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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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Editorial: On Primatology Journals and Primatologists

I greet the announcement of a new journal—any new journal—with a great moan as I glance at the giant pile of unread "recent" issues of various "important" journals on a table near my office desk. The number of different journals in the pile is already much greater than it was just a few short years ago, and seems to me to be increasing—at least in the biobehavioral area—at a much faster rate than the rate of increase in quality articles. Like many readers, perhaps, I finally get tired of looking at the pile (or else I sense that it will soon topple over) and, after skimming through several of what appear to be the more pertinent or important articles in order to salve my conscience (I've already read the very few articles that are really critical to me), I move the various issues to their permanent storage places. Space for this has also become a major problem. A new journal, then, immediately threatens to make the pile higher faster and to make me feel guiltier that I am not reading it all. There is also the problem of the ever-increasing cost of subscriptions. I subscribed to a couple of journals not too many years ago in part because they seemed such good buys. They don't seem so now, but the increases in cost each year have been just enough to give me pause, though not enough to prevent me from deciding, "Just one more year!"

So with new journals being added seemingly monthly to the plethora already existing that compete for what seems like less and less time to read them (there's teaching, research to conduct, administering, committees, reviewing, and the rest of the things that we all have to deal with) and effectively less and less money available to buy them, on sheer grounds of the number of pages to deal with and cost, it made me very uneasy to see the recent advent of not one, but two new primatology journals, the *International Journal of Primatology* and the *American Journal of Primatology*.

In my opinion, a journal should only be founded these days if it promises to have much more than an ordinary degree of appeal to the scientific community (so that its members will feel compelled to add it to their piles). Do these journals show such promise? I must confess that I have some doubts about them in this regard. A reasonable minimum requirement would be quality. Do the present journals appear to be quality journals? It is impossible to judge the general quality of a new journal on the basis of the articles in a few issues, especially when they range so widely in topics, as discussed later. However, one can make some judgements about quality on the basis of the editorial boards—the editors and associate and consulting editors. Both journals certainly seem to glitter in this respect. Many of the very well-known names in the area of primatology and primate research are included (even mine). They are boards that certainly know their stuff and will not hesitate to say, "No." Of course, in some cases, such boards are merely window dressing. (I recall one journal which listed at least one prominent scientist as an editorial consultant long after he was dead.) However, my ear is sufficiently close to the primatological ground to be reasonably certain that this is not the case with the present journals. So my guess is that these jourals will try to maintain reasonably high standards if they get the chance—and, of course, there's the rub. Will they get the chance? Will scientists doing research with nonhuman primates send their best papers to these journals?

I am far from certain that they will. Most people who attend primatology meetings or primatology sessions at more general meetings would probably not call themselves "primatologists" if asked. They are more likely to say, "I am an ethologist who works with monkeys."—or an "experimental psychologist," or "anthropologist," or "immunologist," or "anatomist," etc. These scientists' first loyalty is going to be to the professional discipline in which they are trained, which will also usually have its own academic departments and its own long-established, prestigious journals. These journals are certainly more likely to get the best papers, especially since these are also the journals that grant reviewers and departmental chairmen are going to look for when they make the kinds of decisions that they are always making.

There are few persons whose research is truly "primatological," whose aim is primarily to find out something about nonhuman primates simply because they exist. Indeed, I deeply suspect that the "primatologist" is a mythical creature. Many, probably most, people doing research with nonhuman primates are doing so because they can't do the research on humans for practical or ethical reasons. Most medical researchers who use nonhuman primates fall into this category. Such people are hardly going to read, much less publish, in a primatological journal. (There is a journal devoted to medical primatology, but it does not pretend that its main function is serving monkeykind.) Many others, particularly the type that I mentioned earlier that attend primatology meetings, have a greater interest in and sympathy for their subjects than the people who are using them strictly as a tool, a necessary evil, but still can be called "primatologists" only

secondarily. Their research problems are framed, perhaps not consciously, with humans in mind (it's only natural), or at least with the idea of elucidating general processes of relevance to a wide variety of species. These people organize their work, what they do and what they read, in terms of problems, not species. They have no real interest in or need for a primatology journal. Indeed, such a journal is almost a contradiction in terms for such persons.

That leaves us with the possibly mythical creature, the true primatologist. If such a creature does exist, would it be interested in or capable of reading primary research articles (or even reviews) covering the range of disciplines and topics within disciplines that this journal is now publishing and proposes to publish? Who is it (but a mythical creature?) who can or will turn with avid interest from an article on genetics, to one on the anatomy of the forelimb, to one on development of social behavior, to one on virology, to one on nutrition, and so on? On top of that, the first article may involve prosimians, the second Old World monkeys, the third New World monkeys, and the fourth apes.

Primatology as it exists in practice today is not a good organizing principle. The new journals are animal oriented, not problem oriented. The editors and publishers will claim in their defense that they are "interdisciplinary." This is wishful thinking. The term "interdisciplinary" refers, or at least should, to articles that involve an *integrative* mixture of disciplines, rather than to the mere fact that articles from different disciplines are published side by side. I would suggest the term "multidisciplinary" to cover the latter case. From what I have seen so far the more accurate description of the two journals would be "multidisciplinary." The great bulk of research on nonhuman primates is that way, so it could hardly be otherwise. I think it was a mistake to initiate either journal, and two may compound the problem. I expect the appearance of two journals, for neither of which I can see a real demand, will simply make it less likely that either will succeed. I wish both journals well, and am doing all I can to support both of them (among other things, I subscribe to both), though, in all honesty, I cannot yet recommend them very highly to the scientific community. My basic gut feeling is that we don't need more journals. We do need more excellent research.—A.M.S. [This is a modification of a review by the Editor that appeared in *The Quarterly Review of Biology*, 1982, 57, 207-208.]

"WELL, I DON'T KNOW WHY IT BOTHERS HIM. I THINK IT'S REAL NICE BEING THE SUBJECT OF LOTS OF MAGAZINES!"

The Rehabilitation of Chimpanzees and Other Apes

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Chimpanzees have been known to man and used for study since the time of Hippocrates (Pickering, 1963). In more recent times their contributions to research and to the investigations of human health problems have been significant. The use of chimpanzees in scientific research has advanced our ability to resolve such infectious diseases as yellow fever (Thomas, 1907), respiratory infections (common cold) (Chanock & Finberg 1957; Dochez, 1930; Morris & Blount 1956), poliomyelitis (Bodian & Howe, 1945; Howe & Bodian, 1940; Howe & Bodian, 1941), venereal diseases (Lucas et al., 1971; McClure, 1980), leprosy (Leininger, 1978), degenerative neurological diseases (Gajdusek, Gibbs, & Alpers, 1966; Gibbs et al., 1968), and infectious hepatitis (Atchley & Kimbrough, 1966; Tabor et al., 1980). They have been instrumental in furthering our knowledge of human and nonhuman primate blood groups (Weiner & Moor-Jankowski, 1972) and have given us an insight into behavior patterns (Goodall, 1968) which have helped us to understand and treat abnormal behavior in human beings and animals.

Current trends in science indicate that many chimpanzees now being bred and maintained for use in biomedical research may not be necessary for such activities in the future. The reasons for this are the high purchase price and daily maintenance cost for chimpanzees, the difficulties in housing and containing such powerful and aggressive animals, the fact that they are an endangered species with a declining population in the wild, and the growing sentiment that chimpanzees should only be used for research when absolutely necessary. Because they are an endangered species, we have a responsibility to conserve these animals and support approaches taken to ensure their survival in captivity.

Figures on the size of the chimpanzee population in the United States emphasize the seriousness of the problem of possible surplus animals. There are about 1,400 chimpanzees in this country with 1,100 in research institutions and 300 in zoological gardens (Seal, in press). The animals in research institutions are the ones of concern since it is possible that several hundred of these could become available for some type of rehabilitation program. Before facing an emergency situation, plans should be developed for the proper disposition of these animals.

This discussion will examine the ecology of chimpanzees in the wild, rehabilitation programs that have been carried out for great apes, and recommendations for captive chimpanzees in the United States considered to be surplus.

Chimpanzee Behavior in the Natural Habitat

There have been numerous studies of the behavior of chimpanzees in the wild (Goodall, 1968; Itani, 1980; Itani & Suzuki, 1967; Izawa, 1970; Kortlandt, 1962; Nissen, 1931; Reynolds & Reynolds, 1965; Rodman, 1980). Such studies are important because knowledge of how these animals live in nature may help us to plan rational rehabilitation programs and to maintain chimpanzees in the most satisfactory manner.

Generally, chimpanzees live in groups of 5 or more adult males and 10 or more adult females; communities of 30 to 50 animals are not uncommon. They are nomadic animals and may have a range as large as 80 to 120 sq km; the ranges of two separate groups may overlap by as much as 20%. It is common for some animals to leave and join groups at will. Chimpanzees have rigid dominance orders for both males and females. These orders permit adult animals, especially males, to live together in relative harmony.

