produces 20-30 chimpanzees and up to 75 macaques per year.

The Institute wishes to attract collaborative studies in its major areas of interest or where its unique combination of primate and technical resources can prove helpful. Send inquiries to the Director, Primate Research Institute, New Mexico State University, PO Box 1027, Holloman AFB, NM 88330 (Phone: 505-679-2214).

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LION-TAILED MACAQUE SYMPOSIUM

The Baltimore Zoo and the Baltimore Zoological Society are sponsoring an international symposium on the field biology and captive management of the critically endangered Lion-tailed Macaque (*Macaca silenus*). Program content includes reports of field studies, discussion of captive management techniques, habitat needs, reproductive biology and demography, and strategies for preserving endangered species. The Symposium will take place from May 19 to May 22, 1982. To receive registration materials contact: Baltimore Zoological Society, Druid Hill Park, Baltimore, MD 21217 (Phone: 301-467-4387).

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RHESUS AND CYNOMOLGUS MONKEYS FROM NIH PROGRAM

Recent conservation efforts and the classification of primate species by the Convention on International Trade in Endangered Species have made it nearly impossible to import most standard laboratory primates. To provide commonly used species for biomedical research, the DRR Animal Resources Program established several domestic primate breeding colonies. The program's contract-supported colonies will supply limited quantities of rhesus (*Macaca mulatta*) and cynomolgus (*Macaca fascicularis*) monkeys to eligible investigators for use in biomedical and behavioral research projects. Available monkeys include male yearlings and cull breeders. The colonies retain females and older males for colony breeding.

Although preference is given to requests from investigators with current research support from the National Institutes of Health or the Alcohol, Drug Abuse, and Mental Health Administration, other researchers from nonprofit institutions are eligible.

Investigators who wish to obtain these primates for use in biomedical or behavioral research are invited to submit requests. The letter of request should indicate the source of support and include the title, number, and name of the principal investigator of the grant or contract. The request should also specify the type of animal required and the number, age, sex, or other special characteristics necessary for the project. The entire request need not exceed one typewritten page.

To partially offset the costs of the breeding program, the following charges are made for primates: \$640 for rhesus monkeys, \$320 for cynomolgus monkeys over 1 year of age, and \$230 for cynomolgus monkeys under 1 year of age. The prices include shipping costs within the continental United States. The funds are paid directly to the contractor maintaining the colony.

All inquiries should be addressed to: Dr. Carl E. Miller, Bldg. 31, Rm. 5B59, NIH, Bethesda, MD 20205. Phone: 301-496-5175. [From *Research Resources Reporter*, 1981, 5 [6], 14-15.]

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POSITION WANTED

Primate Behavior Research; B.A. in Anthropology with wide practical experience with laboratory animals and monkeys, desires position involving work with primates; utilizing interest and skills in animal behavior, surgical assisting and animal nursing. Full resumé on request. Jayne Siegel, 255 Dutton Rd., Sudbury, MA 01776.

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1982 LANDRETH RESEARCH FELLOWSHIPS: OKLAHOMA CITY ZOO

Continuing a program initiated in 1978, the Oklahoma Zoological Society will offer four research fellowships for 1982. Each fellowship runs for a period of 10-12 weeks and carries a stipend of \$1,200. Furnished living and kitchen accommodations are available for research fellows in the Landreth Research Center on the Oklahoma City Zoo grounds. Limited laboratory and library facilities are available at the zoo. The University of Oklahoma is 30 minutes away.

Fellowship applications will be reviewed by zoo staff and the fellowship committee of the Animal Research Council. Awards are competitive and will be based on 1) scientific significance; 2) feasibility and relevance within the zoo environment; and 3) the investigator's academic and research record. Although normally conducted during the summer, projects may be scheduled to coincide with academic periods. Projects that can be completed within a 10-12 week period are preferred in most cases, but projects that are to be part of a graduate thesis are also encouraged. A summary report and oral presentation are required before leaving.

Applications for 1982 fellowships must be received at the zoo by January 1, 1982. Final decisions will be communicated to applicants by February 15. For additional information and application forms, including a list of past and potential research problems indentified by the zoo staff, write Dr. Ron Tilson, Research Curator, Oklahoma City Zoo, 2101 NE 50th, Oklahoma City, OK 73111, or call 405-424-3344, ext. 241.

