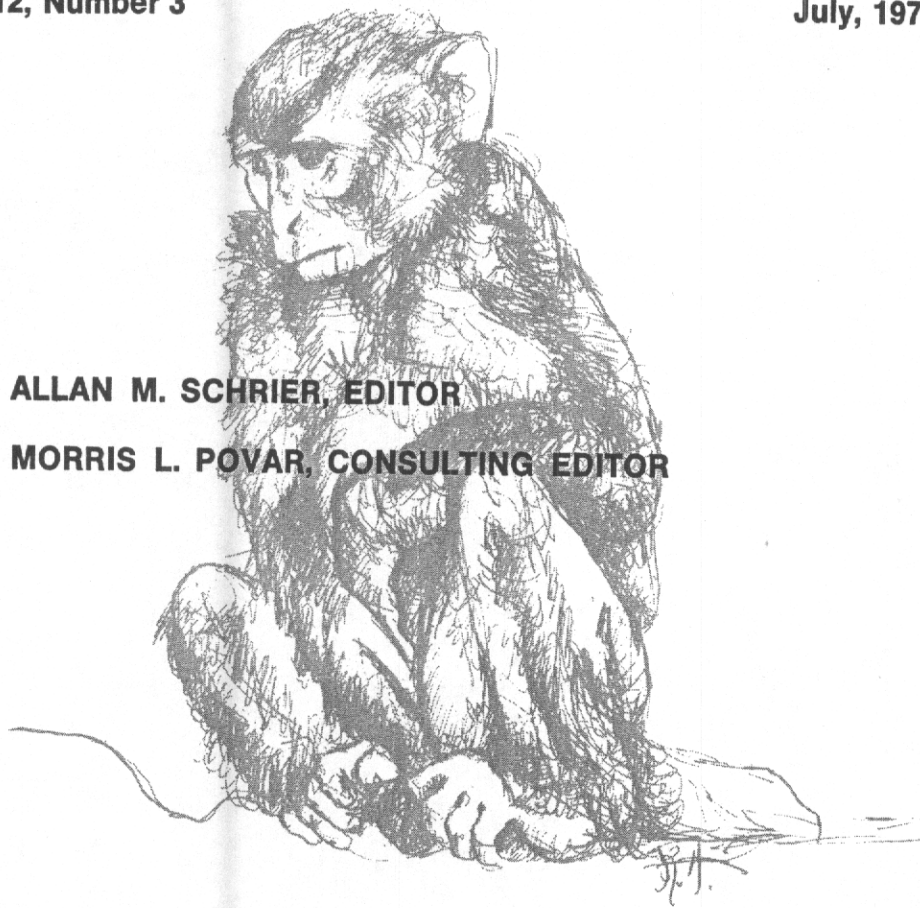


LABORATORY PRIMATE NEWSLETTER

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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:
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Managing Editor: Helen Janis Shuman

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EDITOR'S NOTES: THE RESPONSE TO OUR QUESTIONNAIRE

Along with the October issue, we included our biennial request for notification of subscription renewal which consisted of a questionnaire. This questionnaire is reproduced below (Table 1), along with the frequency and percentage of each of the three responses for each question.

Table 1
Responses to *Newsletter* Questionnaire

	Continue	Discontinue	Expand
1. Need for <i>Newsletter</i> ?	1056(86%)	8(<1%)	169(14%)
2. Original Articles	790(70%)	78(7%)	269(24%)
3. Reprints of Articles of General Interest Appearing Elsewhere	676(62%)	237(22%)	174(16%)
4. Abstracts in Recent Books and Articles Section (This is a time consuming job.)	627(59%)	317(30%)	114(11%)
5. Meeting Announcements and Reports	937(83%)	56(5%)	146(13%)
6. News Items Related to Primates and Primate Research	886(77%)	21(2%)	270(23%)
7. Notices (Information or Primate Material Wanted or Available)	883(78%)	44(4%)	213(19%)

Apparently, readers are pretty well satisfied with the *Newsletter* as it is, for there does not appear to be a very strong sentiment in favor of deleting or changing any aspect of it. The specific interests of *Newsletter* readers vary widely and our approach has been to keep it as general as possible and to try to have a little something for everybody in the field. We seem to have succeeded.

The items that produced the most controversy were 3, concerning reprints of articles appearing elsewhere, and 4, regarding abstracts of recent books and articles. Where all other features received 90% or more positive responses (continue or expand), these were only 78% and 70% positively received, respectively. Perhaps, our comment that

item 4 was time consuming encouraged a negative reaction. Among the comments on item 3, 27 people suggested we abstract rather than reprint articles, and five suggested that we reprint only articles from "obscure" sources. While one man's obscure source is another's primary source, something like that is the approach that we try to take. When we run across articles that we feel may be of special interest or concern to many of our readers, but unlikely to be seen by most of them, we reprint them. We give special consideration to any article concerning a public health problem. Another factor that may have influenced the response to item 3 could have been the use of the term "article." We have the impression that some people had journal articles in mind. We rarely reprint these. Rather, we were thinking primarily of newsworthy articles (perhaps "notes" is a better word) of the type that appear in Veterinary Public Health Reports, bulletins of various organizations, and the like.

Concerning item 4, some felt that we should abstract or list only "important articles", "books but not articles", "articles from little-known journals", or "articles from leading foreign journals". A few asked for reviews rather than abstracts, especially of books. Nine people suggested using guest abstractors, with one volunteering for part of the job. We have suggested in the past that authors send us abstracts of their articles and books as soon as they are accepted for publication.

More than half the questionnaires returned had some sort of comment or suggestion. Many of these were simply a welcome "Good job," or "Keep it up". The majority of the comments were requests for more stress on certain subjects (and less on others). Because of the variety of reader interests, these requests pretty well canceled each other out (see Figure 1). Many people suggested that more emphasis be given to conservation, by more articles on the subject, surveys of endangered species, and more use of our "Animals or materials wanted or available" service.

The "New Feature" most requested, perhaps a sign of the times, was "Positions Available". Another popular request was for some kind of "Letters to the Editor" or "Questions and Answers" column. Four readers asked for a column or reports on Government actions and Federal laws as they apply to researchers. More than 20 persons asked for reports on research in progress, such as lists of grants received, of dissertations filed, of project titles, of field work in progress, of "all labs and their personnel and interests", or reports from labs on the scope of their work. We were also asked for regular reports from the Regional Primate Centers, with one suggestion that each Center appoint one person to send us their regular report.

Many readers asked for more information on field studies; one even suggested that we change our title to "Primate Newsletter." In fact, we strongly encourage field researchers to notify us of field studies they have planned or in progress. Some time ago, somebody told us they were

attempting to gather such information to send to us, but, as often happens with such things, nothing came of it. Anyone care to volunteer?

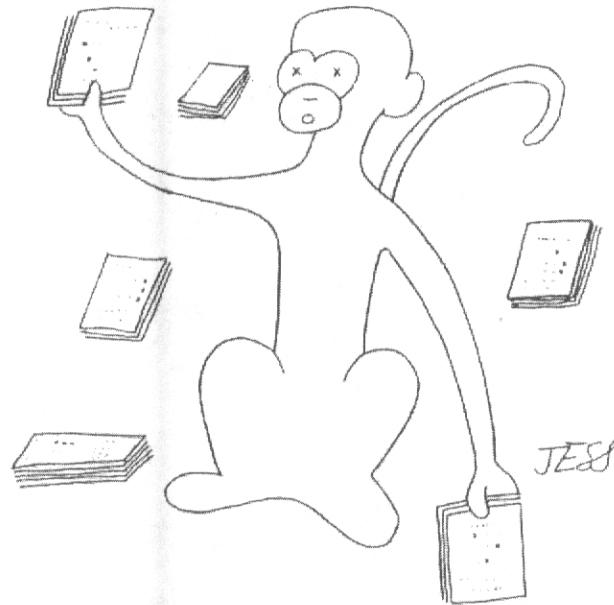


Figure 1. The ones in my left hand say "Too many original papers." The ones in my right hand say "Not enough original papers." The ones over there say "Too much pathology." The ones over here say...

