LABORATORY PRIMATE NEWSLETTER

Volume 10, Number 4

October, 1971

Edited by

Allan M. Schrier

Consulting Editor: Morris L. Povar

Psychology Department
Brown University
Providence, Rhode Island

CONTENTS ISSUE: VOLUMES 9-10

CONTENTS

CHECK-LIST OF PRIMATE HYBRIDS

B. Chiarelli

Istituto di Antropologia, Torino

An up-to-date check-list of nonhuman primate hybrids would have some important implications in the areas of taxonomy and phylogeny. A list of this nature could, moreover, provide valuable information for further research into the comparative genetics of primates.

About ten years ago a check-list of data on primate hybrids was published (Chiarelli, 1961). Table 1 is a preliminary revised list including more recent data. The table shows the species hybridized, the vitality (survival period) and fertility of the hybrids, the number of hybrids of each type, the location of the hybrid births, the birth-date of the first reported hybrid of a type, and the source of the information. Each species of female listed mated with the last listed species of male.

New data and corrections are kindly requested. Please contact: Prof. B. Chiarelli, Istituto di Antropologia, via Accademia Albertina, 17, 10123 Torino, Italy, or Miss R. Daniel, Cytogenetic Laboratory, Dept. of Anthropology (Sidney Smith Bldg.), University of Toronto, Toronto 5, Ontario, Canada.

Table 1

Nonhuman Primate Hybrids

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
PROSIMII						
Lemuridae						
Lemur macaco (m) *Lemur fulvus* (f)	normal	m f	>1	Buffalo, Edinburgh, Hamburgh, London		Appleby (1953, cited by Gray, 1954); Heck (1929); Montagu (1950); Knottnerus-Meyer (1904); Przibram (1910); Perkins (1939); Zuckerman (1932)
Lemur mongoz (f)	normal		>1			Hill (1952-53, cited by Gray 1954); Montagu (1950); Zuckerman (1932); Cahill (pers. communication)
Lemur fulvus (m) *Lemur macaco* (f)	normal	m m	>1	Buffalo, Edinburgh		Appleby (1953); Heck (1929); Montagu (1950); Perkins (1939); Zuckerman (1932); Prizbram (1950)
Lemur mongoz (f)			1	London	1909	Heck (1929); Hill (1952-53, cited by Gray, 1954); Zuckerman (1932)
Lemur mongoz (m) *Lemur macaco* (f)	normal		>1	London		Hill (1952-53, cited by Gray, 1954); Montagu (1950); Zuckerman (1932)
Lemur fulvus (f)			1	London		Heck (1929); Hill (1952-53, cited by Gray, 1954); Zuckerman (1932)

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
ANTHROPOIDEA						
Cebidae						
Cebus albifrons (m) *Cebus apella* (f)	normal	m	1			Zuckerman (1933)
Cebus apella (m) *Cebus capucinus* (f)	normal	m m	>1	Rome		Bronzini (pers. communication, 1949)
Cebus albrifons (f)				Rome		Bronzini (pers. communication, 1949)
Cebus nigrivitattatus (m) *Cebus albrifons* (f)				Yerkes		Bernstein (pers. communication, 1970)
Callithrix jacchus (m) *Callithrix agentata* (f)	normal		>1			English (1932); Zuckerman (1933)
Callithrix penicillata (f)	normal	twins		London	1952	Hill (pers. communication)
Saguinus mystax (m) *Saguinus imperator* (f)	embryos		>1	Parà		Lima E. da Crux (1945)
Saguinus midas (m) *Saguinus bicolor* (f)				Colonia	1959	The International Zoo Yearbook
Cercopithecoidea						
Macaca sylvana (m) *Cercocebus* sp. (f)		m	1			Craft (1938)
Macaca arctoides (m) *Macaca mulatta* (f)	normal		>1	Schönbrunn		Antonius (1951)
Macaca radiata (m) *Macaca radiata* (f)			1	London		(Pers. communication)

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
Macaca fascicularis (f)	normal	m f	>1	London		Flower (1929); Knottnerus-Meyer (1904); Montagu (1950); Niemayer (1868); Pocock (1906); Przibram (1910); Rorig (1903); Yerkes (1915); Zuckerman (1931, 1932, 1933)
Macaca silenus (m) *Macaca nemestrina* (f)	normal-F	m f	>1	Frankfurt, Yerkes		Steinbacker (1941); Montagu (1950); Zukowsky (1952); Bernstein (pers. communication, 1970)
Macaca nemestrina (m) *Macaca mulatta* (f)			>1	London, Schönbrunn		Antonius (1951)
Cynopithecus niger (f)		m f	>1	Yerkes		Bernstein (pers. communication, 1970)
Macaca silenus (f)	normal-F	m f	>1	Frankfurt		Steinbacker (1941); Montagu (1950); Zukowsky (1952)
Macaca fascicularis (f)	normal	m f	>1	London, Hanover		Flower (1929); Knottnerus-Meyer (1904); Montagu (1950); Niemayer (1868, cited by Gray, 1954); Pocock (1906); Przibram (1910); Rorig (1903); Yerkes (1915); Zuckerman (1931, 1932, 1933)
Macaca maura (f)	normal		1	Caturato, Sumatra		Schwarz (1934)
Mandrillus leucophaeus (f)	2 days		1	Hanover		Knottnerus-Meyer (1904); Przibram (1910); Zuckerman (1933)
Papio ursinus (f)			>1			Blyth (1863); Mollika (1863); Zuckerman (1931, 1932, 1933)

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
Papio hamadryas (f)	4 days	f	1	Rome	1940	Mangili (pers. communication)
Macaca radiata (m)						
Macaca mulatta (f)	normal	m	1	Lipsia		Flower (1929); Landois (1896); Zuckerman (1931, 1932, 1933)
Macaca sinica (f)	normal	f	1			Flower (1929); Hill (1937)
Macaca fascicularis (f)	normal	f	1			Fitzinger (1864); Przibram (1910); Rorig (1903); Zuckerman (1933)
Cercopithecus aethiops (f)						Gunning (1910); Zuckerman (1933)
Macaca sinica (m)						
Cercopithecus aethiops (f)	normal	m	1	Pretoria		Gunning (1910); Przibram (1910)
Macaca fascicularis (m)						
Macaca mulatta (f)	normal	m f	>1	Hanover		Flower (1929); Knottnerus-Meyer (1904); Montagu (1950); Niemayer (1868, cited by Gray, 1954); Pocock (1906); Przibram (1910); Rorig (1903); Yerkes (1915); Zuckerman (1931, 1932, 1933)
Macaca nemestrina (f)	4 months	m				Flower (1929); Gentry (1872, cited by Gray, 1954); Montagu (1950); Pocock (1906); Zuckerman (1931, 1932, 1933)
Cynopithecus niger (f)	7 hours	f	1			Montagu (1950)
Mandrillus sphinx (f)	normal		>1	London *et al.*	1878	Flower (1929); Sclater (1878); Zuckerman (1931, 1932, 1933, 1953)
Mandrillus leucophaeus (f)	2 hours	m	1	Hanover		Knottnerus-Meyer (1904); Zuckerman (1933)

