physical, and biological exploration. Experiments planned for these missions include small vehicles to perform traverses at moderate distances from the landed spacecraft; drills for subsurface sampling and vertical profile measurements; and deployed instrumentation for acquiring geophysical data to be transmitted back to Earth by radio frequency link for up to a year after departure of the astronauts. One extended lunar surface mission per year is planned, beginning in 1971.

Medical experiments during 1968 and 1969 will concentrate on the biomedical effects of long duration flight on man. A biomedical laboratory is planned for flight in 1970. This laboratory will consist of an Apollo spacecraft module equipped with biomedical and behavioral apparatus to test and record human responses during long-duration space flights, to various stresses such as physical exercise, variable gravity, and the performance of complex tasks.

Bioscience and biotechnology laboratories are planned to extend earlier investigations on various life forms ranging from simple cells to primates. In these laboratories, greater stresses can be applied to specimens than are normally planned for human subjects, and the results will benefit both the bioscience community and manned space flight technology.

Mr. DADDARIO. Included in these medical experiments, you have not included any animal experiments?

Dr. MUELLER. The bioscience experiments that I referred to are on animals and they run up to primates and one of the downrange or downstream experimental sets of apparatus is an experiment on primates, using man for the carrying out of experiments.

Mr. DADDARIO. You are talking about primates in orbit for what period of time?

Dr. MUELLER. Well, at this point in time, the experiment is in a definition phase and that has not been determined.

Mr. DADDARIO. But it is definite that we will be using animals in this time period?

Dr. MUELLER. Yes. But that time period is out in 1970, so it is several years away.

Mr. DADDARIO. Thank you.

Dr. MUELLER. The technology and engineering experiments planned for Apollo Applications missions are focused generally toward the development of equipment and techniques which are fundamental to the accomplishment of the next generation of space flight missions.

During 1968 and 1969, emphasis will be placed on conducting related experiments in and with the Orbital Workshop. Resupply and crew transfer flights are planned to extend mission duration, rotate crews, and to test orbital rescue operations. Orbital assembly of complex structures and in-flight maintenance of vehicles and experiment apparatus are also planned.

The fiscal year 1968 effort will continue the development of the Apollo Telescope Mount and the Orbital Workshop and will define and develop other experiment payloads for follow-on Apollo Applications missions. These experiments have already been discussed in considerable detail.