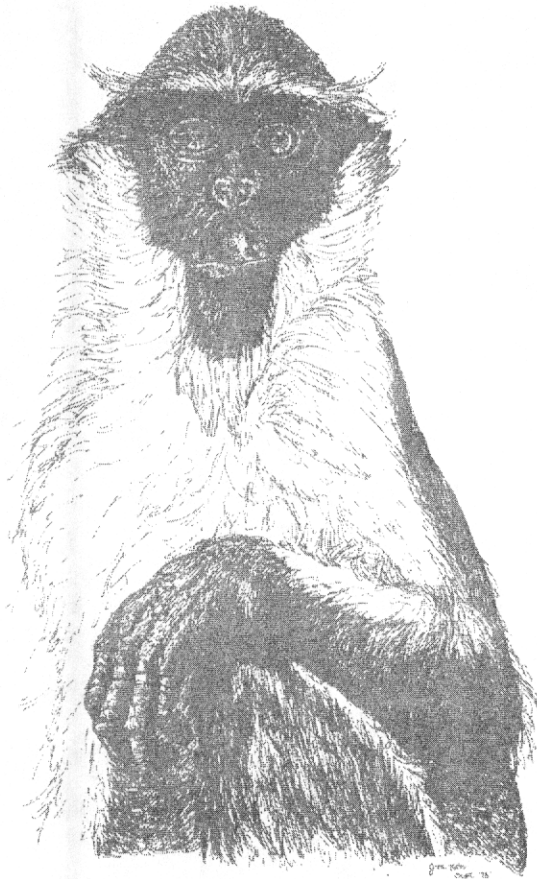


# **LABORATORY PRIMATE NEWSLETTER**

**Volume 15, Number 1**

**January, 1976**



**ALLAN M. SCHRIER, EDITOR**

**MORRIS L. POVAR, CONSULTING EDITOR**

**Published Quarterly by the Primate Behavior Laboratory  
Psychology Department, Brown University  
Providence, Rhode Island**

#### POLICY STATEMENT

The purpose of the *Laboratory Primate Newsletter* is (1) to provide information on care, breeding, and procurement of nonhuman primates for laboratory research, (2) to disseminate general information about the world of primate research (such as announcements of meetings, research projects, nomenclature changes), (3) to help meet the special research needs of individual investigators by publishing requests for research material or for information related to specific research problems, and (4) to serve 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. New issues are mailed free of charge in the United States. Persons outside of the U. S. A. are requested to pay \$1.50 per year to cover the additional cost of mailing. Back issues may be purchased for \$1.00 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 and notes 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 publications, 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* the scientific names used will be those of Napier and Napier [*A Handbook of Living Primates*. New York: Academic Press, 1967].

All correspondence concerning the *Newsletter* should be addressed to:  
Dr. Allan M. Schrier, Psychology Department, Brown University,  
Providence, Rhode Island 02912. (Phone: 401-863-2511)

#### ACKNOWLEDGMENT

The *Newsletter* is supported by U. S. Public Health Service  
Grant RR-00419 from the Animal Resources Branch,  
Division of Research Resources, N.I.H.

Cover drawing compliments of Janet Miyo Kato

---

Managing Editor: Helen Janis Shuman

## CONTENTS

TAXONOMY OF THE OWL MONKEY ( <i>AOTUS</i> ). Roger A. Brumback.....	1
PRESERVED <i>GALAGO</i> CADAVERS NEEDED .....	2
IPS FUND DRIVE FOR CONSERVATION. Hans Kummer.....	3
CREATION OF TWO RAIN-FOREST PARKS IN CAMEROON. J. Stephen Gartlan.....	4
MEETING HELD: THE BIOLOGY AND CONSERVATION OF THE CALLITRICHIDAE.....	5
ADDITIONS TO <i>HANDBOOK OF ANIMAL MODELS OF HUMAN DISEASE</i> .....	6
PETITION ON USE OF PYGMY CHIMPANZEES FOR RESEARCH.....	7
PRIMATES WITH SPECIFIC DISORDERS WANTED.....	9
RESPONSE TO PYGMY CHIMPANZEE PETITION. Geoffroy H. Bourne..	10
32 CHIMPANZEES NOW AT SANCTUARY OF PRIMATE FOUNDATION OF ARIZONA .....	14
LETTERS: STATEMENTS ON PYGMY CHIMPANZEES .....	15
LABORATORY PRIMATE NEWSLETTER QUARTERLY SURVEY: FIRST TWO QUARTERS OF 1975.....	18
NEW PRODUCTS AND SERVICES.....	22
TRAVEL FROM USA TO IPS MEETING .....	22
NEWSLETTER SUPPORT RENEWED .....	22
RECENT BOOKS AND ARTICLES .....	23
ADDRESS CHANGES .....	32

# TAXONOMY OF THE OWL MONKEY (*AOTUS*)

Roger A. Brumback

Washington University School of Medicine

Traditionally the genus *Aotus* has been considered to contain only one species, *Aotus trivirgatus* Humboldt 1812. In 1971, two discrete karyotypic patterns in owl monkeys that were phenotypically and geographically distinct were reported (Brumback, *et al.*, 1971). Subsequently de Boer (1974) confirmed these findings and described a third karyotypic pattern. The karyotypic distinctions were substantiated by studies with the new chromosome banding techniques (Brumback, 1975a & 1975b). Immunologic studies revealed characteristic serum proteins which conformed to the karyotypic, phenotypic, and geographic differences (Brumback & Willenborg, 1973).

On the basis of these findings, the hypothesis was presented (Brumback, 1974a) that the genus *Aotus* consists of at least three separate species, *Aotus trivirgatus* Humboldt 1812, *Aotus griseimembra* Elliot 1912, and *Aotus azarae* Humboldt 1812. Two authors have recently alluded to these species differences (Jarvis, 1974; Koiffmann & Saldanha, 1974); however, despite two letters-to-the-editor (Brumback, 1974b & 1974c) requesting data regarding *Aotus* taxonomy, no further information has appeared either to support or to refute the division of the genus *Aotus* into three species. Since owl monkeys are now commonly used in a variety of experimental protocols (Epstein, *et al.*, 1973) and several breeding colonies are planned (T. Bucci, personal communication), it is important to establish the exact taxonomy of this New World Monkey.

Investigators with owl monkeys should attempt to obtain and record all information necessary for species identification. The geographic origin of owl monkeys is often difficult to determine, but can aid in species identification. Conventional karyotype analysis easily distinguishes the three species *A. trivirgatus*, *A. griseimembra*, and *A. azarae*. Proper species identification of owl monkeys will improve reproducibility of research studies and reduce breeding failures.

## References

- de Boer, L. E. M. Cytotaxonomy of the Platyrrhini (Primates). *Genen en Phaenen*, 1974, 17, 1-115.
- Brumback, R. A. A third species of the owl monkey (*Aotus*). *The Journal of Heredity*, 1974, 65, 321-323. (a)

---

Author's present address: Building 10, Room 5S242, National Institutes of Health, Bethesda, MD 20014.



- Brumback, R. A. Letter to the Editor. *Laboratory Animal Science*, 1974, 24, 834. (b)
- Brumback, R. A. Letter to the Editor. *Journal of Medical Primatology*, 1974, 3, 265. (c)
- Brumback, R. A. Fluorescent banding pattern of the karyotype of *Aotus trivirgatus* Humboldt 1812. A preliminary study. *The Journal of Heredity*, 1975, 66, 247-248. (a)
- Brumback, R. A. Giemsa banding pattern of the karyotype of *Aotus griseimembra* Elliot 1912. A preliminary study. *Journal of Human Evolution*, 1975, in press. (b)
- Brumback, R. A., Staton, R. D., Benjamin, S. A., & Lang, C. M. The chromosomes of *Aotus trivirgatus* Humboldt 1812. *Folia Primatologica*, 1971, 15, 264-273.
- Brumback, R. A. & Willenborg, D. O. Serotaxonomy of *Aotus*. A preliminary study. *Folia Primatologica*, 1973, 20, 106-111.
- Epstein, M. A., Rabin, H., Ball, G., Rickinson, A. B., Jarvis, J., & Melendez, L. V. Pilot experiments with EB virus in owl monkeys (*Aotus trivirgatus*). II. EB virus in a cell line from an animal with reticuloproliferative disease. *International Journal of Cancer*, 1973, 12, 319-332.
- Jarvis, J. E. An unusual karyotypic observation on cultured cells from an owl monkey (*Aotus trivirgatus*). *British Journal of Cancer*, 1974, 30, 164-167.
- Koiffmann, C. P. & Saldanha, P. H. Cytogenetics of Brazilian monkeys. *Journal of Human Evolution*, 1974, 3, 275-282.

\*

\*

\*

#### PRESERVED GALAGO CADAVERS NEEDED

Frozen or otherwise preserved *Galago* cadavers are needed. Any species will be useful, although *G. senegalensis* and *G. crassicaudatus* are of special interest. The cadavers are needed as dissection material for a Ph.D. dissertation on *Galago* locomotor anatomy and behavior. Eviscerated and decerebrate specimens can be used. Age and sex are immaterial; indeed, as much variability in these respects as possible will be of help in the work. The author of this note is a student and ability to pay for the material is limited.--Robin H. Crompton, Mammal Department, Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138.