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
Papio cynocephalus (f)			>1			Ackerman (1898); Przibram (1910); Schoepff (1871); Zuckerman (1923, cited by Gray, 1954)
Cercocebus torquatus (f)	3 months		>1		1872	Montagu (1950); Schlater (1878); Zuckerman (1933, 1953)
Macaca mulatta (m) *Macaca fascicularis* (f)				Varsavia	1959	The International Zoo Yearbook
Macaca nemestrina (f)		f	1	Yerkes		Bernstein (pers. communication, 1970)
Macaca fascicularis (m) *Macaca nemestrina* (f)		f m	>1	Yerkes		Bernstein (pers. communication, 1970)
Macaca maura (m) *Cynopithecus niger* (f)		m	1	Yerkes		Bernstein (pers. communication, 1970)
Cynopithecus niger (m) *Macaca maura* (f)			1	Yerkes		Bernstein (pers. communication, 1970)
Mandrillus leucophaeus (m) *Mandrillus sphinx* (f)		f	>1	Prague	1950?	Cuninko (pers. communication)
Papio hamadryas (f)	normal	f	1	Monaco		Rohr (pers. communication)
Cercocebus torquatus (f)	1 hour		1	Edinburgh		Hill (pers. communication)
Papio ursinus (m) *Papio papio* (f)			>1	Münster		Landois (1896)
Papio cynocephalus (m) *Papio papio* (f)	1 hour		1			Montagu (1950)

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
Macaca fascicularis (f)			>1			Ackerman (1898); Przibram (1910); Schoepff (1871); Zuckerman (1933)
Papio doguera (m)						
Papio papio (f)	1 hour		1	London		(Pers. communication)
Papio sphinx (f)	normal	m	1	Lipsia	1954	Zukowsky (pers. communication)
Papio hamadryas (f)	normal	m f	>1	Lipsia, London		Zukowsky (pers. communication)
Papio papio (m)						
Papio hamadryas (f)	1 hour		1	London		(Pers. communication)
Papio hamadryas (m)						
Papio anubis (f)	1 hour		1	London	1950	Hill (pers. communication)
Papio cynocephalus (f)						Ackerman (1898); Przibram (1910); Zuckerman (1933)
Papio papio (f)			>1	Berlin, Dresden		Petzch (1951); Steinmetz (1938-40)
Mandrillus sphinx (m)						
Papio hamadryas (f)	normal	m f	>1	Rome, Berlin	1937	Mangili (pers. communication); Franke (pers. communication)
Papio sp. (f)						
Cercocebus torquatus (m)						
Macaca nemestrina (f)	normal		1			Montagu (1950)
Macaca fascicularis (f)			1			Montagu (1950); Sclater (1878); Zuckerman (1933)
Mandrillus sphinx (f)	good		1	Cincinnati		Zipperlen (1896)
Cercopithecus aethiops (m)						
Macaca mulatta (f)			1	London	1873	Zuckerman (1931, 1932, 1933)
Cercopithecus mitis (f)	1 stillborn		>1	Yerkes, Austin		Bernstein (pers. communication); Bramblett (pers. communication)

Taxa	Vitality and Fertility[a]	Sex	No.	Location[b]	Birth-date	Reference
Cercopithecus diana (f)	normal	f	1	Portland		(Pers. communication)
Cercopithecus mona (f)			1	Austin		Bramblett (pers. communication)
Cercopithecus hamlyni (m) *Cercopithecus l'hoesti* (f)	normal	f f	>1	New York	1954	Crandall (pers. communication)
Cercopithecus mitis (m) *Cercocebus torquatus* (f)	1 hour		1			Montagu (1950)
Cercopithecus mona (f)				Austin		Bramblett (pers. communication)
Cercopithecus mona (m) *Cercopithecus neglectus* (f)	4 months		1	New York		Crandall (pers. communication)
Cercopithecus nigroviridis (m) *Cercopithecus aethiops* (f)	normal	m	1	Naples	1960	Cuneo (pers. communication)
Presbytis cristatus (m) *Presbytis phayrei* (f)	2 months	m	1	Calcutta		Hill (1936); Sanyal (1893); Zuckerman (1933)
Presbytis entellus (m) *Presbytis senex* (f)	1 hour		1			Hill (1936)
Presbytis obscurus (m) *Presbytis entellus* (f)	1 hour	m f	>1			Hill (1939, 1952-53)
Hominoidea						
Hylobates agrilis (m) *Hylobates lar* (f)	normal	m f	>1	Zurich, Berlin	1961	Steiner (1949, cited by Gray, 1954); Franke (pers. communication)
Hylobates hoolock (m) *Hylobates agilis* (f)	normal	f	1			Montagu (1950)

[a]F indicates that the hybrid was fertile.

[b]The name of a city indicates a zoological garden.

REFERENCES

Ackerman, K. *Thierbastarde Zusammenstellung der bisherigen Beobachtungen über Bastardirung im Thierreiche nebst Litteraturnachweisen. II. Theil: Die Wirbelthiere.* Kassel Weber und Weidemeyer, 1898.

Antonius, O. Über Artbastarde bei Saugetieren. *Verhandlungen Zoologisch-Botanische Gesellschaft Vienna*, 1951, *92*, 106-115.

Blyth, E. Report of the Curator Zoological Department. *Proceedings, Asiatic Society of Bengal, Calcutta*, 1863, *32*, 455-456.

Clarke, R. C. 1953, cited in A. P. Gray, 1954.

Chiarelli, B. Ibridologia e Sistematica in Primati. I. Raccolta di Dati. *Atti Associazione Genetica Italiana*, 1961, *6*, 213-220.

Craft, W. A. The sex ratio in mules and other hybrid animals. *Quarterly Review of Biology*, 1938, *13*, 19-40.

English, W. L. Exhibition of living hybrid marmosets (*Hapale jacchus*, *Hapale argentata*). *Proceedings of the Zoological Society of London*, 1932, 1079.

Fitzinger, L. J. Nachrichten aus dem zoologischen Garten in München. *Zoologischer Garten (Frankfurt)*, 1864, *5*, 335-338.

Flower, S. S. *A list of the vertebrated animals exhibited in the gardens of the Zoological Society of London, 1818-1927. I. Mammals.* London Zoological Society, 1929, 419 pp.

Gray, A. P. *Mammalian hybrids*. Edinburgh: Tech. Comm. Bureau of Animal Breeding and Genetics, 1954.

