

BIOLOGY

Trouble in the Monkey Business

Foreign primate supplies are dwindling. Incidents along shipping routes have caused distrust, and U. S. scientists have plans for home grown monkeys, Gloria Ball reports.

► THERE IS TROUBLE brewing in the monkey business.

Medical researchers and drug firms are beginning to wonder where their next monkey shipment is coming from. Smugglers are running a black market trade in orangutans, and not even limited supplies of U. S.-bred primates will be available in the near future.

Of the 182 primate species known throughout the world, the one most thoroughly studied is the rhesus monkey, *Macaca mulatta*. For years the rhesus has been a popular experimental animal; today 60% of the primates used for research are rhesus. The Rh blood factor was found in the rhesus, and this species was a logical choice for the manufacture of poliovirus vaccine.

The monkey supply problem became acute in March, 1955, when supply houses were desperately trying to produce large quantities of vaccine before the summer polio season hit. A shipment of several hundred monkeys accidentally suffocated in London during a flight stopover. Religious sects that regard the monkey as a sacred animal were outraged. Charges of neglect and cruelty were made by officials from India, and all monkey exports were stopped.

Ban Lifted on Monkeys

The ban was lifted only after a United States delegation assured the Indian government that monkeys would be treated with great care in transit and that they would be used only for most noble purposes. The National Institutes of Health must now supply a certificate of need to India on behalf of U. S. researchers requesting a shipment.

The Indian government will not allow NIH to release statistics on the number of rhesus received.

However, estimates have been made for the number of primates used for medical studies and drug production each year in the U. S. The figure is generally quoted as 200,000 to 300,000. Most of these are imported, and a repeat of the 1955 incident could result in a crippling, permanent shipment ban.

Individual firms and the U. S. Government, through NIH, have sent various expeditions abroad to get a first-hand look at the supply situation.

Dr. Alan Creamer, chief of Merck, Sharp and Dohme's veterinary department, visited dealers in Africa, East and West Pakistan, India, Singapore, the Philippines and London in 1958 and toured Africa again in the fall of 1960.

His evaluation is this: 60% of our imported supply consists of rhesus monkeys from India and Pakistan; 30% come from the South Pacific, the home of the cymologus monkey, *Macaca iris*; and 10% are from Africa, where several species of cercopithecus such as the African green monkey can be found along the east coast. A few are from the west coast—Nigeria and Sierra Leone.

India is now and has been the main supply source for years. The figure of 10,000,000 to 20,000,000 was often quoted as the number of monkeys in India or in Uttar Pradesh alone, a north central province in the heart of the rhesus country. Officials in the U. S. decided the figures needed checking.

Dr. Charles H. Southwick, associate professor of zoology at Ohio University, Athens, completed a survey of Uttar Pradesh in June, 1960. The monkeys were everywhere, most of them (76%) in villages, towns and cities. Only 12% were still in the forest areas. But the final projected estimate for the province was only 800,000, a far cry from the millions supposed to be there, and the supply is being depleted rapidly.

To further confuse the international picture, the U. S. unknowingly has become involved in a black market trade in orangutans. The Indonesian Government is extremely strict in limiting exports. But of

the 77 orangs now exhibited in U. S. zoos, more than one has arrived with an export permit that later proved to be a forgery. The price may be \$2,000 per animal, making a tidy profit for smugglers operating out of Borneo and Sumatra.

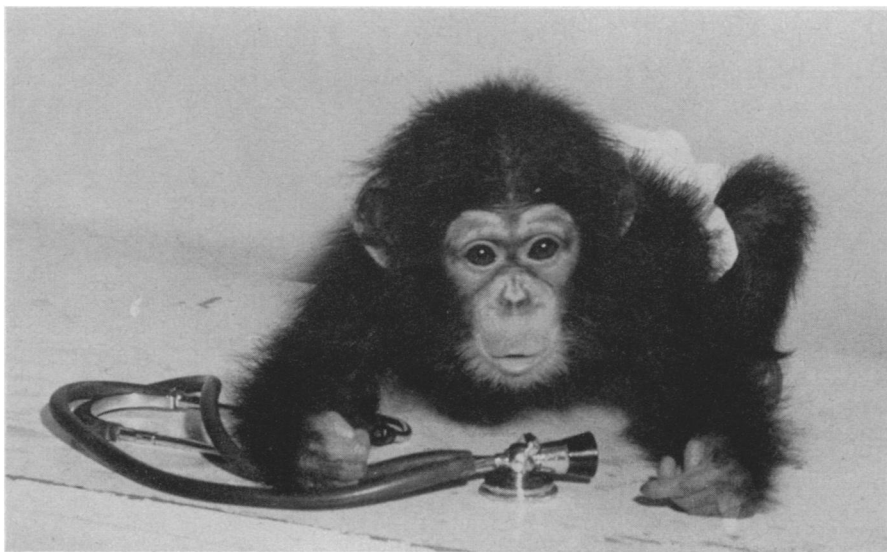
Happily, a new continent is now entering the world market as a supply source: South America. Here the monkeys are more primitive, but their smaller size, as in the case of the spider monkey and the squirrel monkey, makes them particularly suitable for space research.

