LABORATORY PRIMATE NEWSLETTER

Volume 3, Number 1

January, 1964

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POLICY STATEMENT
(Revised January, 1964)

The primary purpose of the Newsletter is to provide information on maintenance and procurement of nonhuman primates for laboratory studies. A secondary purpose is dissemination of general information about the world of primate research. Examples of the kind of practical information that would be useful are as follows: new drugs; novel aspects of cage design; new products; evaluations of various products; references to or short summaries of articles of general interest; experiences in connection with the procurement of monkeys. The Newsletter will also publish offers to exchange monkeys (for example, older monkeys for young or infant monkeys) and requests for monkeys with special characteristics (for example, good breeders or pregnant females). If someone has a special problem, he might want to request help through the Newsletter.

As a rule, only research articles or summaries which have some practical implications or which provide general information likely to be of interest to investigators in a variety of areas of primate research will be accepted for inclusion in the Newsletter. Descriptions of current research projects will also be welcome. It should be kept in mind that the Newsletter is not a formal publication and it is not likely to be obtainable in libraries. Therefore, citation of Newsletter notes or articles in publications is not recommended.

Information for the Newsletter will be welcome from anyone in any research area who is using monkeys or apes. The Newsletter will appear quarterly and will continue so long as people are interested enough to contribute items of information. The mailing list is open to anyone expressing an interest. There is no subscription charge. However, only new issues and back issues for the current year will be mailed to new subscribers free of charge. Volume 1 of the Newsletter may be purchased for $2.00 and Volume 2 for $1.00. (Please make checks payable to Brown University.)

All correspondence concerning the Newsletter should be addressed to:

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Acknowledgments

The Newsletter is supported in part by a Grant (MH-07136) from the National Institute of Mental Health, U. S. Public Health Service.

EDITOR'S NOTES

Increasing use is being made these days of species of monkeys other than the tried and true Macaca mulatta. It would be rather surprising if some experimental findings do not turn out to be species-specific or even subspecies-specific. In any event, this possibility must certainly always be kept in mind. Nevertheless, in research articles in a variety of disciplines, we find amazingly little attention paid to clear identification of the kind of animal studied. We would hardly be satisfied reading an article which simply stated that the subjects were monkeys. While things are perhaps not that bad, it is certainly impossible to ascertain the specific kind of animal used on the basis of the information given in many research articles. It may not even be enough to simply state a commonly accepted scientific name, such as Saimiri sciureus. It should be kept in mind that these animals come from a variety of regions in South America, with a corresponding difference in coat color and other external characteristics, and could turn out to be separable into different species.

In particular, we would like to stress that reliance should not be placed on the importer's designation. Importers are importers, not taxonomists; their labels frequently are chosen for convenience, not for scientific accuracy (probably partly because few researchers have cared). A particular case in point is what almost all dealers (and more researchers) are now calling "cynomolgus" (also spelled "cynamolgus") monkeys, which stands for crab-eating monkeys. These monkeys are still also called "Java" monkeys, though not as frequently as in past years. Other designations that have been used indiscriminately are: Macaca cynomolgus, Java macaque, Cynomolgus irus, Macaca irus, etc. Now, these monkeys can come from Indonesia, the Philippines, Malaya, or Thailand, as well as other regions. In many instances, they come from inland areas and may never have seen a crab, much less eaten one. In a conversation with an importer not too long ago, we asked where the "Java cynomolgus" monkeys he was talking about came from. He said, "Malaya."

To be sure, it is one thing to want to use the proper name and another thing to be able to, as a foray into the field of nomenclature will probably reveal. There is no one source one can turn to when it comes to problems of nomenclature, and different sources often disagree. We have some Philippine "cynomolgus" monkeys in our laboratory and have been trying to find out what to call them. The leading candidates at present seem to be Macaca irus philippinensis and Macaca philippinensis. Maybe there is no answer at present, but either of these alternatives would provide much more information than saying simply "cynomolgus." If no one informs us to the contrary, we will probably choose the first alternative, and also indicate some of the other commonly used designations mentioned above.