Gunning, J. W. B. Bastard zwischen *Macacus sinnicus* und *Cercopithecus lalandei*. *Zoologischer Garten (Frankfurt)*, 1910, *51*, 54.

Heck, L. Halbaffenbastarde. *Zoologischer Garten (Leipzig)*, 1929, *1*, 332.

Hill, W. C. O. On a hybrid leaf-monkey: with remarks on the breeding of leaf-monkeys in general. *Ceylon Journal of Science, B., Zoology*, 1936, *20*, 135-148.

Hill, W. C. O. A new leaf-monkey hybrid (*Trachypithecus obscurus flavicauda* × *Semnopithecus priam thersites*). *Ceylon Journal of Science, B., Zoology*, 1939b, *21*, 265-275.

Knottnerus-Meyer, T. Nochmals 'Über Saugetierbastarde'. *Zoologischer Garten (Frankfurt)*, 1904, *45*, 60-63.

Landois, H. Bastard von Macacus radiatus (Manul.) und Macaca rhesus (Weibl.). *Zoologischer Garten (Frankfurt)*, 1896b, *37*, 156.

Lima E. Da Cruz. *Mammals of Amazonia. I. General introduction and primates*. Museu Goeldi de Historia Natural Etnografia, Belem de Para, 1945, 209.

Mollika. *Proceedings Asiatic Society of Bengal, Calcutta*, 1863, 455-456.

Morris, D. (Ed.). *The International Zoo Yearbook. Vol. I.* London: Zoological Society of London, 1959, 160.

Montagu, M. F. A. A hybrid gibbon. *Journal of Mammalogy*, 1950, *31*, 150-153.

Perkins, R. M. Subspecific crosses between *Lemur macaco* and *Lemur macaco fulvus*. *Journal of Mammalogy*, 1939, *20*, 503-504.

Petzsch, H. Über den wissenschaftlichen Wert von Wirbeltierbastarden aus Zoologischen Garten und Blendlinge zwischen Yak und Schottischen Hochlandrind im Dresdner Zoo. *Zoologischer Garten (Leipzig)*, 1951, *18*, 183-196.

Pocock, R. I. Notes upon menstruation, gestation, and parturition of some monkeys that have lived in the Society's garden. *Proceedings of the Zoological Society of London*, 1906, 558-567.

Przibram, H. *Experimental-Zoologie III. Kop. 4: Bastardierung*. Leipzig and Vienna: Franz Deuticke, 1910. Pp. 27-129.

Rorig, A. Über Saugetier. Bastarde. *Zoologischer Garten (Frankfurt)*, 1903, *44*, 212-220, 247-254, 286-292.

Sanyal, B. R. B. Letter containing remarks upon a hybrid monkey between *Semnopithecus phayrei* and *S. cristatus*. 1893.

Schoepff, A. Nachrichten aus dem zoologischen Garten in Dresden. *Zoologischer Garten (Frankfurt)*, 1871, *12*, 370-374.

Schwarz, E. Über einen Hybriden von Schweinsaffe (Macaca nemestrina Linn.) und Mohrenmarkak (Macaca nigra maura - F. Cuvier). *Zoologischer Garten (Liepzig)*, 1934, 44-46.

Schlater, P. L. Notice of some hybrid monkeys lately born in the Society's menagerie. *Proceedings of the Zoological Society of London*, 1878, 791.

Steinbacker, G. Nachrichten aus Zoologischen Garten Frankfurt. *Zoologischer Garten (Leipzig)*, 1941, *13*, 364-370.

Steinmetz, H. Nachrichten aus Zoologischen Garten, Berlin. *Zoologischer Garten (Leipzig)*, 1940, *12*, 335-343.

Zipperlen, A. Bastard von Cercopithecus fuliginosus und Mandril. *Zoologischer Garten (Frankfurt)*, 1896, *37*, 184-185.

Zuckerman, S. The menstrual cycle of the primates. III. The alleged breeding season of primates; with special reference to the Chacma baboon (*Papio porcarius*). *Proceedings of the Zoological Society of London*, 1931, 325-343.

Zuckerman, S. The menstrual cycle of the primates. VI. Further observation on the breeding of primates; with special reference to the suborders Lemuroidea and Tarsioidea. *Proceedings of the Zoological Society of London*, 1932, 1059-1075.

Zuckerman, S. *Functional affinities of man, monkeys and apes*. London: Keegan, Paul, Trench, Trubner and Co., Ltd., 1933.

Zukowsky, L. Die Wanderu-Schweinsaffen-Mischlinge des Frankfurter-Tiergartens. *Zoologischer Garten (Leipzig)*, 1952, *19*, 1-26.

Yerkes, R. M. Maternal instinct in a monkey. *Journal of Animal Behavior*, 1915, *5*, 403-405.

* * *

NEW DIRECTORS AT WASHINGTON AND DELTA REGIONAL PRIMATE CENTERS

Dr. Orville A. Smith became Director of the Washington Regional Primate Research Center July 1, 1971 and Dr. Peter J. Gerone became Director of the Delta Regional Primate Research Center during August, 1971. Dr. Smith had been Assistant Director of the Washington Center and Dr. Gerone had been Chief of the Virology I Branch, Virus and Rickettsia Division, Department of the Army, Ft. Detrick, Maryland.

* * *

MEETING ANNOUNCEMENTS: AALAS, TEXAS BRANCH

American Association for Laboratory Animal Science, Texas Branch. May 4-6, 1972, Hotel Hilton Palacio Del Rio, San Antonio, Texas. For information contact Dr. William H. Pryor, Jr., USAF School of Aerospace Medicine (VRS), Brooks AFB, Texas 78235.

PET SPIDER MONKEY TRANSMITS SHIGELLOSIS AND SALMONELLOSIS TO HUMANS

Between Nov. 12, 1970, and Feb. 2, 1971, five out of eight children in a Seattle, Washington, home experienced a diarrheal illness. The Seattle-King County Health Department Laboratory isolated *Shigella flexneri* 2 from stool specimens from three children and *Salmonella oranienberg* from one child. These shigella and salmonella serotypes were traced to an asymptomatic spider monkey in a local pet store managed by the children's mother. The children frequently assisted in cleaning the store and caring for the animals.

The mother recalled that the first serious illness occurred when the 9-year-old boy who had been cleaning animal cages in the store, including that of the spider monkey, experienced fever, vomiting, and diarrhea for 4 days in November. The illness was not diagnosed bacteriologically. Ten days later, the 14-year-old sister who had not been working in the store had onset of fever and diarrhea and was hospitalized for 11 days. *S. flexneri* 2 was isolated from her stool. In January 1971, the 12- and 16-year-old brothers who had also cleaned the monkey cage experienced gastroenteritis symptoms which were diagnosed after isolating *S. flexneri* 2 from their stools. The older boy was hospitalized for 4 days. On Feb. 2, 1971, the mother disclosed that a fifth child, 13 years old, who was also exposed to the spider monkey was home from school with diarrhea. That same day, stool specimens were obtained from the spider monkey and the child. *S. oranienberg* was isolated from both specimens. Sensitivity tests were identical in shigella cultures from the monkey and the children. Stools obtained from other family members and employees of the store who were not ill were negative for both shigella and salmonella.