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BRAZILIAN BOOK ON ECOLOGY AND BEHAVIOR OF NEOTROPICAL PRIMATES NOW AVAILABLE IN U.S.

The recently published book, *Ecology and Behavior of Neotropical Primates, Vol. 1*, edited by A. F. Coimbra-Filho and R. A. Mittermeier, Brazilian Academy of Sciences, 1981, is now available in the U.S. This 496 page book includes chapters on systematics, the fossil record, and ecology and behavior of eight of the 16 New World monkey genera (including *Callimico*, *Callicebus*, *Aotus*, *Saimiri*, *Cebus*, *Pithecia*, *Chiropotes* and *Cacajao*). It is available at the original Brazilian Academy price of \$25 US. Please send check to: Dr. R. A. Mittermeier, Dept. of Anatomical Sciences, Health Sciences Center, State Univ. of New York, Stony Brook, NY 11794. Several copies of Cruz Lima's classic book, *Mammals of Amazonia, Vol. 1, General Introduction and Primates*, English edition, are still available as well (at \$85.00 US each).

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RESEARCH TECHNICIAN NEEDED

The Yerkes Regional Primate Research Center of Emory University has need of a Research Technician I to work in its chimpanzee language research project, conducted at Georgia State University's new Language Research Center. Minimum pay is at the rate of \$4.96/hour (\$10,300/year)--negotiable upon credentials. Rapid promotion and corresponding increments in pay are possible contingent upon success in working with 7 and 8 year old male chimpanzees in language-relevant research with a computer-monitored keyboard. Minimum qualifications are high school graduation and 1 to 2 years of technical training or equivalent work experience; the successful applicant likely will have had experience in working directly with chimpanzees or working about them for a protracted period of time. The successful applicant must have a genuine long-term commitment to the study of chimpanzees in a comparative behavioral research program and the ability to work effectively in cooperation with others as chimpanzees are worked with in a social context. Also, they must be able to learn the lexigrams which function as words and the basic controls of the keyboard. Dr. Duane M. Rumbaugh is the Program Coordinator, and Dr. Sue Savage-Rumbaugh is the Principal Investigator.

The laboratory facility is new (6,400 square feet) and is on 55 acres of forested land only 12 miles from downtown Atlanta. It is an ideal research setting, one which should be attractive to a person who seeks a career opportunity working directly with apes in important behavioral research. Send resumés and letters to Ms. Maggie Joffe, Personnel Department, Trimble Hall, Emory University, Atlanta, GA 30322.

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CONTINUING ED. COURSE: VETERINARY CLINICAL DIAGNOSIS AIDED BY RADIOLOGY & PATHOLOGY

This new course in continuing education will be held March 4-5, 1982 at the Elks Lodge, 8421 Arlington Blvd., Fairfax, VA. The course is co-sponsored by the American Registry of Pathology, Registry of Veterinary Pathology, Armed Forces Institute of Pathology and the DC Academy of Veterinary Medicine.

DC Academy members, military and federal service employees in the veterinary and other medical science fields are requested to consult their organization regulations for appropriate application procedures. Civilian veterinarians and allied scientists are encouraged to apply. All applications must be received before Feb. 1, 1982 and may be made by writing to: American Registry of Pathology, Armed Forces Institute of Pathology, ATTN: Veterinary Radiology & Pathology Course, Washington, DC 20306. Upon application, non-DC Academy, non-federal and foreign national registrants are required to submit a \$50 fee, payable to the American Registry of Pathology.

UPCOMING PRIMATE MEETINGS

IXth Congress of the International Primatological Society, August 8-13, 1982, Atlanta, Georgia, U.S.A. This will be a joint meeting of the International Primatological Society, American Society of Primatologists, and the International Society for Human Ethology. The Congress is being coordinated by the Yerkes Regional Primate Research Center. The Congress Chairman is Dr. Frederick A. King.

Write to the Congress Office, Yerkes Regional Primate Research Center, Emory University, Atlanta, GA 30322, USA, for a booklet containing the following information and forms: (1) Outline of the general organization of the Congress; (2) Forms for proposals for symposia, workshops, oral or poster presentations, and film or videotape presentations; (3) Forms for registration and hotel reservations; (4) Information about side trips, post-Congress trips, the meeting site, and so on. The deadline for proposals is February 1, 1982.

