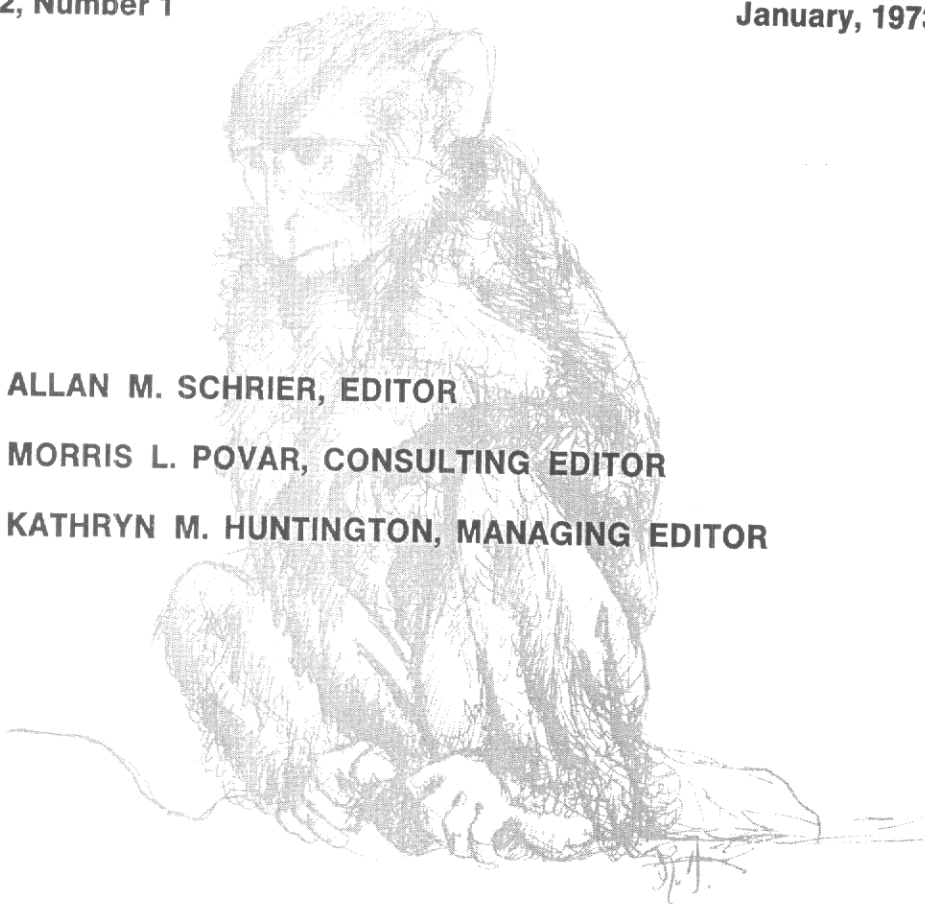


# LABORATORY PRIMATE NEWSLETTER

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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. 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* (see Editor's Notes, July, 1966 issue) the scientific names used will be those of Napier and Napier [*A Handbook of Living Primates*. New York: Academic Press, 1967].

All correspondence concerning the *Newsletter* should be addressed to:  
Allan M. Schrier, Psychology Department, Brown University, Providence,  
Rhode Island 02912.

#### ACKNOWLEDGMENT

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## CORRESPONDENCE

### *On Montagna, Hahn, and History*

Sir: We have come across Dr. W. Montagna's review (1971) of Miss Emily Hahn's article (1971a) and book (1971b) on the history of world primate research. Dr. Montagna criticizes E. Hahn's publications for trivial and superficial treatment of that important problem.

But let us turn our attention to the following detail in Dr. Montagna's review. He reproaches E. Hahn, because, speaking of the history of primatology, she gives facts most of which she has taken from our book "Monkeys for Science" (1966). Dr. Montagna appraises our book too: "This is hardly an unbiased source book; like all others it claims Russian leadership and superiority in the field" (p. 16).

Let us see however what E. Hahn writes about the priority: "The authors at last get around to mentioning America's foremost early primatologist, Robert Yerkes....anxiously trying to show wherever possible that their I. Mechnikov, the founder of primatology in Russia, was a little ahead of the American all the way along the line. In any case, history shows that Yerkes had a primate-research laboratory underway in New Haven in 1926 (he expanded it to open the Anthropoid Experimental Station in Florida in 1930) while the Russians, having encountered many vicissitudes, didn't get theirs going until more than a year later" (1971a, p. 47).

Why then does Dr. Montagna upbraid Miss Hahn? Their viewpoints, as we can see, are very much alike.

We read E. Hahn's publication last summer, but did not intend to write a protest in the scientific press, as we do not think that such painfully scrupulous elucidation of priority is the main concern of investigators, a historian of the science included. However if such an outstanding scientist as Dr. Montagna takes part in the discussion, a sense of justice demands that we answer.

"Monkeys for Science" is a book about the Sukhumi nursery and it is natural that we, soviet authors, mostly speak of Russian and soviet scientists. In some cases we speak of investigations in other parts of the world, although laying no claims to completeness. We are ready to document and to take the responsibility for every line in our work.

"Claiming Russian leadership and superiority" can apparently be seen in our elucidation of a special role played by I. Mechnikov and of the establishment of the Sukhumi monkey nursery. Let us discuss these questions in order.

- 1) The name of I. Mechnikov, an outstanding Russian scientist,

Nobel prize laureate, is well-known not only to scientists, but to the general public as well. In recent years, there have been scientific publications (in particular, Friedman, 1967) showing the role of Mechnikov, a Darwinian, biologist, and physician, as the founder of experimental primatology. We have every reason to believe that this part of Mechnikov's activity is little known in America. As for Robert Yerkes, we have a profound respect for the memory of this outstanding scientist, the founder of the first contemporary primate nurseries in the USA, a man who was in friendly correspondence with the first research workers of the Sukhumi nursery.

We by no means intended to contrast the names of Mechnikov and Yerkes, both for ethical reasons and because such a venture would have been pointless: Mechnikov was born 31 years earlier than Yerkes and died 40 years earlier than he. When Mechnikov published his first work on primates in 1887, Yerkes was a little boy. Yet the point is certainly not only in the time of life of these scientists.