Some of the New Features requested cover items (new films, new equipment) that we have always been willing to include in the *Newsletter* should we come across them, but we do not have the time or the resources to make extensive searches for this kind of information. Another consideration regarding new features is overlap with other information sources. There is no point in our having an extensive morbidity and mortality reports section when this is being done by the Center For Disease Control (see previous issues for descriptions of their Primate Disease Surveillance Program). Of course, we monitor their reports and include in the *Newsletter* any we consider especially significant. As for sources of primates, the Institute of Laboratory Animal Resources of the National Academy of Sciences puts out a publication called *Animals for Research* (8th ed., 1971) which lists suppliers of laboratory animals (as well as sources of laboratory animal equipment). We regularly review their publications in the Recent Books and Articles Section.

With respect to original articles, a wide spectrum of opinion

was again expressed. "Only general articles", "Mainly technical articles", "More articles", "No articles", "More one page reports", "Longer in-depth papers". Our feeling that we should publish incomplete or tentative results was echoed by some, and decried by others. In quick succession we found two responses suggesting more original papers with negative results unpublishable elsewhere, and one warning us against becoming a dumping ground for otherwise unpublishable papers. It was generally agreed that we should not try to publish formal papers, in "competition" with the journals, especially since we do not have referees, though there was a little disagreement there, too.

Our issues go to our overseas readers by sea mail, and two of them asked us to publish meeting announcements much earlier than we do, since the deadline for submission of papers is often past before they receive the *Newsletter*. We publish such announcements as soon as we receive them. Incidentally, one person asked us to stop publishing meeting announcements; they make him feel bad because he can't afford to attend any meetings.

Eighteen persons asked us to be sure to continue the "Address Changes", while three thought we ought to drop them. Six thought we should expand to a journal, while two warned us not to compete with journals, and eight told us not to get any longer. Seventeen offered to pay, or suggested we charge, for the *Newsletter*, and two suggested we look for more financing, perhaps at NIH.

Thank you for your suggestions and comments, and the obvious effort many of you put into them. We welcome additional comments from any of you at any time. They are always helpful.

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CORRESPONDENCE

Support For Primate Distribution Program Idea

Sir: I just read the article by Mittermeier and Fleagle on A Primate Distribution Program To End Waste of Sacrificed Specimens and I would like to add my support to such a program. My primary use of primate cadaver material is for musculo-skeletal dissections in teaching upper level courses in physical anthropology. Although I am a small consumer (4-7 animals per year), the number of small consumers is great and the total attrition of the primate populations is large.

I would be willing to share or provide non-necessary portions of our animals to others (either fixed or frozen) provided that other institutions will pay shipping and packing charges. I would be very interested in participating in a clearing house operation if one is initiated. Although I am only one small consumer of primate material, let me add my support to this project.--John Edward Blank, The Cleveland State University, Dept. of Anthropology, Cleveland, Ohio 44115.

A SPONTANEOUS OUTBREAK OF POLYCHLORINATED BIPHENYL TOXICITY
IN RHESUS MONKEYS*

Donald K. Hinkle

Perrine Primate Research Branch, Environmental Protection Agency

In the period April-August 1972, an outbreak of a disease clinically characterized by puffy eyelids, partial to complete hair loss, anorexia, and gradually progressive weight loss occurred in 3 groups of rhesus monkeys (*Macaca mulatta*) at the Perrine Primate Laboratory. The disease was complicated by secondary pneumonia and diarrhea in many animals. The dates on which clinical signs of the disease were first observed in affected animals were scattered over the 5-month period. Eventually, 84 of the 154 monkeys (54.5%) in the 3 groups were affected.

Of 70 affected animals in groups 1 and 2, 59 (84%) died of the disease. Approximately 1/2 of the 11 surviving monkeys gradually returned to good health, but the remainder were still in poor physical condition 6 months after the onset of clinical signs. All animals in group 3 were killed early in the outbreak due to a concurrent tuberculosis outbreak.

At necropsy, pathologic changes were primarily restricted to the skin and liver. The skin lesions consisted of a hyperkeratotic reaction which extended into the openings of the adnexal glands and hair follicles. As a result of the hyperkeratotic reaction, the lacrimal glands were occluded by desquamated epithelium, explaining the puffy eyelids which were observed. In addition, the mucous epithelium on the inner aspect of the eyelid appeared hyperplastic with a resultant epithelial invagination and formation of small pseudoglandular structures.

Hepatic necrosis of varying severity was noted in most of the affected animals. The least severe hepatic lesions consisted of small clusters of necrotic hepatocytes with an associated aggregation of neutrophils. With increasing severity, the extensiveness of the necrosis increased, and bile duct hyperplasia was observed. In 1 animal, the epithelial lining of the gallbladder was completely destroyed with a marked suppurative reaction.

Because the disease resembled polychlorinated biphenyl (PCB) toxicity in humans, necropsy samples of liver and brain were obtained and tested for the presence of PCBs. The PCB concentration ranged from 2.7 to 17.8 ppm in liver specimens of 17 affected animals and from 1.4 to 1.5 ppm in the brain of 3 animals. The PCB level in the blood of 3 unexposed rhesus monkeys was approximately 0.1 ppm. The PCB concentration observed in tissues of the

*From *Primate Zoonoses Surveillance Report No. 10, April-June 1972*, February 1973, p. 4-5.

Author's address: Perrine Primate Research Branch, Environmental Protection Agency, P. O. Box 490, Perrine, Florida 33157.

affected animals is considered to be in the toxic range.

The source of PCB exposure for these animals could not be determined. Although PCB contamination of animal feeds has occurred in the United States in the recent past, samples of the commercial monkey biscuits fed these animals did not contain detectable PCBs. Squirrel monkeys (*Saimiri sciureus*) being fed the same feed at this laboratory, but housed in a different area, did not develop signs of the disease.

The involved groups of monkeys were housed in newly built outdoor cages. The cages were constructed of concrete and galvanized pipe with aluminum chain-link fencing subdividing the area. No likely source of PCB exposure could be determined in the housing area, and analysis of various environmental specimens failed to detect any PCBs.

Although the duration of exposure could not be determined, the initial exposure apparently occurred sometime in early April. Monkeys in groups 1 and 2 had been at the laboratory for 12 to 36 months prior to detection of the disease. Animals in group 3 were not added to the colony until April 1, 1972. Clinical signs were first observed in all 3 groups in April.

Spontaneous PCB toxicity has not been previously documented in nonhuman primates. However, outbreaks of a disease similar to that described here occurred at the Oregon Regional Primate Research Center in 1967 and 1968. The Oregon outbreak was suspected to be due to PCB intoxication, but tissue analysis for PCBs was not done.