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SPARE NOYES PELLETS FOR SALE

\$50.00 will provide you with all of the P. J. Noyes pellets listed below. Check should be made out to Georgia State University. Contact: Ms. Judy Sizemore, Department of Psychology, Georgia State University, Atlanta, GA 30303, 404-658-2283.

<u>Vendor</u>	<u>Lot #</u>	<u>Size</u>	<u>Flavor</u>	<u>Comments</u>
P. J. Noyes	15485	3.2mm x 2.5mm x 20 mg	Sucrose	50,000
P. J. Noyes	15485	20 mg	Sucrose	50,000
P. J. Noyes	82475	20 mg	Cinnamon	50,000
P. J. Noyes	123175	20 mg	Peppermint	50,000
P. J. Noyes	15485	20 mg	Cinnamon	50,000
P. J. Noyes	15485	20 mg	Peppermint	50,000
P. J. Noyes	15485	20 mg	Sucrose	50,000
P. J. Noyes	82575	20 mg	Peppermint	50,000
P. J. Noyes	15485	20 mg	Peppermint	50,000
BRS/LVE	15153	45 mg	Sucrose	20,000

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RECENT BOOKS AND ARTICLES
(Addresses are those of first authors)

Books

Reproductive Biology of the Great Apes: Comparative and Biomedical Perspectives. Charles E. Graham (Ed.) New York: Academic Press, 1981. 437 pp. [Price: \$48.50]

Contents: 1. Menstrual cycle of the great apes, by C. E. Graham. 2. Endocrinology of pregnancy in apes, by C. Faiman, F. I. Reyes, J. S. D. Winter, & W. C. Hobson. 3. Postpartum amenorrhea and behavior of apes, by R. D. Nadler, C. E. Graham, D. C. Collins, & O. R. Kling. 4. Reproductive and endocrine development in the great apes, by W. C. Hobson, G. B. Fuller, J. S. D. Winter, C. Faiman, & F. I. Reyes. 5. The female ape genital tract and its secretions, by K. G. Gould & D. E. Martin. 6. The male ape genital tract and its secretions, by D. E. Martin & K. G. Gould. 7. Comparative aspects of ape steroid hormone metabolism, by K. Wright, D. C. Collins, P. I. Musey, & J. R. K. Preedy. 8. Laboratory research on sexual behavior of the great apes, by R. D. Nadler. 9. Chimpanzee reproduction in the wild, by C. E. G. Tutin & P. R. McGinnis. 10. Gorilla reproduction in the wild, by A. H. Harcourt, K. J. Stewart, & D. Fossey. 11. Orangutan reproduction in the wild, by B. M. F. Galdikas. 12. Intermale competition and the reproductive behavior of the great apes, by A. H. Harcourt. 13. Sexual selection in man and the great apes, by R. V. Short. 14. Breeding great apes in captivity, by D. E. Martin. 15. Veterinary management of great apes for reproductive biology, by K. G. Gould. 16. Great apes as models in reproductive biology, by C. E. Graham.

Gorilla Behavior. Terry L. Maple and Michael P. Hoff. New York: Van Nostrand Reinhold, 1981. 290 pp. [Price: \$32.50]

This is the second volume in a series of books about the great apes. (The first volume was *Orang-utan Behavior*.) Its aim is to integrate the findings of both field and captive research, but its primary orientation is the problems of captive management. Contents: 1. Gorilla in its natural habitat. 2. General behavior patterns of gorilla. 3. Expression and emotion in gorilla. 4. Gorilla sexual behavior. 5. Birth and parental behavior. 6. Intellect of gorillas. 7. Gorillas in captivity. 8. Conservation of gorilla.

In many cases, the original source of reference in this section has been the Current Primate References prepared by The Primate Information Center, Regional Primate Research Center SJ-50, University of Washington, Seattle, WA 98195. Because of this excellent source of references, the present section is devoted primarily to presentation of abstracts of articles of practical or of general interest. In most cases, abstracts are those of the authors.

The Education of Koko. Francine Patterson and Eugene Linden. New York: Holt, Rinehart and Winston, 1981. 224 pp. [Price: \$15.95]

This book, written in part for lay persons (it is an alternate selection of the Book of the Month Club and the Natural Science Book Club), describes Penny Patterson's efforts to teach a gorilla, Koko, sign language, and discusses related issues.