Chimpanzee food consists of fruit, nuts, insects, stems, branches and roots of plants. Nomadism is related to food supply; less movement of groups is seen when food is plentiful and more when it is scarce (Goodall, 1968; Itani, 1980;

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Itani & Suzuki, 1967; Izawa, 1970; Kortlandt, 1962; Nissin, 1931; Reynolds & Reynolds, 1965; Rodman, 1980).

Rehabilitation Programs

Webster's New Collegiate Dictionary defines rehabilitation as follows: "To restore to a condition of health or useful and constructive activity." It is in this sense that the word rehabilitation is applied to nonhuman primates here. The intent is to take single-caged animals, or those that have been kept two to three per enclosure, and adapt them to social, compatible groups so that they may live in a manner more consistent with their life in the wild.

Chimpanzees

There have been several attempts to rehabilitate chimpanzees into social groups, both in the wild and in the United States. These have included small numbers of animals and their success has been questionable or the projects have been abandoned.

One attempt at returning chimpanzees to the wild involved the release of nine formerly captive animals onto an island in the Gambia River National Park, Gambia. The investigator first spent 18 months with the animals in the Abriko Reserve in Gambia familiarizing them with various foods, foraging, and how to find and make shelters. The adjustment to the wild has been very slow and time-consuming for the teacher who plans to stay on the island with the animals for at least one more year (Carter, 1981). In another attempt, Stella Brewer has released chimpanzees back into the wild in Niokola Koba Park in Senegal and at Mount Asserik, Abuko. In all, these totalled about nine animals. Her conclusions are that compound (captive) chimpanzees are unlikely to become a part of a wild chimpanzee community. The best method of creating a group of rehabilitated animals is to release them in a group that can live together as a self-sufficient community on their own (Brewer, 1978).

Domestic attempts at rehabilitation of chimpanzees have involved two island groups and several colonies of various sizes placed in pens or compounds. In 1972, three female and one male chimpanzees were released on Ossabaw Island, Georgia. Two of the females died and four more were placed on the island. One young was born to the group and removed from the island. This rehabilitation attempt was abandoned because of the difficulty in providing food and shelter for the animals and because of danger to the animals due to the presence of duck hunters on nearby islands (Wilson & Elicher, 1976).

Fritz and Fritz (1979) have socialized chimpanzees into groups by placing newly acquired animals in cages with visual and tactile contact with stabilized animals. The new animals are closely observed and assimilated into groups in pens depending upon their observed reactions: fear, dominance, subservience.

Other large colonies of chimpanzees in the United States are, or have been, largely devoted to research programs, with some breeding being carried on. Primarily these are the colonies at the Yerkes Regional Primate Research Center, Southwest Foundation for Research and Education in San Antonio, New Mexico State University (Holloman Air Force Base), New York University (LEMSIP) and the University of Texas (Bastrop). The latter colony is devoted to rehabilitation of animals and its methods and progress will be reported upon at a later time.

Orangutans

The largest and perhaps the most successful of the great ape rehabilitation programs are the five centers begun in Borneo and Sumatra over the past 20 years. Since the inception of these programs, about 100 orangutans have been released at the various centers. The original purpose of the centers was to create sites where animals taken by the government from illegal traders could be placed. They have now become centers for rehabilitation, research, tourism and education of the public in conservation of nature. The centers have some buildings for personnel, storage and research. Animals' diets are supplemented and two or three of the centers allow tourists to visit and observe the orangutans in their semi-wild state.

There are several problems related to releasing animals back into their native habitat. Most important are the possibility of introducing virulent disease agents, including human pathogens, carried by the captive apes to the wild ones, creating social stress, and upsetting the indigenous population.

Several criteria and procedures have been established by the Borneo and Sumatra programs for the rehabilitation of orangutans in oder to avoid such problems. These are: (1) The animals have passed infancy and spent part of their early years before capture in the wild. (2) Although it may seem odd, one criterion is that the animals have neither been overindulged in captivity nor neglected. On the one hand, well-fed and content animals are difficult to rehabilitate, having become over-dependent on human caregivers. On the other hand, the physical and mental health of neglected animals may be beyond restoration. (3) Independence from human care is encouraged by a gradual procedure. (4) The centers encourages the animals to be arboreal and to stay away from center buildings. (5) The young animals are encouraged to form relationships with wild ones and learn by imitation from the more experienced ones. (6) Contact with center personnel and visitors is kept to a minimum. (7) The center should be isolated by natural barriers from human populations and agricultural areas.

Such conditions are demanding and difficult to meet. The centers in Borneo and Sumatra are not isolated since some have had from 5,000 to 17,000 tourists visit them each year, and center personnel give the animals supplemental food and study their behavior (Aveling & Mitchell, 1982; Rijksen & Rijksen, 1979).

Gibbons

A plan was made to release some gibbons onto an island in the Gulf of Siam in Thailand. The island was leased by the Government of Thailand to the SEATO Laboratory and was considered a logical site to try rehabilitating and studying gibbons returned to the wild state. Gibbons in the wild travel in family groups of an adult pair and their offspring, three to five animals being the usual number. It was felt that this type of grouping should make rehabilitation easier than where animals form large social groups.

The island consisted of 58 acres and in 1966 eight gibbons were released on it near a source of food and water. Three months later, with almost no attention, five animals had disappeared and three had formed a group. At the end of 1966 two of these animals attacked some men, were caught and returned to Bangkok. The single remaining animal died in early 1967. Early in 1967, 58 food and water stations were distributed throughout the island, four metal sheds were constructed for protection of the animals, and a cage-trap installed. Two caretakers were employed to provide water and food and maintain the trails. In the next 14 months, a total of 20 sexually mature animals were placed on the island. Nine animals died or were removed from the island for various reasons.

The program director left the island program in 1969; however, the study continued through 1970. A few births had occurred among the various groups of gibbons. In the next few years the program was abandoned and the remaining animals returned to captivity (Berkson, Ross & Jatindana, 1971).

Discussion

The published attempts at rehabilitating apes have not been eminently successful with respect to the numbers of animals placed in groups in the wild or in captivity. Attempts to utilize island sites have involved small numbers of animals and constant care; provision of shelter and observation is necessary.

The largest rehabilitation program is the one in Indonesia. In the more than 10 years the Borneo and Sumatra centers have been in operation, about 100 animals have been released into a semi-wild existence. Several adult female rehabilitants have mated with wild adult males and, in some instances, produced young. These females had undoubtedly spent their early years in the wild and were able to become socially integrated back into the wild. The major contributions of the orangutan centers have been the enforcement of wildlife conservation laws, conservation education for the public, tourism development, and habitat protection (Aveling & Mithcell, 1982).

No program has been attempted involving the rehabilitation of several hundred apes, especially chimpanzees. If 100 or more chimpanzees should become available for some type of rehabilitation from a captive or caged type of situation,

this could present serious problems. Chimpanzees, unlike orangutans and gibbons who are solitary or travel in small family groups, roam as integrated, well-balanced colonies of 20 to 50 animals, making it much more difficult to reintroduce them into the wild.

Attempts to rehabilitate apes into a natural or semi-natural environment do not seem to be in the best interests of the animals; the efforts are time-consuming, expensive, and often abandoned. Formerly captive animals may represent a hazard to the indigenous population. For these and other reasons it would appear that other approaches to re-introduction of animals into the wild must be considered. However, there appears to be no alternative solution to attempting some types of rehabilitation and maintenance program for chimpanzees not needed for research or exhibition purposes. Rehabilitation of animals, especially apes, receives much attention, publicity and national interest. Hence, any proposed program would undoubtedly receive both public and scientific support.

For captive chimpanzees the best approach at rehabilitation would seem to be to establish 20 to 30 compounds into which are released family groups of 10 to 15 animals. The compounds should be located in, or near, an urban area containing educational and research institutes. This concept is based, in part, on the author's observation and involvement with the Stanford University outdoor primate facility for chimpanzees.

Such a center would have a threefold purpose: maintaining chimpanzees, research and exhibition. It should be constructed with the major purpose of maintaining chimpanzees in the best possible manner. However, thought should be given to providing a method of observing the animals for study, possibly through one-way mirrors, and provision made for viewing the animals by visitors. Providing for the latter two items would permit scientists to seek research support for their work and the charging of a fee to visitors to partially underwrite the expenses of the operation.