## IPS FUND DRIVE FOR CONSERVATION

Hans Kummer

University of Zurich

In the October, 1974 issue of the *Laboratory Primate Newsletter*, Richard W. Thorington, Vice-President of the International Primatological Society (IPS), reported on the aims and activities of the IUCN/IPS, Primate Specialist Group, of which he is chairman. The Group's top priority is the conservation of primate forest habitats. One of the Group's most advanced and important projects, headed by Dr. J. Stephen Gartlan, is the creation of two forest National Parks containing endangered primate species in Cameroon. This thoroughly planned project now enters a decisive phase (see the report on the following page in the present issue of this *Newsletter*). In addition to a WWF contribution of \$30,000 and the cooperation of the Royal Society, the Swiss Development Agency, the New York Zoological Society, and the Leverhulme Trust, it requires the active support of members of the IPS as well as other members of the scientific community.

In my Conservation Report at Nagoya last August I announced an IPS Fund Drive for conservation. [Dr. Kummer is currently President of the International Primatological Society--Ed.] The constitution of the IPS states that the Society "will do everything in its power" for the conservation of primates. While admitting that not every member is in a position to become involved in conservation projects, I would argue that most members will find it in their power to spend one day's salary for the support of excellent existing projects. The Society could thus raise the substantial sum of about \$40,000. If non-members contributed as well, we might even do better. A few members have already sent their checks in response to my appeal in Nagoya. I now appeal to the Society at large to help us live up to the promise contained in the constitution. Your contribution is not only an act of conservation, but also an act of solidarity which the devoted and often frustrating efforts of the active conservators in our ranks have well deserved.

Please make your checks payable to the International Primatological Society, Conservation, and send them, as soon as possible, to our treasurer. His address is: Dr. R. Schneider, Zentrum der Morphologie, Klinikum der J. W. Goethe Universität, Theodor-Stern-Kai 7, D-6 Frankfurt a.M., Western Germany.

We shall report in this *Newsletter* on incoming funds and on expenditures, which will be primarily made for the Cameroon Project under the supervision of the Board of IPS.

\*

\*

\*

## CREATION OF TWO RAIN-FOREST PARKS IN CAMEROON

J. Stephen Gartlan

University of Wisconsin

The Cameroon government has welcomed the idea of totally protecting two areas of mature lowland rain forest, Korup and Douala-Edea. These two proposed National Parks comprise some 300,000 hectares (over 1,000 square miles) in the vulnerable coastal strip of West-Central Africa. The two proposed sites shelter at least 12 anthropoid and 5 prosimian species. Some of these such as the Drill (*Papio leucophaeus*), Black Colobus (*Colobus satanas*), Red Colobus (*Colobus badius*), and Chimpanzee (*Pan troglodytes*) are species seriously endangered through habitat destruction, hunting, and trapping.

Specific plans for the most efficient means of effecting this protection are in the process of being worked out between the International Union for the Conservation of Nature (IUCN), the World Wildlife Fund (WWF), and the Cameroon government.

Survey work is currently under way at the Park sites: detailed surveys of the primate fauna of the areas in relation to ecological resources are being carried out by the present author. These surveys are being financed by the National Institutes of Health through a grant to the Wisconsin Regional Primate Research Center. A botanist and an ornithologist will begin surveys towards the end of this year under a grant awarded by the Leverhulme Trust, London. Field work is being assisted by the donation of an outboard motor, a vehicle, and a fiberglass boat from the New York Zoological Society.

Offices and housing for Park Rangers and a Conservator will be designed and constructed by the Swiss Development Agency. The tourist potential of the Parks will be assessed by on-the-spot visits from a director of one of the largest European travel companies and a member of the German team on Technical Assistance on Tourism Development to Cameroon, towards the end of this year.

The Cameroon government has demonstrated its goodwill both verbally in letters to IUCN/WWF and practically by expelling illegal loggers from the Douala-Edea Reserve. The most serious problems currently facing the Reserves are illegal hunting and trapping. While the Cameroon government will provide manpower for the policing of reserves, funds for their equipment and housing and for boundary marking are urgently required.

The adequate protection of these considerable tracts of forest and their fauna will help conserve a unique resource. Your contribution will represent a vote of confidence in an enlightened government policy and one which may well prove to be influential to other governments with similar resources.

MEETING HELD: THE BIOLOGY AND CONSERVATION OF THE  
CALLITRICHIDAE

A conference, entitled "The Biology and Conservation of the Callitrichidae" (marmosets and tamarins), was held August 18 to 20, 1975, at the National Zoological Park's Front Royal Conservation and Research Center. Participating were 60 scientists from the U. S., Europe, and South America. The papers given at the conference covered a diversity of topics including the results of the first long-term studies by field researchers of marmoset behavior and ecology in South America. Research findings on captive animals covered endocrinology, reproduction, communication mechanisms, parental care, and social behavior.

Round-table discussion groups concentrated on problems of conservation and captive management of marmoset colonies. Both field and biomedical researchers recognized their joint responsibilities in preserving the various species of marmosets and tamarins. The following is a summary of a resolution adopted by conference participants:

Species of marmosets that are threatened so severely that they are near to extinction are the lion tamarin (the 3 subspecies of *Leontopithecus*), the buff-headed marmoset (*Callithrix flaviceps*), the white-eared marmoset, (*Callithrix aurita*), and the cotton-top tamarin (*Saguinus oedipus oedipus*). The clearance of natural homelands represents a major threat. The lion tamarins, for example, are now dependent on only 2% of their original natural range and not more than 600 are thought to survive in the wild.

Conservation suggestions include (a) A total ban on the export, shooting of or interference with these animals. (b) Urgent study by census and observations. (c) Close management of the remaining home environments by reforestation where possible and by a supply of the known limiting factors. These animals depend on particular types of trees and on shelter holes, which might be created in such trees for them. A supply of additional foods may also be necessary to assist their survival in the present unnaturally reduced environments to which they are restricted. The plight of these marmosets is extremely serious and any delay in the application of effective measures may well prove disastrous. Conservation organizations and the governments of source countries are requested to assist.

There are other species used by pharmacological interests and by biomedical research. These marmosets are not immediately threatened, but may become so as the growing needs of research outstrip the replacement of the natural wild stocks. This problem will arise over the next 10 years until breeding programs within the user countries make excessive demand on the wild unnecessary.

The needs for these animals in research are very real where they allow the study of naturally occurring human diseases such as colonic cancer and hepatitis, or where they form excellent models in human oriented research in immunology, virology, reproduction, contraception, and teratology. The potential of marmosets in which studies is only starting to be recognized. The main kinds of marmosets involved are the common marmoset (*Callithrix jacchus*), saddle-backed tamarin (*Saguinus fuscicollis*), and moustache tamarin (*Saguinus mystax*). Appalling losses at present during shipment from the wild to the user countries, which result in an unreal escalation in demand, represent a major problem to these species as does the accelerated rate of deforestation in developing South American countries.

Conservation suggestions include: (a) Development of breeding centers and research within the home countries. (b) Development within the user countries of breeding centers that apply rigorous genetic management of stocks. (c) Rigorous control of export quotas from the homelands. (d) Control of the conditions at export centers and during shipments. (e) Assistance from scientific organizations and the governments of user countries is requested.

On behalf of the combined interests of conservation and scientific research, we request the urgent application of practical measures to change the present unacceptable situation.

For additional information contact: Dr. Devra G. Kleiman, Office of Zoological Research, National Zoological Park, Smithsonian Institution, Washington, DC 20009.

\*

\*

\*

#### ADDITIONS TO HANDBOOK OF ANIMAL MODELS OF HUMAN DISEASE

Fifteen new studies from the *American Journal of Pathology* and the *Comparative Pathology Bulletin* are reprinted in the Fourth Fascicle to the *Handbook: Animal Models of Human Disease*, recently issued by the Registry of Comparative Pathology.

These new studies follow 45 studies published for inclusion in the *Handbook* during the past three years. With the new series is a comprehensive index to the full set of 60 animal models in the *Handbook*. The Fourth Fascicle can be obtained for \$2.25. The complete *Handbook*, with all 60 models and the index in a special binder, costs \$10.50. Both prices include postage. Checks or money orders should be made payable to UAREP, and sent to the Registry of Comparative Pathology, Armed Forces Institute of Pathology, Washington, DC 20306.

\*

\*

\*



## PETITION ON USE OF PYGMY CHIMPANZEES FOR RESEARCH

The following petition, entitled "Research on Pygmy Chimpanzees," was circulated by Dr. W. C. McGrew, Department of Psychology, University of Stirling, Stirling FK9 4LA, Scotland. It is published here at the request of Dr. McGrew.

### Given:

That the Yerkes Regional Primate Research Center, Atlanta, Georgia, U.S.A. has recently imported and is holding five pygmy chimpanzees (*Pan paniscus*), two of which have already died;

That these chimpanzees were trapped and removed from the natural habitat in Zaire for this express purpose;

That the pygmy chimpanzee is considered as a vulnerable species by the International Union for Conservation of Nature and Natural Resources and is so classified in its *Red Data Book*;

That importation of the pygmy chimpanzee into the U.S.A. is prohibited by its inclusion in Class A of the African Convention (1969);

That no reliable nor systematically collected knowledge is available on the population numbers and distribution of the pygmy chimpanzee in the wild, and that our knowledge of the species' behaviour and ecology is minimal;

### Therefore, we the undersigned do:

Deplore the action of the Yerkes Primate Research Center in collaborating in the removal of pygmy chimpanzees from the wild as being ill-considered and detrimental to the long-term conservation interests of the species;

Urge the government and people of Zaire to impose a total ban on the capture of pygmy chimpanzees from the wild, at least until their wild status is fully clarified;

Urge that all scientific laboratories, zoos, and other institutions and individuals desist from importing and receiving any further pygmy chimpanzees for research, exhibition or any other purpose until their wild status is fully clarified, and that any governments involved make no exceptions in this area in their wildlife protection and conservation laws;

Urge that any plans to develop a scientific research centre for the study of pygmy chimpanzees in Zaire based on capturing pygmy chimpanzees from the wild be re-considered; that resources in the long-term might be better employed in the establishment of adequate and secure sanctuaries for the species in its natural habitat.

