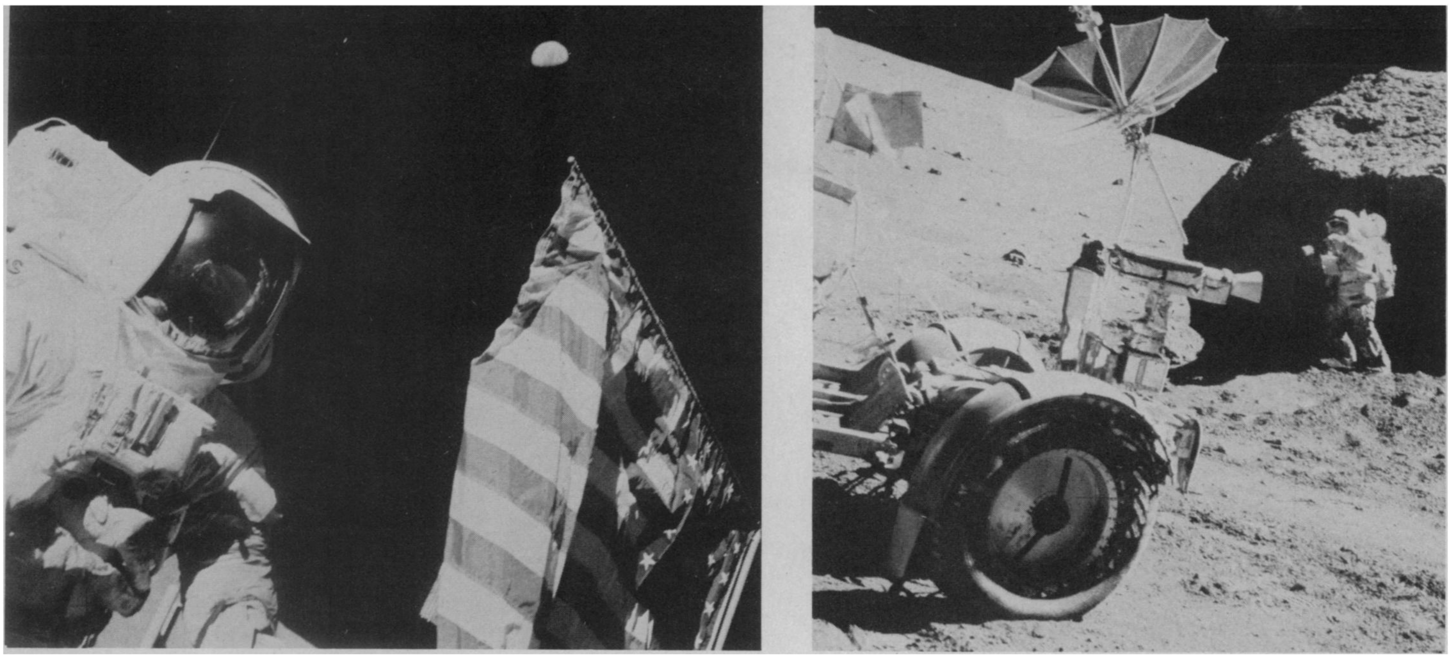


These Apollo 17 photos are of course the last to be taken by men on the lunar surface for decades to come.

Apollo 17 aftermath: Photos

Photos: NASA

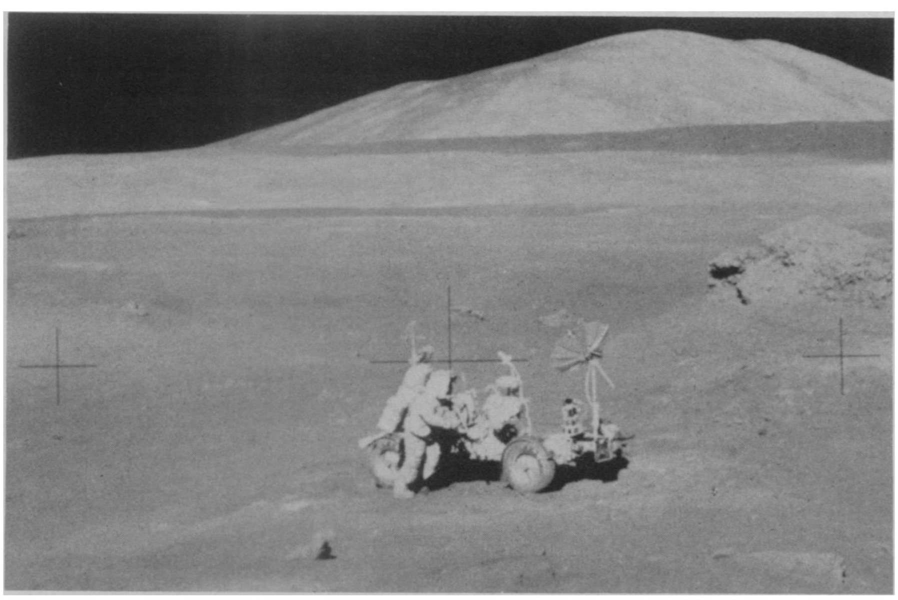
Cernan with photo reference assembly.

"We stood on the shoulders of giants." This was the way the commander of Apollo 17, Eugene A. Cernan, summed up the final moon mission last week upon his return to Houston.