We strongly suggest that you ask your importer to inform you, if at all possible (for a variety of reasons it is often not possible), from what region within a country the animals you receive were obtained, or, at a minimum, from what country. Give this information in your research papers, as well as any other information that might be of help in speci-

fying the animals. Importers might be of help here, indicating that the animals obtained from one area have such and such kind of coat, whereas the ones shipped to you have another kind. Such information, it should be emphasized, will certainly not guarantee eventual clear-cut identification of the animals, but it would be a step in the right direction.

CONTENTS

IDENTIFICATION OF CAUSE OF X-DISEASE IN MONKEYS[1]

D. W. van Bekkum, L. M. van Putten, and M. J. de Vries

Radiobiological Institute T. N. O.

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Recently we have reported the occurrence of a chronic disease in our monkey colony which was identified with the so-called X-disease or hyperkeratosis in cattle (Putten, Vries, and Bekkum, 1963).

With the gradual elimination of many potential causes of X-disease in the environment of the monkeys, it was concluded early in 1963 that the sawdust used in the pans underneath the monkey cages was the most strongly suspected material. As a partial test of this hypothesis, a newly imported group of rhesus monkeys was divided into two groups. One group was put on the standard regimen and the other on a completely different one, in which sawdust was omitted from the pans and all the dietary components were different from those of the standard group. After about 6 months the first clinical symptoms of X-disease became apparent in the group of monkeys kept on sawdust. None of the other monkeys has developed these symptoms.

Because it was known from the literature that calves are highly sensitive to the development of X-disease, experiments with newborn calves were undertaken to determine the presence of the causative factor in sawdust. These investigations were started in May 1963 in cooperation with the Central Veterinary Institute, Department Rotterdam. One group of 3 calves was continuously exposed to sawdust by bedding the animals on a thick layer of this material in an experimental stable at Rotterdam. Two control animals were kept on straw in the same room and were treated similarly in all other respects. The sawdust used in the calf experiment was supplied by the Radiobiological Institute T. N. O. and derived from the same source as that supplied to the monkeys during the past years. Samples from all sawdust batches were stored for chemical analysis. At the same time another group of 6 newborn calves of the same shipment was installed on a plot of grassland next to the monkey-colony building to monitor for the presence of airborne contamination carrying the X-disease agent in the Rijswijk environment.

After about two months one calf of the sawdust group died, showing at autopsy slight lesions suggestive of X-disease in the skin and in parts of the digestive tract. The two other animals in the sawdust group were clinically ill by the end of July and showed characteristic eye and skin

[1]Part of this work was performed under contract with Euratom (European Atomic Energy Community), 51-53 rue Belliard, Brussels, Belgium.

lesions and diarrhea. The animals seemed to recover in the course of August and September and were killed and autopsied in the beginning of October. In both animals highly characteristic lesions of the intestinal tract have been found. None of the control animals on straw bedding or of the group kept on the grassland at Rijswijk has shown any similar lesions at autopsy.

These findings, together with the observations on the monkeys, show that the toxic factor causing X-disease is introduced to the monkey colony by way of the sawdust. Most of the sawdust is produced from wood that has been imported from Sweden. Before shipment from Sweden the wood is treated with various chemicals including solutions of the wood preservative pentachlorophenol (PCP). Chemical analyses of the sawdust samples showed an unexpectedly high concentration of about 0.05% of PCP to be present. These analyses are still being continued to study variations in the different sawdust shipments.

Attempts to reproduce the disease in monkeys with technical PCP by oral administration or application on the skin have so far failed. The possibility has to be considered that the PCP used for the treatment of the wood contains impurities that cause X-disease. Another possibility is that autoclaving the sawdust produces toxic substances from PCP. These two possibilities are still under investigation.