Reports

REP: *ANNUAL REPORT 1980.* Rijswijk. The Netherlands: Organization for Health Research TNO, 1981.

This is the annual report of the REP, which stands for the Radiobiological Institute TNO, Institute for Experimental Gerontology TNO, and Primate Center TNO, Rijswijk Z. H., The Netherlands. Of the many short notes describing the accomplishments of the organization, the following are concerned with primates: RADIOBIOLOGY. Total lymphoid irradiation as an immunosuppressive regimen in monkeys and dogs, by H. M. Vriesendorp & E. P. Walma. TRANSPLANTATION AND IMMUNOGENETICS. Prevention of mortality due to graft-versus-host disease by gastrointestinal decontamination in rhesus monkeys, by G. Wagemaker, P. J. Heidt, & D. W. Van Bekkum. Current knowledge of DR and other RhLA-linked cell membrane antigens of rhesus monkeys, by W. Van Vreeswijk, J. H. Roger, M. C. Noort, J. A. K. Bart, & H. Balner. The influence of D locus antigens and other factors on MLC reactivity in rhesus monkeys, by M. Jonker, G. J. E. Van Meurs, & W. Van Vreeswijk. Influence of D locus antigens and other factors on MLC reactivity in chimpanzees, by H. Balner, G. J. E. Van Meurs, & M. Jonker. Pretransplant blood transfusions have an additive positive effect on kidney graft prognosis in D/DR matched rhesus monkeys, by J. C. C. Borleffs, Z. De By-Aghai, R. L. Marquet, & H. Balner. MICROBIOLOGY AND GNOTOBIOLOGY. Toxicity of interferon in newborn rats and rhesus monkeys, by H. Schellekens, A. De Reus, & K. Cantell. Influence of orally administered Cephadrin on the anaerobic flora and the colonization resistance of selectively decontaminated rhesus monkeys, by C. P. J. Timmermans, P. J. Heidt, C. W. De Groot, & J. De Vast. ETHOLOGY. Maternal interference with sleeping during the day in rhesus monkey infants, by P. J. C. M. Van Luxemburg, H. Dianske, G. De Jonge, and L. G. Ribbens. Social deprivation syndrome in behavioral pathologies of rhesus monkeys and man? by C. Goosen. The behavioural development of captive chimpanzees during the first six months of life, by H. Dianske, W. Van Vreeswijk, & L. G. Ribbens.

Directories

Supplement to Animals For Research: A Directory of Sources. (10th Ed., 1979). Compiled and edited by D. D. Greenhouse and A. L. Cohen. *ILAR News*, 1980, 24 [1], S1-S40.

This is the first supplement issued since this Directory series was initiated in 1954. Its purpose is to inform the research and teaching communities of additional sources of animals available for use in bio-

medical investigations. Copies of the supplement are available free of charge from: Institute of Animal Resources, National Academy of Sciences, 2101 Constitution Ave., NW, Washington, DC 20418. The Directory itself (10th ed.) may be ordered at a cost of \$6.25 from National Academy Press, 2101 Constitution Ave., NW, Washington, DC 20418.

Bibliographies

Since January, the Primate Information Center has published the 14 bibliographies listed below. Unless otherwise noted they cover the period from 1940 to the time of collection. The bibliographies themselves, or a price list showing previously issued titles, may be obtained directly from the: Primate Information Center, Regional Primate Research Center (SJ-50), University of Washington, Seattle, WA 98195. Orders totalling less than \$10.00 must be accompanied by payment. NEW TITLES: *Behavioral observations of feral and free-ranging baboon (Papio)*. 243 citations with species index (\$6.00). *Behavioral observations of feral and free-ranging guenons and vervets (Cercopithecus)*. 168 citations with species index (\$6.00). *Behavioral observations of feral and free-ranging gibbons and siamangs (Hylobates)*. 103 citations with species index (\$5.00). *Behavioral observations of feral and free-ranging New World monkeys (Cebidae and Callitrichidae)*. 207 citations with species index (\$6.00). *Clinical blood picture of nonhuman primates: A selected bibliography of major hemograms & chemistry*. 135 citations with primate index (\$6.00). *The electrocardiogram of normal nonhuman primates*. 68 citations with primate index (\$5.00). *Social behavior of the squirrel monkey (Saimiri sciureus)*. 201 citations (\$6.00). *Spontaneous neoplasia in nonhuman primates: A bibliography of reviews, surveys, and recent cases*. 146 citations with primate & organ indexes (\$6.00). *Studies of myocardial ischemia and infarction in nonhuman primates: A bibliography*. 100 citations with species index (\$6.00). NEW EDITIONS: *Adult male-infant interaction in nonhuman primates, 1940-1974*. 173 citations with primate index (\$6.00). *Adult male-infant interactions in nonhuman primates, 1975-1981*. 166 citations with primate index (\$6.00). *Behavior of the group, mother and infant during the perinatal period: A bibliography of studies related to parturition in nonhuman primates*. 162 citations with primate index (\$6.00). *Bibliography of kinship behavior in nonhuman primates*. 380 citations with primate & subject indexes (\$7.00). *Biological aspects of circadian rhythms in nonhuman primates*. 278 citations with primate index (\$6.00).