Mechnikov was not the founder of primatology in Russia, as E. Hahn has put it (and could not have had any direct relation to the foundation of the Sukhumi nursery, for he died in 1916), as his main investigations on primates were conducted in France, but he had a great influence on the establishment of primate centers and development of primatological investigations in many countries of the world. Robert Yerkes (1943, p. 292) wrote about that too:

Even before my ideas became 'motor', the eminent Russian medical investigator Metchnikoff, then located in France and supplied with monkeys and apes by the African colonies of his adopted country, used them for important studies of human diseases. Before 1910 he had become convinced of their high value as experimental subjects, had employed them extensively himself, and encouraged the development of provisions which should make them readily available for use in laboratories of medical research. Subsequently, about 1923, the Pasteur Institute of Paris, undoubtedly as a result of Metchnikoff's reports and recommendations, established in Africa a station for the use of monkeys and chimpanzees and for their collection and shipment to France....Knowledge of Metchnikoff's observations and conclusions influenced my planning and, in particular, supported my belief that the chimpanzees should prove uniquely valuable to biological investigators.

2) As for the priority of the Sukhumi nursery as the oldest of the now existing primate Centers in the world, we would prefer to avoid comparisons with Yerkes Primate Research Center in this case, too; firstly, because the Sukhumi nursery is known as a colony of monkeys (although in its early days and later apes were also kept here); and secondly, because from the very beginning the Sukhumi nursery was meant as a center of *medical* investigations, whereas Yerkes established a colony for studying chimpanzee *biology* and *behaviour*.

The Sukhumi nursery was established in August 24, 1927. The date of the establishment of Yerkes Center can be found in Yerkes' book (1943, p. 297) and in other articles of its founder, and that date is July, 1930. We do not know any other publications in which the date of its establishment is stated. In the Archives of the Sukhumi nursery there are letters which Robert Yerkes wrote to his Sukhumi colleagues. In these letters he wrote about his plans, about the establishment of his colony. We are sending you a copy of the letter of May 4, 1930 [reproduced below--Ed.] which clearly shows that the colony on Florida was only under construction in those days and that Yerkes was going to profit by the already existing experience of the Sukhumi nursery. If our American colleagues think that the date of organization of Yerkes laboratory in New Haven, that is 1926, is the date of Yerkes Center establishment, we have nothing against it. Yet in this case certain difficulties may arise in connection with the priority of other laboratories already existing (long before 1926) in the USA, France, and Russia which are also mentioned in "Monkeys for Science" (Yerkes himself had apes in New Haven in 1924).

In conclusion we should like to say the following. Robert Yerkes and the scientists of our country were great friends and it is most unlikely that he could think that his letters would be copied to elucidate the truth. While doing this we feel awkward before the memory of the eminent scientist. But if we find that the actual historical events of Russian and soviet science have been distorted, then we feel it necessary to give explanations. And we do hope that it will make the friendship bequeathed by our predecessors even more solid.

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B. A. Lapin, Prof.,  
Corresponding Member of the USSR  
Acad. Med. Sci.  
Director of the Institute of  
Experimental Pathology and Therapy  
of the USSR Acad. Med. Sci.

E. P. Friedman  
Candidate of Biological Sci.,  
Chief of the Sukhumi Primate  
Information Center of the Institute  
of Experimental Pathology and Therapy  
of the USSR Acad. Med. Sci.

APPENDIX

Text of Yerkes' Letter

Dr. A. Sellheim,  
Scientific Anthropoid Station,  
Suchum, Caucasus,  
U. S. S. R.

May 5, 1930

Dear Doctor Sellheim:

I happen to be in New Haven for a few days and hasten to acknowledge your letter of April 7th which I found awaiting me here. It is indeed kind of you to write so often and so fully of the developments in your station.

You ask for my suggestion about the English name of your establishment. The one you are using, "Scientific anthropoid and monkey breeding and observation station of the Moscow Endocrinologic Institute," is of course very explicit, but also very awkward and long. We have designated our Florida station as "Anthropoid Experiment Station of Yale University, Orange Park, Florida." This, as you will note, gives definite information about the nature of the station, its auspices, and its geographical location. Orange Park is in North Florida, fourteen miles from the city of Jacksonville. By train it is approximately twenty-four hours from New York.

May I suggest for simplification that you might use the word "primate" in your title and say merely "Primate breeding and observation station"? Of course, monkey may be used generically or inclusively, and if such is the Russian convention I should think you would so use it. Our station is to be concerned primarily with the anthropoid apes; therefore the use of the term anthropoid.

Permit me to answer in order your questions concerning our station and work. The Florida station is located about one mile from the Saint Johns River and some twenty-five miles from the Atlantic Coast. We

propose to use initially at the station chimpanzees and to endeavor to breed them. Our arrangements provide for a colony of twenty to thirty individuals.

With reference to Madam Abreu's animals, they are taken into the house by the lady herself or by her caretakers, either on leash, or if they are small, by being carried. Animals which become dangerous of course are not transferred from their out-of-door cages. I have never observed transfer in cages, although possibly that is done occasionally.

So far as I know, Dr. Hamilton has not conducted any structural studies of the nervous system. In our book "The Great Apes" you will find reference to the most important and extensive recent work, that of Tilney, "The brain from ape to man." You will find it of interest.

Our Florida station is nearing completion and we expect to have it equipped and ready for use not later than July 1st. Animals will then be installed both from our laboratories in New Haven and direct from Africa. I shall hope presently to be able to send you some pictures of the completed station.

Relative to your walled enclosure, I note the reported response of a baboon and I await with keen interest and eagerness further report on the trial of your barriers. Thus far we have attempted no such construction in Florida and naturally we hope to profit by your initial experiment and experience.

Our work of course is somewhat in abeyance at present because of the planning and construction of laboratories and the assembling of animals, but we hope during the coming year to be able to forge ahead with several types of investigation.

I await with eagerness the promised letter from your colleague and director, Dr. Voskrosenski, and I thank you most heartily herewith for the photographs of yourself and colleagues and of one of your orang-outans, which you kindly enclosed with your letter.

With warm regards,

Yours faithfully,

Robert M. Yerkes



## RABIES IN A CHIMPANZEE\*

The first reported case of rabies in a chimpanzee (*Pan troglodytes*) in the United States occurred in July 1972 in a young female that developed furious rabies while caged in a large commercial animal park near Atlanta.