As a result of environmental pollution from industrial sources, PCBs have become widely dispersed in nature. They are extremely stable compounds, persisting in a contaminated environment almost indefinitely. PCBs have been introduced into the food chain in a fashion analogous to mercury and DDT, and detectable tissue levels of these compounds are common in both humans and domestic animals in the United States. Therefore, the potential for future outbreaks of PCB toxicity in laboratory primates is a real possibility.

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PRIMATE CADAVERS WANTED: *PRESBYTIS*, *COLOBUS*, AND *CALLICEBUS*

Head and neck should be intact. Brain may be removed if desired. All expenses paid. Contact: Dr. R. A. Hilloowala, Department of Anatomy, West Virginia University Medical Center, Morgantown, West Virginia 25606, Telephone: (304) 293-5549, 293-2212.

AN OUTBREAK OF SIMIAN HEMORRHAGIC FEVER*

William T. London

National Institutes of Health

Simian hemorrhagic fever is a febrile, hemorrhagic disease of nonhuman primates due to a fastidious RNA virus which is thought to be an arbovirus (Palmer *et al.*, 1968; Allen *et al.*, 1968; Tauraso *et al.*, 1968). The disease is clinically characterized by rapid onset, early fever, mild facial edema, anorexia, adipsia, dehydration, proteinuria, cyanosis, skin petechiae, melena, epistaxis, and occasionally retrobulbar hemorrhages. Pathologic changes associated with the disease include widespread petechial to echymotic hemorrhages, hemorrhagic necrosis of the proximal portion of the duodenum, splenomegaly due to follicular hemorrhage and engorgement with fibrin and plasma, intravascular coagulation, and generalized destruction of lymphoid tissue.

In outbreaks to date, simian hemorrhagic fever has only been observed in macaque monkeys. Eight outbreaks of the disease, including the current outbreak, have been reported (Espana, 1971; Simpson, 1972). Seven of the outbreaks first involved recently imported rhesus monkeys (*Macaca mulatta*), with subsequent spread of the disease to other macaque monkey species. The source of the eighth outbreak was not identified. All the outbreaks were characterized by an explosive onset, rapid spread within exposed groups, and a high case-fatality ratio.

In November-December 1972, an outbreak of simian hemorrhagic fever occurred at the National Institutes of Health in a building housing 2 groups of monkeys, 212 rhesus monkeys and 46 patas monkeys (*Erythrocebus patas*). The 2 groups of monkeys were housed in separate rooms connected by an open loft. Only the rhesus monkeys were involved. No animals other than the 2 groups were housed in the building.

Of the 212 rhesus monkeys, 172 had been in the colony for 6 months to 1 year. In the period October 25-November 2, 40 rhesus monkeys were introduced into the colony. The newly introduced animals had been conditioned for 60 days at the facilities of an animal importer. During the conditioning period, they were held in 2 separate rooms with no other animals. The patas monkeys had been in the colony for 2 years.

Except for diarrheal disease in 10 of the newly arrived rhesus monkeys, no major disease problems had been noted in the colony until November 24. On this date, 60 rhesus monkeys, including all 40 newly

*From *Primate Zoonoses Surveillance Report No. 10*, April-June 1972, February 1973, p. 5-6.

Author's address: National Institute of Neurological Diseases and Stroke, National Institutes of Health, Bethesda, Maryland 20014.

arrived animals developed a clinical illness characterized by depression and anorexia. On November 25, increasing numbers of the rhesus monkeys were developing a similar illness. Many of the animals observed to be ill on November 24 now had facial cyanosis and dilated pupils; 15 of the animals were too weak to stand. The first fatalities were observed on November 26, when 10 animals were found dead. By November 27, all the rhesus monkeys were clinically affected, and 9 additional monkeys had died. By December 5, a total of 106 monkeys had died. On this date, all surviving animals were killed to stop the epizootic. At necropsy, the affected animals had lesions characteristic of simian hemorrhagic fever.

The disease appeared to have spread within the colony by direct and indirect contact exposure. Although all monkeys in the colony were housed in individual cages separated by a solid metal partition, they could touch each other by reaching around the partition. Also, all the female rhesus monkeys were weighed twice weekly as part of a nutritional experiment. In this process, the animals were placed into 1 of 3 portable cages for transportation to the scale. The portable cages were washed and autoclaved at the end of each day. However, indirect contact of the monkeys resulted during usage of these cages for multiple animals on a given day. The same cages were used for transportation of the patas monkeys to the scale.

Although spread via needles used in treatment and tattooing of monkeys has been incriminated in previous epizootics of simian hemorrhagic fever, exposure to common needles in this outbreak was limited to only a small number of animals. The 40 newly arrived rhesus monkeys were tattooed using the same equipment on November 6. The tattoo needle was cleaned with alcohol between animals. A few animals may have been given injections of vitamins and antibiotics with a common needle. However, the vast majority of infected animals had not been tattooed or inoculated for some time prior to the outbreak.

In a subsequent experimental study, the disease was spread from infected to uninfected rhesus monkeys by both direct and indirect contact exposure as well as by inoculation.

No human illness was associated with either the current outbreak or previously reported epizootics of simian hemorrhagic fever.

This outbreak was quite unusual in that approximately 90 days had elapsed between importation of the newly introduced group of monkeys and the onset of the epizootic. In experimental studies, the incubation period of simian hemorrhagic fever has ranged from 3-6 days after inoculation, with most deaths occurring between 9-13 days (España, 1971).

Disease compatible with simian hemorrhagic fever had not been noted during the conditioning period at the animal importer's facilities. The animal importer had not observed any disease compatible with simian hemorrhagic fever in other animals in his facility, and he had not heard of any similar disease problem in monkeys sold to other customers. An

outbreak of simian hemorrhagic fever occurred in a group of rhesus monkeys at the importer's facility in 1965, but no outbreaks have occurred since that time.

The short incubation period of the disease, the long time elapsing between importation of the newly introduced monkeys and the onset of the epizootic, and absence of the disease in animals at the animal importer's facilities suggest that the rhesus monkeys were first exposed to the disease at the NIH colony. Investigation of possible sources of the infection are in progress.

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TWO ADULT CHIMPANZEES FOR SALE

We have two adult male chimpanzees for sale. One is approximately 11 years of age, the other approximately 18. Both have been used in a series of immunologic experiments which have now been terminated. For information regarding prices and other details contact: Dr. A. F. Moreland, University of Florida, Division of Comparative Medicine, Box 762, J. Hillis Miller Health Center, Gainesville, Florida 32610 (Phone 904-392-2977).

AGREEMENT RESTRICTS TRADE IN THREATENED PLANTS AND ANIMALS*

An agreement approved by 25 countries, as of March 16, 1973, is establishing a world-wide system of export-import permits designed to ban all commercial trade in plants or animals judged to be on the verge of extinction.

U. S. State Department officials anticipate that a majority of the 90 countries participating in the drafting of a Convention on International Trade in Endangered Species of Wild Fauna and Flora will eventually sign the agreement.

That agreement, drafted during a three-week conference held in Washington, D. C. in February, bans commercial trade in 375 species or genera of animals and plants. In addition, it also makes possible the monitoring--therefore regulation--of international trade in more than 250 other, less endangered animals and plants. The United States and 79 other participating nations initialed the document immediately after the conference on March 3. Other delegations to the meeting were not empowered to initial the document.

The treaty contains three lists of species and the trade controls to be applied to each specific group.

Animals and plants listed on the first list, Appendix I, are considered to be on the brink of extinction now. Trade involving these animals or products derived from them is prohibited except for essential scientific purposes that are not detrimental to the survival of the species.