We are not acting as members of any organised pressure group, and many of us have not previously made any public statements regarding primate conservation. Rather, we are trained scientists whose concern is based on informed field experience in Africa. We have all been directly involved in research studies of wild chimpanzees (common and/or pygmy), and it is our experience with these animals which motivates us.

Signatories of the Petition on RESEARCH ON PYGMY CHIMPANZEES

Name	Degrees, Honours	Affiliation	Country
H. Albrecht	Dr. rer. nat.	University of Amsterdam	Netherlands
D. M. Anderson	A.B.	University of Cambridge	England
L. Baldwin	B.A.	Pennsylvania State Univ.	U.S.A.
M. A. Brecht	A.B.	Stanford University	U.S.A.
E. F. Brewer	O.B.E.	National Parks Service	The Gambia
S. M. Brewer		National Parks Service	The Gambia
C. D. Busse	A.B.	Stanford University	U.S.A.
J. D. Bygott	Ph.D.	Serengeti Research Inst.	Tanzania
C. B. Clark	B.A.	Stanford University	U.S.A.
C. L. Craig	A.B.	University of California	U.S.A.
J. A. Crocker	A.B.	Case-Western Reserve Univ.	U.S.A.
J. Goodall	Ph.D.	Gombe Stream Research Ctr.	Tanzania
S. D. Halperin	Ph.D.	Washington University	U.S.A.
P. Harmatz	A.B.	Dartmouth University	U.S.A.
R. A. Hinde	D.Phil., F.R.S.	University of Cambridge	England
C. M. Hladik	Ph.D.	Centre National Recherche Scientifique	France
A. D. Horn	Ph.D.	Yale University	U.S.A.
K. Kawanaka	D.Sc.	Shinshu University	Japan
W. C. McGrew	D. Phil.	University of Stirling	Scotland
N. Merrick	A.B.	Stanford University	U.S.A.
N. Nicolson	A.B.	Harvard University	U.S.A.
T. Nishida	D.Sc.	University of Tokyo	Japan
N.R. Orbell		Niokolo-Koba National Park	Senegal
F. X. Plooij	Ph.D.	University of Nijmegen	Netherlands
H. H. C. Plooiig van de Rijt	B.A.	University of Cambridge	England
A. E. Pusey	B.A.	Stanford University	U.S.A.
F. Reynolds	Ph.D.	University of Birmingham	England
V. Reynolds	Ph.D.	University of Oxford	England
A. F. Richard	Ph.D.	Yale University	U.S.A.
D. C. Riss	A.B.	Stanford University	U.S.A.
J. B. Silk	B.A.	Stanford University	U.S.A.
A. E. Simpson	B.A.	University of Cambridge	England
S. Simpson	A.B.	University of Texas	U.S.A.
B. Smuts	B.A.	Stanford University	U.S.A.
G. Teleki	B.A.	Pennsylvania State Univ.	U.S.A.



Name	Degrees, Honours	Affiliation	Country
A. Suzuki	D.Sc.	Kyoto University	Japan
M. Sandburt Thorndahl	M.A.	University of Cambridge	England
C. E. G. Tutin	B.Sc.	University of Edinburgh	Scotland
A. Van der Stoep Hunt	A.B.	Stanford University	U.S.A.
E. van Zinnic Bergmann		Stanford University	U.S.A.
A. Badrian*	B.Sc.		Eire
N. Badrian*			Eire
H. R. Bauer	M.A.	Stanford University	U.S.A.
M. Rucks	B.A.	Dept. of Game & Wildlife	Ghana
S. Kuroda		Kyoto University	Japan
Y. Sugiyama	D.Sc.	Kyoto University	Japan
K. Morrie	A.B.	Stanford University	U.S.A.

\*Paragraph 7 deleted

\*

\*

\*

### PRIMATES WITH SPECIFIC DISORDERS WANTED

Mature rhesus (*Macaca mulatta*), stumptailed (*M. arctoides*), African green (*Cercopithecus aethiops*), and patas (*Erythrocebus patas*) monkeys with naturally-occurring arteriosclerosis or dyslipoproteinemia and of either sex are wanted to form breeding colonies. We would like to test blood samples from possible candidate animals which could then be purchased outright or traded for younger breeders. We would also like to obtain animals of these same species with naturally-occurring hypertension. Contact: Dr. David P. Martin, Litton Bionetics, Inc., 5516 Nicholson Lane, Kensington, MD 20795 (Phone: 301-881-5600, Ext. 226).

\*

\*

\*

### THE PHILOSOPHERS



Nihilist



Omphaloskeptic



Skeptic

## RESPONSE TO PYGMY CHIMPANZEE PETITION

Geoffrey H. Bourne

Yerkes Primate Research Center

The development and circulation of the petition on pygmy chimpanzees by W. C. McGrew (see pp. 7 of this *Newsletter*) is one of the most extraordinary acts of irresponsibility in the scientific area within recent years.

The petition which, readers can see, protests the acquiring on lend-lease of five pygmy chimpanzees from the Republic of Zaire for the Yerkes Primate Research Center, was sent to about 80 people, of which some 40 signed, and to a number of journals, societies and institutions, and governmental bodies. The petition was accompanied by a cutting from *The New York Times* about our pygmy chimpanzees and this is the only information the signatories were given on the subject.

Briefly, 5 pygmy chimpanzees were obtained by the Institute for Research in Central Africa (IRSAC) the chief scientific institute of the government of Zaire. They were sent from Zaire with the proper and legal export papers on lease-lend to the Yerkes Center. The project was initiated by the U. S. National Academy of Sciences and was facilitated by them and by the U. S. State Department and the U. S. Embassy in Kinshasa, Zaire. The object was to make a preliminary scientific study under laboratory conditions and use this as a basis for raising funds to establish a breeding group of pygmy chimpanzees in Zaire as a first step towards the development of an International Primate Research Institute based primarily on a resource unique to Zaire, the pygmy chimpanzee. Such an institute would be oriented towards behavioral and biomedical studies on apes and would also serve as a spearhead for primate conservation in Zaire. This project has been inspired by the experience of the National Academy of Sciences of the U. S. in helping developing countries establish centers of scientific excellence based on some unique natural resource of the country.

Apart from the philosophical pros and cons of the McGrew petition, it is a fraudulent document in the sense that virtually every point which it makes is either misleading or incorrect.

*1st Paragraph.* The operative word "imported", though technically correct, is misleading. The animals were, are, and will remain the property of Zaire and have been made available to Yerkes for a limited duration for pursuit of certain studies upon the conclusion of which the animals will be returned to Zaire. The term that has been publicly

---

Author's address: Geoffrey H. Bourne, Director, Yerkes Primate Research Center, Emory University, Atlanta, Georgia 30322.

used for this arrangement is "lend-lease" felicitous in that it does not convey clearly our commitment to return the animals.

*2nd Paragraph.* The chimpanzees were not "trapped" as alleged. Three of them were caught by means of nets, which is the accepted procedure for this kind of operation. The 2 young ones were in possession of local villagers and procured for a nominal sum.

*3rd Paragraph.* The designation as "vulnerable" is a relatively low order IUCN ranking and in no way prohibits capture of animals so classified.

*4th Paragraph.* "...importation of the pygmy chimpanzee into the U. S. A. is prohibited by its inclusion in Class A of the African Convention (1969)." The convention in question applies only to the African states (The U. S. A. and other non-African countries are not signatory), and Article 8 expressly provides for the exceptional capture of so-called Class A animals under government authority for scientific purposes.

*5th Paragraph.* Though basically true this assertion fails to take into account statements from knowledgeable sources to the effect that the pygmy chimpanzee is substantially more numerous than claimed according to Dr. Verschuren, the former Head of the Zairian National Parks. See also a letter from Dr. Adriaan Kortlandt which follows this rebuttal.

*6th Paragraph.* The Yerkes, Zaire, U. S. National Academy of Sciences' effort, far from being "detrimental to the long-term conservation interests of the species," is designed precisely to enhance that interest by generating basic knowledge on a virtually unknown animal and ultimately confining its use for research purposes to a self-sustaining colony.

Dr. David Chivers, of Cambridge England has pointed out "the driving force for conservation has to come from the country concerned, progress has to come from the collaboration of primate field workers, land management experts, the governments and game and forestry departments of countries in which primates are endemic and threatened, and international agencies such as IUCN, WWF, UNESCO, WHO, FAO, and so forth."

*7th Paragraph.* The government of Zaire has a total ban on the capture of pygmy chimpanzees in the wild, though local hunters in the areas where they are known to occur continue to kill them for food. The government of Zaire has no means of enforcing such a conservation law all over the area in which the animals are found. In this instance, the government specifically authorized the lifting of the ban to enable the Zairian "Institute for Scientific Research in Central Africa" to enter into a collaborative scientific enterprise with the U. S. National

Academy of Sciences and the Yerkes Center.

*8th Paragraph.* The petition urges "that all scientific laboratories, zoos, and other institutions and individuals desist from importing and receiving of further pygmy chimpanzees..." etc. The requirement that the importation of pygmy chimpanzees into the U. S. be accompanied by proper legal export papers has been in effect for some time and is rigidly enforced, not so the countries near McGrew's home.

In one of his letters concerning the petition McGrew has even made the extraordinary statement that the pygmy chimpanzees which we have should be taken away from us and either sent back to Zaire or sent to a zoo. So he thinks that to take them from an institution where they are being scientifically studied and send them to a zoo is acceptable procedure. I will never be able to understand the mental processes which lead to such a statement.