The animal was one of a shipment of seven young chimpanzees that originated in Sierra Leone, Africa, on June 11, 1972. The animals arrived in Florida on June 13 via Amsterdam, The Netherlands, and Chicago, Illinois, and subsequently were shipped to the animal park in Georgia, arriving on June 29, 1972. In Florida and Georgia, the chimps were maintained in isolation cages that precluded contact with native animals.

On July 8, the infected chimpanzee's behavior became abnormally aggressive, and on July 9, it attacked an attendant who was attempting to feed it, inflicting a penetrating puncture wound on her left heel. Another attendant was scratched when he came to her aid. Both received first aid immediately, and the complete postexposure antirabies treatment was begun the next day, when the animal died and its brain was found positive for rabies.

Although direct microscopic examination (Sellers stain) of brain material from the animal was negative, both fluorescent antibody and mouse inoculation tests were positive at the Georgia State Virus Laboratory and at the Center for Disease Control.

The remaining animals in the shipment were subsequently transferred to CDC's special facilities for observation. None of the other animals developed rabies during the observation period. The infected chimpanzee was probably bitten by a rabid animal in Africa.

Although this is only the 16th laboratory confirmed case of rabies in a nonhuman primate on record in the United States, other cases have probably gone undiagnosed because nonhuman primates are not routinely examined for rabies. Since persons who handle nonhuman primates might thus be exposed to rabies or other zoonotic diseases, current animal importation regulations are being reviewed, and it is likely that more stringent regulations will be recommended.

Source: M. R. Miot, Chief, Virus Laboratories, and R. K. Sikes, D.V.M., Public Health Veterinarian, Georgia Department of Human Resources, and M. S. Silberman, D.V.M., Veterinary Consultant in Exotic Medicine and Feed Lot Practices, Reynolds, Ga.

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\*From *CDC Veterinary Public Health Notes*, September, 1972, prepared by the Veterinary Public Health Section of Epidemiology Program of the National Communicable Disease Center, Atlanta, Georgia.

## CHIMPANZEE-ASSOCIATED HEPATITIS\*

Between August 31 and September 21, 1972, two outbreaks of chimpanzee-associated hepatitis occurred in Houston, Texas. Each is summarized below.

*Outbreak 1:* Between August 31 and September 2, 1972, three employees of a Houston, Texas, zoo, a 29-year-old curator, a 55-year-old nursery supervisor, and a 25-year-old zoo keeper, became ill with a viral-like syndrome. By September 8, all three had fever, myalgia, headache, and severe nausea and were admitted to local hospitals.

Laboratory studies revealed marked elevation of SGOT, LDH, bilirubin, and alkaline phosphatase values; tests for the hepatitis-B antigen were negative in all three. All were diagnosed as having hepatitis-A.

Epidemiologic investigation revealed that a new 10-month-old chimpanzee had arrived at the zoo on August 3. The animal appeared well, except for a mild upper respiratory infection, and was placed in a quarantine cage in the zoo nursery. All three ill employees had direct or indirect contact with the chimpanzee in the month prior to onset of symptoms: the curator cared for the animal at his home for 2 days after its arrival in Houston, the nursery supervisor frequently exercised the animal at the zoo, and the zoo keeper, who had no direct contact, laundered the soiled blankets and diapers from the ape's cage.

Further investigation revealed that the chimpanzee had been captured in Sierra Leone, Africa, and was exported with six other chimpanzees to a dealer in Brandenton, Florida, on July 4, 1972. On approximately August 23, the dealer became ill with fever, lethargy, anorexia, and nausea. He consulted a private physician on September 2 and was diagnosed as having hepatitis-A.

Of the other six chimpanzees in the shipment, one died of a paralytic illness in Florida, and the other five were shipped to a private zoo in Laguna Hills, California. One of the five died of a diarrheal illness shortly after arrival at the zoo, but postmortem examination did not reveal any gross abnormality except a slightly enlarged liver. Of the other four chimpanzees, two had a transient illness characterized by lethargy. The chimpanzees were examined, and SGOT levels were within the normal range. To date no employees at the California zoo have been ill. All animal handlers were given pre-exposure immune serum globulin prophylaxis as required by California wild animal importation regulations.

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\*From *Morbidity and Mortality Weekly Report*, 1972, 21, 343, 348.  
(Prepared by Communicable Disease Center, U.S.P.H.S., Atlanta, Georgia.)

All employees at the Houston zoo who were in direct contact with the new chimpanzee or its feces were given immune serum globulin, and the ape was isolated in a quarantine cage pending investigation. An examination of other zoo employees who had a mild gastrointestinal illness failed to uncover any additional cases of hepatitis.

*Outbreak 2:* In mid-September 1972, a physician from Houston, Texas, and his 3-year-old niece and 12-year-old nephew from Lafayette, Louisiana, became ill with weakness, anorexia, nausea, and jaundice. Laboratory studies on the physician revealed marked elevation of SGOT, bilirubin, and alkaline phosphatase values. The niece and nephew had icto-test positive urine and elevated bilirubin values. The diagnosis for all patients was hepatitis-A.

Epidemiologic investigation revealed that the physician had about a 10-month-old chimpanzee from a breeding compound in Center Hill, Florida, on July 26, 1972. The animal was kept in a cyclone fence cage in the physician's yard but was often taken out to play. From August 12 to 13, the physician was visited by his relatives from Louisiana. While in Houston, the niece and nephew were in direct contact with the pet chimpanzee. The nephew helped clean the chimpanzee's cage and the niece was seen playing with the pet and then sucking her fingers.

Further investigation revealed that the chimpanzee was shipped with two others from Sierra Leone, Africa, to Florida. Of the other two chimpanzees, one is in a Jacksonville zoo, and one is at the Center Hill breeding compound. No illness in these two chimpanzees, and no human illness associated with them has been reported. (Reported by M. S. Dickerson, State Epidemiologist, Texas State Department of Health; F. Soifer, D.V.M., zoo veterinarian, Herman Park Zoo, Houston, Texas; A. G. Randall, M.D., Director, and R. A. MacLean, Director, Communicable Disease Division, City of Houston Health Department; Edmond V. Bayer, D.V.M., Veterinary Section, Ronald R. Roberto, M.D., Bureau of Communicable Disease Control, California State Department of Public Health; and an EIS Officer.)