For purposes allowed in the treaty, trade in animals or plants listed in Appendix I requires issuance of an export permit by the country of origin and an import certificate from the country of destination.

A number of primates are included in Appendix I. These are: all Lemuridae except *Lemur catta*; all Indriidae (indrises, sifakas, avahis); Daubentoniidae (aye-aye); *Callimico goeldii* (Goeldis marmosets); *Leontopithecus* spp. (golden lion tamarins); *Saimiri oerstedii* (red backed squirrel monkey); *Chiropotes albinasus* (white nosed saki); *Cacajao* spp. (all uakari); *Alouatta palliata* (mantled howler); *Ateles geoffroyi frontatus* (spider monkey); *Ateles geoffroyi panamensis* and *Brachyteles arachnoides* (woolly spider monkeys); *Cercocebus galeritus galeritus* (agile mangabey); *Macaco silenus* (lion-tailed macaque); *Colobus badius* (red colobus); *Colobus kirkii* (Kirk's colobus); *Presbytis geei* (Golden langur); *Presbytis pileatus* (capped langur); *Presbytis entellus* (Hanuman langur); *Nasalis larvatus* (proboscis monkey); *Simias concolor* (Pagai Island langur);

*This is a slightly modified version of a note that appeared in the *National Society for Medical Research Bulletin*, 1973, 24 [4], 1-2.

Pygathrix nemaeus (doric langur); *Hyllobates* spp. (gibbons); *Symphalangus syndactylus* (siamangs); *Pongo pygmaeus* (orang-utans); *Gorilla gorilla* (western lowland gorilla).

Appendix II of the convention lists those species of animals and plants which are not yet threatened with extinction. Trade involving these species will require an export certificate from the country of origin. No import certificate is called for and some commercial trade in these will continue.

The common lemur, lorises, capuchins, barbary ape, olive colobus, snub-nosed langurs, John's langur and chimpanzees are the primates included in Appendix II.

A third appendix will be prepared by each country ascribing to the convention listing those species of animals and plants which that country wishes to protect. Trade in products or specimens listed on Appendix III will require an export permit from the country of origin.

The United Nations Environment Program has been asked to assume the Secretariat responsibilities when the Convention comes into force following ratification of 10 governments. Since the U.N. Environment Program is a new organization, it may be necessary for some other group to assume the Secretariat function on an interim basis. The International Union for Conservation of Nature and Natural Resources (IUCN) might fill this need until the U.N. group is in a position to assume its responsibility.

Countries that have signed the Convention on International Trade In Endangered Species of Wild Fauna and Flora (as of March 16, 1973) are: Argentina, Belgium, Brazil, Costa Rica, Cyprus, Denmark, France, Germany (West), Guatemala, Iran, Israel, Italy, Luxembourg, Mauritius, Morocco, Niger, Panama, Philippines, South Africa, Thailand, Togo, United Kingdom, United States, Venezuela and Vietnam (South).

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INTERNATIONAL PRIMATOLOGICAL CONGRESS: TRAVEL

A first circular has been mailed to all members of the International Primatological Society who reside in the Western Hemisphere to announce plans for travel via charter flight to the IPS Congress to be held in Japan in August, 1974. Several circulars have been returned because of invalid addresses. Accordingly, if you are a member of IPS, and have not received a travel circular and wish to receive one or if you are not now a member of IPS but would be interested in joining and possibly attending the Japan Congress, please write to: Dr. Duane M. Rumbaugh, IPS Sec. for the Western Hemisphere, Department of Psychology, Georgia State University, 33 Gilmer St. SE, Atlanta, Georgia 30303.

THE PLIGHT OF THE LION MARMOSETS

The lion marmosets of the genus *Leontopithecus* are among the rarest and most endangered mammals in the world. These spectacular little monkeys, also known as golden marmosets, get their vernacular names from the lion-like mane around the head and the golden color present to varying degrees in the three subspecies. The best known form, the Golden Lion Marmoset (*Leontopithecus rosalia rosalia*) is restricted to a few forest patches in the Brazilian state of Rio de Janeiro and is gravely threatened by habitat destruction. It is estimated that only about 400 individuals remain in the wild. The second form, the Golden-headed Lion Marmoset (*Leontopithecus rosalia chrysomelas*), is in even worse shape. Only about 200-300 survive in very restricted parts of the Brazilian states of Bahia and Espirito Santo. The third form, the Golden-rumped Lion Marmoset (*Leontopithecus rosalia chrysopygus*) is the rarest of the three. It was believed extinct for 65 years, but was rediscovered in 1970 by the Brazilian primatologist Dr. Ademar F. Coimbra-Filho. Approximately 100 individuals still exist in the Morro do Diabo State Forest in the extreme western part of the State of Sao Paulo. Although in a very precarious position, the Golden-rumped Lion Marmoset is probably safer than its two relatives since the last known population occurs in a protected reserve.

The Golden Lion Marmoset was, until recently, fairly common in zoos. About 70 captive specimens now exist in the U. S. The Golden-headed Lion Marmoset has never been exhibited in the U. S. and only once outside of Brazil (in London in 1869). Presently, there are five captive specimens in Rio de Janeiro. The Golden-rumped Lion Marmoset has never been kept in captivity.

In February, 1972, The Wild Animal Preservation Trust sponsored a special Golden Lion Marmoset conference to determine what could be done to save these animals from extinction. This conference was attended by 28 marmoset specialists from the U. S. and Brazil and represented a major step in international wildlife conservation efforts. As a result of the conference, the bulk of the marmoset population in the U. S. has been moved to five major breeding centers and captive breeding efforts have been progressing. (See the reference to the proceedings of the conference in the New Books and Articles section of this issue of the *Newsletter*.)

In Brazil, a special breeding project, known as the Tijuca Bank of Lion Marmosets and headed by Dr. Coimbra-Filho and Dr. Alceo Magnanini, is underway at the Conservation Institute in Tijuca National Park. Tijuca is located near the city of Rio de Janeiro and was once part of the natural habitat of the Golden Lion Marmoset. The world's entire captive population of Golden-headed Lion Marmosets is kept in the Tijuca Bank, along with about 10 Golden Lion Marmosets.

The goal of the Tijuca Bank is to breed Lion Marmosets for later reintroduction into reserves (for which plans are now underway) and to hold marmosets from areas where habitat destruction is inevitable.

This project is partially financed by the World Wildlife Fund. However, additional funds are urgently needed for the construction of more breeding cages and for finding and translocating animals from habitats destined for destruction. To obtain these funds and to publicize the plight of the Lion Marmosets, the authors have initiated a "Save the Lion Marmoset Campaign." If anyone would be interested in taking part in this campaign or in contributing to the survival of these unique animals, please contact one of us.--Russell A. Mittermeier, Save the Lion Marmoset Campaign, Museum of Comparative Zoology, Harvard University, Cambridge, Mass. 02138 and John F. Douglass, Save the Lion Marmoset Campaign, Lowell House, Harvard University, Cambridge, Mass. 02138.

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PET MONKEY ATTACKS TWO PERSONS IN CALIFORNIA*

According to a UPI wire dated April 21, 1973, a 50-pound macaque monkey that stood 4 feet high ran wild in a residential area in Anaheim, Calif., and attacked 2 persons. The animal, apparently kept as a pet in the area, escaped about noon on April 21 and "appeared out of the blue" at a service station. The monkey bit a woman customer as she stepped out of her car with her 5-month-old baby. She fell to the ground and attempted to shield the child. The station manager ran out and kicked at the monkey. He missed and broke his foot. Another employee hit the monkey with a tire iron and stunned it. The injured woman was hospitalized.