A clinical syndrome and gastric lesions that are highly characteristic of X-disease were found by Lushbaugh (1947) in Macaca mulatta sprayed with diesel lubricating oil. The same lesions, which Lushbaugh classified as papillomas, could be induced in the cecum and rectum by feeding monkeys with the oil. In view of our recent findings we speculate that the diesel oil lubricant had been doped with one of the chlorinated naphthalenes.

References

Putten, L. M. van, Vries, M. J. de, and Bekkum, D. W. van. Lab. primate Newsltr, 1963, 2 (No. 2), 1-2.

Lushbaugh, C. C. J. Nat. Cancer Inst., 1947, 7, 313-320.

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NEW PRODUCTS AND SERVICES

Asiatic Animal Imports, Inc. (P. O. Box 8125, International Airport, San Francisco 28, California) is now supplying specific monkey tissue and organs to fill individual requirements. The firm reports that the tissue material is removed under aseptic laboratory conditions by veterinary surgeons and preserved in holding solutions in accordance with the purchaser's specifications. Overnight direct air freight under refrigeration is possible when necessary. Thyroid, kidney, liver, heart, and other tissues, as well as whole blood and blood serum, are available from rhesus monkeys and other commonly used laboratory monkeys, including cynomolgus, African greens, and baboons.

Proteus mirabilis associated with Chronic Diarrhea in *Macaca mulatta*: A Case Report

Morris L. Povar

Psychology Department, Brown University

A *Macaca mulatta* male, approximately 6 years old, weighing 12 lb. and generally in good health, has been a resident of our colony for over 4 years. He is an alert animal, even for a rhesus, and he has performed exceptionally well in the behavioral studies performed with him. There was no change in diet, environment, or management for over a year, except for his being paired with a female for mating on two occasions. Several weeks after the second pairing, he developed an intermittently soft stool. There is usually a good deal of excitement when animals that have been caged singly are paired, but the condition persisted too long for this to account for it.

The animal was caged alone for treatment. His stools were found to be free of parasites, as they had been for over 2 years. In an attempt to control bowel hyperactivity, phenobarbital, 1/4 grain, was administered two times daily as a tablet embedded in his monkey biscuit. His appetite remained good, but his stools continued to get worse after 5 days of treatment.

The animal had gained weight rapidly on the amount of food he was getting and was up to 13 lb. at this stage. His diet was reduced by 10% to see if less food would help re-establish a normal stool by reducing volume of excreta. By this time the feces were continuously soft, light grey in color and occasionally showing some mucoid coating which was intermittently streaked with blood. A stool culture was started at this time by the Bacteriology Department of the Rhode Island Hospital, Providence, R. I. The feces yielded a pure culture of *Proteus mirabilis*. A chart by Dieterich (reproduced in Ruch, 1949, p. 78) indicates that *Proteus mirabilis* is nonpathogenic for *Macaca mulatta*. Consultation with local pediatricians and other M.D.s revealed that chronic diarrhea in children has been traced to *Proteus* organisms including *mirabilis*.

The *Proteus* organism isolated was found sensitive to penicillin, streptomycin, bacitracin, neomycin, and Chloromycetin. Injections of 300,000 u. procaine penicillin intramuscularly were continued for 5 days. The monkey's stools improved slightly after 3 days, but then deteriorated rapidly. He was then placed on Enteromycin tablets #1 (Pitman-Moore Co.), which contain bacitracin disalicylate 150 u., streptomycin as sulfate 15 mg., and roasted powdered carob pulp 800 mg. No masking of the tablets was necessary, as the animal promptly ate one three times daily. At this point his weight had dropped to 11.5 lb. Since separation from his mate had not visibly helped him, he was returned to her cage. Within 48 hours after the Enteromycin treatment was begun, his stools were perfectly normal in appearance. His food

allotment was then increased to its original amount, and his weight subsequently increased from the low of 11.5 lb. to 12.75 lb.