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REQUEST FOR INFORMATION: CHEMISTRY AND HEMATOLOGY OF *MACACA*

Unpublished information on blood chemistry and hematology data on *Macaca* species is desired to enlarge our collection of normal values. Our autoanalyzer results are available on request.--Contact: D. E. Beischer, Ph.D., Biomedical Division, Naval Aerospace Medical Research Laboratory, Pensacola, Florida 32512. (Telephone: 904-452-2556)

## PRIMATE PARASITE REGISTRY

The National Institutes of Health recently approved the establishment of a Primate Parasite Registry at the California Primate Research Center, University of California, Davis, California 95616. The Registry will be under the direction of Mrs. MayBelle Chitwood, formerly at the Beltsville Parasite Laboratory, U.S. Department of Agriculture, Beltsville, Maryland, with Dr. Ming M. Wong, head of the Parasitology Unit of the Primate Center, as co-ordinator.

With the increased use of nonhuman primates in biological investigations and the greater concern for the welfare of these animals, the need for more attention to parasitological aspects has become apparent. The need for a centralized reference source from which basic information about parasites and parasitic diseases could be obtained seemed to be most logically and conveniently filled by the Center. One of the program interests of the Center has been to study primates *per se*, with emphasis placed on prevention and control of primate diseases. Many common diseases are those with a parasitological origin. The Center has been collecting parasitological material for the past three years and approximately 10,000 parasitological examinations have been performed on twelve species of primates. The collection and organization pertaining to all phases of primate parasites is continuing during this time. Collaborative studies have been established with parasitologists at the University of California campuses and other research institutions.

The functions of the Primate Parasite Registry are to: 1) serve as a national and international repository for primate parasitological materials so that a centralized reference collection will be available, 2) build up sets of parasitological materials and a serum bank for research and training programs, 3) develop such material for special research projects of individual investigators, and to compile basic reference literature relating to classification of parasites and parasite-host checklist, 4) provide consultation and identification service on taxonomic problems related to primate parasitology, and 5) provide short courses and workshops.

It is not intended that the Registry provide routine diagnostic service; however, when fully functioning, it will be a valuable reference center for all investigators involved with primate parasites.

Requests for identification of specimens will be handled as time will allow, but large collections will not be worked up for individuals. Where a conflict of opinion on normal efforts to classify has failed, where possible, consultation will be provided.

It would be appreciated if those interested in sending in material to be identified would please contact Mrs. Chitwood to ascertain if such assistance could be made available.

## KNOWN AGE PRIMATES WANTED

The Department of Anthropology, University of Maryland, desires known age bone samples (midshaft-long bones), skeletons, and whole cadavers of the following primates for purposes of the study of microscopic age changes in bone: chimpanzees (all subspecies and pygmy), baboons (all species), rhesus monkey, and gibbons (all subspecies and siamang).--Please contact: Dr. S. I. Rosen, Dept. of Anthropology, University of Maryland, College Park, Maryland 20742. (Telephone: 301-454-4155)

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## REQUEST FOR PRIMATE CADAVERS

A small number of relatively complete, uncontaminated primate cadavers needed for comparative anatomical studies. Will pay shipping and moderate handling costs for juvenile or adult specimens of any of the following genera: Alouatta, Ateles, Erythrocebus, Galago, Hylobates, Lagothrix, Pan, Papio, Presbytis.--Contact: Jonathan Friedlaender, Department of Anthropology, Harvard University, Cambridge Mass. 02138. (Telephone: 617-495-2227)

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## FACILITIES AND SERVICES OF NATAL INSTITUTE OF IMMUNOLOGY AVAILABLE

The Fourth International Congress of Primatologists has issued an appeal for the conservation of primates and the Natal Institute of Immunology wishes to support this aim by making the facilities of its primate colony available to other groups of workers. This has the additional advantage of saving the expense and trouble of arranging transport and quarantine.

The Institute, a non-profit research organization in Durban, South Africa, has a colony of baboons (*Papio ursinus*) and vervet monkeys (*Cercopithecus pygerythrus*). It has collaborated with centers in America and Europe, particularly in projects where the center produces an antigen and sends it to the primate colony where it is used to immunize animals. The antiserum is collected and sent back to the center concerned. The cost is negotiated but is of the order of U.S. \$50 per baboon. For vervet monkeys the cost is even lower.

This facility could be extended to other types of project while some people may be interested in working in Durban during their sabbatical leave. Inquiries will be welcomed and should be directed to: Dr. H. J. Downing, Head; Animal Colony, Natal Institute of Immunology, P.O. Box 2356, Durban, South Africa.

## TISSUE SHARING SUGGESTED

The critical situation which exists regarding the conservation of primates as described in the articles, "New Primate Exchange Service" and "Recycling of Primates," in the October, 1972, *Laboratory Primate Newsletter* (pp. 3-4), encourages me to write about the possibility of sharing tissues between laboratories. At the Galesburg State Research Hospital we have already had considerable success in obtaining monkey brain tissue for our studies in relation to studies carried on by other groups. In one case animals were actually brought to our laboratory and sacrificed; in another we sent a team to Wisconsin to sample the brains at the time the animals were sacrificed; and in still a third case homogenates of brain tissue were shipped to us frozen in dry ice. The cost of primates, the expense of their maintenance, as well as their shortage renders such cooperative effort of great importance. Although I have now moved to the Nebraska Psychiatric Institute, I hope that once the biochemical laboratory has been expanded we will be able to maintain a similar type of cooperation with the users of primates for other purposes. I would appreciate letters or comments from anyone interested.--Williamina A. Himwich, Ph.D., Research Professor of Psychiatry, Professor of Biochemistry, Nebraska Psychiatric Institute, 602 South 44th Avenue, Omaha, Nebraska 68105.