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ICZN Issues Rulings on Mandrill, Baboon, and Leaf-Eating Monkey Nomenclature

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The International Commission on Zoological Nomenclature (ICZN), the judicial body concerned with correct scientific names for all animals, has recently (1982a) issued a ruling on the generic names to be applied to the mandrill and the (savannah/hamadryas) baboon. The ICZN ruled that, in accordance with widespread (but not unanimous) current usage, the term *Papio* (with authorship Erxleben, 1777) is to be applied to the baboons, while *Mandrillus* Ritgen, 1824 is to be used for mandrills. The respective type species are *Papio* (originally *"Cynocephalus") papio* Desmarest, 1820 (now commonly called *P. cynocephalus papio* or *P. hamadryas papio)* and *Mandrillus sphinx* Linnaeus, 1758. If, as some authors consider, these two animals are placed in the same genus, the mandrill would become *Papio sphinx* (or *Papio (Mandrillus) sphinx* if subgenus distinction were desired—as suggested, for example, in Szalay and Delson, 1979).

The reason that this matter had to be adjudicated by the ICZN was that an earlier author than Erxleben (Müller, in 1773) had used the term *Papio* to refer to the mandrill. By the rule of priority, this would fix usage of *Papio* for mandrills thereafter and require the use of another genus name (namely *Chaeropithecus)* for baboons. In this case, after consideration of alternative arguments put forward by the writer and Mrs. Prue Napier (1976) and of comments by numerous primatologists and zoologists, the above decision was made.

The ICZN has now also ruled (1982b) on a second request to stabilize primate nomenclature, this time involving family-group names for the leaf-eating monkeys. In order to retain current usage and promote stability, even at the expense of formal priority, it was decided that Colobinae (or Colobidae) is the valid name to designate this group at the subfamily (or family) level, even though it was first used after names based on both *Presbytis* and *Semnopithecus* had been published. The question of the correct authorship of names based on *Colobus* was also answered: usually it is cited as coined by Blyth (1875) or incorrectly by Elliot (1913) who first used it as a subfamily rather than a family rank; but it was found that Blyth (1863, p. 11) had used Colobidae the earliest; however, because Blyth did not specifically mention the genus *Colobus,* the ICZN ruled that the term must date instead from Jerdon (1867, p. 3), who used Colobinae including *Colobus.* (Personally, I disagree with this ruling, as the use of Colobidae by Blyth certainly implies inclusion of *Colobus,* but this ruling must be accepted in full pending further application to the ICZN.) It was further ruled that, although the name Presbytina was used by Gray (1825) for leaf-eaters, no name based on *Presbytis* is to be employed instead of one based on *Colobus;* if, for example, one wishes to distinguish two tribes within a subfamily for leaf-eaters, the subfamily is Colobinae Jerdon, 1867 and the tribes would be Colobini Jerdon, 1867 and Presbytini Gray, 1825. At a potentially even lower level, the name Semnopithecidae (or other endings) is available from Owen (1843).

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In sum, the correct name for leaf-eating monkeys now is Colobinae Jerdon, 1867 (or Colobidae if one prefers to rank them as a full family). Presbytina/i/ae is available from Gray, 1825 for an Asian subdivision of this taxon, and Semnopithecidae Owen, 1843 at lower rank if required. The history of this problem and the original application for a decision was presented in the *Bulletin of Zoological Nomenclature* by Delson (1976) and comments were added by Brandon-Jones (1978).

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Correction to Clarke & Mitchell

In the article by S. Clarke and G. Mitchell, "Characteristics of Predation by Captive Primates," in the July, 1982 issue of this *Newsletter,* throughout the paper Snowdon was misspelled (as Snowden). In addition, on p. 5, line 2, the word "territorial" should be substituted for "nutritional."

Trends in Primate Imports, Captive Breeding, and Placement, 1981

History of Primate Trade to the United States

Annual primate imports have steadily declined from over 100,000 in the mid-1960's to under 25,000 in the late 1970's and early 1980's. There are five major reasons for this decline: (l) In 1975, the U.S. Public Health Service implemented regulations banning pet primate imports, which reduced trade in South American species. Over 173,000 squirrel monkeys *(Saimiri sciureus),* 20,000 douroucouli *(Aotus trivirgatus),* 31,000 capuchins (*Cebus* spp.), 26,000 tamarins *(Saguinus* spp.), 12,000 woolly monkeys *(Lagothrix lagothricha),* and 7,000 black-handed spider monkeys *(Ateles geoffroyi)* entered the United States between 1968 and 1972 (Banks, 1976). With the exception of the douroucouli and tamarins, which were imported mainly for biomedical research, most of these monkeys were destined for the pet industry. (2) In 1973 many primate species were listed in the U. S. Endangered Species Act, resulting in a prohibition on the commercial import of these animals. (3) In 1975, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was implemented, which bans commercial trade of the species listed in CITES Appendix I. Many of these species are also listed in the U. S. Endangered Species Act. (4) Over the last 15 years, several countries have instituted complete or partial trade bans on wildlife, including primates. India, Peru, and Colombia, which provided about 75% of the primates imported by the United States in the early 1970's (Mack & Eudey, in press), have banned commercial trade in primates. These bans have caused a sharp decline in the number of macaques, marmosets, tamarins, and cebids imported by the United States. (5) The markedly higher cost of primates and increased number of primate captive-breeding colonies in the United States have somewhat reduced the demand for wild primates in the biomedical and pharmaceutical research community.

Species Imported Today

The factors cited above have limited the type and volume of primate species imported by the United States. According to data gathered by TRAFFIC (U. S. A.), the total for 1980 was 21,648. Of a total of 13,843 Asian monkeys imported, the largest number by far was 13,174 cynomolgus or longtail monkeys *(Macaca fascicularis).* Of a total of 3,374 African monkeys imported, the largest number was 2,490 green or vervet monkeys *(Cercopithecus aethiops),* and the next largest, 641 olive baboons *(Papio anubis).* Of a total of 4,431 New World monkeys imported, the largest number was 1,770 squirrel monkeys *(Saimiri sciureus)* and the next largest, 1,047 red-bellied tamarins *(Saguinus labiatus).*

Captive Breeding in the United States

In 1978, the United States domestically produced 5,093 primates (Gerone, 1980). A preliminary analysis of breeding programs of the major primate facilities, prepared by the Interagency Primate Steering Committee, National Institutes of Health, shows that the United States produced 8,645 primates in 1981, of which 6,049 were rhesus monkeys. By 1980 over 10,000 adult female rhesus monkeys were available for breeding (O. Soave, Interagency Primate Steering Committee, 1980, personal communication). The production of rhesus monkeys has increased from 3,500 in 1978 to over 6,000 in 1981.

Primate Placement Service

Since 1978, the Primate Supply Information Clearinghouse, Washington Regional Primate Research Center, has provided a placement service for surplus primates held by facilities throughout the United States. Over 1,300 researchers

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Excerpted from an article by David Mack in *ILAR News,* 1982, *25,*[4], 10-13. David Mack is Assistant Director of TRAFFIC (U.S.A.), 1601 Connecticut Ave. N. W., Washington, DC 20009.

with federally funded primate projects and other primate users receive a weekly mailing.

In 1981 the Clearinghouse published 826 listings, resulting in the placement of 4,596 live primates, most of which went to universities. The number of primates placed increased by 37% over 1980. During the past 2 years, rhesus monkeys accounted for the greatest number of placements (34-42%), followed by cynomolgus monkeys (15-11%).

The Future

Today, there are several indications that the use of primates in biomedical research is on the decline in the United States. The number of biomedical primate research projects funded by the U. S. government has decreased because of cuts in federal spending. Also, for the first time the supply of rhesus monkeys in the United States exceeds the demand (O. Soave, Interagency Primate Steering Committee, 1982, personal communication). Thus, it appears that the United States may see a further decline in the number of primates imported in the years to come.

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* * *

Position Available: Management of Large Baboon Colony

Position: Assistant Scientist at the Southwest Foundation for Research and Education (Equal Opportunity Affirmative Action Employer).

Requirements: D. V. M. - Licensed in U. S. - No experience required.

Duties: Health-care management of a colony of 1,500 baboons at the Southwest Foundation for Research and Education entailing both clinical and surgical responsibilities. Veterinarians on program collaborate with investigators in development of research programs in cardiovascular and pulmonary diseases, direct animal related research activities such as surgery and necropsy.

Salary: $16,000 - $20,000.

Start Date: Available now.

Contact: Mr. Bill Read, Personnel Manager, PO Box 28147, San Antonio, TX 78184. Please include resume, copy of transcripts and names of 3 references with initial correspondence.