*9th Paragraph.* The government of Zaire has established huge sanctuaries for the pygmy chimpanzee (the Salonga Park, for example), but the requirements of making them "secure" defy the scale of resources that it or any external agencies can bring to bear on this problem. The modest resources we might be able to mobilize to maintain a breeding colony if diverted as proposed in the petition would have no effect whatever in assuring the protection of the species.

*10th Paragraph.* McGrew claims that the signatories of his petition are "trained scientists whose concern is based on informed field experience in Africa". This is a deliberate misrepresentation. Half (21 of 43) of the signers are identified as holders only of bachelor's degrees and can by no stretch of the imagination be described as "trained scientists". Two have no academic qualifications at all. Of the others who signed, two admitted they signed the petition without reading it and at least one has withdrawn his name from the list of signatories. Any person who would sign a document like this on the basis of a newspaper article, which was the only information supplied by McGrew, is certainly not operating as a trained scientist, and such action raises grave doubts to his claim to such a title. In fact, this whole matter is as far from being science as it can be and at best it can only be described as emotional caterwauling.

One would expect that an individual who becomes a self appointed vigilante for pygmy chimpanzees would have qualifications in at least one of the following: pygmy chimpanzees, Zaire, Wildlife management, dealing with African governments, and cooperating with their game and wildlife departments. McGrew does not have experience in any of these areas.

The best way for a non-entity to become an international figure in science is to produce and publish fine new and original work; seeking

this distinction by misrepresentation, inaccuracy, abuse and ignorance may be faster, but it is not likely to reflect credit on the person who uses it, nor those who support him.

Dr. David Chivers of the University of Cambridge, England, has circulated a statement on this matter and this rebuttal could be appropriately concluded by quoting from it.

"The harsh emotive criticisms (in places illogical and inaccurate) contained in the petition organized by Dr. McGrew, of a project designed to help us understand and conserve pygmy chimpanzees, can do little to help conservation in Zaire and could quite likely seriously jeopardise such efforts. The first two premises seem a little irrelevant and obscure; there is far more at stake than the removal of five animals to the U. S. A. The third and fifth premises are a direct contradiction of each other; how can the pygmy chimpanzee be endangered/vulnerable if nothing reliable is known about its status in the wild (this is in itself an inaccurate statement). The fourth premise is also inaccurate since it seems that the African Convention has been carefully followed to the letter.

The recommendations are no more constructive. To condemn the Yerkes Center and the Zaire government for collaborating in a long-term programme of research designed to lead to a research centre and more effective conservation in Zaire, on the basis of this initial loan of five animals to Yerkes, is unjustified. How can it be detrimental to the long-term conservation of the pygmy chimpanzee? How can the action be called "ill-considered" after the lengthy process of consideration, discussion, negotiation, and referral of the proposal for revision. It is an insult to the two governments concerned and to their scientific advisors. To urge a total ban on the capture of wild animals is also an interference in the internal affairs of another country, but, more seriously, it is wholly impractical--totality always is. What pygmy chimpanzees require for their survival are large areas of remote forest; they are only hunted where they impinge on human habitation, and in most of these cases the forests in which they are living are being cleared for cultivation. That remote areas are being established as wildlife sanctuaries is but one indication as to how ill-informed the signatories are of the situation in Zaire. Their failure to realise the important way in which studies of wild and captive groups complement each other is equally depressing. Would that Dr. McGrew had spent his time and money collecting systematically the information on distribution and numbers that we apparently need.

I presume to comment on this activity through my limited experience in South-east Asia, since I can foresee the disastrous effects that similar activity could have on conservation efforts there. It also seems important that someone with equal concern for species such as the pygmy chimpanzees should express the contrary view about appropriate actions that should be taken. It should be a matter of great concern



that the cooperation and goodwill established over many years should not be disrupted. The problems are common to all tropical countries; the situation is delicately balanced but gives cause for considerable optimism. This is not to suggest that we should relax our vigilance or cease our efforts; the real battle is only just starting. Events have proved that adequate laws exist, it remains to see them enforced effectively and wisely--and to see a decline in the rate of forest clearance. There are enough problems, however, without the ill-considered intervention of people lacking the appropriate experiences, however admirable may be their motives. We must hope that any harm already done is not irreparable, and that careful, thorough, scientific debate will precede any future actions."

\*

\*

\*

### 32 CHIMPANZEES NOW AT SANCTUARY OF PRIMATE FOUNDATION OF ARIZONA

The Primate Foundation of Arizona, first mentioned in the April, 1971 issue of this *Newsletter*, now has 32 chimpanzees in its sanctuary. The Foundation is a non-profit, tax-exempt corporation devoted to preservation, propagation, and study of the chimpanzee. The Foundation has no paid employees, all the work being done on a volunteer basis.

"Malacandra," the name chosen for the chimpanzee sanctuary, is from C. S. Lewis's book, *Out of the Silent Planet* and was a perfect, peaceful world. The Foundation's Malacandra is forty acres of land leased from the U. S. Bureau of Reclamation. There is a concrete structure on the land which was one of the first hydroelectric plants in the state. The land will be divided into islands with indoor housing facilities into which the chimps can come at night for feeding and observation. There will be a commissary, a nursery, a kindergarten play yard, offices, etc. The construction will be accomplished in phases over a 10-year period at an estimated cost of one million dollars.--From "Chimp Chatter", the first issue of a monthly publication of the Primate Foundation of Arizona, P. O. Box 86, Tempe, AZ 85281.

\*

\*

\*



Meditator

### THE PHILOSOPHERS



Theist

## LETTERS: STATEMENTS ON PYGMY CHIMPANZEES

*To whom it may concern.*--In a circular letter dated 1 July 1975 Dr. W. C. McGrew has asked about 80 scientists and students who are studying, or have studied, chimpanzee ecology and behaviour in the wild, to sign a public statement in which they deplore the action of the Yerkes Primate Research Center and the Government of the Republic of Zaire in capturing and exporting 5 pygmy chimpanzees (*Pan paniscus*).

While I appreciate and esteem the purity of Dr. McGrew's motives, I think that his action springs from inadequate and incorrect information on the alleged rarity of the pygmy chimpanzee. Furthermore it is my opinion that the action casts an unjustified blame upon both the Yerkes Regional Primate Research Center and the Government of the Republic of Zaire.

I regret this action particularly because the President and the Government of Zaire deserve the highest praise for the tremendous contributions they have made to the preservation of nature and natural resources in their country for the benefit of entire mankind.

I should add, however, that I consider the pygmy chimpanzee as an inadequate experimental animal for regular laboratory use. All 86 pygmy chimpanzees which were captured in 1958-'59 by the Laboratoire Médical in Stanleyville (now Kisangani) for the American poliomyelitis and arterosclerosis research programs, died within 3 weeks. The survival and breeding records in zoos have been rather discouraging until now.-- Dr. Adriaan Kortlandt, Zoologisch Laboratorium, Universiteit van Amsterdam C, Plantage Doklaan 44, Nederland, August 15, 1975. (Field worker on chimpanzee ecology and behaviour in 10 African states, including Zaire, since 1960.)

*To whom it may concern.*--Just coming home from a 2 1/2 months safari I find on my desk a several-inches pile of correspondence on Dr. McGrew's pygmy chimpanzee petition and on my response to it. You will understand that I am unable now to write individual replies to all these letters. Therefore please accept this circular in which I am trying to clarify some points.

(1) My general opinion has been formulated in a statement added to a letter to Dr. Bourne dated 15 August 1975. [Reproduced above--Ed.] Please read my statement as carefully as I wrote it. I maintain every passage which it contains.

(2) In my opinion, the article on the pygmy chimpanzee in *The New York Times*, May 15th 1975, apparently based on interviews with Dr. Bourne and some of his co-workers, contains several unwarranted, unscientific



and incorrect statements. The same applies to Dr. McGrew's circulars dated 1 July 1975 and 22 October 1975, and (in a much lesser degree) to a letter written by Dr. Bourne of which he sent me a copy, dated 20-5-1975.

(3) A map of the geographical range of the pygmy chimpanzee has been published by G. Vanderbroek in *Ann. Soc. roy. Zool. belge* 89, 1958/59, 203-211, and by A. Kortlandt and J. C. J. van Zon in *Proc. 2nd int. Congr. Primat. Atlanta, GA 1968*, Karger, Basel/New York 1969, 3, 10-13. This map is based on a more detailed map which contains the basic data and which is hanging (or was hanging at least until a few years ago) on the wall in Professor Vanderbroek's office, Laboratoire d'Embryologie et d'Anatomie Comparée, Université de Louvain. The basic data (or at least some of them) are also available for inspection at the Musée Royale d'Afrique Centrale, Bruxelles-Tervuren. The geographical range of the pygmy chimpanzee, drawn on a vegetation map of tropical Africa, was also shown by me at the chimpanzee experts' meeting in Nagoya, 1974 (explicitly mentioned in McGrew's circular of 1 July 1975), and during that same session I stated at length why the pygmy chimpanzee cannot be regarded as a rare and/or endangered animal species. All these data have been ignored by both Dr. Bourne and Dr. McGrew in their letters and circulars. Nor has Dr. McGrew publicly mentioned some of the sources to which he referred in his private letters to me.

