

# science □ news

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**NITROGEN  
FIXATION:  
FROM AIR  
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# Conversation Pieces

## Question of the Century

Is there life on Mars? If there is, we hope this masterpiece of miniaturization will prove it. Built by TRW, it packs into one cubic foot the equivalent of three organic chemistry labs full of equipment that's been designed to determine whether micro-organisms exist in the Martian soil. It also contains the complex electronics needed to gather the data for transmission to Earth. Several weeks after July 4th, 1976, when NASA's Viking (built by Martin Marietta) is scheduled to land on Mars, scientists hope to answer the question that has tantalized men for so long.

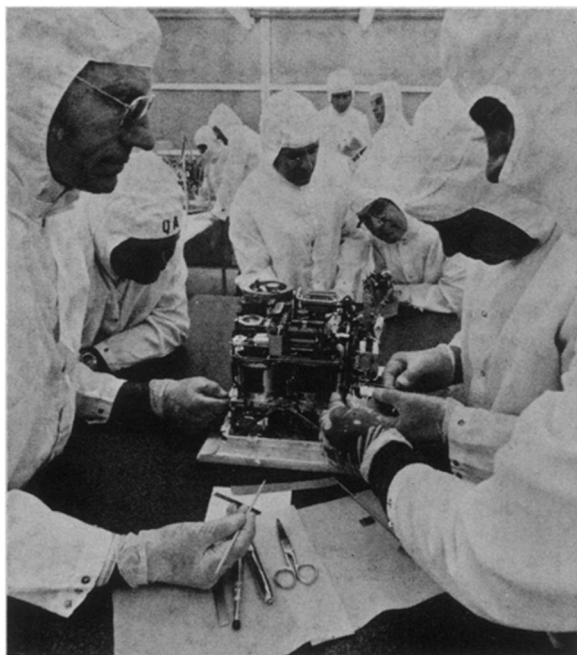
Another TRW-built experiment on Viking will measure the violent winds and cold temperatures of the red planet's tenuous atmosphere. Meanwhile, TRW engineers are working on further experiments designed to probe the hot, dense atmosphere of Venus, later this decade. With Earth's atmosphere "bracketed" by the opposite extremes of these two natural laboratories meteorologists may get new insights into our long-range climatic trends and weather processes.

These experiments are only the latest of many TRW projects designed to help NASA explore the solar system. In 1958, Pioneer 1 was the first spacecraft ever built by a private firm. It showed the shape of the Van Allen belts and measured interplanetary particles and fields. Later Pioneers observed solar disturbances and the solar wind from as far away as the other side of the sun. The most recent Pioneers have crossed the asteroid belt, made close-ups of Jupiter, and sent back more data on the interplanetary medium from record-breaking distances. One is now headed for Saturn and the other will become the first man-made object to leave the solar system.

During the nineteen sixties, TRW built NASA's series of Orbiting Geophysical Observatories, which mapped the Earth's magnetosphere and provided detailed data on phenomena that affect long-distance communications.

We've now started building three High Energy Astronomy Observatories for NASA. Designed to look far beyond our solar system, they'll map sources of X, gamma, and cosmic rays across the entire celestial sphere and then concentrate on the most interesting ones. The results should help answer key questions about quasars, pulsars, black holes, and galactic explosions. They may even throw new light on man's basic theories of energy and matter and on how the universe began.

In skimming the highlights of such projects, it's hard to avoid sounding boastful. But the engineers and scientists who actually do the work have no time for bragging. They're too busy applying the lessons they've learned to new and even more difficult problems. These hard-working people, in fact, are what TRW Systems is all



Building the Viking Lander Biology Instrument involved the use of more than thirty different types of advanced technology.

about. If you're interested, we'd like to send you a couple of booklets that give you an overview of our diverse capabilities and more information about the Mars instruments. Just write on your Company Letterhead to:

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