Disease

Atypical mycobacteria as the probable cause of positive tuberculin reactions in squirrel monkeys (*Saimiri sciureus*). Soave, O., Jackson, S., & Ghumman, J. S. (Bldg. 31, Rm. 4B30, NIH, Bethesda, MD 20205) *Laboratory Animal Science*, 1981, 31, 295-296.

Three of 275 squirrel monkeys demonstrated a positive reaction to Koch's old tuberculin within 72 hours after the test. The animals were again positive when retested 1 week later. Two of the monkeys

were killed and necropsied. There was no gross nor histologic evidence of tuberculosis. Organisms were cultured from liver, spleen, and mediastinal lymph node. These were identified as Runyon Group II mycobacteria, *Mycobacteria gordoneae*.

An outbreak of type C botulism in captive monkeys. Smart, J. L., Roberts, T. A., McCullagh, K. G., Lucke, V. M., & Pearson, H. (Agricultural Res. Council, Meat Res. Inst., Langford, Bristol, England) *Veterinary Record*, 1980, 107, 445-446.

In an outbreak of type C botulism in a group of captive primates, six squirrel monkeys, six white throated capuchin monkeys and two weeper capuchin monkeys succumbed rapidly and died. *Clostridium botulinum* type C toxin was detected in the remains of their usual ration of chopped chicken feed, in nine of 11 blood samples, and one of three stomach contents samples from the affected animals.

Intestinal parasitism in an outdoor breeding colony of *Macaca mulatta*. Eberhard, M. L. (Dept. of Parasitology, Delta Reg. Prim. Res. Ctr., Covington, LA 70433) *Laboratory Animal Science*, 1981, 31, 282-285.

A portion of a large outdoor breeding colony of rhesus monkeys was surveyed for intestinal parasites. The results of this examination were compared to data obtained at the time of arrival for this same group of animals. In addition, a small number of infants born in the colony were examined. Although most species of parasites detected during quarantine were retained in the breeding colony, the parasite population changed. The number of helminthic infections doubled while protozoan infections decreased by 20%. *Trichuris* (47%), *Strongyloides* (34%), *Entamoeba* (59%), *Endolimax* (20%), and *Iodamoeba* (20%) were the most common parasites detected in the outdoor breeding colony.

Infantile polycystic renal disease in a rhesus monkey (*Macaca mulatta*). Baskin, G. B., Roberts, J. A., & McAfee, R. D. (Delta Reg. Prim. Res. Ctr., Three Rivers Rd., Covington, LA 70433) *Laboratory Animal Science*, 1981, 31, 181-183.

Congenital infantile polycystic renal disease was diagnosed in an infant rhesus monkey. The kidneys were enlarged, and renal tubules were cystic. The intrahepatic bile ducts were increased in number, dilated, and surrounded by excessive fibrous tissue. This disease was similar to inherited infantile polycystic renal disease in man.

Renal disease in prosimians. Boraski, E. A. (Zoological Soc. of San Diego, PO Box 551, San Diego, CA 92112) *Veterinary Pathology*, 1981, 18, (Suppl. 6), 1-5.

Renal lesions occurred spontaneously in 22 of 113 prosimians that died at the San Diego Zoo between 1965 and 1977. 17 of the 22 were in the family Lorisiidae (14 in galagos), three in Lemuridae, and one each in Indriidae and Tupaiidae. Of the *Galago* cases, six were in *G. senegalensis* and eight in *G. crassicaudatus panganiensis*. Lesions included focal and diffuse proliferative glomerulonephritis, membrano-

proliferative glomerulonephritis, interstitial nephritis, and pyelonephritis.