In June 1970, the spider monkey had been shipped to the Seattle store from a wholesaler in Miami, Florida. The monkey had no apparent illness while in the pet store. At the time of the outbreak, it was quarantined at the pet store. In early March 1971, it was treated orally with ampicillin, 100 mg per kg per day in three equal doses, for a total of 10 days. A stool specimen obtained 7 days after the last dose yielded *S. flexneri* 2. For 3 weeks in May, the monkey received oral chloramphenicol, 500 mg per day in four equal doses. Another stool specimen obtained on June 3, however, still yielded *S. flexneri* 2 as well as *S. anatum*. A total of seven stool specimens were obtained from the monkey from January 28 to June 14. All yielded *S. flexneri* 2; *S. oranienberg* and *S. anatum* were isolated only once. *S. flexneri* 2 was also isolated from swabs obtained from the monkey's tail fur and a tin eating bowl in his cage. Stool specimens from five squirrel monkeys which were also in the store were negative for shigella and salmonella.

The mother was not convinced of the health department's findings

---

*From *Morbidity and Mortality Weekly Report*, 1971, *20* [33], 291-292. The editorial comment is also from the original source.

until she personally collected a stool specimen from the monkey and delivered it to a local hospital laboratory on June 14. When this laboratory reported that the specimen yielded *S. flexneri* 2, she permitted a veterinarian to dispose of the monkey.

Editorial Comment.--In September 1970, a fatal case of human shigellosis associated with a spider monkey was reported in Connecticut (Center for Disease Control: Primate Zoonoses Surveillance, Rep. No. 4, April 1971). *S. flexneri* 2a was isolated from the patient's stool specimen and from the monkey's colon at necropsy. Both isolates were resistant to chloramphenicol, streptomycin, sulfathiazole, and tetracycline. This uncommon resistance pattern was also found in the isolates from the patients and spider monkey in Washington.

* * *

HEAT PRODUCTION OF MONKEYS

D. C. Shelton reports on the heat production of a variety of laboratory animals in the current issue of *Laboratory Animal Digest* (1971, *7*, 44-46). Values for the monkey are given below.

Weight: 4,200 grams
Basal heat production in 24 hours: 207 kilocalories
Actual heat production in 24 hours: approximately 800 kilocalories (Estimated on the basis that some animals under laboratory conditions liberate heat at four times the basal rate, others at only twice the basal rate on the average.)
Latent heat production in 24 hours: approximately 275 kilocalories

Approximate animal heat released by 36 animals per 228-sq.-ft. room module:

Total heat:	29,000 kilocalories/24 hours	
	9,600 BTU/hour (maximum)	
Latent heat:	10,000 kilocalories/24 hours	
	3,300 BTU/hour (maximum)	

CFM/animal: 18.0 (Arrived at by multiplying average weights by cubic feet/minute/pound.)

CHLORAMPHENICOL-PENTOBARBITAL INTERACTION IN BABOONS (*PAPIO CYNOCEPHALUS*)

H. Richard Adams

University of Pittsburgh

Gary T. Moore

Southwest Foundation for Research and Education

Studies in this laboratory have indicated that chloramphenicol may prolong the duration of anesthetic action of pentobarbital in cynomolgus (*Macaca fascicularis*), rhesus (*M. mulatta*) and squirrel monkeys (*Saimiri sciureus*) (Adams, 1970). Also, a recent investigation by others has confirmed our previously observed interaction of chloramphenicol with pentobarbital in rhesus monkeys (Potkay & Palmer, 1971). We now wish to report that the antibiotic has a similar effect upon the duration of pentobarbital anesthesia in another nonhuman primate species, the yellow baboon (*Papio cynocephalus*).

Three groups of the baboons were given different treatments 30 minutes prior to the administration of 28 mg/kg of pentobarbital (IV). One group was given 100 mg/kg (IV) of chloramphenicol, a second group was given 200 mg/kg, and a third (control) group was given only saline. The mean duration of the pentobarbital anesthesia was 100 percent longer in the groups pretreated with chloramphenicol than in the control group. The difference between the control group and the group pretreated with 100 mg/kg of chloramphenicol was significant ($t = 2.83$, $df = 8$, $p < 0.025$) as was the difference between the control group and the group pretreated with 200 mg/kg of chloramphenicol ($t = 4.32$, $df = 8$, $p < 0.005$). However, the difference between the duration of anesthesia of the 2 groups pretreated with the antibiotic was not significant ($t = 0.98$, $df = 8$).

This adverse drug interaction appears to be associated with an inhibition of drug biotransformation activities of hepatic microsomal enzymes by chloramphenicol (Dixon & Fouts, 1962). The clinical implications of such interactions in laboratory primates have been discussed (Adams, 1970; Potkay & Palmer, 1971).

REFERENCES

Adams, H. R. Prolongation of barbiturate anesthesia by chloramphenicol in laboratory animals. *Journal of the American Veterinary Medical Association*, 1970, *157*, 1908-1913.

First author's address: Department of Pharmacology, University of Pittsburgh, School of Pharmacy, Pittsburgh, Pennsylvania 15213.

Dixon, R. L., & Fouts, J. R. Inhibition of microsomal drug metabolic pathways by chloramphenicol. *Biochemical Pharmacology*, 1962, *11*, 715-720.

Potkay, S., & Palmer, A. E. Effects of chloramphenicol on barbiturate and halothane anesthesia in rhesus monkeys (*Macaca mulatta*). *Laboratory Primate Newsletter*, 1971, *10* [3], 11-15.

* * *

JOURNAL OF MEDICAL PRIMATOLOGY ANNOUNCED

The *Journal of Medical Primatology* will commence publication in the fall with E. I. Goldsmith and J. Moor-Jankowski serving as the Editors-in-Chief. The new journal will be published by S. Karger and there will be six issues per year to begin with. The journal is intended to be a forum for medical scientists and biologists interested in approximating the health and disease conditions of man in his phylogenetically closest relatives, the apes and monkeys.

The following are the members of the Editorial Board: H. Balner, N. Barnicot, R. A. Chez, F. Deinhardt, R. N. T-W-Fiennes, J. E. Hamner, III, A. G. Hendrickx, S. S. Kalter, H.-J. Kuhn, J. Ruffie, A. M. Schrier, O. A. Smith, Jr., S. Solomon, B. F. Trum, and A. S. Wiener. In addition, approximately 40 persons have agreed to serve as Editorial Consultants (referees).