(4) According to the maps mentioned above, the pygmy chimpanzee geographical range amounts to about 350,000 km<sup>2</sup>. Since there has been hardly any deforestation, (*Carte Michelin 155*, 1971) virtually the whole area is covered by almost undisturbed rain and swamp forests. I have myself flown over parts of this area by medium-altitude propellor planes during dry seasons in 1960 and 1964, and I was struck by the extreme rarity of smoke from human villages and slash-and-burn agriculture, including distances of 200-300 kilometers without any sign of human life. Moreover, most of the area is accessible only by motor boat or pirogue, and wide areas are periodically flooded so that they are entirely uninhabitable. (In either 1963 or 1964 even the BCB Bank in Stanleyville, now Kisangani, was flooded.)

(5) Unfortunately, no precise figures are available as to the average population density of the pygmy chimpanzee. From personal communications by Belgians in pre-independence times (i.e., when people still looked at animals) it seems obvious to me that the species is definitely *not* rare, though it is less conspicuous than the much more vociferous common chimpanzee. The same conclusion emerges from the ease with which both the Laboratoire Médical and the Yerkes Laboratories captured these apes. If we rather arbitrarily assume that their average population density is roughly only one tenth of that of the common chimpanzee in the Budongo Forest, the total number of pygmy chimpanzees would still be in the order of magnitude of some 100,000-200,000 individuals. In other words, the pygmy chimpanzee is presumably

less rare and *certainly less endangered* than the western subspecies of the common chimpanzee, *Pan troglodytes verus*. I really do not understand why Dr. McGrew and other participants in the discussion continue to ignore both the easily accessible facts and the readily discernible circumstantial considerations. Instead they continue arguing in a way one would not expect among scientists.

(6) Nor do I understand why Dr. McGrew gives so much authority to the I.U.C.N. Red Data Book. We should consider that the I.U.C.N. is a seriously understaffed organization where devoted people are doing their best to deal with tremendous world-wide problems. Laying wrong emphasis on the character of their work does injustice to them. Anyway, the Red Data Book edition available to me is full of conspicuous errors with regard to both chimpanzees and gorillas. These errors could have been prevented if the compiler had carefully considered the data available at the I.U.C.N. office, but apparently she had no time to do so. Admittedly one of my correspondents sent me a revised sheet on the mountain gorilla recently issued by I.U.C.N., but I do not know whether such revised sheets have been issued also on the common and the pygmy chimpanzee.

(7) Nor do I understand why the capture of only five pygmy chimpanzees and the death of two of them is causing such a stir. Nobody cried wolf when several chimpanzees died and several others were crippled forever at the Gombe Reserve, presumably due to inadequate hygienic precautions. So why this row about the Yerkes Laboratories and the Zaire government?

(8) Since 1965 I have urged that the western subspecies of the common chimpanzee is the only one which is really endangered. (A pilot study on chimpanzee ecology, Amsterdam 1965; *Lab. Primate Newsl.* 5, [3], 1966, 1-11; *Lab. Primate Newsl.* 6, [4], 1967, 1-13.) I am wondering when primatologists and conservationists will at long last take appropriate action on this situation? It is really time to come to business, rather than to squabble.--Dr. Adriaan Kortlandt, November 10, 1975.

\*

\*

\*

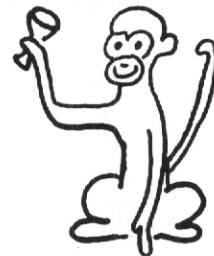
### THE PHILOSOPHERS



Agnostic



Gnostic



Hedonist

LABORATORY PRIMATE NEWSLETTER QUARTERLY SURVEY:  
FIRST TWO QUARTERS OF 1975

This is the first report of the results of a quarterly survey conducted by the *Laboratory Primate Newsletter*. A form is being sent to cooperating institutions (primarily large primate facilities) on a regular basis requesting census data, number of births, and morbidity and mortality information. In addition, brief reports of zoonoses and epizootics may accompany these survey reports. We would appreciate any comments and suggestions from readers regarding these reports. For sources of data included in the following tables, see note at the bottom of page 20.

TABLE 1. MORTALITY SUMMARY BY SYSTEM: JANUARY 1-MARCH 31, 1975

SPECIES	Generalized	Integumentary	Musculoskeletal	Respiratory	Cardiovascular	Digestive	Urogenital	Nervous	Endocrine	Neoplasia	Trauma	Unspecified
<i>Pan troglodytes</i>	1			1	1	1						
<i>Macaca arctoides</i>	1			1								1
<i>M. cyclopis</i>	1			1		1						
<i>M. fascicularis</i>				1								1
<i>M. mulatta</i>	3		1	29	2	39	2	1	1		8	11
<i>M. nemestrina</i>						1	1					1
<i>M. radiata</i>						3						4
<i>Cynopithecus niger</i>						1						
<i>Erythrocebus patas</i>						2						
<i>Cercopithecus athiops</i>					1	1						
<i>P. cynocephalus</i>					1							
<i>Theropithecus gelada</i>				1				1				
<i>Saimiri sciureus</i>	1			2		5	1				2	11
<i>Ateles geoffroyi</i>	1											11
<i>Aotus trivirgatus</i>	1				2	3	3				1	3
<i>Callicebus moloch</i>												1
<i>Callithrix jacchus</i>	1										2	1
<i>Saguinus oedipus</i>	9					1					4	4
Hybrid				1		1						1
TOTALS	19	0	1	37	7	59	7	2	1	0	17	50

TABLE 2. CENSUS, NUMBER OF BIRTHS, AND MORBIDITY SUMMARY BY SYSTEM:  
JANUARY 1-MARCH 31, 1975

SPECIES	Census	Births	Generalized	Integumentary	Musculoskeletal	Respiratory	Cardiovascular	Digestive	Urogenital	Nervous	Endocrine	Neoplasia	Trauma	Unspecified
<i>Gorilla gorilla</i>					1		1	4	1					2
<i>Pan troglodytes</i>	116	1	2	2		7		44	2					
<i>Pongo pygmaeus</i>	35		1				1	11					2	2
<i>Macaca arctoides</i>	147	4							1	1			1	1
<i>M. cyclopis</i>	89	1							1					
<i>M. fascicularis</i>	251	9						3		1	1		2	2
<i>M. mulatta</i>	3430	73 <sup>a</sup>		5	2	280	2	886 <sup>b</sup>	19 <sup>d</sup>	2		1	26	18
<i>M. nemestrina</i>	84	1			1			2					7	1
<i>M. radiata</i>	206	3												
<i>Cynopithecus niger</i>	28					1		9	1				2	
<i>Erythrocebus patas</i>	25							19 <sup>c</sup>						
<i>Cercocebus atys</i>	41							1					1	
<i>Papio anubis</i>	42													
<i>P. cynocephalus</i>	25													
<i>P. papio</i>	74													
<i>Theropithecus gelada</i>			2	2		2		1					2	4
<i>Saimiri sciureus</i>	560	1	2	2		2		1					2	4
<i>Ateles geoffroyi</i>						1	1		1					
<i>Cebus</i>					1									
<i>Aotus trivirgatus</i>	229	3							2	4				
<i>Callicebus moloch</i>		1												
<i>Saguinus oedipus</i>		1												
<i>S. nigricollis</i>	85	3												
<i>S. spp.</i>	95													
<i>Galago crassicaudatus</i>		1												
Hybrid						1		1						
TOTALS	5562	102	7	11	5	294	5	982	28	8	1	1	45	34

<sup>a</sup>31 were timed pregnancy Cesaerean sections

<sup>b</sup>Includes 232 *Shigella* spp. and 144 *Salmonella* spp.

<sup>c</sup>Includes 6 *Shigella* spp. and 4 *Salmonella* spp.

<sup>d</sup>Includes 17 abortions

TABLE 3. MORTALITY SUMMARY BY SYSTEM: APRIL 1-JUNE 30, 1975

SPECIES	Generalized	Integumentary	Musculoskeletal	Respiratory	Cardiovascular	Digestive	Urogenital	Nervous	Endocrine	Neoplasia	Trauma	Unspecified
<i>Pan paniscus</i>	2											
<i>P. troglodytes</i>				1				1				
<i>Pongo pygmaeus</i>	1											
<i>Macaca arctoides</i>						2					2	1
<i>M. cyclopis</i>											1	
<i>M. fascicularis</i>	6					2			1		3	7
<i>M. mulatta</i>	7	1		16	5	16	2	1	1	2	11	35
<i>M. nemestrina</i>	5 <sup>a</sup>											1
<i>M. radiata</i>												4
<i>Erythrocebus patas</i>				3		1					1	2
<i>Cercocebus atys</i>						1						
<i>Cercopithecus aethiops</i>	1			1		1						
<i>C. talapoin</i>				1							1	
<i>Theropithecus gelada</i>												1
<i>Saimiri sciureus</i>	10			3		10	5				2	26
<i>Ateles geoffroyi</i>				1								
<i>Cebus albifrons</i>												1
<i>Aotus trivirgatus</i>				1		1	2				4	10
<i>Callicebus moloch</i>												1
<i>Saguinus nigricollis</i>						1						4
<i>S. oedipus</i>	5			1		8						9
<i>S. tamarin</i>												1
TOTALS	37	1	0	28	5	43	9	2	2	2	25	103

<sup>a</sup>Tuberculosis

Note.--The mortality data in Table 1 are based on reports from the following four facilities: California Regional Primate Research Center, New England Regional Primate Research Center, National Institutes of Health, and Yerkes Regional Primate Research Center. The census and birth data in Table 2 are also based on reports from the above-mentioned four facilities, while the morbidity data in that table does not include the California Center. The data in Tables 3 and 4 is based on reports from all four facilities plus reports from the Delta Regional Primate Research Center. Future surveys will include additional facilities.