After 1 week of treatment, a replacement mixed culture of Lactobacillus acidophilus and Bulgaricus called "Lactinex" (Hynson, Westcott & Dunning) was administered with the Enteromycin. It is common in the treatment of similar problems in humans to introduce a culture of desirable organisms because they are often destroyed or replaced by a pathogen. Lactinex was administered at the rate of one tablet 3 times daily. The animal accepted this tablet also without masking. Stools remained perfectly normal for one more week and the Enteromycin was then discontinued. One week later the Lactinex was discontinued.

The monkey has remained normal during the 3 months which have elapsed since the treatment was discontinued. He has recently been subjected to considerable stress in being moved to a new environment and into a new cage, but has apparently remained normal throughout. A recent culture showed a normal population of Enterobacillus and B. coli. No Proteus were present.

Although it is impossible for us to fully meet the provisions of Koch's Law in determining the specific cause of this mulatta macaque's chronic diarrhea, the nature of the response and the similarity to a condition observed in humans makes this case interesting.

References

Ruch, T. C. Diseases of laboratory primates. Philadelphia: Saunders, 1959.

U. S. PUBLIC HEALTH SERVICE
REGIONAL PRIMATE RESEARCH CENTER PROGRAM

The Primate Research Center Program was last described in the October 1962 issue of the Laboratory Primate Newsletter. A more detailed and up-to-date review of the program appears below.[1]

In 1956 the National Advisory Heart Council discussed the possibility of a nonhuman primate research station in this country, similar in concept to the Woods Hole Marine Biological Laboratory, for the conduct of research that would advance knowledge in the cardiovascular field. Further consideration of this plan at the National Institutes of Health resulted in a recommendation to establish several smaller "regional" Primate Research Centers in the United States dedicated to all disciplines using primates in research.

The first primate center award was made in 1960 and the other six by the end of Fiscal Year 1962. These centers are financed by Public Health Service grants to the universities or foundations serving as "host" institutions.

In Fiscal Year 1960, Congress appropriated $2 million for the establishment of one or two primate research centers in this country while encouraging further study of the development of a national conditioning center where primates would be studied from capture through the rest of their life spans. Only one center grant was awarded that year--to the Medical Research Foundation of Oregon, Inc.

In Fiscal Year 1961, Congress appropriated $7 million to expand the program by establishing and operating additional primate research centers. Three primate center grants were awarded, one to the University of Wisconsin, one to the University of Washington, and one to Emory University in Georgia.

During Fiscal Year 1962, Congress appropriated $9.5 million for primate research centers. Three center grants were awarded, one to Harvard University, one to Tulane University, and one to the University of California for a national conditioning center. These are the last center grants that will be awarded for the present.

Each of these awards provided two grants, one for all construction costs, including acquisition of land, and one for either total or base operating costs for seven years. The terms of the awards require that the institution receiving the grant serve as a "host" institution, providing not only fiscal management but also an academic environment of high standard for resident and visiting scientists.

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[1] The information for this review was supplied by the Animal Resources Branch, Division of Research Facilities and Resources, National Institutes of Health, Bethesda 14, Maryland.

Though each center has its own program orientation, the six regional centers are committed to providing facilities for a broad scope of disciplines using primates in research. The seventh center, a national primate conditioning center, is committed to investigations on the primate itself, including capture and transportation, maintenance under laboratory conditions, and breeding and rearing in captivity.

There were many more applications for grants under this program than could be awarded. Each application was reviewed by the Primate Research Study Section of the National Institutes of Health and by the National Advisory Heart Council. Their recommendations for awards followed intensive reviews of the applications and visits by members of the Study Section and the staff to the applying institutions.

Criteria on which recommendations were based included the scientific calibre of the investigators, their experience in the field of primate research, and the scientific merit of the proposed research to be conducted in the centers. Because the center must be a resource for a community of scientists, the "host" institution must agree to make the facility and the primates available to visiting scientists and to share information of common interest with other primate centers.