Orange County animal shelter officers, using a loop device, finally captured the animal and took it to the shelter. As it was being transferred to a cage, it broke loose and bit a shelter attendant, opening a wound on his right arm that took 30 stitches to close. The shelter manager said the monkey, first thought to be a baboon because it was so large, was in an "agitated, vicious state."

Further investigation by the California Department of Public Health showed that the animal had been kept as a pet for the past 7 years. The young owner had recently married and left the pet with his father and mother.

The woman was not as badly injured as first thought. She received a sedative and a tetanus shot at the hospital and was released. The shelter attendant received a deep wound that required from 30 to 50 stitches to close. The animal was held for observation for 14 days and is still being held at the shelter pending determination of ownership. The father released the animal to the shelter but the son wants him back. Neither of the patients received antirabies treatment.

*From *CDC veterinary public health notes*, April, 1973, p. 4.

NEWSPAPER CLIPPINGS: BABY GORILLA CUSTODY DISPUTE SETTLED

Central Park personnel were jubilant at the news that Patty Cake, their beloved baby gorilla, will be returned to her parents at the Central Park Zoo.

The eagerly awaited announcement, made yesterday at a formal news conference at the Bronx Zoo, brought to an end the custody battle that had been simmering between the two zoos over the future of the baby gorilla.

The decision was based on a 2,000-word report from Dr. Ronald D. Nadler, a psychologist at the Yerkes Regional Primate Research Center in Atlanta, who had been called in to mediate the dispute.

"The recommendation is based on the judgment that an infant gorilla is more likely to develop into a socially competent and reproductively adequate animal if it is raised in the company of its parents as opposed to being raised with a group of peers," Dr. Nadler wrote in his report.

Dr. Nadler, who was at the news conference, stressed that ensuring Patty Cake's "normal reproductive potential" was of utmost importance because gorillas were an endangered species. He pointed out that studies had shown that chimpanzees, a closely related species, brought up by humans normally weighed more than those brought up by their parents. But, he also pointed out that human-reared chimpanzees also had been shown to develop aberrant forms of behaviour, exhibit deficiencies in learning and to be "relatively ineffectual reproductively."

For the first six months of her life, Patty Cake was never removed from her parents' cage at the Central Park Zoo. After breaking an arm accidentally on the bars of her cage in March while playing with her parents, the little gorilla was taken to the Bronx Zoo's animal hospital to recuperate. She was examined there and found to be underweight and suffering from intestinal parasites.

This led officials at the Bronx Zoo to request that she not be returned to Central Park. At the Bronx Zoo, Patty Cake was put in Pampers and kept in a nursery under the constant supervision of a nurse. Recently, she had been taken out to play with the other two infant gorillas at the Bronx Zoo and the plan was that eventually the three of them would be brought up together.

Dr. Nadler recommended that when Patty Cake was returned to her parents, she be given supplemental feedings to assure an adequate diet and that she be given medical examinations periodically. He suggested that she be reintroduced to her Central Park keepers for a few days while she was still at the Bronx Zoo and then be reintroduced quietly to her parents when she had refamiliarized herself with her surroundings at the Central Park Zoo.

Richard M. Clurman, Administrator of Parks, Recreation and Cultural Affairs, said that all of Dr. Nadler's suggestions would be carried out and that Patty Cake would probably be reintroduced to her parents within a week or so. One of the report's recommendations is that the bars of the cage be fixed in such a way so as to preclude the recurrence of the accident that Patty Cake suffered.

Deirdre Carmody, *The New York Times*, June 6, 1973

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THE IMMENSE TARSIER BABY

Clyde A. Hill

San Diego Zoo

Ulmer (1963) and LeGros Clark (1924) recorded rather amazing birth weights for newborn tarsiers. Ulmer's *T. syrichta carbonarius* newborn weighed 25.3 and 27.2 grams and the measurements of the newborn tarsier were approximately 50% of those of the adult. LeGros Clark weighed two *T. bancanus borneanus* newborn at 23.1 and 24 grams which agree closely with the Philadelphia statistics. Two Mindanao tarsiers were recently born at the San Diego Zoo, the same subspecies as Ulmer's. The San Diego newborn weighed 29 grams at one day of age and 27.2 grams six hours after birth. The birth weights are approximately one third that of the adult. The immense baby phenomenon of *Tarsius* should provide some fascinating research possibilities in a number of fields.

REFERENCES

LeGros Clark, W. E. The Bornean Tarsier. *Proceedings of the Zoological Society of London*, 1924, 221.

Ulmer, F. A. Jr. Observations on the Tarsier in Captivity. *Der Zoologische Garten* (NF), 1963, 27 [1/3], 118-119.

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LIVE *GALAGO CRASSICAUDATUS* WANTED FOR BEHAVIORAL RESEARCH

Either sex, breeding age or younger. Contact: Anne B. Clark, Committee for Evolutionary Biology, University of Chicago, Chicago, Illinois, 60637.

CONSERVATION RESOLUTION ADOPTED BY IUCN

The following resolutions were among those adopted by the 11th General Assembly of the International Union for the Conservation of Nature.

17. International Trade In Wildlife

Recognizing the initiative taken by IUCN in matters relating to the international trade in wildlife and the urgent need for international regulation of the increasing trade in threatened species of wildlife and their products; noting the progress being made in developing an international convention on trade in threatened species of wildlife; being aware that such a convention will require support from national legislation and effective enforcement; the 11th General Assembly of IUCN meeting at Banff, Canada, in September 1972: Urges all governments to participate in the proposed intergovernmental meeting to conclude the convention to be held in Washington, D. C. with target date February 1973; [See the note on the agreement reached at this meeting on p. 10 of this issue of the *Newsletter*.--ed.] And recommends that governments should introduce effective legislation to protect threatened species of wildlife, including prohibition of capture and killing and control of all trade in such species and their products, and that such legislation should be properly enforced.

20. Use of Non-Human Primates in Research and Teaching

Recognizing the unique value of non-human primates as man's closest relatives and as models serving the biological and medical sciences in the advancement of human health and scientific knowledge; the 11th General Assembly of IUCN meeting at Banff, Canada, in September 1972: Recommends that all governments ensure that every effort is made to conserve threatened species of non-human primates in their natural habitat;

And recommends further that research institutions, laboratories and universities take action to ensure: (1) that the greatest care be taken to meet demands for animal material for research and teaching by choosing species of non-human primates that are not threatened, or by using other non-threatened animal species or, preferably, tissue culture whenever possible; (2) that maximum use be made of individual animals in order to reduce demands; (3) that threatened species of non-human primates, including all apes, are not used for bio-medical, teaching or commercial purposes except in crucial human health research, and then only when fully effective measures have been taken to ensure the survival of the species and only when other species or tissue cultures are not suitable; (4) that breeding programmes be promoted to provide supplies of primate species for research and teaching, based on probable long-term requirements; and (5) that in the implementation of these requirements, the highest humanitarian considerations shall apply.

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

Books

The Chimpanzee: Vol. 6. Anatomy and pathology. G. H. Bourne (Ed.). Basel: Karger, 1973. [Price: About \$33] (All volumes of this series are distributed exclusively in the United States of America and Canada by University Park Press, Baltimore, Md.)

