

## Science packages on moon shut down

The arrays of scientific instruments left on the moon by Apollo astronauts were shut down this week, in part because of the approximately \$2 million a year that it costs to keep them going. Another reason, according to sources at the National Aeronautics and Space Administration, is the lack of sufficiently active support by scientists engaged in lunar research.

Known as ALSEPS, the Apollo Lunar Science Experiment Packages were deployed by astronauts on all six of the manned missions to the moon's surface. The packages consisted of various combinations of instruments, including passive and active seismometers, magnetometers, solar-wind spectrometers, heat-flow probes, meteorite and micrometeoroid detectors, charged-particle detectors, gravimeters, laser reflectors and other devices. The ALSEPS were equipped with centralized, nuclear-powered transmitters to relay the instruments' data to earth. Many of the instruments have provided voluminous and valuable information about the moon's interior, surface and surrounding environment.

The decision to shut down the instruments has been in the works for more than two years. Unfortunately, says a NASA source, expressions of support from the scientific community at the time were less than had been hoped for. Petitions made available at such gatherings as the annual Lunar Science Conference at Johnson Space Center in Houston failed to produce widespread support for the program. Thirteen principal investigators, four of them with NASA, are still working with the program.

Although the scientific instruments have been turned off, the transmitters are being kept on so that scientists from the Jet Propulsion Laboratory in Pasadena can use the unmodulated carrier waves for geodetic and astrometric studies and spacecraft navigation checks. All of the ALSEPS have far outlived their design lifetimes, and some of the transmitters should still be operating in the 1980s. The Apollo 11 package, designed to run for 14 days, lasted 45; all of the rest were still going by this week, with 19 of the 25 instruments operational (although 8 of the 19 were only in "standby" mode).

By NASA's calculations, the power supplies for the ALSEP transmitters should keep the Apollo 12 signal coming until spring of 1979; Apollo 14 past 1981; Apollo 15 until early 1978; Apollo 16 well into the 1980s, and Apollo 17 at least through 1980. The signals are extremely weak—from -135 down to -142 dBm—but the transmitters are designed to hold those levels until the power supplies fall below a certain output, when the signals will simply stop.

It is thus possible, although presumably only with elaborate equipment, for



Apollo 12's Alan Bean readies ALSEP's nuclear power plant on the lunar surface.

amateur radio operators to pick up the ALSEP transmissions. The Johnson Space Center has received about a dozen "QSL cards"—requests from ham radio operators for confirmation of a received signal—since the ALSEPS went into operation. ALSEPS 12 through 17 are transmitting, respectively, on 2278.5, 2279.5, 2276.5, and 2275.5 megahertz (16 and 17 use the same frequency). □

## Will the child be normal? Ask mother

Anyone who knows their Oedipal from their anal stages can testify to the importance of the mother-child relationship in a youngster's development. Until recently, however, there have been few systematic attempts to measure exactly how the quality of the mother-child relationship can influence the child's emotional growth.

Now, University of Pittsburgh researchers have examined one aspect of the mother-child bond—the attitude of the first-time mother toward her infant—and traced the progress of more than 100 of the youngsters over a 10-year period. The results, reported recently at the World Congress of Psychiatry in Honolulu, indicate that a mother's perception of her newborn infant frequently predicts how well the youngster will adjust in later childhood: Generally, the more positively the mother sees the child, the more emotionally healthy the child will later become.

The study began in 1963, when psychiatrist Elsie R. Broussard selected 318 infants born during a two-and-one-half month period. The children chosen were non-handicapped and most were white. The parents' backgrounds ranged from grammar school to postgraduate education and from unskilled to professional jobs.

A few days after giving birth, and

again one month later, the mothers were asked to describe what they believed "most little babies are like" and instructed to predict "what your baby will be like." Infants of mothers who rated their children higher than the average baby were classified as low risk, and those whose mothers rated them below average were identified as high risk.

At age four-and-one-half and again at 10 to 11 years old, more than 100 of the original children were evaluated by child psychiatrists who had no knowledge of the previous predictive risk ratings. Broussard and her colleagues found that only 7.7 percent of those children viewed negatively both at birth and at one month were considered totally emotionally healthy at 10 and 11 years by the evaluators. Among youngsters rated above average at both points, 46.2 percent were described as symptom free. The remaining diagnoses of emotional illness included: "doubtful, but suspicious"; "probable but (not completely) certain"; and "high confidence of mental disorder." The latter category contained 46.2 percent of those twice rated below average by their mothers, compared with only 26.9 percent of those rated above average.

The results were similar at age four-and-one-half. Of those infants who were rated positively twice, 63.2 percent were diagnosed as having no mental disorder; of the "twice negative" infants, only 14.3 percent were labeled totally healthy. Broussard notes that the apparent trend as the youngsters got older "in the direction of pathology"—as well as the overall prevalence of emotional disorder among all the follow-ups—"indicates the magnitude of the mental health problem. . . . The critical variable associated with the child's emotional development . . . is judged to be the mother's early perception of him," Broussard says. "This relationship appears to be independent of the educational level of either parent, father's occupation, changes in income, maternal age, type of delivery [and] family size."

While positive maternal perception does not guarantee a trouble-free childhood, Broussard concludes that "the absence of positive maternal perception of the neonate is associated with a very high rate of subsequent psychopathology." Preventive programs, aimed at improving the mother's relationship with her newborn, should be given top priority, says the psychiatrist, who has already begun such a program in Pittsburgh. "During the first few weeks of the infant's life, the mother needs to be able to identify with the infant's primitive needs and yet be able to maintain her own reality orientation," Broussard says. "Mothers of infants at high risk seem to be hampered in this ability. These mothers seem in a state of postpartum paralysis." In such a state, Broussard says, the mother is "unlikely" to establish a healthy, balanced environment for the child. □