A new species of the genus *Probstmayria* Ransom, 1907 (Nematoda: Atractidae) from the rhesus macaque, *Macaca mulatta*. Arya, S. N. (Makrana Mohalla, Jodhpur 342001, India) *Primates*, 1981, 22, 261-265.

Probstmayria nainitalensis n. sp. is described from the rectum of the rhesus monkey from Nainital, India. The new form consists of morphologically dissimilar spicules, spicular ratio 1:1.41-1.50, tip of shorter spicule elongate and blunt, six pairs of postanal papillae and a prominent gubernaculum in the male and didelphic ovaries and postequatorial vulva in the female. A key to the species is also furnished.

Yersinia pseudotuberculosis infection: Study of an epizootic in squirrel monkeys. Buhles, W. C., Jr., Vanderlip, J. E., Russell, S. W., & Alexander, N. L. (Syntex Res., Mountain View, CA 94043) *Journal of Clinical Microbiology*, 1981, 13, 519-525.

An epizootic of an acutely fatal enteric disease in a colony of squirrel monkeys (*Saimiri sciureus*) was attributed to infection by *Yersinia pseudotuberculosis* serotype III. Of a total adult population of 96 animals at risk, there were six fatal cases of yersiniosis. Serological evaluation of the colony just after the outbreak ended revealed that 22 of 60 monkeys tested (37%) had significant antibody to *Y. pseudotuberculosis* but did not have clinical disease. An episode of abortions was associated both temporally and spatially with the fatal cases of yersiniosis, and *Y. pseudotuberculosis* was cultured from the uterus of two of the dying monkeys, suggesting that yersinia infection may be associated with abortion, as well as with enteric infection, in these animals.

Physiology

Blood volume in *Macaca fascicularis*. Kamis, A. B. & Noor, N. M. (Unit Zoologi, Universiti Kebangsaan Malaysia, Jalan Pantai Baru, Kuala Lumpur, 22-12, Malaysia) *Primates*, 1981, 22, 281-282.

The plasma and erythrocyte volumes of *Macaca fascicularis* were determined using blood labelled with ^{125}I -serum albumin and ^{51}Cr . It was found that the erythrocyte, plasma and packed cell volumes were 108 ± 6 ml (Mean \pm S.D.), 210 ± 10 ml and $37 \pm 2\%$ respectively. Total blood volume of macaque was 8% of body weight.

Breeding

Establishment of a breeding colony of stumptailed monkeys (*Macaca arctoides*). Chamove, A. S. (Stirling University Psychology Primate Unit, Stirling, FK9 4LA, United Kingdom) *Laboratory Animals*, 1981, 15, 251-259.

A breeding colony of 27 female and 4 male stumptailed monkeys was established in a 300 m² laboratory. More than 80 infants were born over 6 years.

Annual plasma testosterone cycle and ejaculatory ability in the laboratory-housed crab-eating macaque (*Macaca fascicularis*). Dang, D. C. & Meusy-Dessole, N. (Lab. d'Anatomie, U.E.R. Biomed., 45, rue des Saints-Pères, 75270 Paris Cedex 6, France) *Reproduction, Nutrition, and Development*, 1981, 21, 59-68.

Six fertile adult males were studied. Radio-immunological assay of the plasma testosterone, sampled monthly, showed an annual hormone cycle with a maximum in the fall and a minimum in the spring. The ejaculatory ability of these animals was estimated for 10 min in the presence of females between days 12 and 15 of their menstrual cycle. This ability showed no cyclic variation during the year. Comparing the annual variation of testosterone levels in macaque males (*M. mulatta*, *M. arctoides*, *M. nemestrina*, *M. fascicularis*) and man, we found that, except for *M. arctoides* and *M. nemestrina*, the maximal simian levels always coincided with autumn and the minimal levels with spring in spite of the different rearing environments. It appears that above a minimal level, variation in the plasma testosterone level does not affect male sexual behavior, at least as far as ejaculatory ability is concerned. Moreover, during this study we noted that above a maximal plasma testosterone level, varying with the season, the ejaculation rate may be depressed.

Infant-related influences on birth intervals in rhesus monkeys. Simpson, M. J. A., Simpson, A. E., Hooley, J., & Zunz, M. (Sub-Dept. of Animal Behaviour, Univ. of Cambridge, Cambridge CB3 8AA, England) *Nature*, 1981, 290, 49-51.