Postdoctoral Research Positions: Southwest Foundation

Four postdoctoral scientists will be appointed to the Southwest Foundation for Research and Education's staff about January 1, 1983, for an initial period of one year. Minimum salary for first year is $17,000 with consideration made for prior relevant, postdoctoral experience. Positions are: 1. Psychologist/Psychopharmacologist under supervision of Dr. Irving Geller, Director of the Behavioral Pharmacology Department, to participate in studies concerned with the mechanism of drug behavior interactions. Requires dissertation research in operant conditioning with at least one year relevant postdoctoral experience desired. 2. Peptide Chemist under supervision of Dr. P. N. Rao, Director of the Organic Chemistry Department, to study isolation of brain peptides. 3. Cell/Molecular Biologist under supervision of Dr. Sydney A. Shain, Director of the Cellular and Molecular Biology Department, to participate in studies concerning hormonal regulation of gene expression in aging and neoplasia. Requires experience in immunology and *in vitro* translation of messenger RNA. 4. Biological Anthropologist/Zoologist/Comparative Psychologist, under supervision of Dr. Anthony M. Coelho, Jr., in the Behavioral Medicine Laboratory, to study the contributions of behavior patterns and social stress to heart disease in socially living nonhuman primates. Interested candidates should respond by December 1, 1982, to Personnel Manager, Southwest Foundation for Research and Education, PO Box 28147, San Antonio, TX 78284, referring to position by number. Include curriculum vitae, a description of research interests, and names of three references, including major professor, in initial correspondence. *An equal opportunity/affirmative action employer.*

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Monkey Colonies for Research on Aging

Colonies of aged monkeys at four NIH Regional Primate Research Centers (PRC's) have been set aside for research on the aging process. A total of 187 aged macaques are available: 55 *Macaca mulatta* (rhesus monkeys) at the California PRC in Davis, birth years 1964 to 1967; 49 *M. mulatta* at the Oregon PRC in Beaverton, birth years 1961 to 1967; and 56 *M.mulatta* at the Wisconsin PRC in Madison, birth years 1956 to 1967 and 27 *M. nemestrina* (pigtailed macaques) at the Washington PRC in Seattle, birth years 1957 to 1967. Complete experimental and clinical histories of the animals are on record at the respective PRC's.

The primary use of the aged animals will be in experiments that will not cause them long-term or irreversible effects. Tissue specimens, and other biological samples may be provided, when available, to NIH National Institute on Aging (NIA) grantees. Some services may also be provided to NIA grantees by the PRC's. Investigators should contact the director of the appropriate PRC and negotiate agreements prior to submitting a grant application involving use of these animals.

The set-aside colonies were created through an interagency agreement between NIA and the NIH Division of Research Resources. An independent panel of primatologists and comparative pathologists selected the monkeys for the set-aside colonies from a pool of 360 monkeys, 15 years old or older, on the basis of their experimental and clinical histories. Animals that have been breeders, or have been exposed to short-acting drugs or to interventions with expected local or mild effects were selected.

In most cases, the aged animals will be maintained at the respective PRC's for the duration of the investigators' grants. Under rare circumstances a small number of monkeys may be purchased from the PRC's and transferred to other laboratories. Negotiations should be made with the director of the appropriate PRC and coordinated through the director of the Aging Primate Research Program at the NIA.

For additional information about the set-aside colonies and other services contact: Dr. Leonard Jakubczak, Building 31, Room 5C05, National Institute on Aging, Bethesda, MD 20205 (Phone: 301-496-3136).

1983 Landreth Research Fellowships: Oklahoma City Zoo

Continuing a program initiated in 1978, the Oklahoma Zoological Society and the Oklahoma City Zoo will offer four Hobart F. Landreth Research Fellowships for 1983. Each fellowship runs for 12 weeks and carries a stipend of $1,200. Limited living and kitchen accommodations are available for research fellows on zoo grounds. Library facilities are available at the zoo, and at the University of Oklahoma, which is 30 min away.

Applications will be reviewed by the 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 to the zoo, and (3) the investigator's academic record. Projects may be scheduled to begin at any time of the year, may be species-specific or broadly comparative, and need not be exclusively behavioral, as all aspects of zoo biology are encouraged. Fellows are responsible for preparing a summary report of their research in publishable form and presenting a seminar to the Animal Research Council at the end of their tenure.

Applications must be received by January 15, 1983. Notification to applicants will be made by February 20, 1983. While proposals are not intended to be exhaustive documents, they should provide the following information: (1) Significance of the proposed research to the scientific field, which would include a brief theoretical background and pertinent literature review. (2) A list of major objectives and a reasonably detailed proposal, including methodology, experimental design, schedule (estimated starting and completion dates) and appropriate references. (3) A resumé of academic background and research experience and a letter of recommendation from a professional in the research field who is willing to serve as adviser on the project.

Submit three copies of the research proposal along with the appropriate documents to Dr. Ronald L. Tilson, Research Curator, Oklahoma City Zoo, 2101 N. E. 50 St., Oklahoma City, OK 73lll. (Phone: 405-424-3344)

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News Briefs

Kenya Bans Export of Primates

Late in 1981, Kenya banned exports of primates, an action that is expected to cause baboons and vervets to be in short supply.

Taub's Appeal Decided

In July, a Maryland Circuit Court jury acquitted Edward Taub of five of the six counts in his appeal of his November, 1981 conviction on charges of cruelty to animals in unnecessarily failing to provide veterinary care for six of the rhesus monkeys used in his research. We have no report on whether or not Taub will appeal his conviction on the remaining count to a higher court.

New Executive Director of Interagency Primate Steering Committee

Thomas L. Wolfle has been named to succeed Orland Soave as Executive Director of the Interagency Primate Steering Committee, Veterinary Resources Branch, Division of Research Services, National Institutes of Health (NIH). A primary mission of this committee is to ensure that sufficient numbers of nonhuman primates are available to the United States to meet its human health-related responsibilities. Dr. Wolfle assumed his new position on August 1, 1982.

Dr. Wolfle received his D. V. M. degree from Texas A&M University in 1961. Subsequently, he joined the U. S. Air Force Veterinary Corps in which he served until 1975. In 1970, he received a Ph.D. degree in physiological psychology from the University of California at Los Angeles. In 1975 he entered the U. S. Public Health Service and since that time has been assigned to the Division of Research Services, NIH.

Walgren Bill Progresses

After a letter writing campaign that produced an estimated 100,000 letters by animal welfare advocates, the full House Science and Technology Committee reported out a slightly amended version of Representative Doug Walgren's (D-PA) animal research bill, H. R. 6928, "The Humane Care & Development of Substitutes for Animals in Research Act." (See *News Briefs* in the July, 1982 issue of this *Newsletter.)* The bill still contains provisions requiring that federally-funded research institutions be accredited and that animal care committees make scientific assessments. The cost estimate of implementing this bill as prepared by the Congressional Budget Office states that: "...the cost to research entities for accreditation would be $500 million in total...also, about 1,300 additional staff would be necessary to meet the reporting requirements of this bill. Using an average cost of $50,000 per employee, the cost to the research entities for additional manpower would be $65 million per year." According to Walgren, in response to the scientific community's concern about the consequences of the bill, (as quoted in the *NSMR Bulletin),* "The cost is to upgrade the facilities and that would be phased in over a period of 10 years. This would be the normal process of modernizations [and therefore] this should not be an undue burden." The bill has now been referred to the House Subcommittee on Health and the Environment, chaired by Henry A. Waxman (D-CA), for review and comment because that subcommittee has jurisdiction on all legislative proposals relating to research and biomedical programs. No definite date has been established for consideration of the bill. While comparable legislation has not been introduced on the Senate side, rumors persist that a number of senators have agreed to sponsor a similar bill in the event it passes the House.

New Officers of ASP Assume Duties

Andrew G. Hendrickx, Associate Director and leader of the Perinatal Biology and Reproduction research unit at the California Regional Primate Research Center, Davis, assumed a two-year term as President of the American Society of Primatologists at the society's August meeting in Atlanta, Georgia. W. Richard Dukelow, Director of the Endocrine Research Unit at Michigan State University, East Lansing, continues as Treasurer of the Society. Anthony M. Coelho, Jr., Head of the Behavioral Medicine Laboratory at the Southwest Foundation for Research and Education, San Antonio, is the new Executive Secretary.

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Cynomolgus Twins Born at Washington Center

A pair of male *Macaca fascicularis* twins was born at the Washington Regional Primate Research Center, Seattle late last year. Twinning is rare (1.2 percent of births) in monkeys, something attested to by the fact that this was the first set of twins born at the Center in over 2,200 recorded monkey pregnancies there.

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TRAFFIC: Network Monitoring International Trade in Wildlife

TRAFFIC (U. S. A.)—Trade Records Analysis of Flora and Fauna in Commerce—is a program of World Wildlife Fund-U. S. and part of an international TRAFFIC network cooperating with the International Union for Conservation of Nature and Natural Resources to monitor the international trade in wild plants and animals. Thus far, there are other TRAFFIC offices in Germany, Japan, and England, the last mentioned office under the name Wildlife Trade Monitoring Unit (WTMU), based in Cambridge, England. TRAFFIC (U. S. A.) issues a quarterly, *TRAFFIC (U. S. A.) Newsletter,* which is available for $10 per year by writing to their office at: 1601 Connecticut Ave. N. W., Washington, DC 20009. WTMU issues a bimonthly, *TRAFFIC Bulletin,* also available for $10 per year by writing to their office at 219(c) Huntingdon Rd., Cambridge CB3 0DL, UK.