The contents of this final volume of the series are: The Skull of the Fetal Chimpanzee (Chondrocranium and Development of Osteocranium), by D. Starck; Functional Anatomy of the Upper Extremity, by H. Preuschoft; Clinical Pathology Data for the Chimpanzee and other Anthropoid Apes, by H. M. McClure, M. B. Guilloud & M. E. Keeling; Down's-Like Syndrome in a Chimpanzee. Clinical, Behavioral, Cytogenetic and *post mortem* Observations, by H. M. McClure, W. A. Pieper, M. E. Keeling, C. B. Jacobson & R. C. Schlant; Cardiovascular Function in the Chimpanzee Studied by Chronic Instrumentation, by H. L. Stone, H. Sandler & T. B. Fryer; Intestinal Helminths, by G. R. Healy & B. J. Myers.

Nonhuman primates and medical research. G. H. Bourne (Ed.). New York/London: Academic Press, 1973. [Price: \$25]

Contents: Monkeys and yellow fever, by P. Galindo; Monkeys and malaria, by M. D. Young; Cell cultures, by A. D. Felsenfeld; Tuberculosis and bacterial infection, by R. C. Good; Virus research, by S. S. Kalter; Models for investigation in parasitology, by R. E. Kuntz; Primates as organ donors in transplantation studies in man, by K. Reemtsma; The importance of monkeys for the study of malignant tumors in man, by B. A. Lapin; The use of primates in cardiovascular research, by G. A. Gresham; Humanlike diseases in anthropoid apes, by C. Stout; Cross-circulation between humans in hepatic coma and chimpanzees, by J. H. Patterson, R. C. MacDonnell, Jr., G. T. Zwiren, H. F. Seigler, R. Metzgar & M. Keeling; The Cape Chacma baboon in surgical research, by J. H. Groenewald and J. J. W. Van Zyl; Degenerative diseases, by O. Felsenfeld; Modeling of neurogenic disease in monkeys, by G. M. Cherkovich & B. A. Lapin; Development of a brain prosthesis, by L. R. Pinneo; Visual refractive characteristics and the subhuman primate, by F. A. Young; Contribution of primate research to sensory physiology, by H. Sakata; Performance studies in biomedical research, by D. N. Farrer; The importance of nonhuman primate studies of learning and related phenomena for understanding human

*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.

cognitive development, by D. M. Rumbaugh; Mental retardation, by G. W. Meier; Primate studies and human evolution, by S. L. Washburn; The primate research center program of the National Institutes of Health; by G. H. Bourne.

Saving the lion marmoset: Proceedings of the Wild Animal Propagation Trust Golden Lion Marmoset Conference. D. D. Bridgwater (Ed.). Oglebay Park, Wheeling, West Virginia: Wild Animal Propagation Trust, 1972. [Price: \$5.00]

This volume presents the results of a specialists conference on the golden marmoset *Leontopithecus rosalia* held at the National Zoological Park, Washington, D. C. on 15 to 17 February, 1972.

Contents: Introductory remarks with comments on the history and current status of the golden marmoset, by D. D. Bridgwater; Taxonomy of the genus *Leontopithecus* lesson, 1840, by A. F. Coimbra-Filho & R. A. Mittermeier; Behavior of *Leontopithecus rosalia* (the golden lion marmoset) and related species: A review, by P. A. Snyder; Social behavior of laboratory groups of *Saguinus fuscicollis*, by G. Epple; On the present status of *Leontopithecus* and some data about new behavioural aspects and management of *L. rosalia rosalia*, by A. F. Coimbra-Filho & A. Magnanini; Husbandry of rare marmoset species, by S. H. Hampton, J. K. Hampton & B. M. Levy; The breeding of endangered species of marmosets and tamarins, by W. R. Kingston; Management and reproduction of the Goeldi's monkey *Callimico goeldii* (Thomas, 1904) Callimiconidae, primates, by R. Lorenz; The establishment of a captive breeding program and a wildlife research center for the lion marmoset *Leontopithecus* in Brazil, by A. Magnanini & A. F. Coimbra-Filho; Recommendations for a basic husbandry program for lion marmosets, by F. DuMond, Chairman; Recommendations on research priorities for the lion marmoset, by D. Kleiman, Chairman; An unverified bibliography of the family Callithricidae (From 1900 to present), by S. H. Hampton, R. Lorenz & B. M. Levy.

Four new children's books on nonhuman primates:

Darwin's notion that man is a little closer to the apes than the angels no longer provokes storms of righteous indignation. In fact, considering mankind's performance in this century alone, there is some comfort in the thought that we are kin, in physiology and behavior, to these comparatively gentle beasts.

Among current books on the subject, Dorothy E. Shuttlesworth's *The story of monkeys, great apes, and small apes* (Doubleday, \$4.95. Ages 10 to 14) is a good concise survey of the primates. Mrs. Shuttlesworth's editorial experience with the Natural History and Junior Natural History magazines is reflected in her skillful organization of factual matter that avoids being either a discouraging clutter of details or a monotonously encyclopedic catalogue. The nine indexed chapters, generously sprinkled with photographs which match the text admirably, are introduced by a brief sketch of the evolution of the primate and the characteristics distinguishing it from other living creatures.

Proceeding from the upper branches of the family tree (gorillas, chimps, orangutans), the book considers the physical structure and

appearance, feeding and nesting habits and other significant behavior patterns of the various lesser species: the capuchin monkeys which in captivity like to watch TV; the langurs which babysit for one another; the loris with more backbone than mind, and on to the tree shrews, which didn't gain admittance to primate society until scientists finally took a closer look at their skulls.

Another roundup of the primates, Lilo Hess's *Monkeys and apes without trees* (Scribner's, \$4.95. Ages 9 to 13) is built around a collection of highly appealing photographs Mrs. Hess has taken of various specimens (marmosets, chimpanzees, gibbons, etc.) in zoos, laboratories and private homes. The somewhat pedestrian text provides scientific information about the pictured species and their adaptability as house pets or, in the case of the chimp and rhesus monkey, as laboratory animals. Considerable space is given to the diet and space requirements of these animals in captivity, and Mrs. Hess concludes with a plea not to make pets of them but to leave them to the zoos where, with the development of more natural settings, we will be able to observe "our closest relatives the way they really are--not as unhappy displaced creatures in a bare prison."

The social behavior of the baboon and its importance in the evolutionary scheme are the focus of Richard Gardner's *The baboon* (Macmillan, \$4.95. Ages 11 to 15). It traces man's changing opinion of the animal, from the ancient Egyptians, who revered it, to the medieval scholars, who abhorred it, and today's scientists, who value it as more than a laboratory animal. For after observing the baboon in the wild, they have found illuminating parallels between its life patterns and those of men, especially the processes through which individuals are socialized by the group.

Carol Fenner's *Gorilla gorilla* (Knopf, \$4.95. Ages 7 to 11) is a moving little story, based on reports of field observations, about a gorilla from its birth in the African forest to its coming of age in a big-city zoo. The text combines mood and basic facts effectively and is well matched by the sensitive drawings of Symeon Shimin. Implied or explicit in each of these books is the point that man, the most intelligent of the primates, is also the most destructive and within the next few decades will probably destroy all of his related species as he destroys their natural environment and much of his own as well. From which we must conclude that, confronted with such a melancholy prospect, man is just about as helpless as his stupid distant cousin, the pop-eyed potto. --From a review by Paul Showers, *The New York Times Book Review*, May 27, 1973.

Reports

REP: Annual report, 1972. Rijswijk, The Netherlands, 1973.