Papers of up to 4,000 words reporting original data will be welcomed, as well as short papers of 1,000 to 2,000 words reporting a particularly interesting case history, pathological finding or new experimental method. All submitted papers have to conform to Karger style and should be sent to this address: J. Moor-Jankowski, M.D., Journal of Medical Primatology, New York University Medical Center, 550 First Avenue, New York, New York 10016.

* * *

BABOON GROUP IN PRESERVE IN TEXAS

A population of 200 *Papio anubis* baboons are living in an open area of approximately 24 acres, which forms part of the World of Animals preserve in Dallas, Texas. The animals are contained in their compound by special fencing. The animals have been established for one year and have produced many offspring. Approximately 60 animals were born in captivity and 140 were wild, trapped in Kenya by International Animal Exchange, Inc.

Anyone interested in discussing the possibilities of studying the social behavior of this group should contact: R. Brian Hunt, World of Animals, Box 305, Mesquite, Texas 75149.

ON THE SIDE OF THE APES? A BOOK REVIEW

For years I have read with pleasure Emily Hahn's articles in *The New Yorker*. Therefore, when some four years ago the word went out about her projected book on Primate Centers, I was prepared for something unusual. As she did the other Centers, Miss Hahn visited the Oregon Center twice. From information she gathered during these visits and a little library work, she wrote two long articles in the 9th and 10th issues of Volume 27 of *The New Yorker* and an expanded version in her current book, *On the Side of the Apes* (New York: Thomas Y. Crowell Company, 1971). In all, Miss Hahn makes evident first, that she has a passion for zoo animals in general and the great apes in particular; and second, that she hasn't even the vaguest notion what the mission of Primate Centers is all about. She also reveals that her writing is not nearly so charming as I remembered it. I won't quibble here with factual errors, but I do take her to task for her poor judgment and bad writing.

She begins with a rambling, disconnected account of the history of primatology and the use of primates in research, mostly lifted from a little Russian book by Lapin and Friedman, called *Monkeys for Science*. This is hardly an unbiased source book; like all others it claims Russian leadership and superiority in the field. She then discusses the great Robert M. Yerkes and his work with chimpanzee behavior, first at Yale University, then at Orange Park, Florida.

The heart of the book--the purported raison d'être of the whole undertaking--the material on the Primate Centers, drivels off into an anecdotal style that, though easy to read is largely trivial, even frivolous. For example, her treatment of the Wisconsin Center begins with an interview with Dr. Harry Harlow, its former Director. He is quoted, *in quotation marks*, as saying things that make him sound like an idiot and not the articulate, pioneering experimental psychologist he is. From this, she proceeds to an interview with Dr. George Kerr about the effects of malnutrition on development and on his and Waisman's work on PKU, then to remarks about experiments on learning and isolation, and finally to some impressions about breeding and husbandry. These odds and ends don't give even an elementary grasp of the scientific import or impact of that Center. All other Primate Centers and every scientist interviewed is treated in the same airy, inconsequential manner.

I do not impugn Miss Hahn's good intentions. But I must ask how she could have spent four days at the Oregon Center alone and then have written ten pages of unrelated and unrelieved bagatelle? She might have saved her own time, as well as ours, by doing some homework studying our yearly progress reports. None of us whose time was thus wasted realized that what we had said to Miss Hahn informally, jocularly, or over cocktails would become the *substance* of her book. None of us knew that the author is incapable of sifting trivia from the important, the asides from the main line of argument. She undertook, as the dust jacket states, the task of presenting "A new look at the primates, the men who

study them, and what they have learned." Instead Miss Hahn has come up with a bagfull of shallow anecdotes; she was not up to her task.--William Montagna, Oregon Regional Primate Research Center, Beaverton, Oregon 97005.

* * *

CASE REPORTS: MOLLUSCUM CONTAGIOSUM IN A COLONY BORN CHIMPANZEE

In 1967 Douglas *et al.* (*J. Amer. Vet. Med. Assoc.*, 1967, *151*, 901-904) reported the occurrence of molluscum contagiosum, small and rather benign skin tumors induced by a specific virus, in 7 chimpanzees at the 6571st Aeromedical Research Laboratory, Holloman AFB, New Mexico. The youngest of these chimpanzees was 3 years old. At that time, experimental infection of other chimpanzees was attempted, but no lesions had developed within 75 days. Although the inoculated animals have been observed for 4 years, no lesions have appeared. Additional animals were inoculated last year, and they have not developed any sign of the disease.

Since the initial cases, one additional spontaneous case has occurred. The involved animal was a female chimpanzee that was colony born and raised by her mother until she was 1 year old. When she was 16 months old, several small nodules developed on her face, especially adjacent to the eyes and nose. The largest lesion was 0.3 cm in diameter. All of the nodules were removed surgically, and histologically they were typical molluscum lesions. Although the affected animal was in close contact with other chimpanzees daily, none of the other animals developed any lesion.

The occurrence of molluscum contagiosum several years after an outbreak of the disease suggests the possibility that the virus is present in the colony, but no adequate reasons can be given for the 4-year quiescent interval or the lack of success in experimental transmission. No cases of molluscum have occurred in any humans having contact with the chimpanzee. (The animals used in this study were handled in accordance with the "Guide for Laboratory Animal Facilities and Care" prepared by the National Academy of Science--National Research Council and in accordance with the Secretary of Agriculture Standards in "Laboratory Animal Welfare".)--R. E. Schmidt, and T. M. Butler, Operating Location, Aerospace Medical Division (AFSC), Holloman Air Force Base, New Mexico 88330.

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

BOOKS

The chimpanzee, Vol. 3. Bourne, G. H. (Ed.) Baltimore, Md. and Manchester, England: University Park Press, 1970. [Price $28.50]

The contents of the third volume of this series on the chimpanzee is as follows: Erythrocyte antigens of chimpanzees by M. E. Dorf and Ch.M. Zmijewski; Transplantation biology of the chimpanzee by R. S. Metzgar and H. F. Seigler; Human viral hepatitis and chimpanzees by H. F. Smetana, A. D. Felsenfeld and A. J. Riopelle; Filariasis in chimpanzees by Th.C. Orihel; The treponematoses by U.S.G. Kuhn; The skin of the chimpanzee by D. M. Ford and E. M. Perkins; The histology of the chimpanzee eye by R. L. Carpenter; Steroid hormones in the chimpanzee (*Pan satyrus*) by R. I. Dorfman; Reproductive physiology of the chimpanzee by C. E. Graham; Functional anatomy of the lower extremity by H. Preuschoft; Heart of the chimpanzee by H. Frick; Differential rearing of the chimpanzee: a project survey by R. K. Davenport and C. M. Rogers; Chimpanzee maternal behavior by C. M. Rogers and R. K. Davenport; Social communication in the chimpanzee: a review by P. C. Reynolds.

