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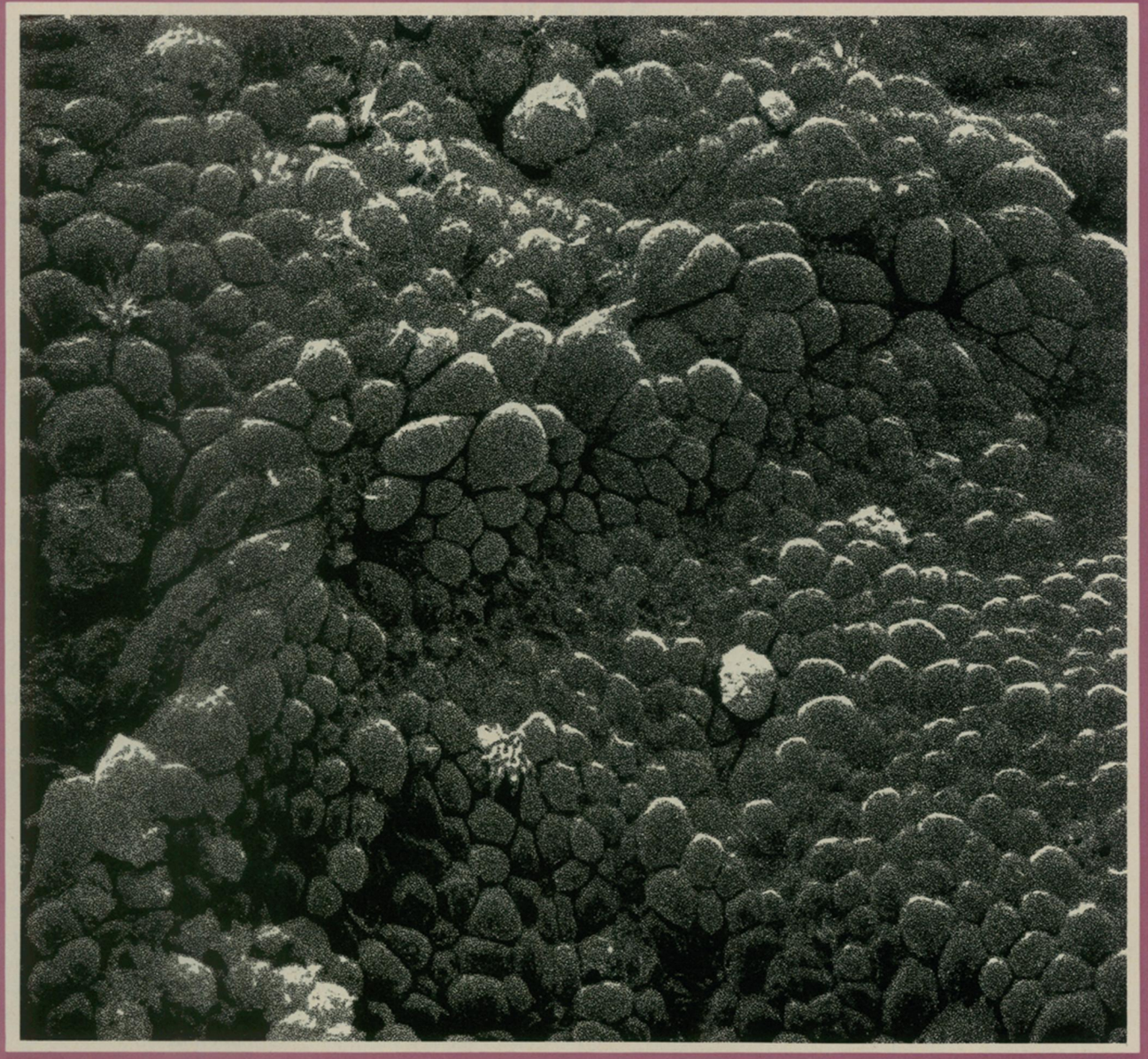
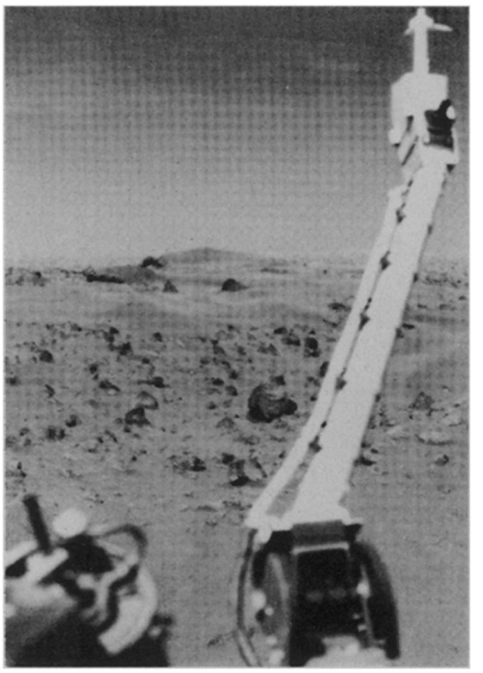
science news



AGING AND THE REPRODUCTIVE SYSTEM

Conversation Pieces

WEATHER REPORT FROM MARS



From minus 120° F at night to a cozy minus 22° F at midday . . . those are typical readings from the miniature weather station we built for NASA's Viking Lander. Winds so far have been gentle and variable but at such low atmospheric pressures that the spit on a wet finger would evaporate in a flash. For the scientists on NASA's meteorology team, it has been almost like looking out the window at a thermometer and anemometer over two hundred million miles away.

To research meteorologists, one of the most significant things about Mars is that wind storms develop with lightning speed. That tenuous atmosphere can produce winds of more than hurricane velocity in no time at all by Earth's standards. The energizer for these sudden and violent changes in Martian weather is, of course, the same as it is for Earth: solar radiation. But, with no oceans to act as stabilizing heat sinks, the energy is transferred from surface to atmosphere very rapidly indeed, by convection. Both storms and calms on Mars are planetary in scope. By using data from this enormous laboratory in their mathematical models, scientists may be able to gain new insights into the way Earth's more complicated weather systems work.

Some of the TRW people who helped build the Martian weather station are already at work on instruments designed to analyze the atmospheres of Venus, Jupiter, and Saturn. The Venusian atmosphere is particularly interesting because it provides a set of conditions about as different from those on Mars as possible. Many times as hot and dense as Earth's atmosphere, it's an example of the well-known greenhouse effect run wild. Could industrial pollution create anything like the same effect here? Venus, the ultimate laboratory is ready; a new set of probing instruments soon will be.

Other NASA experiment packages, now under development or study at TRW, include systems to measure plasma waves and electric fields in interplanetary space, radiometers to measure the sun's total energy output with unprecedented precision, and a laboratory for Space Shuttle in which experiments can be performed on fundamental atmospheric cloud processes without the disturbing influence of gravity. (Once again, man's understanding of a complicated process may be improved by removal of one of the complicating factors.)

Incidentally, the biology experiment we built for Viking is also working perfectly. Whether or not it will find signs of life in the soil samples it's been analyzing is still a question but it has already provided some unexpected data on Martian soil chemistry. This one cubic foot of instrumentation contains about forty thousand parts and does the work of three earthside rooms full of lab equipment. It's not surprising that Time magazine said "it must certainly rate as one of the age's technological masterpieces."

If you are interested in knowing more about the company behind these interesting technical developments, we'll be glad to send you an illustrated brochure on our overall capabilities.

TRW

DEFENSE AND SPACE SYSTEMS GROUP

Attention: Marketing Communications, E2/9043, One Space Park, Redondo Beach, California 90278