The present status of each of the primate centers is as follows:

Oregon Regional Primate Research Center (Director: Dr. William Montagna)
505 N. W. 185th Street
Beaverton, Oregon

The Public Health Service primate center program was inaugurated in 1960 with the awarding of grants to the Medical Research Foundation of Oregon for construction and operation of a regional primate center. The University of Oregon provides the scientific standards by which the center operates. The new facility, including unique outdoor colony buildings, is on a large tract of land in Beaverton about 10 miles west of downtown Portland.

Investigators here currently emphasize studies in reproductive physiology; cardiovascular physiology; neurophysiology; comparative biochemical, histochemical, and electron miscroscopic attributes of red and white muscle fibers; comparative histophysiology and biochemistry of skin, and a number of other programs dealing with the origin, specialization, and functional mechanism of primate cellular and organ systems.

Regional Primate Research Center (Director: Dr. Theodore C. Ruch)
University of Washington
Seattle 5, Washington

Grants have been awarded to the University of Washington for the construction and operation of a regional primate research center on the University campus at Seattle. Construction of this facility was begun in April 1963 and is expected to be completed by the summer of 1964.

The center will be a facility for University faculty members using primates in medical, biological, and psychological research and will also emphasize the training of visiting scientists in primate research techniques and primate care. A further important objective is to serve as a center for disseminating new information about primate research.

Among key investigations to be conducted at the center will be studies in neurophysiology and electrophysiology, gastrointestinal physiology, skeletal and dental development, and obesity and dietary factors in cardiovascular diseases.

Wisconsin Regional Primate Research Center (Director: Dr. Harry F. Harlow)
University of Wisconsin
22 North Charter Street
Madison 5, Wisconsin

Grants have been awarded to the University of Wisconsin for construction and operation of a primate research center adjacent to the present primate laboratory, on a site in the campus extension area. Construction on this facility was begun in October 1962 and is expected to be completed early in 1964.

Included in this facility will be an area where certain animals will be housed for many years to enable scientists to study them from birth to death, a life span sometimes as long as 25 years in rhesus monkeys. An extensive breeding program will be undertaken to provide a constant supply of young animals.

Among investigations to receive special emphasis at this center are studies on biochemical factors associated with mental retardation, postnatal development of the primate brain, hormonal factors in reproductive processes, and variables influencing the development of normal and abnormal behavior.

Yerkes Regional Primate Research Center (Director: Dr. Geoffrey H. Bourne)
Emory University
Atlanta 22, Georgia

Grants have been awarded to Emory University for construction and operation of a primate research center designed primarily for multidisciplinary study of the anthropoids. Situated on the University campus, this center will assure the continuation and further development of the psychobiological research of the Yerkes Laboratories of Primate Biology, Inc., owned by Emory University and now situated at Orange Park, Florida. Construction of the new facility was scheduled to begin late in 1963.

Areas of research emphasis of the new center will include studies on the relation of infant growth and experience to behavior in later life; physical, physiological, and psychological attributes of aged pri-

mates; brain functions; comparative studies on monkeys and apes; and effects of unusual environments and intense stimulation.

Delta Regional Primate Research Center (Director: Dr. Arthur J. Riopelle)
Covington, Louisiana

Grants have been awarded to Tulane University for construction and operation of a primate research center adjacent to Covington, Louisiana, about 36 miles from New Orleans. Construction was begun in September 1963 and is expected to be completed in 1964.

Research emphasis at this center will be on cardiovascular diseases, including diet-induced atherosclerosis and hypertension, other metabolic diseases, infectious diseases, environmental studies, and behavioral sciences. Particular emphasis will be placed on studies of New World monkeys at this center.

New England Regional Primate Research Center (Director: Dr. Bernard Trum)
Harvard Medical School
25 Shattuck Street
Boston 15, Massachusetts

Grants have been awarded to the Harvard Medical School, acting in behalf of several Greater Boston and New England universities and medical institutions, for construction and operation of a regional primate research center on a 140-acre tract of land in Marlboro and Southboro, Massachusetts. Construction is scheduled to begin in the summer of 1964.