However, purchasing agents and scientists alike agree that supply colonies should be built up and maintained in or near the U. S. Dwindling reserves in India are not the only consideration. Prices range from \$35 to \$200 for a rhesus and \$300 to \$750 or even as high as \$2,000 for a chimp, depending on size, condition, source and shipping distance.

Have Breeding Colonies

At present, plans for such a large-scale project in the U. S. are indefinite. Several research groups now maintain breeding colonies to supply enough animals for their own experiments, and outside investigators may be invited to make special studies on the premises.

Breeding primates is a relatively slow business. Dr. Arthur Riopelle, director of the Yerkes Laboratories for Primate Research in Orange Park, Fla., states that the 70 chimps there produce only half a dozen young in a year. The chimp matures at eight and a half years and the gestation period is seven and a half months. How-



MONKEY SEE, MONKEY DO—This eight-month-old chimp helps out during his monthly physical examination. He is part of a blood study project and is one of nearly 300,000 primates used each year in the U. S. for medical research and drug production.

ever, the female can bear young throughout her entire lifetime, which may be 50 or 60 years, for there is no menopause in any primates except humans.

Maximum conditions for setting up a large supply colony are yet to be determined. Data on all types of primate research are being channeled into central information files at the National Academy of Sciences-National Research Council, and new research groups soon will be adding their reports to the common pool.

One of the largest is the \$2,000,000 Oregon Primate Center, now under construction at Beaverton, Ore., where Dr. Donald E. Pickering, a pediatrician, will direct studies of some 500 rhesus monkeys.

Future Plans For Colonies

In the future, Dr. Willard H. Eyestone of the primate committee at NIH estimates, it should be possible to establish a breeding colony or colonies large enough to supply 25,000 to 30,000 primates per year. This number would be adequate for basic research purposes but not enough to meet the needs of drug production.

The closest thing to such a colony is Santiago, an L-shaped Puerto Rican island that has been a playground for rhesus monkeys since 1939. Some 300 TB-free animals now range freely over the island's 37 acres and 75 females are in the caged colony. A few are now being released to other institutions, and plans for expansion to two other islands are under consideration.

The main project on Santiago, now co-operatively sponsored by the National Institute of Neurological Diseases and Blindness and the University of Puerto Rico Medical School, is an extensive study of neonatal defects and asphyxia at birth, aimed at finding out why babies are born with cerebral palsy, mental retardation, epilepsy, deafness and blindness.

• Science News Letter, 79:90 February 11, 1961

ROCKETS AND MISSILES

Successful Samos II Is U. S. Eye in the Sky

► SAMOS II, an experimental model of the U. S. Air Force's Satellite and Missile Observation System, has been successfully launched.

It now circles the globe in a circumpolar orbit 300 miles away when closest to earth and 350 miles away at the farthest point of its orbit. The period is 95 minutes.

The Samos system is intended for military surveillance, once in operation. However, the Samos II model was launched for the purpose of testing photographic equipment, the Air Force reported.

The perfected system of Samos satellites is planned to radio back to earth photographs of any part of the earth's surface.

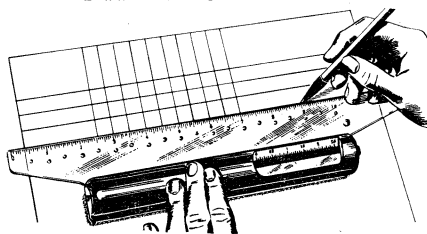
The Samos II satellite was launched by an Atlas ICBM first stage with a 22-foot Agena-A second stage rocket from Point Agnello, Calif. The Samos instruments are located in the nose of the Agena rocket.

Samos I, also launched from Point Agnello last October, never went into orbit.

There will be no attempt made to recover the Samos II.

• Science News Letter, 79:91 February 11, 1961

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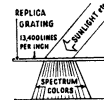
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