The chimpanzee, Vol. 4. Bourne, G. H. (Ed.) Baltimore, Md. and Manchester England: University Park Press, 1971. [Price $28.50]

The contents of the fourth volume of this series on the chimpanzee is as follows: Nissen's observations on the development of sexual behavior in captive-born, nursery-reared chimpanzees by A. H. Riesen; Chimpanzee intelligence by D. M. Rumbaugh; Longitudinal, postnatal growth in chimpanzee by J. A. Gavan; Comparative pathology of the chimpanzee by H. M. McClure and N. B. Guilloud; Dermatoglyphics in the chimpanzee by J. Biegert; The blood vessels of the chimpanzee by W. Platzer; The chimpanzee placenta by K. S. Ludwig and R. Baur; Nutrition and diet of chimpanzees by G. H. Bourne.

Behavior of nonhuman primates. Vol. 3. Schrier, A. M., & Stollnitz, F. (Eds.) New York/London: Academic Press,

---

*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.

1971. [Price: $9.50].

The first 2 volumes of this series appeared in 1965. A fourth volume will appear shortly and additional volumes will be published periodically. The contents of the just-published third volume are listed below. Development of social behavior by R. A. Hinde; Activity profiles of primate groups by Irwin S. Bernstein; Vision by Russell L. De Valois and Gerald H. Jacobs, and Hearing by William C. Stebbins.

Defining the laboratory animal. Washington, D. C.: National Academy of Sciences/National Research Council, 1971.

This volume contains the proceedings of the IVth International Symposium on Laboratory Animals, held in Washington, D. C., April 8-11, 1969. The symposium was organized under the joint auspices of the International Committee on Laboratory Animals and the Institute of Laboratory Animal Resources of the National Research Council. Papers that pertain to nonhuman primates are listed below. Virological study on nonhuman primates by S. S. Kalter; The baboon in medical research: Base-line studies in fourteen hundred baboons and pathological observations by H. W. Weber, H. D. Brede, C. P. Retief, F. P. Retief, and E. C. Melby, Jr.; DNA viruses from South American monkeys: Their significance in the establishment of primate colonies for biomedical research by L. V. Melendez, M. D. Daniel, R. D. Hunt, F. G. Garcia, C. E. O. Fraser, T. C. Jones, and J. Mitus.

DISEASE

Health aspects of the supply and use of non-human primates for biomedical purposes: Report of a WHO Scientific Group. Technical Report Series, No. 470. Geneva: World Health Organization, 1971.

This is the report of a scientific group that met in Geneva from September 23-29, 1970. The organization of the report is as follows. 1. Introduction: need for international recommendations; 2. Implementation of recommendations; 3. Special problems; 3.1, Feeding of animals; 3.2, Detection of tuberculosis in monkeys and apes; 3.3, Diagnosis of virus diseases contracted by man from monkeys and apes; 3.4, Action to be taken in case of injury; 4. Conservation of supplies of monkeys and apes; 5. Breeding in captivity; 6. Training of personnel; 7. Future activities; 7.1, Prevention of losses; 7.2, Ensuring future supplies; 7.3, Public health measures; Annex: Recommendations on health aspects of the supply and use of non-human primates for biomedical purposes. Orders for the series or for individual reports may be obtained from local sources or from: World Health Organization, Distribution and Sales Service, 1211 Geneva 27, Switzerland, but must be paid for in pounds sterling, US dollars or Swiss

francs. [Price for above report: 30 p $1.00 Sw. fr. 3.-]

Diabetes mellitus in a rhesus monkey (*Macaca mulatta*): A case report and literature review. DiGiacomo, R. F., Myers, R. E., & Baez, L. F. (Sec. on Primate Management & Reproduction, Lab. Perinatal Physiology, Nat. Inst. Neurol. Dis. & Stroke, Nat. Inst. Health, P. O. Box 5095, Puerta de Tierra Station, San Juan Puerto Rico 00906) *Laboratory Animal Science*, 1971, *21*, 572-574.

A naturally occurring case of diabetes mellitus in a rhesus monkey was described. The diabetes, characterized initially by cachexia and polydipsia, responded to insulin therapy but was poorly managed due to lack of proper dietary control. The literature on simian diabetes mellitus, which suggests that this species may be useful as an experimental model, was reviewed.

Pseudotuberculosis in nonhuman primates: infection with organisms of the *Yersinia enterocolitica* group. McClure, H. M., Weaver, R. E., & Kaufmann, A. F. (Dept. Vet. Pathol., Yerkes Reg. Primate Res. Cen., Emory U., Atlanta, Ga. 30322) *Laboratory Animal Science*, 1971, *21*, 376-382.

Pseudotuberculosis caused by organisms of the *Yersinia enterocolitica* group was found in 3 monkeys. Infection in the first monkey, which lasted approximately 1 month, followed a fracture of a fibula. The other 2 monkeys had acute clinical illness terminated by death within a few days of onset. All infections were characterized by some degree of ulcerative enterocolitis, regional lymphadenopathy, and necrosis of the liver, spleen, and lymph nodes. In addition, the first monkey had extensive abscess formation adjacent to the fractured fibula. Attempts to experimentally reproduce the disease in other monkeys were unsuccessful.

Incidence of *Shigella* in conditioned rhesus monkeys (*Macaca mulatta*). Weil, J. D., Ward, Martha K., & Spertzel, R. O. (U. S. Army Med. Res. Inst. Infectious Diseases, Frederick, Md. 21701) *Laboratory Animal Science*, 1971, *21*, 434-437.

Forty conditioned rhesus monkeys (*Macaca mulatta*) were studied for the presence of *Shigella*. Multiple fecal specimens obtained over an 11-week period by rectal swab were cultured for enteric bacteria. Isolates identified as *Shigella* on the basis of biochemical reactions were classified serologically. Shigellae were isolated from 27 (67.5%) of the survey groups; 22 infected animals were healthy throughout the 11-week period. Three *Shigella* serotypes were isolated. A single serotype was identified in specimens obtained from 21 animals; more than 1 serotype was identified in 6 animals.

PHYSIOLOGY AND BEHAVIOR

The menstrual cycle and its effect on behaviour in the talapoin monkey (*Miopithecus talapoin*). Scruton, Diane M., & Herbert, J. (Dept. Anatomy, U. Birmingham, Birmingham, England) *Journal of Zoology, London*, 1970, *162*, 419-436.