TABLE 4. CENSUS, NUMBER OF BIRTHS, AND MORBIDITY SUMMARY BY SYSTEM:  
APRIL 1-JUNE 30, 1975

SPECIES	Census	Births	Generalized	Integumentary	Musculoskeletal	Respiratory	Cardiovascular	Digestive	Urogenital	Nervous	Endocrine	Neoplasia	Trauma	Unspecified
<i>Gorilla gorilla</i>						3		9						
<i>Pan paniscus</i>			2											
<i>P. troglodytes</i>	159	1	1		1	5		27		1			4	2
<i>Pongo pygmaeus</i>	35	1						25					1	
<i>Macaca arctoides</i>	210	4		10	2			23	2		1			1
<i>M. cyclopis</i>	90	3		1										
<i>M. fascicularis</i>	511	8				22		79 <sup>a</sup>						2
<i>M. mulatta</i>	3492	148	6	148	54	88		251 <sup>b</sup>	47	8		1	41	42
<i>M. nemestrina</i>	89	5			1								2	
<i>M. radiata</i>	215	10		10	12	1		27	13	3	1			8
<i>Cynopithecus niger</i>	29	1												
<i>Erythrocebus patas</i>	41				1	2		6 <sup>d</sup>					2	
<i>Cercocebus atys</i>	40	1											1	
<i>Cercopithecus aethiops</i>	48					6	1	30 <sup>c</sup>						2
<i>Papio anubis</i>	40													
<i>P. cynocephalus</i>	14													
<i>P. papio</i>	74													
<i>Theropithecus gelada</i>				1									6	
<i>Saimiri sciureus</i>	859	26	11	2	1	8		2	1	2			5	11
<i>Ateles geoffroyi</i>		3												
<i>Cebus spp.</i>	38													
<i>C. albifrons</i>				1										
<i>Aotus trivirgatus</i>	211	4	1											
<i>Callicebus moloch</i>		2												
<i>Saguinus nigricollis</i>	84	9		3	2			3	4	1				3
<i>S. oedipus</i>														
<i>S. tamarin</i>						1								
<i>S. spp.</i>	95													
TOTALS	6374	226	19	175	74	135	1	482	67	15	2		65	71

<sup>a</sup>Includes 25 *Shigella* spp. and 6 *Salmonella* spp.

<sup>b</sup>Includes 15 *Shigella* spp., 21 *Salmonella* spp., and 3 rectal prolapses.

<sup>c</sup>Includes 13 *Shigella* spp.

<sup>d</sup>Includes 1 *Shigella* spp.



## NEW PRODUCTS AND SERVICES

### Commercial Breeding of Monkeys Planned

The establishment of new primate breeding compounds in the United States is the purpose of a joint venture of Pet Farm Inc., and Blue Ribbon Pet Farm, Inc. as announced Sept. 28, 1975 in Miami. Dr. B. M. Levine of Pet Farm and John H. Marolf, of Blue Ribbon plan to use natural wooded islands in Florida for the establishment of free-roaming breeding colonies of New and Old World Monkeys, where they should thrive and propagate at a minimum production cost. Other plans of the newly established company, Animals for Research, call for cage control breeding where necessary. The company's research primate facilities have been approved under the new regulations established by the United States Department of Health, Education, and Welfare. From these facilities, the company, under the supervision and direction of Dr. Levine, will supply laboratories, research scientists, and other users of primates for research with specimens from countries that still permit their exportation.

\*

\*

\*

### TRAVEL FROM USA TO IPS MEETING

Travel support to the International Primatological Society, England, 1976: The Sixth International Congress of Primatology will be held in Cambridge, England, August 24-27, 1976. Members in the United States are encouraged to seek support for their travel by direct application to the National Science Foundation, National Institutes of Health, and elsewhere. Applications to the National Science Foundation for travel support should be completed and submitted not later than March 1, 1976. Investigators who hold NSF grants are advised that they can seek approval for use of funds to support costs of travel to this meeting.--Duane M. Rumbaugh, Secretary, Western Hemisphere.

\*

\*

\*

### NEWSLETTER SUPPORT RENEWED

Financial support for the *Laboratory Primate Newsletter* has been approved for five more years by the Animal Resources Branch, Division of Research Resources, National Institutes of Health.

We wish to thank the many persons who have written to us in support of the *Newsletter*. Your support is a source of personal satisfaction and your comments and suggestions a means of improving the *Newsletter*.

\*

\*

\*



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

Books

*Lemur Biology*. I. Tattersall and R. W. Sussman (Eds.). New York/London: Plenum, 1975. 378 pp. [Price: \$22.95]

An interdisciplinary volume dealing with taxonomy, paleontology, morphology, physiology, ecology, and behavior of the Malagasy lemurs. A conservation program is also outlined for this endangered group of prosimians. Contents: Part I. INTRODUCTORY. 1. History of study of the Malagasy lemurs, with notes on major museum collections, by J. Buettner-Janusch, I. Tattersall, & R. W. Sussman. 2. Notes on topography, climate, and vegetation of Madagascar, by I. Tattersall & R. W. Sussman. Part II. SYSTEMATICS AND EVOLUTION. 3. The significance of chromosomal studies in the systematics of the Malagasy lemurs, by Y. Rumpler. 4. Development and eruption of the premolar region of prosimians and its bearing on their evolution, by J. H. Schwartz. 5. Dentition of *Adapis parisiensis* and the evolution of lemuriform primates, by P. D. Gingerich. Part III. MORPHOLOGY AND PHYSIOLOGY. 6. Structure of the ear region in living and subfossil lemurs, by R. Saban. 7. Notes on the cranial anatomy of the subfossil Malagasy lemurs, by I. Tattersall. 8. The lemur scapula, by D. Roberts & I. Davidson. 9. Osteology and myology of the lemuriform postcranial skeleton, by F. K. Jouffroy. 10. Body temperatures and behavior of captive Cheirogaleids, by R. J. Russell. Part IV. BEHAVIOR AND ECOLOGY. 11. Observations on the behavior and ecology of *Phaner furcifer*, by J.-J. Petter, A. Schilling, & G. Pariente. 12. *Lemur catta*: Ecology and behavior, by N. Budnitz & K. Dainis. 13. A preliminary study of the behavior and ecology of *Lemur fulvus rufus* Audebert 1800, by R. W. Sussman. 14. Field observations of social behavior of *Lemur fulvus fulvus* E. Geoffroy 1812, by J. E. Harrington. 15. Preliminary notes on the behavior and ecology of *Haplemur griseus*, by J.-J. Petter & A. Peyrieras. 16. Field observations on *Indri indri*: a preliminary report, by J. I. Pollock. 17. An analysis of the social behavior of three groups of *Propithecus verreauxi*, by A. F. Richard & R. Heimbuch. Part V. EPILOGUE. 18. Future of the Malagasy lemurs: conservation or extinction? by A. F. Richard & R. W. Sussman.

---

\*In many cases, the original source of references in the following section has been the Current Primate References prepared by The Primate Information Center, Regional Primate Research Center, University of Washington. 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. Any author wishing to have a published paper abstracted in this section may do so by sending the Editor a copy of the reprint or abstract and indicating his desire on the reprint.

*Advances in Behavioral Biology*. Vol. 9. *Perspectives in Primate Biology*. A. B. Chiarelli (Ed.). New York/London: Plenum, 1974. 333 pp. [Price: \$19.50]

This volume is the result of a NATO Advanced Study Institute held in Montaldo, Turin, Italy, June 7-19, 1972. Contents: Embryogenesis *in vitro*: an experimental model for the understanding of reproductive physiology and development in mammals, by A. B. Mukherjee; Comparative neuroanatomy of prosimian primates: some basic concepts bearing on the evolution of upright locomotion, by D. E. Haines, H. M. Murray, B. C. Albright, & G. E. Goode; Outline of a primate visual system, by D. M. Snodderly, Jr.; The study of chromosomes, by B. Chiarelli; Immunogenetics of primates, by J. Ruffie; Comparative virology in primates, by S. S. Kalter; Comparative primate learning and its contributions to understanding development, play, intelligence, and language, by D. M. Rumbaugh; Principles of primate group organization, by I. S. Bernstein. Nonhuman primates: a vulnerable resource, by B. Harrisson.

*Interpretive Atlas of the Monkey's Brain*. W. J. S. Krieg. Evanston, IL: Brain Books, 1975. 132 pp. Publisher's address: Brain Books, Box 9, Evanston, IL 60604. [Price: \$50]

This atlas comprises 89 plates, 11 by 14 inches. They are from photographs of microsections stained for cells, or for fibers. These are in pairs: cells on the left, fibers on the right. The plates are loose in the Solander case so they may be matched in pairs, or arranged in any way. They are printed from same size or half size negatives in collotype. 54 of the plates are from frontal sections of the whole brain, the usual plane after experimental work. In this group, sections are illustrated at 4 mm intervals. Slices 9 to 13 of the 18 also have pairs of plates at 2 mm intervals showing the central region enlarged. Frontal sections include brain stem and cerebellum, but there is a series of 10 plates which are larger pictures of sections transverse to the brain stem itself, including cerebellum. 13 plates are from a sagittal series of the entire brain, cells and fibers: six pairs. 10 more are horizontal sections of the cerebrum: five pairs. The last three plates are a transparent reconstruction of the cerebrum in slabs, two of them unfolding to 11 by 28 inches.

*International Zoo Yearbook* (Vol. 14). N. Duplaix-Hall (Ed.). London: The Zoological Society of London, 1974. 450 pp. [Price: hardcover--\$22; softcover--\$16.50]

Articles on nonhuman primates in this volume are: Breeding Müller's Borean gibbon *Hyllobates lar muelleri*, by E. J. Brody & A. E. Brody; Observations on the birth of a Lowland gorilla *Gorilla g. gorilla* in captivity, by L. Bingham & T. C. Hahn; Classification of captive gorillas *Gorilla gorilla*, by D. Cousins.