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## REQUEST FOR PITUITARY GLANDS

Anterior pituitary glands from nonhuman primates needed for histochemical and immunohistochemical studies. Adenohypophyses from any species will be useful but those of New World monkeys are of particular interest. Information on the approximate age, sex, reproductive status and treatment of the animals is desirable. The glands should be fixed in Bouins Hollande sublimate for a period of at least 12, but not more than 24 hours. The composition of the sublimate should be as follows: Solution A: Copper acetate 2.5 g; picric acid cryst. 4.0 g; formalin (10.0 ml 40% formaldehyde); dist. water, 100 ml. Solution B: Saturated  $HgCl_2$  in dist. water. Before use, combine 9 parts A with 1 part B. The fixed tissues should then be placed in 70% ethanol and can be mailed in the ethanol. Small adenohypophyses (weighing 10 mg or less) can be fixed whole. Larger glands should be hemisected before fixation.--Dr. Charles S. Nicoll, Department of Physiology-Anatomy, University of California, Berkeley, California 94720.

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## ADULT FEMALE CHIMPANZEES WANTED

I wish to purchase several healthy, intact adult female chimpanzees for reproductive physiology studies. Please send details of available animals to: Dr. Charles Graham, Yerkes Primate Research Center, Emory University, Atlanta, Georgia 30322.

## INTERNATIONAL PRIMATOLOGICAL SOCIETY NOTES

New Officers of the Society were elected for the 1973-77 term at The Fourth International Congress of Primatology which met in Portland, Oregon, August, 1972. The new officers are:

President: Dr. Hans Kummer, University of Zurich, Zurich,  
Switzerland  
Vice President: Dr. Kinji Imanishi, Gifu University, Kyoto,  
Japan  
Vice President: Dr. Richard W. Thorington, Jr., Smithsonian  
Institution, Washington, D. C.  
Secretary General: Dr. Geoffrey H. Bourne, Yerkes Regional  
Primate Research Center, Atlanta, Georgia  
Treasurer: Dr. Rolf Schneider, Institute of Anatomy of the  
University, Frankfurt, West Germany  
Western Hem. Secy.: Dr. Duane M. Rumbaugh, Georgia State  
University, Atlanta, Georgia  
Secretary for Europe: Dr. Holger Preuschoft, Ruhr-Universität,  
West Germany  
Secretary for Asia: Dr. Shiro Kondo, Primate Research Institute,  
Inuyama City, Japan

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### MONKEYS NEEDED FOR STOCKING MONKEY ISLAND

For sometime now the Anthropology Field Program here at Edison has been conducting research in primate behavior. Since last May this has consisted of observations taken on a colony of free-roaming chimpanzees living on an island maintained by Lion Country Safari near West Palm Beach. Our procedure was to take behavioral definitions from van Lawick-Goodall and Reynolds, categorize them into behavioral complexes, and plot them on time interval grid sheets. This allows us to analyze both patterns and frequencies. Now it appears that we may be able to construct from one to three islands here on our campus. The main island will be just under four acres in size and will be surrounded by a 20-ft wide, water-filled moat. If the smaller islands are built, they will be approximately one-half acre each. The purpose of the island would be to establish a colony of monkeys, on a semi-wild basis, for long-range behavioral research. While our students would be the principal users of the facility, it would be open to persons from other colleges and universities. Also, our data and reports would similarly be available (a report on our research at Lion Country is reaching final draft and we hope to have it published). The main problem facing us is locating a colony of monkeys that we could acquire for only the cost of shipment. We are interested in any type of monkey that would be restricted by the moat described. Naturally, as population increases overcrowd the island, we would make those animals available on the same basis. The island will be ready for habitation in September, 1973. Any assistance would be greatly appreciated.--Contact: Prof. G. E. Huggins, Social Sciences Division, Edison Community College, Fort Myers, Florida 33901. (Telephone: 813-481-2121)

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

BOOKS

*Gibbon and siamang*: Vol. 1. *Evolution, ecology, behavior and captive maintenance*. D. M. Rumbaugh (Ed.). Basel: Karger, 1972. [Price: \$37.80]

This is the first volume of a series on the lesser apes. The purpose of this volume is to provide a broad introductory view of the lesser apes. Studies of the systematics, phylogeny, and karyotypes of gibbons and siamangs are reviewed and discussed by Colin P. Groves and by Brunetto Chiarelli. The results of field studies in the Malay Peninsula are reported by David J. Chivers. The specialized suspensory and brachiating behaviors of gibbons and siamangs are anatomically and functionally analyzed by Russell Tuttle. Problems encountered in the captive maintenance of gibbons and siamangs, along with a discussion of their diseases, treatment, and nutritional needs, are discussed by Michale E. Keeling and Harold M. McClure. The difficulties and frustrations commonly experienced by those who have attempted to maintain gibbons as domestic pets are described by Emily Hahn.

*Breeding primates*. W. I. B. Beveridge (Ed.). Basel: Karger, 1972. [Price: \$17.95]

The proceedings of the International Symposium on Breeding Non-Human Primates for Laboratory Use, Berne, 1971. Contents: Problems and opportunities of breeding primates, L. H. Schmidt. *Apes*: Breeding chimpanzees and other apes, G. H. Bourne; Experience with breeding apes in Basle Zoo, E. M. Lang; The chimpanzee breeding unit at the Primate Centre TNO, The Netherlands, C. Goosen. *Baboons*: Breeding baboons for laboratory use, D. C. Kraemer & N. C. Vera Cruz; Some problems of breeding baboons under laboratory conditions, I. A. Beattie; The rearing of a premature baboon, Hanna Chorazyna. *Macaques*: The development and management of macaque breeding programs, L. J. Neurauter & W. J. Goodwin; Breeding colonies of macaques and gibbons on Santiago Island, Puerto Rico, C. R. Carpenter; Breeding macaques at the Primate Centre TNO,

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\*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.