The center will provide facilities and support for (1) investigations in bacteriology, physiology, nutrition, endocrinology, pathology, and psychology; and (2) the acquisition, breeding, and maintenance of a variety of primate species. In addition, the center will train professional and technical personnel in the care and management of primates in research laboratories, and will provide primates that meet special requirements for the research programs of the institutions cooperating in the center program.

National Primate Conditioning Center (Director: Dr. Leon H. Schmidt)
University of California
Davis, California

Grants have been awarded to the University of California for construction and operation of a National Primate Conditioning Center at the University's campus at Davis, California. Construction is scheduled to begin early in 1964.

The long range objectives of this Center are: (1) to develop simple and reliable techniques for introduction of healthy specimens of a wide variety of nonhuman primates into the laboratories of workers in experimental biology and medicine (this objective encompasses problems of procurement, housing, and breeding, as well as maintenance and manipulation); (2) to make such animals available to guest investigators at the

Center at least for pilot experiments and where indicated for fuller investigations; (3) to provide special breeding stock or other unique subjects to investigators in other institutions for approved studies, and (4) to participate actively in developing a broad body of knowledge on the comparative biology of nonhuman primates with emphasis on defining the utilities of diverse subjects for various biomedical studies. To achieve these goals a broadly based staff of permanent investigators will be organized. These will include the disciplines of parasitology, bacteriology, immunology, virology, biochemistry, nutrition, physiology (particularly reproductive), pharmacology (experimental therapeutics), anatomy, pathology, anthropology (both physical and social), psychology (behavioral), ecology, and biometrics. Formalized training in primate care and maintenance techniques will be an important segment of the total activity

According to present schedules, all seven primate research centers will be operating by 1965. Once they are operating, there will be a continuing liaison between the centers and the staff of the Animal Resources Branch of the National Institutes of Health. Two major responsibilities in this liaison are the annual negotiations of budgets for operating costs which consider among other factors funds received from other sources for research projects, and a pooling and dissemination of information of common interest to all centers and to the scientific community.

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INFORMATION ON BREEDING OF NEW WORLD PRIMATES SOUGHT

Precious little information is available in the literature on the breeding of New World primates. We, at M.I.T., are embarking on a program of research on the development of visually guided behavior in primates under the direction of Dr. Richard Held. We need a small, fairly easily handled primate such as the cebus monkey. We would like to study the animals from birth but this will be virtually impossible unless we can get them to breed. We would appreciate any information on the breeding of New World primates. Opinions, anecdotes, articles, the names and addresses of people who are working with New World monkeys, any reference at all will be greatly appreciated. In the event this endeavor proves successful, we shall be more than happy to share the information with other interested parties. Please send any scrap of information to:

Joseph A. Bauer, Jr.
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E10 - 044
Cambridge 39, Mass.

BOBBY JOE, 6, A SPACE PILOT

Holloman Air Force Base, N. M.--Bobby Joe, a six-year-old chimpanzee, has been trained to pilot a spacecraft back through the earth's atmosphere after a trip into space.

Bobby Joe is regarded as the Ph.D. of Holloman's famed Chimp College, an Air Force installation conducting some of the most remarkable research in the world. The chimpanzee was trained for spacepilot duty by learning to keep a small cross inside a circle on a lighted panel board. With two hand levers, one controlling vertical and the other horizontal movements of the cross, Bobby Joe follows the meandering circle over the panel with amazing accuracy. Spacecraft controls, say the experts, could be simplified for space flight by using the circle and cross tracking method. Maj. Herbert G. Reynolds, chief of the comparative psychology branch for the aeromedical research at Holloman, said Bobby Joe would be a whiz at this. "There is no question about it," Major Reynolds said. "He would guide a space vehicle into space and bring it back. He can sit and track for hours. His eyes do not tire too much. We hope he will get a chance." When the 69-pound chimpanzee is working he has to keep the cross inside the circle for two 10-second periods before he is rewarded with a banana-flavored food pellet. During a five-hour shift, he received 225 pellets.

