comets Kohoutek falls. If gas is abundant, searches for molecules should be fruitful. But if dust is abundant, infrared studies, looking for broad features rather than sharp lines, may reveal new information about the composition of the dust. For instance, are silicates as abundant in comets as many scientists think they are in interstellar clouds?

Some astronomers think that one of the most important studies of Kohoutek will be a detailed recording of the evolution of the comet. But Robert MacQueen of the High Altitude Observatory in Boulder, Colorado, points out that changes in the comet's tail near the sun may also be used to study the solar wind. Others will be looking for evidence of metals such as sodium and iron, which has shown up in other comets just before they reached the expected perihelion distance of Kohoutek.

The outstanding question about comets may not be solved by observing Kohoutek, however. The validity of the most comprehensive model of cometary behavior, in which F. L. Whipple likens a comet to a "dirty snowball," depends on whether or not comets have a solid nucleus. The nucleus of Kohoutek is expected to be about 20 or 30 km in diameter, far too small to resolve even with the best telescopes. Most astronomers think that a mission to a comet will be necessary to resolve this question, and some are already proposing a mission to intercept Comet Grigg-Skjellerup in 1977. But there is an outside chance that Richard Goldstein and his associates at the Jet Propulsion Laboratory, Pasadena, California, may prove the existence of a nucleus if they detect an echo when they try to bounce a radar signal off Kohoutek.

When Comet Kohoutek reappears after perihelion, plainly visible in the evening sky on 30 December, it should be a spectacular sight, stretching as far as 30° across the sky and shining almost as brightly as Mars. According to a theory of the origin of comets by J. Oort, Kohoutek may have been orbiting undisturbed beyond Pluto from the creation of the solar system until some fairly recent perturbation, in the last 10,000 years, sent it into its present course to the sun. If indeed Comet Kohoutek is making its first passage into the solar system, its glow may not only afford earth dwellers a spectacle that occurs once in a lifetime, but also provide astronomers with a view of the material from which the solar system was born.

—WILLIAM D. METZ

Notes

1. The comet was discovered on 7 March 1973 by Luboš Kohoutek, with a 31-inch Schmidt telescope at the Hamburg Observatory, when it was about 5 astronomical units (A.U.) from the sun. At perihelion on 29 December 1973 it is expected to pass within 0.14 A.U. of the sun.
2. Estimates of the brightness of Comet Kohoutek at perihelion vary from magnitude — 5 to — 10. On the scale of solar brightness, the greater estimate (—10) corresponds to about 0.2×10^{-6}, while the scattered light from the sky even on a clear mountaintop has a brightness of 30×10^{-6} very near the sun (but decreases to 10^{-7} far away). Onboard Skylab, the brightness of the stray light in the white light coronagraph is 10^{-10} on the same scale.

Speaking of Science

Shortage of Primates?

Within 5 years investigators may have to breed all of the subhuman primates required for their research, according to William Goodwin of the Primate Research Centers Section, Division of Research Resources (DRR), National Institutes of Health, Bethesda, Maryland. Several species, including some already on the endangered species list compiled by the Department of the Interior, have been in short supply; now the availability of the common—and frequently used—rhesus monkey may be curtailed.

Since primates are not indigenous to North America, researchers in the United States have had to rely on imported animals. Most countries, however, have set export quotas to conserve their primate populations. India, the principal supplier of rhesus monkeys, has restricted the number exported worldwide to 65,000. Goodwin expects that the Indian government will soon reduce that figure to 30,000. The Institute of Laboratory Animal Resources (ILAR) of the National Academy of Sciences reported that researchers in the United States alone used almost that many rhesus monkeys—more than 26,500—in 1971.

The major problem is that the subhuman primates are losing their competition with the human primate. The situation of animals living in tropical forests is especially critical. These habitats are being converted to farmland in order to meet the food demands of growing populations or are being cut down for their hardwood timber. Unfortunately, many of the forest primates are both shy and unable to adapt to the altered environment; they prefer living in the wild to living in proximity with man.

Some species, such as the gorilla and the orangutan, are facing extinction. Of course, these are not typical laboratory animals, but the concern of primate specialists extends to the more commonly used species. Richard Thorington, curator of primates at the Smithsonian Institution, Washington, D.C., said that the survival of several species of Old and New World monkeys is threatened. These include the night monkey, which is imported from Colombia for research on malaria, and the stump-tailed macaque of Thailand. One investigator, who wanted to use the stump-tailed macaque for a long-term study of cardiac physiology, switched to another species when informed that the availability of the animals could not be guaranteed for the duration of the project. The chimpanzee is also becoming scarce. Once an animal has been placed on the endangered species list, this country may prohibit its importation.

Although research is not seriously handicapped at this time by a primate shortage, DRR has awarded a contract to ILAR to perform a survey of primate populations. This will be a worldwide primate census involving first an analysis of available data followed by the field studies needed to supply missing information. Very little is known about the status of the primate populations in such areas as Southeast Asia.

These surveys will identify those primates that will have to be bred in the United States to meet research requirements. Considering that more than 56,000 primates of all species were used in 1971, a substantial monkey business may result.—JEAN L. MARX