Recent Books and Articles

(Addresses are those of first authors)

Books

Advanced Views in Primate Biology: Main Lectures of the VIIIth Congress of the International Primatological Society, Florence, 7-12 July, 1980. A. B. Chiarelli and R. S. Corruccini (Eds.). Berlin: Springer-Verlag, 1982. 266 pp. [Price: $45.60]

This is the third volume of selections from the proceedings of the VIII Congress of IPS (see Recent Books and Articles in the July, 1982 issue of this Newsletter for a listing of the first two volumes.) Contents: Part A - Main Lectures. Inaugural address, Congress of Primatology, Florence, by G. H. R. von Koenigswald; Recent advances in molecular evolution of the primates, by M. L. Baba, L. L. Darga, & M. Goodman; Immunogenetic evolution of primates, by J. Ruffié, J. Moor-Jankowski, & W. W. Socha; The evolution of human skin, by W. Montagna; The importance of theory for reconstructing the evolution of language and intelligence in hominids, by S. T. Parker & K. R. Gibson; Primatology and sociobiology, by J. Wind; Dominance and subordination: Concepts or physiological states?, by E. B. Keverne, E. Meller, & A. Eberhart; Sexual behavior in aging male rhesus monkeys, by C. H. Phoenix & K. C. Chambers; Simian-type blood groups of hamadryas baboons. Population study of captivity-born animals at the Sukhumi Primate Center - Preliminary report, by B. A. Lapin, W. W. Socha, & J. Moor-Jankowski; Rhesus macaques: Pertinence for studies on the toxicity of chlorinated hydrocarbon environmental pollutants, by W. P. McNulty; The role of a Kenyan primate center in conservation, by J. G. Else; Further declines in rhesus populations of India, by C. H. Southwick, M. F. Siddiqi, J. A. Cohen, J. R. Oppenheimer, J. Khan, & S. W. Ashraf; Taiwan macaques: Ecology and conservation needs, by F. E. Poirier; Prospects for a self-sustaining captive chimpanzee breeding program, by B. D. Blood. Part B - Symposium reports. Miocene hominoids and new interpretations of ape and human ancestry, by R. L. Ciochon & R. S. Corruccini; Infanticide in langur monkeys (Genus *Presbytis)*: Recent research and a review of hypotheses, by G. Hausfater & C. Vogel; Recent advances in the study of tool-use by nonhuman primates, by W. C. McGrew; Primate communication in the 1980's: Summary of the satellite symposium on primate communication, by C. T. Snowdon, C. H. Brown, & M. R. Petersen; Primate locomotor systems: Summary of results of the pre-congress symposium in Pisa, by H. Ishida, R. H. Tuttle, & S. Borgognini-Tarli; Results of the pre-congress symposium on "Methods and Concepts in primate brain evolution", by D. Falk & E. Armstrong; The effects of drugs and hormones on social behavior in nonhuman primates, by A. Kling & H. D. Steklis; Report on symposium entitled: "Comparative biology of primate semen", by K. G. Gould; Chromosome banding and primate phylogeny. Inaugural address, by H. N. Seuànez; Comparative psychology symposium: Introduction, by P. A. Bertacchini; The present and future status of comparative psychology: Proceedings of the Corigliano Calabro symposium, by J. T. Braggio.

Primate Paradigms: Sex Roles and Social Bonds. Linda Marie Fedigan. Montreal: Eden Press, 1982. Soft cover. 386 pp. [Price: $18.95]

The author's objective is to survey and synthesize current research findings in a number of areas of primatology which seem relevant to questions concerning male and female patterns of behavior. The book is intended for non-specialists as well as specialists. Contents: Part I - Constructing the paradigm. 1. An introduction to primate studies. 2. Words. 3. Instinct, innate and learned behavior. 4. Primate societies. 5. Sexual dimorphism. Part II - Social behavior: Some major concepts and their implications for sex differences. 6. Aggression. 7. Dominance and alliance. 8. Roles. 9. Kinship - the ties that bind. 10. Sociosexual behavior. Part III - Growing up: The ontogeny of sex differences. 11. Fertility & virility: Hormones and the development of sex differences in behavior. 12. Ontogeny and socialization. 13. Deprivation. Part IV - Social organization and behavior: Female and male roles. 14. Multi-male, multi-female societies. 15. Polygynous societies. 16. Monogamous societies. Part V - Sex differences

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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.

in evolutionary theory. 17. Sexual selection: Female choice or Hobson's choice? 18. Sociobiological theories and sex roles. 19. Theories on the evolution of human social life.

Reports

REP: ANNUAL REPORT 1981. Rijswijk. The Netherlands: Organization for Health Research TNO, 1982.
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. Quantitation of t-lymphocytes in rhesus monkey bone marrow grafts correlated to graft-versus-host disease and survival time after transplantation, by D. W. van Bekkum, G. Wagemaker, & S. Merchav. TUMOUR INDUCTION AND TUMOUR BIOLOGY. Neoplasia in rhesus monkeys irradiated with x-rays and fission neutrons, by M. J. van Zwieten, J. J. Broerse, & C. F. Hollander. IMMUNOLOGY. Cyclosporin A and kidney transplantation in rhesus monkeys, by J. C. C. Borleffs, Z. de By-Aghai, A. F. Kok, C. Zurcher, & H. Balner. The *in vivo* effects of monoclonal antibodies specific for human effector T cells in rhesus monkeys, by M. Jonker, B. Malissen, C. Mawas, & H. Balner. MICROBIOLOGY AND GNOTOBIOLOGY. Acute toxicity of bacterial derived HuIFN α 2 in rhesus monkeys. ETHOLOGY. A study of anti depressant medication effects in rhesus monkeys, by C. Goosen, L. G. Ribbens, & H. M. G. Westenberg. Appetence for social play in rhesus infants as a developmental requirement, by H. Dienske, P. J. C. M. van Luxemburg, & G. de Jonge.

Bibliographies

Observations of solitary feral or free-ranging nonhuman primates: A bibliography. Jean Balch Williams. Seattle: Primate Information Center, 1982. [Price: $6.00. Send orders to: Primate Information Center, Regional Primate Research Center SJ-50, University of Washington, Seattle, WA 98195]

Postnatal growth of nonhuman primates: A selected bibliography. Benella Caminiti. Seattle: Primate Information Center, 1982. 210 Citations with Primate Index. [Price: $6.00. Ordering information same as in previous reference.]

Anomalies and teratism in nonhuman primates: A bibliography of naturally occurring cases. Benella Caminiti. Seattle: Primate Information Center, 1982. 289 Citations with Primate and Subject Indexes. [Price: $6.00. Ordering information same as in previous reference.]

Spontaneous and experimentally induced chromosome aberrations in nonhuman primates: A bibliography. Benella Caminiti. Seattle: Primate Information Center, 1982. 120 Citations with Primate Index. [Price: $6.00. Ordering information same as in previous reference.]

Renal blood flow in nonhuman primates: A bibliography of normative and experimental studies. Benella Caminiti. Seattle: Primate Information Center, 1982. 86 Citations with Primate Index. [Price: $6.00. Ordering information same as in previous reference.]

Biological aspects of circadian rhythms in nonhuman primates: A bibliography (1940-1979). Benella Caminiti. Seattle: Primate Information Center, 1982. [Ordering information same as in previous reference.]

Biological aspects of circadian rhythms in nonhuman primates: A bibliography (1980-1982). Benella Caminiti. Seattle: Primate Information Center, 1982. [Ordering information same as in previous reference.]

Disease

Infection in rhesus *(Macaca mulatta)* and squirrel *(Saimiri sciureus)* monkeys due to mycobacterium tuberculosis phage type B: Outbreak in a primate colony. Mayhall, C. G., Lamb, V. A., & Coleman, P. H. (Div. of Inf. Dis., Med. Coll. of VA, MCV Station, Box 49, Richmond, VA 23298) *Journal of Medical Primatology*, 1981, *10*, 302-311.

13 rhesus and 5 squirrel monkeys developed tuberculosis during an outbreak in a university nonhuman primate colony. 31 people were exposed to the tuberculous animals, and one had tuberculin test conversion. Tuberculosis appeared to be spread between rooms by transfer of infected animals, and within rooms by the airborne route.

Significant infections in primate parasitology. Kuntz, R. E. (Dept. of Microbiol. & Inf. Dis., Southwest Fdn. for Res. & Ed., San Antonio, TX 78284) *Journal of Human Evolution,* 1982, *11,* 185-194.