In another room, a five-year old chimp named George, who walks as straight and erect as a man, does his specialty--counting. A panel with a small screen that flashes numbers sits at the end of George's cage. When a figure shows on the screen, George presses a lever an equal number of times. He pushes another handle to clear the panel. If he gets six right in a row, a reward pellet slips down the chute. George recently had the number 7 included in his schedule--from 1 to 7. His hand counted out the other six numbers on the control lever quickly. When 7 came up, he hit the lever more slowly, counting each tap. He missed it a couple of times. George showed his training that day, however. He finished the sequence correctly and looked for his reward. There was none. Again he did it perfectly, and again no pellet. Upon examination, Major Reynolds found the tube clogged. The chimp hadn't received a reward after three hours of work, but had continued to push the levers each time the numbers came up. The scientists were elated.

Chimp College is a busy place. It has become the world's most famous chimp vivarium (animal colony) and its research with animals is being watched by scientists all over the world. Enos and Ham were graduates of the school, which recently moved into a new million-dollar complex. Enos, the chimponaut who orbited the earth,

died earlier this year of diarrhea, a major cause of sickness for chimps. Ham, the even-tempered, wrinkled-faced chimponaut who was the first to ride atop a soaring rocket in a sub-orbital flight in 1961, is now in the Washington, D. C., National Zoo, a hero and celebrity.

Chimp College also is supplying animals to many universities and institutions around the country for experiments. In a current program six chimps from Holloman will undergo tests at the Navy Air Development Center, Johnstown, Pa., with six Navy men. A sailor and chimp are scheduled to ride together on a centrifuge. Animal and man will perform the same experiments for a comparison study of the effects of the forces of gravity. "The centrifuge will move at 5, 6, and 8 Gs'," Major Reynolds said. "We want to see comparative studies in hearing and sight with the increased G load. The chimp is a real durable character and tougher in many ways than man. The chimp is not frightened of pain. We also found out with Enos and Ham that they adapt easily. Noise and vibration did not affect the two space travelers, but acceleration did. Enos performed much better than Ham after he had a period of adaptation. Ham's sub-orbital flight didn't give him time to adapt to his environment. It is the same with man."

Future projects at Holloman, Major Reynolds said, include breeding. All efforts there so far have failed. One female chimp, Big Mean by name and a tic-tac-toe expert has been tagged the leading prospect for motherhood. She is about 10-years old, beginning maturity for chimps whose life span averages about 40-45 years, and weighs about 100 pounds. She also is the possessor of a foul temper, as her name implies.

Chimp College has a classroom section in one building and dorms, or vivarium, in another. The vivarium consists of a modern hospital that would strike envy in any doctor's heart; individual cages, heated, and with water; and an outside run for each cage. The hospital has 26 persons to care for the animals. In the hospital are a 500-millampere X-ray machine, a biochemistry laboratory, a pathology laboratory, clinical laboratory, a surgical suite and a diet kitchen.

The chimp colony numbers 83 animals, most of them adolescents. The main food is a commercially prepared chimp chow. Fruits are used for desert or supplements to the main diet. A special delight is the "chimp cocktail," a sparkling pink-colored concoction of gelatin, soft boiled eggs, baby cereal and milk. The chimps love it and hold out their cups for more. Pellets and candy are the main rewards in the training system, and the chimps are eager to get their hands on an extra ration.

The Providence Journal, December 24, 1963

HIGHWAY PATROL BRAKES EVOLUTION OF A CHIMP

Lakeland, Fla., Dec. 15--An ordinary motorist, on seeing a sports car traveling at 70 miles an hour with a monkey at the wheel, might think it best to say nothing--and try to forget. But John McLeod, who had this experience yesterday on Interstate Highway 4, decided to tell his story to the Highway Patrol. It took a lot of convincing, but the patrol office here finally radioed the Tampa office to be on the lookout for a sports car driven by a monkey. Later, two troopers spotted the car and stopped it. In the driver's seat and steering the car was a chimpanzee. In the passenger's seat was Robert E. Stover of Tampa, a carnival showman who had trained the chimp to steer while he operated the gas and brake pedals. Mr. Stover was charged with reckless driving and with having no driver's license. No charges were filed against the chimp.