The menstrual cycles of 14 captive talapoin monkeys were studied by making serial observations on the vaginal smears and sexual skin swellings for up to 15 months. Twelve of these females menstruated and the mean duration of their cycle was 32.9 days (95% confidence limits 28.0-37.7). The corresponding value for the seven most regular females was 33.0 days (29.1-36.8). There were rhythmic changes in the vaginal smears and sexual skin during the menstrual cycle. Maximum cornification of the smears and maximum sexual skin swelling were observed at midcycle; the sexual skin deflated and the smear became less cornified during the luteal phase. The follicular phase--i.e. from menstruation to maximum skin swelling lasted 20.4 days with a wide distribution, in contrast to the mean duration of the luteal phase (13.7 days) which showed a pronounced peak at 14 days. The menstrual cycle of the talapoin thus resembles those of certain other Old World monkeys that exhibit perineal sexual skin swelling. Sexual behavior of the male and female was maximal near the female's midcycle and minimal during the luteal phase, with intermediate values in the follicular phase. The males were most aggressive toward other females of the group when one female was at midcycle; there were no consistent changes in aggression between the male and the female herself. The number of times one animal looks at another (a characteristic behavior pattern in talapoins) was measured and occurred most often at midcycle, but other preliminary observations indicated a more pronounced correlation between this behavior pattern and an animal's position in the hierarchy.

The effect of restraint and position upon selected respiratory parameters of two species of *Macaca*. Berendt, R. F., & Williams, T. D. (Experimental Aerobiol. Div., Aerobiology II Branch, Dept. of the Army, Frederick, Md. 21701) *Laboratory Animal Science*, 1971, *21*, 502-509.

The minute volumes, tidal volumes, and respiration rates of *Macaca mulatta* and *Macaca fascicularis* were measured at selected intervals after the monkeys were restrained in a plastic chair or strapped to a V-board in upright or supine positions. Restraint had a more pronounced effect upon both species than position. Monkeys confined to the plastic chair had high tidal volumes and low respiration rates; the reverse occurred with animals strapped to the V-board. Resting time caused a marked diminution of all parameters except the respiration of animals strapped to the board.

The hemogram of the maternally-reared neonatal and infant baboon (*Papio cynocephalus*). Berchelmann, M. L., Vice, T. E., & Kalter, S. S. (Dept. Microbiol. & Infect. Dis., Southwest Found. Res. & Educ., P. O. Box 28147, San Antonio, Texas 78228) *Laboratory Animal Science*, 1971, *21*, 564-571.

Thirty-two infant baboons were studied with reference to the change in erythrocytes, hemoglobin, packed cell volume, reticulocytes, platelets, leukocytes, and the leukocyte differential in the first 6 months of life. These values were compared to those reported for human infants. All the erythrocytic values in the neonatal baboon were lower in the first week than those reported in human newborns. Hemoglobin values of infant baboons remained below those of human infants in this 6-month period. The red cell count of the infant baboon rose rapidly in the second week and by 2 months was greater than that of human infants of this age. At 6 months, the red cell count of the infant baboon was still rising, and the packed cell volume was comparable to that of the human infant. Leukocyte values of the infant baboon at 6 months of age were higher than those of human infants. In both neonatal baboons and humans, segmented neutrophils predominate. In the third week, lymphocytes predominated in the blood of the infant baboon. The human newborn develops this reversed picture 2 weeks after birth. Blood values in the infant baboon are comparable to normal values of the human infant, emphasizing the parallelism between man and baboon.

Hematologic, biochemical, and parasitologic parameters of the night monkey (*Aotus trivirgatus*). Wellde, B. T., Johnson, A. J., Williams, J. S., Langbehn, H. R., & Sadun, E. H. (Dept. Med. Zoology, Walter Reed Army Inst. Res., Walter Reed Army Med. Cen., Washington, D. C. 20012) *Laboratory Animal Science*, 1971, *21*, 575-580.

Hematologic, biochemical, and parasitologic parameters of the night monkey (*Aotus trivirgatus*) were studied. Serum enzyme activities of glutamic oxaloacetic transaminase and glutamic pyruvic transaminase were greater than values previously reported for man or Old World nonhuman primates. Thirty percent of the serum electrophoretic patterns had definite double albumin components, while most monkeys had high levels of alpha-2 globulins. No natural malarial infections were detected in the monkeys, although microfilaria and trypanosomes were found in a few animals. *Giardia* species was the most common intestinal protozoan found.

Peripheral blood changes in the pregnant (Kenya) baboon (*Papio cynocephalus*). Berchelmann, M. L., Vice, T. E., & Kalter, S. S. (Div. Microbiol. & Infect. Dis., Southwest Found. Res. & Educ., P. O. Box 28147, San Antonio, Texas 78228) *Laboratory Animal Science*, 1971, *21*, 613-620.

Hematological changes occurring in 37 female baboons during pregnancy and postpartum were evaluated. All erythrocytic values declined during the gestation period in female baboons. The average hemoglobin levels dropped from 13.1 g per 100 ml in early pregnancy to a low of 12.1 g per 100 ml after delivery; packed cell volume (PCV) was 41.5% in the first 34 days of gestation and prior to delivery reached a low of 39.3%; the red cell count (RBC) fell from 5.11 millions per cmm shortly after the initiation of pregnancy to 4.63 millions per cmm before delivery. The increase in hemoglobin, PCV, and RBC which occurs in women prior to delivery was not observed in the pregnant baboons. Leukocytosis developed in the baboon after 70 days gestation. Another moderate increase was observed before delivery. The leukocytosis developing in the female baboon prior to delivery was not as marked as the increase in leukocyte numbers which develops in women before and after delivery. The hematological changes occurring in the peripheral blood of these female baboons during pregnancy were similar to those seen in pregnant women.

Hematologic values of the black spider monkey (*Ateles fusciceps*), red spider monkey (*Ateles geoffroyi*), white face monkey (*Cebus capucinus*), and black howler monkey (*Alouatta villosa*). Porter, J. A., Jr. (Gorgas Memorial Lab., Panama, Republic of Panama) *Laboratory Animal Science*, 1971, *21*, 426-433.

Hematologic values were determined from black spider monkeys (*Ateles fusciceps*), red spider monkeys (*Ateles geoffroyi*), white face monkeys (*Cebus capucinus*), and black howler monkeys (*Alouatta villosa*). Mean values, standard deviations, and minimal-maximal values were determined for erythrocyte counts, leukocyte counts, packed cell volumes, hemoglobin concentrations, differential leukocyte counts, mean cell volumes, mean cell hemoglobins, and mean cell hemoglobin concentrations. Calculations were presented separately for sexes, for immature and mature monkeys, and for arrival at laboratory, maintained in laboratory in 1967, and maintained in laboratory in 1968.

BREEDING

Spontaneous abortion in wild-caught rhesus monkeys, *Macaca mulatta*. Hertig, A. T., King, N. W., & MacKey, J. (Div. Pathobiology, New England Reg. Primate Res. Cen., Southborough, Mass. 01772) *Laboratory Animal Science*, 1971, *21*, 510-519.