Nonhuman primates play host to a broad spectrum of parasites and commensals. The range of organisms present and frequently the intensity of infection is dependent upon or related to biologic circumstances responsible for parasite transmission and propagation. Most of the protozoans of primates are considered as commensals with limited pathogenic potentials. Some protozoa *(Entamoeba* and *Balantidium),* however, are responsible for variable pathologic involvement, especially in the intestinal tract. Others *(Babesia, Plasmodium* and *Trypanosoma)* may induce subtle or transient infections of medical concern. The helminths, by contrast, are represented by a formidable list of worms responsible for tissue destruction and macroscopic pathology in the intestine as well as in other pertinent viscera. *Bertiella* may be presented in a number of African primates but adult cestodes as a rule cause little disease. Larval cestodes *(Echinococcus* and *Multiceps),* however, may cause impressive involvement of viscera and frequently are found in the body cavity. Although their presence may not be lethal, different nematodes, e.g., *Molineus* and acanthocephalans may constitute serious intrusion and may be common in South American primates and *Oesophagostomum* may be prevalent in some African populations. The threat of *Strongyloides* in chimpanzees is well recognized. Macroscopic filariae may be resident in connective tissues or lungs and microfilariae are found in the circulatory system. Somatic infections may result from larval pentastomes in various viscera. Possible or even probable synergism of non-pathogenic parasite infection in combination with commensals or microbiologic organisms is poorly understood and offers opportunity for investigation. In general there seems to be a fairly well established equilibrium between primates and their parasites.

An outbreak of hepatitis in marmosets in a zoological collection. Lucke, V. M. & Bennett, A. M. (Dept. of Pathology, Univ. of Bristol Med. Sch., University Walk, Bristol BS8 1TD, UK) *Laboratory Animals,* 1982, *16,* 73-77.

12 marmosets of 3 different species died of hepatitis during a period of 5 months. The lesions closely resembled those of virus hepatitis in man but material from these animals and from in-contact marmosets failed to reveal the presence of hepatitis A. This, together with certain aspects of the epidemiology of the disease, suggests that the outbreak was not caused by a virus of human origin but possibly by a virus indigenous to the marmoset or tamarin.

Acute gastric dilatation and rupture in *Macaca arctoides* associated with *Clostridium perfringens.* Christie, R. J. & King, R. E. (Univ. of Miss. Med. Ctr., 2500 N. State St., Jackson, MS 39216) *Journal of Medical Primatology,* 1981, *10,* 263-264.

A clinical case of gastric dilatation and rupture is described in an adult male *Macaca arctoides. Clostridium perfringens* was isolated from the heart, blood and liver. Data collected from our macaque colony for 13 years indicated a mortality rate of 3.5% due to acute dilatation, making it a leading cause of death.

Mange in *Macaca arctoides* (Primates: Cercopithecidae) caused by *Cosarcoptes scanloni* (Acari: Sarcoptidae) with possible human involvement and descriptions of the adult male and immature stages. Smiley, R. L., & O'Connor, B. M. (Systematic Entomology Lab., IIBIII, Agricultural Res., Sci. & Ed. Admin., USDA, Beltsville, MD 20705) *International Journal of Acarology,* 1980, *6,* 283-290.

Sarcoptic mange in *Macaca arctoides* and a scabies-like condition in a human caused by *Cosarcoptes scanloni* are discussed. The adult male and immature mites, about which little is known, are described.

Rotavirus (SA11) antibody in nonhuman primates. Kalter, S. S., Rodriguez, A. R., & Heberling, R. L. (Southwest Fdn. for Res. & Ed., San Antonio, TX 78284) *Laboratory Animal Science,* 1982, *32,* 291-293.

Sera from 15 species of Old and New World monkeys and apes were tested for antibody to rotaviruses using SA11 as the antigen. 14 of the 15 species tested and 309 of 585 (52.8%) animals tested were positive. Whether this antibody reflects infection with SA11 or with an antigenically related agent remains to be determined.

Chemotherapy of filariasis in squirrel monkeys *(Saimiri sciureus).* Eberhard, M. L. (Dept. of Parasitology, Delta Reg. Prim. Res. Ctr., Covington, LA 70433) *Laboratory Animal Science,*1982, *32,* 397-400.

The effect of some known antifilarial drugs on naturally-occurring filariae in squirrel monkeys was evaluated. 4 drugs, dithiazanine iodide, naphuride sodium, thiacetarsamide sodium, and diethylcarbamazine were tested against *Dipetalonema gracile* and *Tetrapetalonema marmosetae*. *D. caudispina* was included in some of the studies using diethylcarbamazine. These are the 3 most commonly encountered filarial species in squirrel monkeys. Dithiazanine iodide proved to be unsuitable for use because of lack of acceptance by the monkeys. Naphuride sodium (10 mg/kg/week for 5 weeks) did not exert filaricidal activity against the species tested during a 7-month evaluation period. Thiacetarsamide sodium (0.22 ml/kg twice daily for 2 days) had lethal effects on the adult parasites, but not the microfilariae, of all species tested. Diethylcarbamazine (50 mg/kg/day for 10 days) was found to be effective against both microfilaria and adults of all filarial species tested. Monkeys given this regimen were microfilaria-negative for 12-24 weeks following treatment.

Spontaneous occurrence of *Angiostrongylus costaricensis* in marmosets (*Saguinus mystax*). Sly, D. L., Toft, J. D., II, Gardiner, C. H., & London, W. T. (Meloy Labs, 2501 Research Blvd., Rockville, MD 20850) *Laboratory Animal Science*, 1982, *32*, 286-288.

2 marmosets imported from Iquitos, Peru, were found to be infected with *Angiostrongylus costaricensis*, a naturally occurring nematode parasite of Central American rodents. Both animals had large solitary granulomas involving the wall and adjacent mesentery of the small intestine. Histopathologic examination showed the adult nematodes in the luminae of the mesenteric arteries that coursed through these granulomas. The inflammatory reaction was associated with numerous degenerating eggs and larvae. This is the first report of this parasite in nonhuman primtes and extends its geographic range to Peru. In addition, in one animal, *Dipetalonema* sp were seen free in the abdominal cavity, and plerocercoid larvae (spargana) were in the loose connective tissue of the left axilla. This animal also had microgranulomas associated with eggs and larvae of *Angiostrongylus* in the kidney, liver, lung, and heart.

Physiology

Establishment of normal electrocardiographic values for a colony of rhesus monkeys (*Macaca mulatta*) under sedated and unsedated conditions. Kupper, J. L., Kessler, M. J., Clayton, J. D., & Brown, R. J. (Gulf South Res. Inst., PO Box 1177, New Iberia, LA 70560) *Journal of Medical Primatology*, 1981, *10*, 329-335.

Electrocardiographic tracings were obtained from 57 female and 56 male rhesus monkeys under sedated and nonsedated states to determine normal electrocardiographic values. The data were tabulated by sex group and state of consciousness. The results are compared with previous electroradiographic studies in rhesus monkeys.

Differential effects of chemical and physical restraint on carbohydrate tolerance testing in nonhuman primates. Streett, J. W. & Jonas, A. M. (Sect. of Comp. Med., Yale Univ. Sch. of Med., 375 Congress Av., New Haven, CT 06510). *Laboratory Animal Science*, 1982, *32*, 263-266.

Ketamine hydrochloride, used during glucose or lactose tolerance tests to aid restraint of rhesus and stumptail macaques unconditioned to handling, prevented the establishment of definitive baseline plasma glucose tolerance curves from which meaningful interpretations could be derived. Repetition of the tests after the animals were restraint-chair conditioned provided clear baseline control data. It is suggested that ketamine might invalidate those carbohydrate tolerance tests which are based on the absorption of glucose from the gastrointestinal tract.

Hematologic values of captive golden lion tamarins (*Leontopithecus rosalia*): Variations with sex, age, and health status. Bush, M., Custer, R. S., Whitla, J. C., & Smith, E. E. (Dept. of Animal Health, National Zoological Park, Smithsonian Institution, Washington, DC 20008) *Laboratory Animal Science*, 1982, *32*, 294-297.

Blood samples obtained from 104 captive golden lion tamarins, collected over a 7-year period, were analyzed for hematologic values. Females had higher total plasma protein values, while males had higher numbers of basophils, hematocrits, and hemoglobin concentrations. Adult tamarins had higher erythrocyte and leukocyte counts, more neutrophils, basophils, and eosinophils, and higher hematocrits and hemoglobin concentrations than juveniles. Variations associated with abnormal health status included decreases in erythrocytes, hematocrits, hemoglobin concentrations, erythrocyte indices, and total plasma protein. Decreased numbers of monocytes and eosinophils and increased numbers of leukocytes, neutrophils, bands, and basophils also were observed with abnormal health status.