The Netherlands, C. Goosen; Experience with a breeding colony of stump-tailed macaques for teratological testing, H. Weber & J. Grauwiler; Studies on reproduction in the stump-tailed macaque, V. G. Stenger; The development of a rhesus breeding colony in India, J. H. Vickers; A proposed primate centre in India for research in reproduction, Shanta S. Rao, Safia R. Munshi, & B. A. Gadgil; Estimated cost of breeding macaques in Singapore, Annie B. Elliott. *Guenons*: Breeding captive guenons and mangabeys in East Africa, N. R. Chalmers. *New World monkeys*: Breeding New World monkeys in a laboratory environment, K. C. Hayes, G. Fay, A. Roach, & F. J. Stare; Reproduction of squirrel monkeys in the laboratory, L. A. Rosenblum; Free range breeding of squirrel monkeys on Santa Sofia Island Colombia, Trudie Jerkins; Concluding remarks on breeding, W. I. B. Beveridge. *Research in reproduction*: Experimental control of reproduction in primates, C. R. Austin; Research on reproduction at the New England Regional Primate Research Center, B. F. Trum; Menstrual cyclicity and luteal function in baboons with intra-uterine devices, P. Eckstein, W. G. Breed, Judith N. Stephenson, & P. V. Peplow; Breeding and hand-rearing marmosets for viral oncogenesis studies, L. G. Wolfe, J. D. Ogden, J. B. Deinhardt, L. Fisher, & F. Deinhardt; Further observations on an established marmoset breeding colony, W. R. Kingston; A laboratory breeding colony of the lesser mouse lemur, R. D. Martin. *General comments on breeding*: Comments on breeding simians for research needs in Britain, K. R. Hobbs.

*Chimpanzee: Immunological specificities of blood.* E. I. Goldsmith & J. Moor-Jankowski (Eds.). Basel: Karger, 1972. (*Primates in Medicine*, Vol. 6) [Price: \$16.55]

Contents: Immunological studies on chimpanzee plasma proteins, R. T. Damian & E. A. Lichter; Leukocyte antigens of primates, M. E. Dorf & Judith A. Haber; Blood groups of chimpanzees, A. S. Wiener & J. Moor-Jankowski.

*Transplantation in primates.* G. P. Murphy (Ed.). Basel: Karger, 1972. (*Primates in Medicine*, Vol. 7) [Price: \$16.55]

Contents: The use of antilymphocyte serum in subhuman primates. Possibilities and complications, H. Dersjant & H. Balner; Bacteriological and virological considerations in primate transplants, H. D. Brede & G. P. Murphy; The erythrocyte blood group systems. Grouping, matching and role in transplantation, E. Cohen; Baboon allotransplantation, G. P. Murphy & H. D. Brede; Kidney preservation in baboons, H. W. Weber & G. P. Murphy; Primate liver transplantation, J. G. Fortner & Man H. Shiu; The role of the primate in hepatic transplantation, D. Sampson; Morpholog-

ic characteristics of rejection of the baboon lung allograft, W. R. Anderson, T. F. Coulon, T. M. Kiesel, W. D. Kelly, C. R. Hitchcock, & J. J. Haglin; Primate endocrine tissue transplantation, F. K. Merkel & J. J. Bergan; Heterotransplantation: past and future, K. Reemtsma; Preservation of red cells from the subhuman primates. Chimpanzees and baboons, A. W. Rowe, J. H. Davis, & J. Moor-Jankowski; Heart transplantation in primates, P. M. Barnard & J. J. Heydenrych.

*Complex behavior of the apes.* A. I. Schastnyi. Leningrad: Izdatel'stvo "Nauka", 1972. [In Russian]

Contents: Introduction; Review of physiological literature on the behavior of apes. The description of animals under observation; Dynamics of the formation of complex forms of behavior in apes (chimpanzee); The role of acquired inhibition (differentiation) in the process of formation of the behavior of the apes (chimpanzee); The using of acquired experience by apes in the process of formation of complex forms of behavior; The study of acquired signalling activity directed by chimpanzee to experimenter; The study of the means of interaction between apes, acquired in group experiment; The development of the constructive activity of chimpanzees; Nervous mechanisms "voluntary" forms of behavior in apes (chimpanzee); Physiological principles of "voluntary" forms of complex behavior in apes (chimpanzees); Conclusion; Supplement; References.

*Anthropoid memory.* L. A. Firsov. Leningrad: Izdatel'stvo "Nauka", 1972. [In Russian]

Contents: Introduction; The study of higher nervous activity in apes in the Soviet Union; Principal characteristics of higher nervous activity in apes; Higher nervous activity and sexual hormones; Imitation activity of apes; Trace conditioned reflexes; Physiological regularities of delayed reactions; The study of the present and delayed choice according to the signal identity in primates; Conclusion; Appendix--From our experience in maintaining apes in laboratory conditions; References; Summary.

## DISEASE

Validité de l'épreuve tuberculinique dans la prophylaxie de la tuberculose chez les primates. Milhaud, C., Bodin, G., Breteau, J., Coletsos, P. J., Klein, M., & Poussot, A. (Centre de Recherches de Médecine Aéronautique, 5 bis, avenue de la Porte de Sèvres, F 75, Paris 15, France) *Expérimentation Animale*, 1972, 5, 117-122.

The occurrence of a tuberculosis epizootic in two colonies of macaques raises the question of the validity of the tuberculin test. Evidence of the inadequacy of

the test is revealed by the following: out of 12 monkeys with tuberculosis, 2 have shown a frankly positive reaction, 1 an inconspicuous reaction and 9 no reaction whatsoever. This relative failure can be attributed to three causes: lack of standardization of the test, polyphasic progress of tuberculin allergy in macaques, inadequate chemoprophylaxis by isoniazid. It is suggested that various diagnostic methods such as radiography, bacterioscopy, sedimentation rate determination etc., should be used in conjunction, and, if possible, either a permanent, isoniazid induced, chemoprophylaxis, or a BCG vaccination be obtained.

Viral infections of the Kenya baboon (*Papio cynocephalus*) in its natural habitat. Rodriguez, A. R., Kalter, S. S., Helmke, R. J., & Heberling, R. L. (Div. Microbiol. & Inf. Dis., Southwest Found. Res. & Educ., P.O. Box 28147, San Antonio, Texas 78284) *Primates*, 1972, 13, 141-148.

Stools, rectal swabs, throat swabs, and tissues were collected from 508 baboons (*Papio cynocephalus*) in 17 areas of Kenya and Tanzania during 5 field trips between 1961 and 1968. A total of 11 isolations were made: nine agents were recovered from 508 fecal samples and 2 from 468 throat swabs. These isolates were identified as adenovirus serotypes AA153, SA7, SV15 and SV23. SV23 was found only in throat swabs and never from fecal material while AA153, SA7 and SV15 were recovered only from fecal material. One rectal specimen produced 2 serotypes, SV15 and SA7. No isolates were recovered from necropsy samples from 19 animals.