That a mother's relationship with her infant could influence her subsequent reproductive history can be argued as follows. A rhesus monkey infant whose next sibling is to be born in a succeeding birth season could compete with it by trying to postpone the date when its mother next conceives. If the mother preferred a shorter delay than the infant, processes of conflict and negotiation involving the two could show in some of the behavioral interactions constituting their relationship. For example, a mother could try to hasten the onset of her next pregnancy by trying to promote more independent behavior in her infant, perhaps by rejecting some of its bids for contact. Data are presented from the authors' rhesus monkey colony and other colonies which support this argument.

Determinants of sexual behavior of *Macaca arctoides* in a laboratory colony. Linnankoski, I., Hytonen, Y., Leinonen, L., & Hyvarinen, J. (Dept. of Phys., Univ. of Helsinki, 00170 Helsinki 17, Finland) *Archives of Sexual Behavior*, 1981, 10, 207-222.

Copulatory behavior of wild-born, individually caged laboratory stumptail monkeys (*Macaca arctoides*) was investigated. The monkeys were paired daily for 20 min, and altogether 536 pairings were observed. The influence of the female's menstrual cycle and social factors on male sexual activity was determined. The reactions of the other monkeys during a

pairing, and masturbation behavior of the males were observed and described. Among other things, it was concluded that reunion after separation is very potent in triggering copulation and that sexual behavior of the female is more dependent on adequate sexual stimulation by the opposite sex than is that of the male.

Ecology and Field Studies

On the geographical distribution of primates in China. Zhang, Y.-Z., Wang, S., & Quan, G.-Q. (Inst. of Geography, Academia Sinica, Peking, China) *Journal of Human Evolution*, 1981, 10, 215-226.

This paper deals with the geographical distribution of primates in relation to environmental conditions and threatening factors in different zoogeographical regions. South China region: most species of primates inhabit the tropical forest stretching along the southern border of the country. Habitat destruction has caused *Nycticebus coucang*, *Pygathrix nemaeus*, *Presbytis* spp. and *Hylobates* spp. to be threatened with extinction. Through intensive exploitation *Macaca* spp. have been reduced to some secondary forest areas. Southwest China region: *Presbytis entelles* inhabits the area below the moist temperature belt in the southern flank of the Himalayas. *Tupaia glis* live at 2000 m elevation in evergreen broadleaf forests. Some of the *Macaca* spp. population are forced to live at even higher elevations, over 3000 m, due to deforestation, *Rhinopithecus roxellanae bieti* still remains in Yunnan. Central China region: *Macaca mulatta* and *M. speciosa* have disappeared in most parts of this region except for some isolated groups occurring in the rugged mountains. *R. r. roxellanae* and *R. r. brelichi* exist under protection, the latter being one of the most endangered mammals in China. North China region: there are only two small relict populations of *M. mulatta* in Shansi and Hopei reaching as far as lat. 41°N. It once had a wide distribution in northern China as indicated in the historical literature.

Invasion of the forest by an African savannah monkey: Behavioural adaptation: Kavanagh, M. (c/o Rosemary Cottage, Tuggles Plat, Warnham, Sussex, England) *Behaviour*, 1980, 73, 238-260.

Tantalus monkeys, a race of the savannah species, *Cercopithecus aethiops*, have invaded the cultivated forest of Bakossi in southwest Cameroon during the last seventy years and become important agricultural pests. The cultivated forest is a new habitat to which they are well adapted by virtue of their eclectic diet, their habit of foraging away from tall trees, their semi-terrestriality, their flexible group size and their cryptic nature. The indigenous related species of the rain-forest are less able to exploit the changed habitat, probably because they are insufficiently terrestrial or cryptic and they typically forage among the trees that provide their refuge. As a result of their conflict with the farmers whose crops they raid, the forest tantalus monkeys contrast with conspecifics in the savannah by their less predictable ranging patterns, their quieter call repertoire, a striking and consistent male pattern of vigilance behavior and their habit of hiding from dogs rather than giving the loud alarm calls that are invariably given where canids are not

associated with man.

New locality for the yellow-tailed woolly monkey. Parker, T. A. III. & Barkley, L. J. (Drawer MU, Museum of Zoology, Louisiana St. Univ., Baton Rouge, LA 70893) *Oryx*, 1981, 16, 71-72.