Pharmacology and Anesthesia

Ketamine-HCl as a suitable anesthetic for endocrine, metabolic, and cardiovascular studies in *Macaca fascicularis* monkeys. Castro, M. I., Rose, J., Green, W., Lehner, N., Peterson, D., & Taub, D. (J. Rose, Dept. of Physiol. & Pharm., Bowman Gray Sch. of Med., Winston-Salem, NC 27103) *Proceedings of the Society for Experimental Biology and Medicine,* 1981, *168,* 389-394.

Ketamine-HCl has been reported, depending on experimental conditions and dosage given, to have significant cardiovascular and endocrine effects in some species. However, previous studies in primates have inadequately distinguished between animal handling and ketamine effects. We, therefore, examined the effects of various doses of ketamine (0, 5, 10, 15, and 20 mg/kg) on mean arterial blood pressure and on plasma insulin, glucose, and cortisol concentrations in 10 chronically cannulated *Macaca fascicularis* monkeys which had been acclimated to restraining chairs. Each monkey received 3 different doses of ketamine according to a balanced incomplete block design. Ketamine anesthesia produced no significant changes in plasma insulin, glucose, or cortisol concentrations nor did it affect mean arterial blood pressure. In addition, the effects of ketamine-HCl on endocrine responses to insulin-induced hypoglycemia were examined in 4 animals according to a cross-over design. These animals also had chronically maintained cannulas and had been acclimated to restraining chairs. Plasma glucose concentrations, as well as plasma ACTH, growth hormone, and cortisol responses in ketamine-anesthetized animals receiving an insulin challenge were no different from those in unanesthetized control animals. Thus, our studies indicate that ketamine-HCl does not perturb these particular hormonal systems in *M. fascicularis* monkeys.

Combination of ketamine and xylazine for effective anaesthesia of juvenile chimpanzees *(Pan troglodytes).* April, M., Tabor, E., & Gerety, R. J. (Div. of Vet. Med. Res., Animal Res. Br., 328A, HFV-540, FDA Agricultural Res. Ctr.-East, Beltsville, MD 20705) *Laboratory Animals,* 1982, *16,* 116-118.

Intramuscular administration of ketamine at 15-20 mg/kg body weight provided effective levels of anesthesia for venipuncture in 23 chimpanzees aged 12-36 months. For procedures such as plasmaphereses or percutaneous needle biopsy requiring longer anesthetic times, xylazine (1 mg/kg) was given with the ketamine. More than 1,600 procedures were performed under anesthesia on the 23 chimpanzees over a period of 18 months with no mortality. Recovery was smooth and uneventful.

Hematologic and other effects of ketamine and ketamine-acepromazine in rhesus monkeys *(Macaca mulatta).* Porter, W. P. (Div. of Comp. Med., Sch. of Med., The Johns Hopkins Univ., Baltimore, MD 21205) *Laboratory Animal Science,* 1982, *32,* 373-375.

Hematologic and rectal temperature values were analyzed for rates of change in rhesus monkeys while immobilized with ketamine or ketamine-acepromazine. Immobilization times were directly compared between the 2 test groups. Only neutrophil counts were statistically different in the rate of change between the groups, and this difference occurred only during a portion of the test period. Acepromazine, when combined with ketamine at the tested dose, appeared to have a minimal effect on the values studied and offered certain advantages over ketamine used alone.

Facilities and Care

Variation of minerals and trace elements in laboratory animal diets. Wise, A., & Gilburt, D. J. (MRC Lab. Animals Ctr., Woodmansterne Rd., Carshalton, Surrey SM5 4EK, U.K.) *Laboratory Animals,* 1981, *15,* 299-303.

29 laboratory animal diets from 5 manufacturers for rats, mice, guinea pigs, primates and dogs were analyzed for calcium, total phosphorus, phytate phosphorus, magnesium, sodium, potassium, iron, zinc and copper. Variations between diets for the same species were found to be much larger than differences between means for different species. The analyses were compared with data in the manufacturers' catalogues. The best controlled element was potassium. Most deviations of other elements were distributed in a skewed fashion and quite serious differences between analytical and catalogue data were found. In general, deviations from the catalogue were less than variations between diets. It is recommended that catalogues should give ranges of composition rather than means.

Long-term experiments with a newly-developed standardized diet for the New World primates *Callithrix jacchus jacchus* and *Callithrix jacchus penicillata* (marmosets). Wirth, H., & Buselmaier, W. (Altromin Spezialfutterwerke GmbH, Postfach 1120, D-4937 Lage (Lippe), Federal Republic of Germany. *Laboratory Animals,* 1982, *16,* 175-181.

A newly-developed complete diet for marmosets was evaluated in a study lasting more than 4 yr. Using this diet, it was possible to adapt the feeding habits and dietary requirements of these increasingly popular South American nonhuman primates to standardized laboratory conditions.

Postexposure immunoprophylaxis against B virus (Herpesvirus simiae) infection. Boulter, E. A., Zwartouw, H. T., & Thornton, B. (Chemical Defence Establishment, Porton Down, Salisbury, Wilts, Great Britain) *British Medical Journal,* 1981, *283,* 1495-1497.

Local infiltration of antiserum into sites inoculated with B virus protected rabbits from an otherwise fatal encephalomyelitis. Treatment was effective when delayed for 6 hr but not after 24 hr. Homologous rabbit antisera were more effective than heterologous monkey antisera, and protection was unrelated to neutralization titres. Protection apparently depended not on neutralization of inoculated virus but on destruction of infected cells before they produced progeny virus. Normal human immunoglobulin able to neutralize B virus did not protect. Intravenously administered antibody was effective only if large doses were given. The findings suggest that persons bitten or scratched by monkeys latently infected with B virus may be treated successfully by immunoprophylaxis with specific antibody. Stocks of human or of more readily available simian antisera should be held in laboratories where such animals are used.

Organização de colõnia de sagüis em cativeiro [Organization of a colony of primates in captivity.] de Mello, M. T. (Deparamento de Biologia Celular, Instituto de Ciências Biológicas, Universidade de Brasilia, Brasilia, DF, 70910, Brasil) *Cie‹`ncia e Cultura,* 1981, *33,* 579-582.

A description is made of one colony of primates in conditions of captivity. Housing and management of marmosets in "open" facilities are detailed.

Breeding

Stimulating maternal behaviour in the lowland gorilla *Gorilla g. gorilla* at Apeldoorn. Mager, W. (Apenheul Sanctuary for Gorillas & South American Monkeys, 7313 HK Apeldoorn, The Netherlands) *International Zoo Yearbook,* 1981, *21,* 138-143.

Among other things, use was made of infant monkeys and demonstrations of breast feeding by humans to stimulate maternal behavior in a gorilla.

The first weeks of cohabitation of newly-formed heterosexual pairs of common marmosets *(Callithrix jacchus).* Woodcock, A. J. (Dept. of Psychology, Univ. of Reading, Earley Gate, Whiteknights, Reading RG 6 2AL, U.K.) *Folia Primatologica,* 1982, *37,* 228-254.

16 pairs of common marmosets were formed, 6 of which were observed for 7 weeks, and 10 for 4 weeks. A variety of behaviors was recorded. Behaviors associated with sexual encounters occurred initially at high levels but declined during the study period. The incidence of sexual mounting was closely related to that of male tongue-smacking and female slit-eyed tongue-flicking. Other social behaviors including scent-marking and allogrooming did not show a consistent pattern of occurrence with respect to time or sexual activity.

Pregnancy outcome following jet transport stress in nonhuman primates. Sackett, G. P. (Reg. Prim. Res. Ctr. SJ-50, Univ. of Washington, Seattle, WA 98195) *Journal of Medical Primatology,* 1981, *10,* 149-154.

Pregnancy outcomes following jet airplane shipment during pregnancy or before return to a breeding group were compared with outcomes that did not involve air shipment. For pigtailed macaques, long-tailed macaques, and baboons, viable offspring rates were not affected by air shipment or were slightly higher when animals had been shipped. However, pigtailed macaques placed in harem breeding groups following a jet flight produced fewer viable offspring if they became pregnant within 90 days than those taking longer to conceive after a flight.

Early detection of pregnancy in rhesus and stump-tailed macaques *(Macaca mulatta* and *Macaca arctoides):* Evaluation of two radioimmunoassays and a hemagglutination inhibition test. Lequin, R. M., Elvers, L. H., & Bertens, A. P. M. G. (Dr. A. P. M. G. Bertens, Central Ani. Lab., Univ. of Nijmegen, Geert Grooteplein Noord 29, PO Box 9101, NL-6500 HB Nijmegen, The Netherlands) *Journal of Medical Primatology,* 1981, *10,* 189-198.

Chorionic gonadotropin (mCG) in serum and urine of monkeys was determined by a radioimmunoassay and hemagglutination inhibition (HAI subhuman primate tube test for pregnancy). HAI-positive pregnancy tests coincided fully with the mCG excretion patterns as determined by RIA (oLHβ system). The least reliable system was the hCG-β RIA. The HAI test allowed accurate prediction of the parturition date.