*International Zoo Yearbook* (Vol. 15). N. Duplaix-Hall (Ed.). London:

The Zoological Society of London, 1975. 456 pp. [Price: hardcover--\$27.50; softcover--\$20]

Articles on nonhuman primates in this volume are: Breeding tree-shrews *Tupaia belangeria* and mouse lemurs *Microcebus murinus* in captivity, by R. D. Martin; Gestation and birth of a Douc langur *Pygathrix n. nemaus* at San Diego Zoo, by D. K. Brockman & L. K. Lippold; Notes on a 29-year-old female chimpanzee *Pan troglodytes* which bred after an interval of nearly 19 years, G. Callard, R. Smith, M. Carman & R. Hutton; Artificial insemination in chimpanzees *Pan troglodytes*, by C. J. Hardin, G. Liebherr, & O. Fairchild; Second gorilla birth at the Yerkes Regional Primate Research Center, by R. D. Nadler; Distinguishing characters of the insular forms of orang-utan *Pongo pygmaeus*, by J. Mackinnon; and Separation and reunion of a gorilla *Gorilla g. gorilla* infant and mother, by R. D. Nadler & S. Green.

#### Reports

*The Jersey Wildlife Preservation Trust Eleventh Annual Report 1974.* Issued by the Headquarters of the Trust at the Zoological Park, Les Augres Manor, Trinity, Jersey, Channel Islands, 1975.

This report includes the following articles, among others: Management and breeding of the genus Lemur, by Q. M. C. Bloxam & D. Riordan; The hand-rearing and reintroduction to its parents of a saddleback tamarin, by A. G. Pook; Breeding, hand-rearing and development of the third Lowland gorilla, by P. Coffey & G. Pook; Cognitive, manipulative and social skills in gorillas, by J. Hughes & M. Redshaw; and Treatment of acute dehydration in an infant Lowland gorilla, by F. S. Carter. There is also a systematic list of primate specimens at the Jersey Zoological Park in 1974.

#### Bibliographies

Field research on langur and proboscis monkeys: An historical, geographical, and bibliographical listing. Baldwin, L. A., Kavanagh, M., & Teleki, G. (Dept. Anthropology, 409 Social Sciences Bldg., Pennsylvania State Univ., Univ. Park, PA 16802) *Primates*, 1975, 16, 351-363.

This is the 4th in a series of reports about field research on the ethology and ecology of nonhuman primates. Previous reports have covered: (a) the African baboons, drills, and geladas, (b) the African apes, and (c) the Asian apes. The current listing for the Asian colobine monkeys--namely, langurs and proboscis monkeys--was planned and compiled together with another listing on the African colobine and cercopithecine monkeys. This latter listing will be the next report in the series.

#### Disease

A perspective on simian tuberculosis in the United States--1972.

Kaufmann, A. F., Moulthrop, J. I., & Moore, R. M., Jr. (Bureau of Epidemiology, Ctr. for Disease Control, Atlanta, GA) *Journal of Medical Primatology*, 1975, 4, 278-286.

Despite the availability of effective control measures, simian tuberculosis continues to be a major colony management problem. In 1972, 909 cases of simian tuberculosis were reported to the Center for Disease Control. Most of the cases (838) were in rhesus monkeys (*Macaca mulatta*). The attack rate was higher for animals conditioned by commercial importers prior to sale (6.6%) than for animals received shortly after importation without conditioning (1.2%). Failure to apply control measures effectively and consistently both in trade channels and at the user level is a significant factor in perpetuation of the problem.

A survey of *Sarcocystis* in nonhuman primates. Karr, S. L., Jr. & Wong, M. M. (California Primate Res. Ctr., Univ. of Calif., Davis, CA 95616) *Laboratory Animal Science*, 1975, 25, 641-645.

Of the 375 wild-caught Old World and New World monkeys examined in this survey, 79 (21%) were infected with *Sarcocystis*, while 369 laboratory-born animals were negative. 4 structurally different types of sarcocysts were observed; 2 were probably new species. New host records were recognized for 4 species of Asian macaques, 3 African cercopithecids, and the New World *Saimiri sciureus*.

The laboratory investigation of an outbreak of diarrhoea in rhesus monkeys. Needham, J. R. (Animal Division, Clinical Res. Ctr., Watford Rd., Harrow, Middlesex HA1 3UJ, England) *Journal of the Institute of Animal Technicians*, 1975, 26, 17-25.

Diarrhoea was observed on the day following delivery of 20 rhesus monkeys. During the outbreak of diarrhoea only 4 isolates or *Shigella* spp. were obtained from monkeys suffering from diarrhoea. A large number of organisms, generally assumed to be non-pathogenic, were isolated from cases of diarrhoea and these isolates were in some cases extremely resistant to antibiotics. It is concluded that all monkeys should be regularly screened for *Shigella* and *Salmonella* spp. All enteric organisms should be isolated and identified and their susceptibility to antibiotics recorded.

Hydatid disease in a mandrill baboon. Boever, W. J. & Britt, J. (St. Louis Zoo, St. Louis, MO 63110) *Journal of the American Veterinary Medical Association*, 1975, 167, 619-621.

Hydatidosis has been described in many species of domestic and wild mammals, including primates. Among the latter reported to have been infected are rhesus monkeys, orangutans, and savannah and drill baboons. This is a case report of hydatid disease due to *Echinococcus granulosus* in a mandrill baboon (*Mandrillus sphinx*).

*Mycobacterium avium* infection in three rhesus monkeys. Sesline, D. H., Schwartz, L. W., Osburn, B. I., Thoen, C. O., Terrell, T., Holmberg, C.,



Anderson, J. H., & Henrickson, R. V. (California Primate Res. Ctr., Univ. of Calif., Davis, CA 95616) *Journal of the American Veterinary Medical Association*, 1975, 167, 639-645.

Naturally occurring *Mycobacterium avium* infection in 3 rhesus monkeys was characterized clinically and pathologically by intestinal and lymphoreticular involvement. Blood lymphocyte rosette formation and phytomitogen responses were depressed, whereas serum beta and gamma globulin concentrations were increased. Slow-growing, acid-fast, nonchromogenic bacilli isolated from lymph nodes taken at necropsy were identified as *M. avium* serotypes 4, 18, and double types 1 and 8.

Meningitis caused by *Klebsiella* spp. in two rhesus monkeys. Fox, J. G. & Rohovsky, M. W. (Division of Lab. Animal Med., Mass. Inst. of Tech., Cambridge, MA 02139) *Journal of the American Veterinary Medical Association*, 1975, 167, 634-636.

2 adult, female rhesus monkeys (*Macaca mulatta*) became depressed, weak, anorectic, and adipsic. Auscultation of the thorax of 1 monkey revealed bilateral harsh rales. Neither monkey responded to therapeutic doses of antibiotics, and both died soon after treatment was started. Meningitis was demonstrated histologically and pure cultures of multiple antibiotic-resistant *Klebsiella* were isolated from the brains of both monkeys. Of 13 clinically normal rhesus monkeys in the same facility, 5 had multiple antibiotic-resistant *Klebsiella* spp. in their pharynges.

Airsacculitis in the baboon. Lewis, J. C., Montgomery, C. A., Jr., & Hildebrandt, P. K. (Div. of Pathology, Walter Reed Army Inst. of Res., Washington, DC 20012) *Journal of the American Veterinary Medical Association*, 1975, 167, 662-664.

A baboon (*Papio anubis*) that had been given opiate compounds through an indwelling catheter developed mucopurulent airsacculitis. After a prolonged course, the infection was eventually controlled by medical and surgical means. Air-sac involvement, though rarely reported in nonhuman primates, appeared frequently in the group of baboons to which this subject belonged--all of which were being treated experimentally with opiates. Proposed explanations for this unusual incidence included the propensity of opiates to induce a histamine response, almost continuous contamination of pathogenic bacteria in the indwelling catheters, and a suggested anatomic predisposition of the baboon larynx to drain secretions into the air sac.

### Physiology

Biochemical values in the normal and hypothermic baboon *Papio cynocephalus/anubis*. Phillips, C. F., Nicolalde, A. A., & Wolfson, S. K., Jr. (Dept. of Neurosurgery, Univ. of Pittsburgh, Pittsburgh, PA) *Journal of Medical Primatology*, 1975, 4, 308-319.

17 biochemical parameters were measured in the venous and arterial

blood of normal adolescent baboons (*Papio cynocephalus/anubis*) under normothermic sedation and normothermic and hypothermic anesthesia. Statistical comparisons of the results were made between sexes and between the two temperatures under anesthesia. Six parameters differed significantly between males and females and five varied significantly between normothermia and hypothermia. Comparisons to the existing literature and the differences under hypothermia are briefly discussed.

#### Pharmacology and Anesthesia

Maternal and fetal responses to halothane in pregnant monkeys. Eng, M., Bonica, J. J., Akamatsu, T. J., Berges, P. U., Yuen, D. D., & Ueland, K. (Dept. of Anes. RN-10, Univ. of Wash., Seattle, WA 98195) *Acta anesthesiologica scandinavica*, 1975, 19, 154-158.

Maternal cardiac output, blood pressure, heart rate, fetal blood pressure, heart rate and respiratory blood gases, and uterine blood flow were measured in 6 pregnant monkeys during halothane-nitrous oxide and oxygen anesthesia and compared to these same parameters observed during nitrous oxide and oxygen anesthesia. Halothane 1.5% was associated with a decrease in maternal arterial pressure (54%), heart rate (10%), cardiac output (17%), total peripheral resistance (40%), and uterine blood flow (28%). Mean fetal heart rate decreased 18% and mean fetal blood pressure 22%. These changes in fetal hemodynamics were probably related to a direct depression of the fetal cardiovascular system and its usual compensatory mechanism as well as the fetal asphyxia secondary to the decrease in uterine blood flow.