Tuberculosis in a pig-tailed macaque. Lau, D. T., Fuller, J. M., & Sumner, P. E. (Animal Care Facility, U. Cal. Med. Cen., San Francisco, Calif. 94122) *Journal of the American Veterinary Medical Association*, 1972, 161, 696-699.

Tuberculosis was diagnosed in a pig-tailed macaque (*Macaca nemestrina*). At necropsy, all mediastinal and tracheobronchial lymph nodes were generally involved. Areas of abscessation were in the lungs, spleen, and liver. Microscopic examination of those organs revealed multiple granulomas in various stages of development. Acid-fast organisms were cultured from the mediastinal lymph nodes, lungs, and spleen.

Heatstroke in a colony of squirrel monkeys. Hickey, T. E., & Kelly, W. A. (Dept. Pathol. & Toxicol., Mead Johnson Res. Cen., Evansville, Ind. 47721) *Journal of the American Veterinary Medical Association*, 1972, 161, 700-702.

An episode of heatstroke in a colony of squirrel monkeys (*Saimiri sciureus*) was characterized by abnormal behavior, weakness, ataxia, emesis, diarrhea, and dyspnea. Four monkeys died, and pathologic evaluations revealed generalized circulatory disturbances similar to those recorded in cases of human heatstroke.

*Sarcocystis* in a patas monkey. Pucak, G. J., & Johnson, D. K. (Exp. Surg. & Clin. Med. Sec., Vet. Resources Branch, Div. Res. Serv., Nat. Inst. Health, Bethesda, Md. 20014) *Laboratory Animal Digest*, 1972, 8 [2], 36-39.

Cysts of *Sarcocystis* were found in heart, esophagus, and diaphragm of a 12 kg. adult male patas monkey (*Erythrocebus patas*) during routine histologic examination. The monkey had been maintained in the laboratory for 3 years as an untreated control. Although these zoites were smaller than zoites from other host species, they were similar in size to those found in *Macaca mulatta*. The cysts were confined to a single muscle fiber and no inflammatory response was evident.

#### PHYSIOLOGY AND BEHAVIOR

Infant monkeys--a model for crib death. French, J. W., Morgan, B. C., & Guntheroth, W. G. (Dept. Pediatrics, U. Wash. Sch. Med., Seattle, Wash. 98195) *American Journal of Diseases of Children*, 1972, 123, 480-484.

Recent reports suggest that sudden infant death syndrome (SIDS) may be related to an inappropriate diving reflex or obligate nose breathing. Immersion of the neonatal monkey's face in cold (14 C) water, or nasal occlusion resulted in apnea which is occasionally persistent, bradycardia, and relative hypertension. In the same monkeys at an older age, apnea never persisted after removal of the diving stimulus, and there was no obligate nose breathing. The study documents a dive reflex and obligate nose breathing and concludes that the infant monkey is a suitable model for the study of SIDS. We suggest, however, that the fatal factor in crib death may be the failure to interrupt apnea however the apnea was initiated. The failure to resume respiration may represent an inappropriate return to the apneic state of the fetus.

Normal serum biochemical values of *Cercopithecus aethiops*, *Cercocebus atys*, and *Presbytis entellus*. Altshuler, H. L., & Stowell, R. E. (Nat. Cen. Primate Biol., U. Calif., Davis, Calif. 95616) *Laboratory Animal Science*, 1972, 22, 692-704.

Sera from *Cercopithecus aethiops*, *Cercocebus atys*, and *Presbytis entellus* were studied to establish normal baseline values for 22 chemical constituents. The animal populations studied were carefully selected to include only mature, healthy animals. Highly significant differences in the normal values were found when the different species and when males and females of the same species were compared. The frequency distribution curves of the animal populations were found to be non-Gaussian. The

implications of these findings were compared to recent studies of large human populations and similar baseline studies on other simian species, and the differences were briefly discussed.

Age of sexual maturity in the stump-tailed macaque (*Macaca arctoides*): A birth from laboratory born parents. Trollope, J., & Blurton Jones, N. G. (Dept. Growth & Develop., Inst. Child Hlth, U. London, 30 Guilford St., London, England WC1N 1EH) *Primates*, 1972, 13, 229-230.

Data are given for sexual maturation in a male (fertile mating at 3.25 years post-natal) and female (fertile mating at 3.0 years post-natal) *M. arctoides*. Comparisons with data for *M. mulatta* and *M. fuscata* suggest that these ages are unusually early for macaques.

## DRUGS

Repeated general anaesthesia in macaques by intramuscular methohexitone sodium. Wallace, J., Johnson, N. W., & Kenney, E. B. (Dental Sch., London Hosp. Med. College, Turner St., London, E1 2AD, England) *Laboratory Animals*, 1972, 6, 61-66.

Intramuscular methohexitone sodium as a short-acting general anaesthetic for oral procedures in macaques resulted in no significant weight loss or detectable systemic side effect in any animal during a period of 52 days continuous daily use. Histological examination of injection sites revealed no significant tissue damage.

A comparison of halothane and methoxyflurane anesthesia in three species of nonhuman primates. Hughes, H. C., Jr., & Lang, C. M. (Dept. Comp. Med., Coll. Med., Milton S. Hershey Med. Cen., Pennsylvania State U., Hershey, Pa. 17033) *Laboratory Animal Science*, 1972, 22, 664-667.

The rates of induction, maintenance concentrations, and recovery times were measured in *Cebus albifrons*, *Macaca arctoides*, and *M. mulatta* anesthetized with halothane and methoxyflurane. With halothane, no significant differences among the 3 species were observed in any of these variables. With methoxyflurane, there were significant differences in all 3 variables. In all species, both induction and recovery times were significantly shorter with halothane.

Clinical evaluation of tiletamine as an anesthetic in six nonhuman primate species. Bree, M. M. (Unit Lab. Animal Med., U. Mich. Med. Sch., Ann Arbor, Mich. 48104) *Journal of the American Veterinary Medical Association*, 1972, 161, 693-695.

Tiletamine was investigated for use as an anesthetic in 6 nonhuman primate species, using a total of 165 animals.