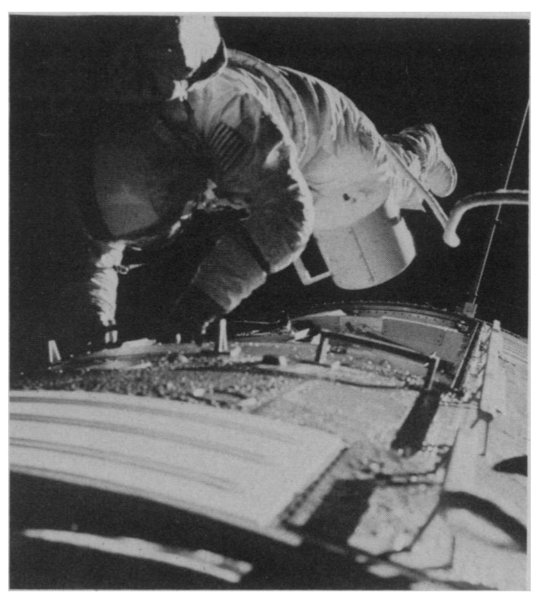
Others agree. The exploration of Taurus-Littrow and the last Apollo trip to the moon were described in superlatives by NASA administrators, lunar scientists and members of the news media. "Apollo 17 closes a golden chapter in what has been a very successful program," said Rocco A. Petrone, Apollo program director. "In a way, it also brings to a close what has been a very romantic chapter in space exploration."

"I've never seen a more perfect mission," was the way Christopher C. Kraft Jr., director of the Manned Spacecraft Center, put it. And of the last Apollo crew and the only one to include a professional geologist, Kraft said: "They [the crews] are always standing on the shoulders of those who have passed. I don't know how in the world they transfer that much information back and forth amongst themselves [one crew to another], but they do, and therefore, the last . . . is always the best."

Reviewing how each Apollo trip had become more sophisticated and how the returns had revealed the great complexity of the moon, George M. Low, deputy administrator for NASA said, "After Apollo 11 I thought we'd skim off the cream [of science] . . . and



Schmitt at area of orange volcanic soil on either side of the rover.



Evans retrieves film during transearth coast.

Scientist-astronaut Schmitt at a huge, split lunar boulder during third EVA.

released, geologists jubilant

we wouldn't have much left to discover. How wrong I was." He said each mission added more and more to the science coffer.

Cernan and his traveling partners Ronald Evans and Harrison Schmitt went almost immediately into the extensive post-flight debriefings and medical examinations upon their arrival in Houston Dec. 21. (Cernan lost nine pounds and Schmitt, four and one-half pounds. Evans, called the galloping gourmet of the flight, gained one and one-half pounds.) They continued debriefing through Christmas Eve and will resume Jan. 2.

Lunar scientists were also exuberant in their appraisal of Apollo 17. They were particularly excited when the astronauts' color photographs, processed last week, revealed that the orange soil (SN: 12/23/72, p. 404) did indeed appear orange—even in the pictures. This increases the possibility that the material is the product of very young lunar volcanism. Scientists are making plans to do a thorough analysis of the gases that come out of the soil. The two large sample-return containers, five sample bags full of smaller bags, and another larger bag of material were placed in the nitrogen processing lines at the Lunar Receiving Laboratory. Several rocks were placed in the radiation counting laboratory at MSC, but because of the Christmas holidays the first rock box was not to be opened until later this week. □

Final Apollo's homeward view: From the Mediterranean (top) to Antarctica.

Observing and pondering astrophysics' puzzles

Relativistic astrophysics is a phrase with a certain ambiguity. It can refer to the theory of special relativity and thereby to dynamic and electromagnetic processes at speeds near that of light. Or it can refer to general relativity, the Einsteinian theory of gravity, which is especially applicable to cases where gravitational fields are very strong.

Relativistic astrophysics takes under its purview most of the astronomical discoveries of the last decade or so, and most of them seem to fit the definition in both senses. In pulsars, for example, there are, according to current belief, both electrically charged particles moving at speeds near that of light and very strong gravitational fields.

As the Sixth Texas Symposium on Relativistic Astrophysics opened in New York last week, Engelbert Schucking of the University of Texas at Austin remarked that the conferences were getting more and more scientific. By this he meant the theory of relativistic astrophysics is becoming more and more tied to observations.

It is not merely that objects that were once exercises for theoretical imagination are becoming actual: Pulsars have been known for several years, and the early theoretical speculation that they are neutron stars is now widely accepted. A few years back pulsars had not been as fully observed as they have been now. Theoreticians could let their minds play with the general principle. Now they must strain to accommodate theory to minute fluctuations in the periods of pulsars, as determined from four years' close watching, and as a result one hears refinements of neutron-star theory that its originators never dealt with: solid crusts, solid cores, liquids and gases of very strange appearance.

There is both frustration and tedium in these attempts to fit theory very closely to observation, but it would be wrong to say that the scientists feel stymied. Rather there is a sense of eagerness to see where observation and theory will lead. There is plently of unfinished business in both categories. A theoretical example is the quasars. A decade of observation has led to no agreement as to what they are or where they are, whether local or at cosmological distances. Theorists continue to speculate while observers observe.

A very big example of an observational loose end is the gravity waves. Predicted by Einstein's general relativity, their discovery is claimed by Joseph Weber of the University of Maryland. So far, Weber and his co-