The New York Times, December 17, 1963

MONKEY 'SPEECH' STUDIED IN JAPAN

Cleveland--The leader cried "kuan" and the troop fell silent ready to meet the enemy. He said "ga ga ga" and the troop trembled with fear, shrieking "gyaa gyaa." This may sound like code language for warfare, but it is actually monkeys' social communication.

Studies by the Japan Monkey Center and Japanese Primate Research on the "language" of wild Japanese monkeys were reported recently here at a meeting of the American Association for the Advancement of Science. Dr. Denzaburo Miyadi, zoology professor at Kyoto University in Japan, said "kuan" was a signal among the monkeys of approaching danger. It is uttered by the strongest male. Upon hearing "kuan" the monkeys disappear from sight except for one who keeps watch on the enemy from the top of a tree. The cry "ga ga ga" or "go go go," often followed by an attack on others, is an expression of threat. "Gyaa gyaa" are cries of fear. The monkeys, Dr. Miyadi pointed out, greet each other with certain words as they come and go and have the sounds to express various emotions. Baby monkeys, like baby humans, have special ways of talking. "Unlike the human language, however, monkeys cannot tell their companions such things as 'This tastes good,' or 'You should try this,' and so on," Dr. Miyadi said. "But their language facilitates the splendid teamwork existing in the troop." The monkeys also communicate with gestures, he noted. A human being might shrug his shoulders to indicate "I just don't know what to say." A monkey dances toward a female with his lips moving to show affection, or he mounts the back of a weaker monkey as if to say "See, I'm the stronger." "There are some troops which are more noisy than others," Dr. Miyadi said, "but a larger troop usually has a larger vocabulary than a smaller one." Although some troops have words that others lack, there seem to be no "dialects."

Dr. Miyadi told how the monkey troops evolve their own cultures. He told how a monkey discovered how to wash sweet potatoes in sea

water before eating them. Before long the habit was picked up by members of the troop and spread to other troops.

There seems to be an optimum group size, he noted, and beyond that size the monkey troop will split. The critical point is not known.

"The monkey troop is undoubtedly a society of mutual acquaintance," Dr. Miyadi said. "Each monkey knows every other monkey with its ranking status, the mother-child relationship and so on. Some infants, for example, are ranked high because they are the children of influential mothers."

The New York Times, January 5, 1964

* * *

HEPATITIS IN HUMANS ASSOCIATED WITH NONHUMAN PRIMATES[1]

At the 100th meeting of the American Veterinary Medical Association in August, Dr. Joe Held, formerly with the Communicable Disease Center and now at the National Institutes of Health, reported on 78 cases of hepatitis among persons working with nonhuman primates used in research studies.[2] The primates were incriminated as the source of the human infections. Of the 78 human cases, chimpanzees were thought to have been the source of infection in 61 cases, woolly monkeys in 9, a gorilla in 4, and Celebes apes in 4.

Several of the human cases occurred in multiple case outbreaks in institutions using primates for scientific investigations. Epidemiological studies showed that the nonhuman primates were the only factor common to all the cases. This link in the transmission of infectious hepatitis from nonhuman primates to man emphasizes the need for further investigation into the etiology and epidemiology of infectious hepatitis and also points up the need for a method of protecting people working with nonhuman primates.

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[1] From the December, 1963, issue of the CDC Veterinary Public Health Notes, prepared by the Veterinary Public Health Section of the Epidemiology Branch, Communicable Disease Center, Atlanta, Ga.

[2] See Lab. primate Newsltr, 1962, 1 (No. 4) for some of the details about most of the cases.

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