Of 21 pregnant female *Macaca mulatta* caught in the wild, 9 (42.85%) aborted or delivered prematurely, 9 (42.85%) delivered normally at, or near, term babies which survived, and 3 (14.3%) delivered stillborns at or near term. Thus, over one-half of these animals lost their offspring, which is in marked contrast to animals bred in

captivity. Morphological evidence indicated that venous angitis of the placental base plate resulted in thrombosis, subtotal infarction, and intrauterine death of a normal fetus. In 3 cases, the mothers died of a giant cell pneumonia, consistent with that caused by measles virus. Sequential morphological changes in the placenta of one of these suggested a viral etiology of the venous angitis as the cause of the thrombosis, although no attempt was made to isolate the virus from the lungs or placenta of this case. Since clinical or subclinical infections with measles virus are known to occur in a high percentage of newly captured *M. mulatta* at or about the same time that abortions or stillbirths occur, it would seem this relationship deserves further investigation. It is possible that measles virus infections play a significant role in the fetal wastage of wild-caught monkeys whose pregnancies were conceived prior to capture.

INSTRUMENTS AND TECHNIQUES

Extraction of baboon canine teeth: A simple efficient technic. Smith, A. W. (Vet. Sci. Div., USAF Sch. Aerospace Med., Aerospace Med. Div. AFSC, Brooks Air Force Base, Texas 78235) *Laboratory Animal Science*, 1971, *21*, 604-609.

The baboon's increasing popularity as a research animal has prompted the development of a simple technic for extracting canine teeth from the adult male, and a set of special instruments was developed for this purpose. The method described employs dental elevation almost exclusively. This approach has eliminated the need for such surgical procedures as gingival flaps and buccal plate evulsions. This, in turn, has reduced trauma and provided a technic whereby even older males have had all 4 canines extracted within 30 min. In over 4 dozen cases where this approach was employed, recovery was uneventful and rapid.

CONSERVATION

The golden lion marmoset. Perry, J. *Oryx*, 1971, *11* [1], 22-24.

The golden lion marmoset, *Leontideus rosalia*, is one of three closely related species restricted to Brazil (the others are *L. chrysopygus* and *L. chrysomelas*). Once they were widely distributed in the coastal forests; today they are reduced to small remnants, two of them at least with a very precarious future. The author reports here on their status following his recent visit to Brazil.

Zoos' help for a rare monkey. Hill, C. A. (San Diego Zool. Garden, P. O. Box 551, San Diego, Calif. 92112) *Oryx*, 1971, *11* [1], 35-39.

The lion-tailed macaque of southern India is in danger;

even in 1963 there were probably fewer than a thousand in the wild. But zoos have found them easy to obtain, and a survey this year showed 79 in U.S. zoos. The author, after visiting India and seeing how precarious was this monkey's situation in the wild, proposed that the American Association of Zoological Parks and Aquariums should consider starting a captive breeding project using animals already in American zoos. In September, 1970, AAZPA agreed to do this and also placed restrictions on imports of the macaque by its members. The author is chairman of the committee that is running the project, and appeals for European and other zoos to take part.

* * *

REQUEST FOR INFORMATION: RELATION OF DIET TO FEMALE FERTILITY

Information and references are requested on the relationship between the diet of female mammals, including man, and their ability to conceive. We believe that the failure to achieve the state of conception following mating may be caused by the lack of something in the diet which effects the metabolism in such a way that the fertilized egg does not adhere to the wall of the uterus. We do not believe that this missing factor effects the general health of the female but that it does effect the blood passing through the wall of the uterus, preventing the state of pregnancy.--Linda Leiker, Scientific Director, National Primate Research Centre, P. O. Box 114, Limuru, Kenya.

ADDRESS CHANGES

Clark O. Anderson
National Center for
Primate Biology
University of California
Davis, Calif. 95616

M. W. Balk
6829 N. Ottawa
Chicago, Ill. 60631

Efraim Benhar
Isotope Department
Weizmann Inst. Science
P.O. Box 26
Rehovot, Israel

Ronald A. Chez
Pregnancy Research Branch
NICHD
4915 Auburn Ave.
Bethesda, Md. 20014

George L. Clarke
Lab. Aids Branch
Div. Research Services
Nat. Inst. Health
Bethesda, Md. 20014

W. H. Dieterich
Dept. Public Health
P.O. Box 1370
Riverside, Calif. 92502

R. J. Eckroade
Dept. Animal Sci. &
Agricultural Biochem.
028 Agricultural Hall
Newark, Del. 19711

Donovan E. Fleming
Psychology Department
Brigham Young University
Provo, Utah 84601

F. M. Garner
4416 Oak Hill Road
Rockville, Md. 20853

Paul M. Goldman
516 Fletcher Pl.
Rockville, Md. 20851

Richard A. Griesemer
National Center for
Primate Biology
University of California
Davis, Calif. 95616

Billy E. Hooper
Dept. Vet. Path.
Coll. Vet. Med.
University of Georgia
Athens, Georgia 30601

Richard A. King
Psychology Dept.
Univ. North Carolina
Chapel Hill, N. C. 27514

John T. LaCroix
Keesler Medical Center
Keesler AFB, Miss. 39534

R. W. Leader
Dept. Animal Diseases
Univ. Connecticut
Storrs, Conn. 06268

G. Lussier
Inst. Microbiology
P. O. Box 100
Laval, Quebeck
Canada

William A. Mason
National Center for
Primate Biology
University of California
Davis, Calif. 95616

W. C. McGrew
Gombe Stream
Research Centre
P.O. Box 185
Kigoma, Tanzania

J. T. Parer
Obstet. & Gynecol.
LAC-USC Medical Center
1200 North State St.
Los Angeles, Calif. 90033

George J. Pucak
National Inst. Health
Bldg. 28, Rm. 102
Bethesda, Md. 20014

John W. Renfrew
Psychology Dept.
Northern Michigan Univ.
Marquette, Mich. 49855

Reed W. Rings
Michigan Dept. Public Hlth
Bureau of Laboratories
3500 North Logan Street
Lansing, Mich. 48914

Robert E. Schmidt
Vet. Path. Dept.
Coll. Vet. Med.
Oklahoma State Univ.
Stillwater, Okla. 74074

Euclid O. Smith
Dept. Sociology and
Anthropology
Univ. Tenn. at Martin
Martin, Tennessee 38237

Fred Stollnitz
417 Hillmoor Drive
Silver Spring, Md. 20901

Earl Usdin
Room 9-97, Parklawn Bldg.
Nat. Inst. Mental Health
5600 Fishers Lane
Rockville, Md. 20852

Douglas W. Windle
1011 So. 33rd St.
Milwaukee, Wisc. 53215

Ralph F. Ziegler
Vet. Med. Sci. Dept.
NMRL
Nat. Nav. Med. Cen.
Bethesda, Md. 20014

CONTENTS OF VOLUMES 9-10 (1970-1971)