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: *Immunology*. H. Balner, H. Dersjant, & W. van Vreeswijk, The RhL-A system of histocompatibility anti-

gens in rhesus monkeys; H. Balner, H. O. McDevitt, B. Benacerraf, M. E. Dorf & J. J. van Rood, The immune response of rhesus monkeys to synthetic antigens; H. Balner & E. K. Toth, Identification of a major locus controlling mixed lymphocyte reactivity (MLR) in rhesus monkeys. *Primate behaviour and reproduction*. G. A. Boorman, E. J. Beijersbergen, G. H. Fitzgerald, C. Goosen & T. M. Speltie, Breeding at the primate center; G. A. Boorman, T. M. Speltie & G. H. Fitzgerald, Urinary chorionic gonadotropin excretion in the chimpanzee; C. Goosen, Some causal factors in grooming behaviour. *Bacteriology and Parasitology*. A. C. Ford, D. van der Vaaij, T. M. Speltie & E. J. Beijersbergen, Problems in the diagnosis and control of Simian tuberculosis, W. D. H. Hendriks, Gastro-intestinal decontamination and lethal irradiation in monkeys.

Bibliographies

Erratum: Biological Abstracts, Vol. 55, No. 7, lists *The chimpanzee. A topical bibliography*. (2nd ed.) Rohles, F. H., Jr. (Ed.) as published by the University of Washington, Seattle. This information is incorrect. The publisher is: Institute for Environmental Research, Kansas State University, Manhattan, Kansas 66502.

Films

Aspects of the behavior of the sifaka, (16mm black and white, sound, (12 min.) Struhsaker, T. T. & Richard, A. The Rockefeller University Film Service, New York, N. Y. 10021. (Rental price: \$15; Sale price: \$60)

This film of the sifaka, *Propithecus verreauxi verreauxi* (Grandidier, 1867), one of the Malagasy lemurs, was made in August 1971 in the arid forests of southern Madagascar. In this region, groups live in well-defined, and largely exclusive, "territories." Encounters take place along the "borders" of these territories. Generally, these encounters take the form of highly energetic, ritualized "battles," during which animals from opposing groups chase each other, but rarely establish physical contact.

The vocal repertoire of this species contains several calls. The "spat" call on the sound track usually was associated with submissive behavior; the wailing call was given by an animal that had lost contact with the rest of the group. This wail, which was extremely difficult for the human ear to locate, usually was answered by animals in the main body of the group with the "purr" vocalization, also heard on the sound track. In contrast to the wailing call, the purr could easily be located by the human ear.

Characteristically, sifakas are peaceful animals, exhibiting a low frequency of aggression. However, during the one week of the year when mating occurred, males fought fiercely.

During these fights, males received large, open wounds in their efforts to "defend" their groups from "invasion" by males from other groups. The submissive male shown in the film entered another group during the mating season and drove out its dominant male after a 24-hour battle. He himself was in turn driven out of that group a day later by yet another "invading" male, and subsequently returned to resume his submissive position in the group to which he belonged prior to the mating season.

The film shows locomotion, grooming, dominance, marking behavior, and infant-parent relationships.

Disease

A Herpes B (*Herpes simiae*) epidemic in Bonnet macaques (*Macaca radiata*). Ruebner, B. H., Espana, C. & Brayton, M. A. (U. Calif. Pri. Res. Ctr. & Dept. Path., U. Calif., Sch. Med., Davis, Calif. 95616) *Laboratory Investigation*, 1973, 28, 396.

Twelve of 79 Bonnet macaques housed in an outdoor structure died after a short illness, the principal features of which were dyspnea, conjunctivitis, coryza, and lethargy. At necropsy there was massive consolidation of both lungs with mottling and hemorrhagic foci. The livers showed striking yellowish miliary foci. Histologically there were necrotizing lesions with type A intranuclear inclusions in the liver and lung. Some animals also had encephalitis. Herpes B (*herpes simiae*) was isolated from the lesions. Rhesus monkeys (*Macaca mulatta*) appear to be the host reservoir for this infection. In other species, such as Bonnet macaques, and, very rarely, in man this virus can cause a fulminant systemic infection. Herpes *simiae*, isolated from this outbreak, was grown in BSC-1 monkey kidney cells where it produced extensive cytopathic changes within 24 hours of inoculation. By electron microscopy characteristic intranuclear and cytoplasmic herpes-virus particles were seen. The development of the virus generally resembled that of the other members of this group. In some respects, however, such as in the development of dense, probably lysosomal, material which surrounded the particles and in its manner of egress from the infected cells, the virus differed somewhat from other members of the herpes group. (Supported by Grants RR 06138 and RR 00169, National Institutes of Health, Animal Research Resources Branch.)

Investigations into the diagnosis and spread of epizootic simian tuberculosis. Ford, A. C., Van Der Waaij, D., Speltie, T. M., & Beyersbergen, E. (Radiobiological Inst. TNO, Lange Kleiweg 151, Rijswijk (ZH) The Netherlands) *Laboratory Animal Science*, 1973, 23, 232.

During 3 separate epizootics of simian tuberculosis various procedures were evaluated as to their efficacy in the diagnostic regimen. None was completely satisfactory. Spread of fecal bacteria by aerosolization during cleaning procedures is a possible factor in the dissemination of tubercle bacilli among nonhuman primates. Of importance in this respect is the type of ventilation employed in the animal quarters.

Filariasis in New World monkeys: histochemical differentiation of circulating microfilariae. Chalifoux, L. V., Hunt, R. D., Garcia, F. G., Sehgal, P. K. & Comiskey, J. R. (N. E. Reg. Primate Res. Ctr., Harvard Med. Sch., Southboro, Mass. 01772) *Laboratory Animal Science*, 1973, 23, 211.

Filariasis is one of the most common parasitic infections of New World primates. The significance of these parasites with respect to animal health, their influence on experimental manipulations, or poten-

tial public health hazard is poorly defined. In part, these parameters have not been fully explored, owing to difficulties in accurately identifying the numerous types of circulating microfilariae, or failure to locate adult parasites at necropsy. In the present research, 11 types of circulating microfilariae were differentiated in blood smears from 7 species of New World monkeys, based on differences in the localization of the enzyme acid phosphatase, using naphthol AS-TR phosphate as substrate. The incidence of infection in each species of monkey is reported. This method shows promise as a means of distinguishing microfilariae in blood smears.

Review of recent epizootics in nonhuman primate colonies and their relation to man. Tauraso, N. M. (801 Toll House Ave., Frederick, Md. 21701) *Laboratory Animal Science*, 1973, 23, 201.

The viral, bacterial, and parasitic infectious diseases of simian primates are described and reviewed. Some recent epizootics are described as they related to man and the health of the colony. Mention is also made of other primate infectious diseases which did not result in epizootics or outbreaks but which posed a threat to human health. Reference is made to key review articles to which the reader may refer for further details. Anyone responsible for the maintenance of a nonhuman primate colony must be constantly aware of simian infectious diseases because of the potential harmful effect upon the colony and of the danger to individuals who must care for and work with primates. The importance of adequate quarantine upon arrival into the colony, constant supervision beyond the initial quarantine period, determining the cause of sick and dead monkeys, and instituting appropriate treatment when feasible are stressed.

Pneumothorax associated with lung mite lesions in a rhesus monkey. Rawlings, C. A., & Splitter, G. A. (Dept. Vet. Sci., Coll. Agric. & Life Sci., The U. Wisc., Madison, Wisc. 53706) *Laboratory Animal Science*, 1973, 23, 259.