After intramuscular (I.M.) injection of tiletamine (3 to 4 or 5 to 6 mg/kg of body weight), induction of anesthesia occurred smoothly and without excitement in 1 to 3 min. Mean sleeping time varied significantly among most of the 6 species given 3 to 4 mg/kg: 37 min. in 12 *Macaca fascicularis*; 38 min. in 6 *Erythrocebus patas*; 49 min. in 82 *M. mulatta*; 51 min. in 4 *Papio anubis*; 56 min. in 32 *M. actoides*; and 60 min. in 9 *M. nemestrina*. When 5 to 6 mg/kg was administered, the mean sleeping times for 17 *M. mulatta* and 3 *M. nemestrina* were 72 min. and 83 min., respectively. Procedures performed under anesthesia included testing for tuberculosis, tattooing, withdrawal of blood by arterial or venous puncture, tissue biopsy, electrocardiographic recordings, and cardiac transplantation. In all instances, recovery from anesthesia was smooth and uncomplicated.

#### FACILITIES AND CARE

Organisation et maintenance d'une petite unite de chimpanzés destinée à des recherches neuropsychophysiologiques.

I. Principes généraux. Locaux. Matériel. Milhaud, C., Klein, M., & Mahouy, G. (Centre de Recherches de Médecine Aéronautique, 5 bis, avenue de la Porte de Sèvres, F 75, Paris 15, France) *Expérimentation Animale* 1972, 5, 41-61.

The carrying out of a research program in the field of neuropsychophysiology has required the installation, within an existing laboratory, of a small animal unit designed to accommodate and allow research on about ten chimpanzees. In this first paper, some of the various problems encountered are presented: general organization, adaptation and air conditioning of the rooms, design of fittings and mobile equipment. This unit must be suited to the physical and behavioral characteristics of the chimpanzee.

Organisation et maintenance d'une petite colonie de chimpanzés destinée à des recherches neuropsychophysiologiques.

II. Problèmes relatifs au personnel. Alimentation. Pathologie. Conclusion générale. Milhaud, C., Klein, M., & Mahouy, G. (Centre de Recherches de Médecine Aéronautique, 5 bis, avenue de la Porte de Sèvres, F 75, Paris 15, France) *Expérimentation Animale*, 1972, 5, 97-115.

This paper, complementing a previous work, deals with the problems related to the feed requirements and pathology of a small colony of chimpanzees, together with the problems posed by the personnel required for its management. Feeding is approached from a practical viewpoint, taking into consideration the basic data of the diet of chimpanzees. The pathological problems emphasize the importance of the notion of risk and its corollary, namely prophylaxis. The qualifications of animal keepers is particularly emphasized with

regard to the personnel problems. Finally, the general conclusion concerns the choice of the chimpanzee as a laboratory animal.

#### ECOLOGY AND FIELD STUDIES

Ecology and behavior of the wild proboscis monkey, *Nasalis larvatus* (Wurmb), in Sabah, Malaysia. Kawabe, M., & Mano, T. (Dept. Biology, Faculty of Science, Osaka City U., Sugimoto-cho, Osaka, Japan) *Primates*, 1972, 13, 213-228.

Proboscis monkeys, *Nasalis larvatus* (Wurmb), were investigated in the Padas Bay and Kinabatangan River areas, Sabah, from July 1968 to March 1969. The proboscis monkey is a common, widely distributed species of coloboids in Sabah, living in the various vegetations that extend from the coastal swamp to the inland plain. It appears to have a terrestrial tendency, compared with other coloboids, moving around on the ground in the forest and extending its activity, sometimes, to the open land along the river beach. The number of monkeys in a troop ranged from 11 to 32, and almost all troops were composed of several adult males, many more adult females, and immature animals. The adult males appear to play the role of leaders in the troop through their characteristic behavior, attacking, threatening, warning, watching, etc., other troop members or invaders. Each troop always emitted various boisterous vocalizations which were divided into 14 types.

#### PROCUREMENT

Quarantine, conditioning, and production of nonhuman primates for scientific use in the country of origin. Clarkson, T. B. (Lab. Animal Med., Bowman Gray Sch. Med., Wake Forest U., Winston-Salem, N. C.) *Pan American Health Organization Scientific Publication*, 1972, 235, 33-38.

In summary, the methods for quarantining and conditioning nonhuman primates in their country of origin are not as effective as seems necessary to best serve the interests of either the scientific community (users) or the country of origin concerned about the primate populations as a natural resource. The controlled production of nonhuman primates for scientific use in the country of origin is virtually nonexistent. A program of international cooperation has been proposed to provide technical experts to assist exporters of primates in developing methods for primate procurement, quarantine, conditioning, and production.

## INSTRUMENTS AND TECHNIQUES

A monkey-proof drinking device for metabolism studies. Milton, G. C. (Dept. Gynecology, Vincent Res. Lab., Massachusetts General Hosp., 32 Fruit St., Boston, Mass. 02114) *Laboratory Animal Science*, 1972, 22, 743-745.

A drinking device was developed for preventing primates from toying with the water dispenser and thus diluting urine collected in the metabolism pan. Should the animals cause leakage of drinking water by shaking the cage, the device will prevent the dilution of urine with unknown quantities of drinking water.

A device to simplify the rectal probe electro-ejaculation technic for rhesus monkeys. Wagstaff, P. A. (ORTHO Res. Found., Raritan, N. J. 08869) *Laboratory Animal Science*, 1972, 22, 748-749.

An inexpensive and easily-constructed device was developed to stabilize the probe in the rectum and thereby simplify the electroejaculation method for rhesus monkeys by requiring that only one individual be present to perform the procedure. The device consists of a wooden yoke which fastens to a canvas sling by a detachable hook and spring arrangement. The probe, connected to the yoke, can be inserted into the rectum and maintained in a fixed position without the need for manual manipulation during the electroejaculation procedure.

Technique to shorten canine teeth in young rhesus monkeys. Vargervik, K., Harvold, E. P., & Chierici, G. (Sec. Orofacial Anomalies, U. Calif., San Francisco, Calif. 94122) *Journal of the American Veterinary Medical Association*, 1972, 161, 707-709.

A cutting and pulpotomy technique was used to shorten canine teeth in rhesus monkeys, thus reducing the danger associated with their handling. The canine teeth are cut at a distance of 1 to 2 mm from the gingiva with a carbondum disk in an electric hand drill. A cavity is prepared and filled with amalgam.



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