#### Taxonomy

On the phyletic relationship of the tree shrews. Campbell, C. B. G. (Dept. of Neurological Surgery, Univ. of Virginia, Charlottesville, VA) *Mammal Review*, 1974, 4, 125-143.

The tree shrews (family Tupaiidae) were earlier grouped with the elephant shrews (family Macroscelididae) in the suborder Menotyphla of the Insectivora. Following a proposal of Carlsson (1922), many workers, and notably Le Gros Clark, have presented evidence that the tree shrews should be regarded as primitive or basal primates. Simpson (1945) accepts them as such in his classification of the Mammalia. This view, because of the wide interdisciplinary interest in primate evolution, has been widely accepted and has been of considerable influence. It has not, however, been without its opponents. This review critically analyses the evidence for and against accepting the tree shrews as primates.

Comments on the taxonomy of Brazilian marmosets (*Callithrix, Callithrichidae*). Hershkovitz, P. (Mammal Div., Field Museum of Natural History, Chicago, IL 60605) *Folia primatologica*, 1975, 24, 137-172.

The taxonomic appraisal of Brazilian marmosets, genus *Callithrix*, by Coimbra-Filho and Mittermeier is critically examined. The most important question concerns the arrangement of members of the *Callithrix jacchus* group. The author recognizes a single species, *C. jacchus*, with subspecies *aurita*, *flaviceps*, *geoffroyi*, *jacchus*, and *penicillata*. Coimbra-Filho and Mittermeier and others cited by them had treated these as distinct species. The author concludes that the assertions of Coimbra-Filho and Mittermeier are not supported by the evidence.

#### Instruments and Techniques

Nonhuman primate restraint device for ocular drug studies. Casey, W. J., Hart, B. K., & Tarleton, W. A. (Dept. of Ophthalmology, Univ. of Calif., San Francisco, CA 94143) *Laboratory Animal Science*, 1975, 25, 483-486.

A restraining device for nonhuman primates was designed which effectively prevented the animal from touching the eyes and thereby transferring a topically applied drug from one eye to the other. This permitted use of one eye of the same animal as a reliable control for observation of pharmacologic effects. The design permitted self-feeding by the animal. It did not produce chafing or pressure sores and resulted in no depression. The device has been used successfully for a 5-mo. period.

A simple method for obtaining blood pressure in rhesus monkeys (*Macaca mulatta*). Gerbig, C. G., Molello, J. A., & Robinson, V. B. (Pathology-Toxicology Dept., The Dow Chemical Co., P. O. Box 68511, Indianapolis, IN 46268) *Laboratory Animal Science*, 1975, 25, 614-618.

A relatively simple procedure was devised to obtain blood pressures in rhesus monkeys. This procedure utilized a polygraph, pulse transducer, pressure transducer, blood pressure mixer unit, and pediatric sphygmomanometer cuff. Previous attempts to auscultate the Korotkoff sounds by use of a sphygmomanometer cuff and stethoscope were unsuccessful. Blood pressure can be obtained by cannulation of the femoral artery, but repeated puncture may cause serious trauma to the arterial wall. This procedure was developed and used in our laboratory to obtain repeated blood pressures over a 90-day period. Results from using the cuff and polygraph have been shown to correlate favorably with cannulation of the femoral artery.

Pneumoperitoneography: A special radiological technic used in nonhuman primate medicine. Hoffmann, R. A. & Silverman, S. (Calif. Primate Res. Ctr., Univ. of Calif., Davis, CA 95616) *Laboratory Animal Science*, 1975, 25, 609-613.

Visualization of abdominal structures was difficult in survey radiographs of nonhuman primates due to the paucity of intra-abdominal fat and the presence of gastrointestinal contents. Simple pneumoperitoneography combined with contrast gastrointestinal studies provided valuable information about size, shape, and position of abdominal



structures, among other things. After ip injection of carbon dioxide, a series of positional radiographs were exposed to delineate the various abdominal organs. The positioning device used in the examination was illustrated and described and the clinical indications and diagnostic value of pneumoperitoneography discussed.

#### Conservation

Orang Utan rescue work in North Sumatra. Rijksen, H. D. & Rijksen-Graatsma, A. G. *Oryx*, 1975, 13, 63-73.

Trade in the highly endangered orangutan still goes on despite total protection in its entire range--Indonesia and East Malaysia. The authors spent three years studying orangutans in North Sumatra, trying to get the protection law enforced, and running a rehabilitation station for confiscated animals. The aim was to return the animals to the wild, but the station's real importance was that it made the confiscation of illegally held animals possible, and was thus some deterrent to hunters and traders. Much more damaging than the orangutan trade, however, is the forest destruction that is going on, and it is vital to ensure that large areas of lowland primary forest are preserved from the huge timber-logging operations that are fast destroying the orangutan's habitat.

Contribuição ao manejo racional da colônia de "rhesus" (*Macaca mulatta*) na Ilha do Pinheiro, GB., Brasil (Cercopithecidae--Primates). Coimbra-Filho, A. F. & Maia, A. de A. (Instituto de Conservação da Natureza, S.C.T., GB. Chefe de Pesquisas do CNPq.) *Brasil Florestal*, 1974, 5, [20], 13-25. (In Portuguese)

The authors comment upon details of the correct management of the rhesus (*Macaca mulatta*) population maintained by the Oswaldo Cruz Foundation on Pinheiro Island, an islet situated in Guanabara Bay, in the State of Rio de Janeiro. Considerations about the environment of the island, an analysis of the more important aspects of the nutritional process, and certain rules for the judicious management of the colony, are the essence of this work. The authors end by recommending several practical procedures, especially the agronomic treatment of the arboreal species and the adoption of rational principles of nutrition, which have as their goal the improvement of environmental conditions, a better way of life for the animals, an increase in the birth-rate, and a decrease in mortality.

The influence of selective logging on primates and some other animals in East Kalimantan. Wilson, C. C. & Wilson, W. L. (Reg. Pri. Res. Ctr. SJ-50 & Dept. of Psychology, Univ. of Wash., Seattle, WA 98195) *Folia Primatologica*, 1975, 23, 245-274.

A brief survey was conducted in East Kalimantan, Indonesia, to determine the influence of selective logging operations on primate populations. Data were also collected on some birds and squirrels.

Selective logging that causes only moderate habitat disturbance does not seem to result in a significant decrease in the densities of several primate species. Whereas some species adjust readily to moderately disturbed habitats, other species may have difficulty in maintaining a breeding population in logged areas. A review of the literature plus our own data suggest that rain forest birds and squirrels seem to be the most disrupted by selective logging of their habitats. While some of the other mammals are directly harmed by selective logging, others are endangered only by the human encroachment that often follows. Suggestions regarding enlightened tropical forestry practices, additional studies of the influence of selective logging, and the establishment of forest preservation areas are also discussed.

In the October, 1975 issue an article by Mittermeier, Ruiz, & Luscombe (*Oryx*, 1975, 13, 41-46) listed in the present section was incorrectly titled. The correct title is "A woolly monkey rediscovered in Peru."

\*

\*

\*



MAC AQUE

## ADDRESS CHANGES

Laurie Godfrey  
92 West St.  
Oneonta, NY 13820

Peter Gruenwald  
29 Mainbridge Lane  
Willingboro, NJ 08046

John J. Halki  
USAF Med. Ctr. WP/SG  
Wright-Patterson, AFB, OH 45433

Kenneth R. Holmes  
Dept. VAPP  
Vet. Med. Building  
Univ. of Illinois  
Urbana, IL 61801

Ronald R. Hutchinson  
Foundation for Beh. Res.  
Box 248  
Augusta, MI 49012

M. E. Keeling  
Environmental Science Park  
Veterinary Resource Div.  
Rt. 2, Box 149-G  
Bastrop, TX 78602

Peter Morrison  
Inst. of Arctic Biology  
Univ. of Alaska  
Fairbanks, AK 99701

Theopolis Peace  
Letterman Army Inst. Research  
Presidio of San Francisco  
CA 94129

Lawrence R. Pinneo  
2506 Ash St.  
Palo Alto, CA 94306

William H. Pryor, Jr.  
Dept. of Vet. Med. Sci.  
Naval Med. Res. Inst.  
Nat'l. Naval Med. Ctr.  
Bethesda, MD 20014

F. R. Robinson  
201 W. 600N  
West Lafayette, IN 47906

Robert S. Runkle  
Office for Res. & Sci. Affairs  
Becton, Dickinson & Co.  
Stanley & Cornelia Sts.  
Rutherford, NJ 07070

Alan F. Scott  
Johns Hopkins Univ. Sch. of Med.  
933 Traylor Bldg.  
720 Rutland Ave.  
Baltimore, MD 21205

Charles J. Sedgwick  
Fuerte Animal Hosp.  
4620 Avocado Blvd.  
La Mesa, CA 92041

Robert A. Stuhlman  
Dir. Lab. Anim. Res.  
Sch. of Med.  
Wright State University  
Dayton, OH 45431

D. H. Walker  
4854 178th Lane NW  
Anoka, MN 55303

John Winsser  
National Cancer Cytology Ctr.  
150 Broad Hollow Rd.  
Melville, NY 11746

David Yellen  
David Yellen Associates  
P.O. Box 638  
Deerfield Beach, FL 33441

Ralph F. Ziegler  
USAFSAM/VS  
Brooks AFB, TX 78235