Nearly all imported rhesus monkeys (*Macaca mulatta*) have *Pneumonyssus simicola* infections. In contrast, rhesus monkeys born and raised in laboratories in the United States have low incidence of infection, and these animals probably need to be closely associated with imported adult animals to develop infection. Tension pneumothorax was diagnosed as a chronic debilitating condition in an imported rhesus monkey. During exploratory thoracotomy, multiple bronchopleural fistulas associated with lung mite (*Pneumonyssus simicola*) lesions were identified. The animal died 1 day after repair of these fistulas.

Infections among Thai gibbons and humans caused by atypical *Microsporium canis*. Taylor, R. L., Cadigan, F. C., Jr., & Chaicumpa, V. (Dept. Microbiology, U. Texas, Med. Sch., San Antonio, Tex. 78284) *Laboratory Animal Science*, 1973, 23, 226.

An atypical strain of *Microsporium canis*, having characteristics of the anthropophilic fungus *Microsporium audouini*, was the etiologic agent in an epizootic of ringworm disease in a colony of Thai gibbons. Numerous inapparent infections were detected, and these "carrier" gibbons probably

served as an effective reservoir of the fungus. Three cases of human dermatophytoses, caused by isolates identical with the gibbon fungi, were observed.

Thorns of South American clump palm trees in the thoracic organs of owl monkeys (*Aotus trivirgatus*). Shimp, R. G., Fiske, R. A., Woodard, J. C., & Moreland, A. F. (Div. Comp. Med. & Dept. Pathol. (Woodard), Coll. Med., U. Florida, Gainesville, Fla. 32601) *Laboratory Animal Science*, 1973, 23, 285.

Three cases involving penetrating thorns of the thoracic organs and subcutaneous tissues were observed in *Aotus trivirgatus*. Gross and microscopic pathological changes were noted. These thorns may have caused the unexplained deaths of the animals.

Physiology and Behavior

Age related changes of hematologic values in infant *macaca mulatta*. Martin, D. P., McGowan, M. J. & Loeb, W. F. (Litton Bionetics, Inc., 5510 Nicholson Lane, Kensington, Md. 20795) *Laboratory Animal Science*, 1973, 23, 194.

Changes in hematologic values occurring in 170 hand-reared *Macaca mulatta* were studied from birth through 2 years of age. Complete blood counts, consisting of packed cell volume, total leukocyte count, and differential leukocyte count, were performed once during the first 3 days of life, at 1, 2, 3, 4, and 8 weeks, and monthly during the rest of the first year. During the second year values were determined at 6-month intervals. There was an initial high packed cell volume, but this decreased during the first 2 weeks of life. Neutrophil numbers were also high at birth, but declined with age. Lymphocyte levels were low at birth, but increased rapidly to adult values. An inversion of the lymphocyte-neutrophil ratio occurred during the first month of life. Eosinophil values were low at birth, increased to adult values during the first month, and fell to one-half adult values during the second month where they remained for the period studied. The total white blood count was essentially the same from birth through 2 years of age.

Facilities and Care

Keeping up with our gorillas. Anon. *ZOOLOG*, 1973, 46 [3], 4-11. The new out-of-doors Gorilla Exhibit at the San Diego Wild Animal Park is described.

Nonhuman primate animals for research in gastrointestinal problems. Goldsmith, E. I., & Glenn, F. (525 East 68 St., New York, N. Y. 10021) *The American Journal of Surgery*, 1973, 125, 89-98.

Problems of husbandry, anesthesia, tranquilization, physical restraint while awake, prevention of disease transmission, fluid and electrolyte balance, and postoperative care have now been overcome enabling one to make a choice of primate animal subject based on the scientific merit of the species available.

The Laboratory for Experimental Medicine and Surgery in Primates (LEMSIP) was planned to fill the need for nonhuman primate animals and appropriate related facilities in a large biomedical research community (Greater New York). Innovative methods of husbandry, caging, cost accounting, and space utilization have reduced dramatically the cost of experimentation with primates, making them competitive with other animals. A program of simultaneous and sequential utilization of animals by more than one investigator has resulted in an average utilization of each animal for 6.5 programs per year. The Laboratory now functions as a truly interinstitutional program providing a unique resource and a possible prototype for shared facilities elsewhere.

Ecology and Field Studies

Notes on the ecology of five lorisiformes of Rio Muni. Pi, J. S. (Parque Zoológico de Barcelona, Barcelona) *Folia Primatologica*, 1972, 18, 140-151.

Some aspects of the ecology of *Arctocebus calabarensis*, *Perodicticus potto*, *Euoticus elegantulus*, *Galago alleni* and *Galago demidovii* are described. It is reasoned that *A. calabarensis* is more abundant than was previously supposed and that this species has less ecological plasticity than has *P. potto*. The nocturnal habits are more apparent in *A. calabarensis* than in the other four species studied. The breeding season of *A. calabarensis* is apparently similar to that of the forest cercopithecids of the same region.

Instruments and Techniques

A temporary restraint chair for monkeys. Carlson, K. R. (Dept. Pharm., U. Pittsburgh, Sch. Med., Pittsburgh, Pa. 15213) *Physiology and Behavior*, 1972, 9, 493-494.

A device for the rapid and safe restraint of macaque monkeys is described. After minimal training, animals will voluntarily position themselves in the device; no physical contact between animal and experimenter is necessary, and the chairing procedure requires only a few minutes. Various accessories permit using the chair in a variety of experimental situations.

Restraint of monkeys for craniofacial research. McNamara, J. A., Jr. (Dept. Anat. & Ctr. Human Growth & Develop., U. Mich., Ann Arbor, Mich. 48104) *Journal of Dental Research*, 1973, 52, 183.

This paper reports the development of a primate restraining system that maximizes short-term fixation and standardization of head position; this system also provides moderate limitation of body movement. The device consists of a primate chair, which was modified from a basic design, and a head holder mounted on the chair.

Study of spontaneous behavior in squirrel monkey groups: observation techniques, recording devices, numerical evaluation and reliability tests. Hopf, S. (Max-Planck-Institute for Psychiatry, Dept. Prim. Behav., Munich)

Folia primatologica, 1972, 17, 363-388.

This paper describes and discusses a relevant method for quantifying social behavior. The investigation is extended to each stage of the study: the process of observation, the different codes (observing, paper recording, computer storage), the programs, the numerical data reduction, and statistical testing, if reasonable models are available.

Shaping monkey-human contact. Aarons, L. (Div. Res. & Develop., Ill. Dept. Men. Hlth., Chicago, Ill. 60610) *Perceptual and Motor Skills*, 1973, 36, 235-243.

An empirically ordered sequence of 11 steps is described for the training of progressive increases in physical contact between monkeys and humans. The steps range from a point at which food is not accepted from *E*'s hand, through the touching and petting of varied parts of the monkey's body, to the monkey climbing on or being held by *E*. Some illustrative data are presented for rhesus and pigtailed macaques and it is suggested that evaluation of the animal-human relationship is relevant to long-term studies in experimental behavior therapy.

Collection of chimpanzee semen with an artificial vagina. Fussell, E. N., Franklin, L. E., & Frantz, R. C. (Delta Reg. Prim. Res. Ctr., Tulane U., Covington, La. 70433) *Laboratory Animal Science*, 1973, 23, 252.

The assembly of a simple artificial vagina and its use to collect ejaculates from chimpanzees was described. The method is humane, eliminates the need to tranquilize or restrain the animal, and eliminates the risk of urine contamination of the ejaculate.

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