Failure of lactation to have a consistent effect on interbirth interval in the common marmoset, *Callithrix jacchus jacchus*. Lunn, S. F. & McNeilly, A. S. (MRC Reproductive Biol. Unit, Reproductive Biol. Ctr., 37 Chalmers St., Edinburgh EH3 9EW, Scotland) *Folia Primatologica,* 1982, *37,* 99-105.

Analysis of intervals between successive births, or of the interval between spontaneous or induced abortion and subsequent birth, indicate that unlike most primates for which information is available, lactation does not consistently influence the ability of the common marmoset to conceive during the early post-partum period.

Comparison of the two methods of electroejaculation in the Japanese monkey *(Macaca fuscata).* Matsubayashi, K. (Lab. Primate Ctr., Primate Res. Inst., Kyoto Univ., Inuyama, Aichi 484, Japan). *Experimental Animals,* 1982, *31,* 1-5.

Electrical parameters in two methods of stimulation, i.e, the rectal probe method under anesthesia and the penile method in conscious animals, were examined in the Japanese monkey. Animals required some training period for the penile method initially, but they responded well after sufficient practice. Although the semen samples obtained by the penile method showed spontaneous liquefaction partially at all times, samples by the rectal probe method frequently stayed in absolute coagulum. The fluid portion in the specimens by the penile method contained free, motile, and rich spermatozoa in contrast with the rectal probe method that included little sperm in it.

Sexual behavior in aging male rhesus macaques: Effects of test duration on sexual performance. Phoenix, C. H. & Chambers, K. C. (Dept. of Prim. Beh., Oregon Reg. Prim. Res. Ctr., Beaverton, OR 97007) *International Journal of Primatology,* 1982, *3,* 221-229.

The sexual behavior displayed by 9 old (20-yr and older) rhesus *(Macaca mulatta)* males in 10-min tests was compared to that displayed in 1-hr tests. The tests were part of a long-term study on the decline in male sexual activity that accompanies old age. The mean percentages of 1-hr tests with contacting, mounting, intromission, and ejaculation was significantly lower than that of 10-min tests conducted with the same males 11 yr earlier. Thus, the decline in sexual performance was not an artifact of the limited (10-min) test duration.

Ecology and Field Studies

Survey and census of howler monkeys *(Alouatta palliata)* in the rain forest of "Los Tuxtlas," Veracruz, Mexico. Estrada, A. (Estación de Biologia Tropical, "Los Tuxtlas," Apartado Postal 94, San Andrés Tuxtla, Veracruz, Mexico) *American Journal of Primatology,* 1082, *2,* 363-372.

Howler monkey troops were censused at the biological reserve "Los Tuxtlas," which includes 700 ha of rain forest. 20 howler monkeys were also trapped, measured, marked, and released. Censuses were conducted for a period of 26 mo, and they indicated the existence of 17 troops. The mean troop size was 9.12 (SD ± 2.93), and mean troop composition was 3.0 adult males, 4.12 females, 1.56 juveniles, and 1.54 infants. Ecological density was 0.23 howlers/ha or 23.29 howlers/km^2 The male to female ratio was 1:1.37. No discrete seasonality in births was noted. Howler monkeys in this locality inhabit the northernmost limit of the neotropical rain forest. The population parameters fall within those reported for *Alouatta palliata* at other sites.

Guidebook for the long-term monitoring of Amboseli baboons and their habitat: Definitions, procedures, and responsibilities. 2nd ed. rev. G. Hausfater, S. Altmann, & J. Altmann. Ithaca, New York: Privately printed, 1982. 69 pp. [Price: $5.00. Ordering information: Dr. Glenn Hausfater, Sect. of Neurobiology and Beh., Langmuir Lab., Cornell Univ., Ithaca, NY 14850]

Patterns and determinants of monkey densities in Peru and Bolivia, with notes on distributions. Freese, C. H., Heltne, P. G., Castro R., N., & Whitesides, G. (International Affairs Staff, Fish & Wildlife Service, U. S. Dept. of the Interior, Washington, DC 20240) *International Journal of Primatology,* 1982, *3,* 53-90.

A comparative study of species assemblages and population densities was conducted on Amazonian monkey communities in 16 areas in northern Peru and in southern Bolivia. The habitats ranged from several types of tropical rain forest in the more northern latitudes to dry, deciduous forest in the southernmost study area. A transect census

technique was used to estimate the relative and absolute densities of all diurnal monkey species except *Cebuella pygmaea*. The number of coexisting monkey species ranged from 4-6 in the southern areas to 12-14 in the northern areas. Predation by humans was found to be the single most important factor affecting monkey densities. The strong influence of hunting has largely obscured the effects of other factors on population densities.

Current primate field studies. Anonymous. *Primate Eye*, 1982, *18*, (Supplement), 1-18.

Diet and feeding behaviour of Kloss gibbons on Siberut Island, Indonesia. Whitten, A. J. (c/o Inst. for Resource & Environmental Studies, Dalhousie Univ., 1312 Robie St., Halifax, N. S., Canada) *Folia Primatologica*, 1982, *37*, 177-208.

Kloss gibbons are the same size and live in the same type of habitat as several other gibbon species, and consequently its diet would be expected to be similar to its closely related congeners. The diet is described in terms of the weight of food items, fecal remains, and time devoted to different foods. Aspects of feeding behavior are then examined, such as changes in food choice through the day, the relationship between fruit size to feeding bouts and feeding rates, and the effect of forest type quality on ranging. A comparison is made between gibbon species. The diet of Kloss gibbons appears to differ from that of other gibbons in that it contained no tree leaves, and arthropods were a major part of the diet. Possible reasons for this are discussed.

Conservation

Reactions of captive gibbons to natural habitat and wild conspecifics after release. Tingpalapong, M., Watson, W. T., Whitmire, R. E., Chapple, F. E., & Marshall, J. T., Jr. (USA Medical Component, Armed Forces Res. Inst. of Med. Sci. (formerly SEATO Med. Res. Lab.), Ratchavithi Rd., Bangkok, Thailand) *Nat. Hist. Bull. Siam Soc.* 1981, *29*, 31-40.

In January, 1976, a gibbon colony, maintained by the Armed Forces Research Institute of Medical Sciences (AFRIMS), which was no longer required for research, was released into a natural forest habitat at Saiyok, Kanchanaburi. Of 31 gibbons released, 1 was known to have died after release, 1 died from transportation stress, 4 joined wild groups, 11 were not seen after the day of release, 13 were observed intermittently for varying periods of time, and 1 was recaptured and not released again. Several were seen eating natural foods. Captive-raised gibbons are capable of readjusting to the natural environment.

Good news about orang-utans in Sarawak. Kavanagh, M. (IUCN Conservation Monitoring Ctr., 219(c) Huntingdon Rd., Cambridge CB3 0DL, UK) *Oryx*, 1982, *16*, 320-321.

Hopes that a viable population of orangutans can be conserved in Malaysian Borneo have been given a big boost by the discovery that they are more widespread than had been expected in the proposed Lanjak-Entimau Orang-Utan Sanctuary adjacent to the Indonesian frontier.

Brazilian tamarins on the way to extinction? Ayres, J. M., Mittermeier, R. A., & Constable, I. D. (Instituto Nacional de Pesquisas da Amazonia, CP 478, 69,000 Manaus, Amazonas, Brazil) *Oryx*, 1982, *16*, 329-333.

The pied bare-face tamarin is found only in the vicinity of Manaus, the second largest city in Brazilian Amazonia, where rapid growth in recent years has resulted in much forest destruction. The authors' studies show that this tamarin is now endangered and they suggest an action plan to ensure its survival.

Threats to the proboscis monkeys. Jeffrey, S. (Pear Tree House, Hutton Magna, Richmond, N. Yorkshire) *Oryx*, 1982, *16*, 337-339.

The endemic proboscis monkeys in Borneo live along the rivers and coasts where people also tend to concentrate. Hitherto there has been room for both. But in Kalimantan, logging and wood-processing industries are expanding rapidly - Indonesia hopes to be self-sufficient in pulp and paper by 1984 - and this, together with the planned removal by the same date of 2 1/2 million people from overcrowded Java, mostly to Kalimantan, could seriously affect the proboscis.

Revision of Directory of Graduate Programs in Primatology and Primate Research Planned

Questionnaires have been enclosed with the present issue of the *Newsletter*, which must be returned by January 15, 1983, to confirm or revise a present listing or enter a new one. It is particularly important that any current listings be checked and that we be sent notification that no change is necessary if that is the case. We will not repeat listings without such notification.

Please note that the Directory is not intended for post-doctoral programs, though any such sent to us will be listed in a separate section at the end of the Directory.

* * *

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