The authors found a small number of yellow-tailed woolly monkeys in a part of Peru 200 kilometers from where in 1974 the species was 'rediscovered' (having been believed extinct). As the area is also the home of a number of endemic Peruvian birds, they suggest it may have been a refugium in the late Pleistocene and should be both protected and explored for other possible undescribed species.

Instruments and Techniques

Device for capture and restraint of nonhuman primates. Smith, E. O. (Yerkes Reg. Prim. Res. Ctr. Fld. Stat., Emory Univ., 2409 Collins Hill Rd., Lawrenceville, GA 30245) *Laboratory Animal Science*, 1981, 31, 305-306.

A device was developed which allowed the isolation, capture, and restraint of individual stump-tail macaques (*Macaca arctoides*) living in a social group. Capture and restraint was accomplished with minimum stress to the animals and minimum risk to animal handlers. The use of positive reinforcement in the training regimen contributed to reliable daily entrance into the capture device.

Baboon (*Papio ursinus*) capture using a blow-dart system. Melton, D. (Regional Biologist, Dept. Wildlife & Nat. Parks, Chobe Nat. Park, PO Box 17, Kasane, Botswana) *South African Journal of Wildlife Research*, 1980, 10, 67-70.

This paper describes the methodology of capture and the problems experienced while immobilizing baboons in the Okavango Swamp, Botswana, using a blow-dart system. The equipment used and its efficiency is described along with the immobilization drugs and their effects. Problems encountered are described within the context of working with habituated animals that are being studied behaviorally. The system was found effective, allowing for a continuous slow sampling of baboons with a minimum of disturbance.

Conservation

Ethical concerns in primate use and husbandry. Eudey, A. A. (Dept. of Anthro., Univ. of Nevada, Reno, NV 89557) *International Journal for the Study of Animal Problems*, 1981, 2, 96-102.

Subsequent to World War II, a dramatic increase occurred in the utilization of nonhuman primates in biomedical and psychological research and industry. At the same time field studies on the ecological and social behavior of natural populations of primates also increased, making possible more realistic assessments of both the behavioral potentiality of primate populations and their conservation status. In spite of the growing body of information indicating the endangered or threatened status of most species, many laboratory workers and planning agencies continue to regard primates

as renewable resources, even seeking to bypass protective legislation in habitat countries to obtain them. As a consequence, insufficient financial support has been made available for the development of breeding colonies for research programs which may be essential. However, much utilization of primates is open to question. The appropriateness of primates as models, the number of animals used in experiments, and the redundancy of experimentation frequently are given little consideration. Likewise, field data on the biological and social requirements of primates have been consistently ignored in housing and other aspects of care, thereby calling into question the results of much research. The lack of restraint on the utilization of primates (and other animals) in research may ultimately be a consequence of the man/nature dichotomy embedded in traditional interpretation of Judeo-Christian thought.

Apes on The Rock. Fa, J. E. (Animal Ecology Res. Group, Dept. of Zoology, South Parks Rd., Oxford, OX1 3PS, England) *Oryx*, 1981, 16, 73-76.

Barbary macaques have been on Gibraltar continuously for 240 years, maybe longer. Today they are a major tourist attraction--1000 people may visit them in a day. But they have caused much trouble in the past, raiding gardens, damaging houses, biting people. Since 1913, with few breaks, they have been fed regularly on the top of the Rock by the British Army. Numbers have fluctuated--in 1900 there were 130, in 1943 only four, which on Mr. Churchill's instructions were increased by imports to 24. Today they are kept at between 30 and 40, and controlled by exports to zoos and culling, which the author, who is studying their adaptation to living with man, considers unacceptably wasteful.

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18TH INTERNATIONAL ETHOLOGICAL CONFERENCE

The 18th International Ethological Conference will be held in Brisbane, Australia, August 29 to September 6, 1983. According to Professor Glen McBride, the Conference Secretary, this will be the first "open" conference of the series, so that all may attend. Those interested in receiving further information should write to Professor McBride. The address is: Conference Secretary, Animal Behaviour Unit, University of Queensland, St. Lucia, Australia 4067.

Professor McBride suggested that the conference organizers would be receptive to proposals from primate ethologists for a plenary session or symposium on a topic of interest to primatologists.

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