

Houston Chronicle Friday March 23, 1979

# 1,100 attend showing of Jupiter, Mars pictures

BY CARLOS BYARS  
Chronicle Science Writer

Close-up movies and still photographs of Jupiter and Mars — startling, stunning and sometimes eye-wrenching — captivated an overflow audience at the Johnson Space Center.

An estimated 1,100 persons Thursday night packed the center's largest auditorium, which usually seats about 800, and others were turned away at the door.

The films, including three-dimensional footage of Mars, prepared with the aid of a computer, were presented at the final evening session of the 10th annual Lunar and Planetary Science Conference.

High-resolution photos of Jupiter and its four largest moons, taken on the first Voyager space probe visit just completed, were shown by Edward Stone, Voyager project scientist, who also outlined some of the discoveries made during the mission.

The Voyager movie was actually a series of single-frame photographs taken at 10-hour intervals as the spacecraft approached Jupiter last month. Because the giant planet rotates in a 10-hour period, it appeared to stand still as intricate bands of clouds whipped back and forth across its surface.

The planet's distinctive Red Spot appeared to be a hurricanelike mass of clouds about three times the size of the Earth.

Stone noted some surprises that turned up in the photographs — bright white spots in the clouds, a series of lightning flashes and a visible aurora similar to the Earth's northern lights.

The Jupiter moon Ganymede was found to have a patchwork of faults, or breaks in its surface. Stone said it is "the Humpty Dumpty of the Jovian world, and all the geologists will never put it together again."

Io, the innermost of the major moons of Jupiter, mystified scientists at first because the early photographs failed to show any impact craters. Such craters sprinkle the planet's other moons.

Stone said scientists' opinions and theories about the phenomenon shifted with each new batch of photographs, until it was discovered that Io has active volcanoes that spout what appears to be a sulfurous material more than 200 miles into space.

He said more photographs and data will be obtained in May when the second

Voyager spacecraft flies by Jupiter and its moons.

Elliot Levinthal of Stanford University introduced the three-dimensional Mars pictures, sent back by radio signal in July 1976 from the first of two Viking landers.

The 3-D technique was developed to help controllers direct operations of the lander on Mars and study the geology of the planet. The audience was shown a full sweep of the Martian horizon, mostly rows of desolate-looking ridges and piles of the loose rock and sand that cover the planet's surface.

Although most of the crowd came to see the films, a key scientific presentation also was made by Dr. Yuri Surkov of the Vernansky Institute of the Academy of Science of the U.S.S.R.

In the first Western presentation of data from the Soviet Union's mission to Venus, Surkov described an experiment that appeared to indicate the acid clouds of that very hot planet may be hydrochloric rather than sulfuric.

## Envoy's assassins may be linked to IRA, police say

THE HAGUE, Netherlands (UPI) — Dutch police, aided by two Scotland Yard detectives, believe the assassins of British Ambassador Richard Sykes may have been "highly trained" Irish killers, but admit they have few clues.

Sykes, 58, and a servant, Karel Straub, 19, were killed by shots to the head Thursday as the envoy was getting into his Rolls-Royce to go to the embassy. A woman embassy staffer seated in the car was unharmed.

British and Dutch detectives, mystified by the identities of the killers and an apparent lack of precautions for a man whose specialty was security, investigated a possible link with the Provisional Irish Republican Army.

"Who else would want to shoot the British ambassador?" a Dutch police official said.

Three years ago Sykes, dispatched to Ireland by the Foreign Office to investigate the IRA assassination of Ambassador Christopher Ewart-Biggs in Dublin, wrote a report criticizing lax security and recommending improvements.



'Mars in 3-D' will be shown March 1 in Fairchild

## Dramatic 3-D film footage on Mars to be screened free on March 1

"Mars in 3-D," a dramatic 3-D movie based on film footage taken by the Viking Orbiter satellite, will be screened twice on Thursday, March 1, at 7 and 9 p.m. in Fairchild Auditorium at Stanford Medical School.

The movie is open to faculty, staff, and students at no charge.

The movie, which is subtitled "Images from the Viking Mission," was developed by Dr. Elliot C. Levinthal, adjunct professor of genetics, using advanced computer techniques. It is complete with a stereo sound track of computer-generated music composed by Michael McNabb and William Schottstaedt of the Center for Computer Research in Music and Acoustics at Stanford.

Basically presented in three parts, the movie concentrates on scenes from the Orbiter, the science test lander, and scenes of the Martian surface.

According to Levinthal, "ridges, outcrops, and eroded drifts of the Lander One terrain are clearly shown. The closing scenes show the rock types and troughs that surround Lander Two."

Levinthal produced the film and Kenneth L. Jones of the Jet Propulsion Lab at Cal Tech directed it. Uri Geva, a graduate student in the Communications

Department at Stanford, was film advisor and editor.

Commissioned by the National Aeronautics and Space Administration (NASA) as part of the Viking project, the movie was shown last month at the Second International Colloquium on Mars held at Cal Tech in Pasadena.

# 3-D movies open world Mars meet at Caltech

By JULIAN LOEWE  
Staff Writer

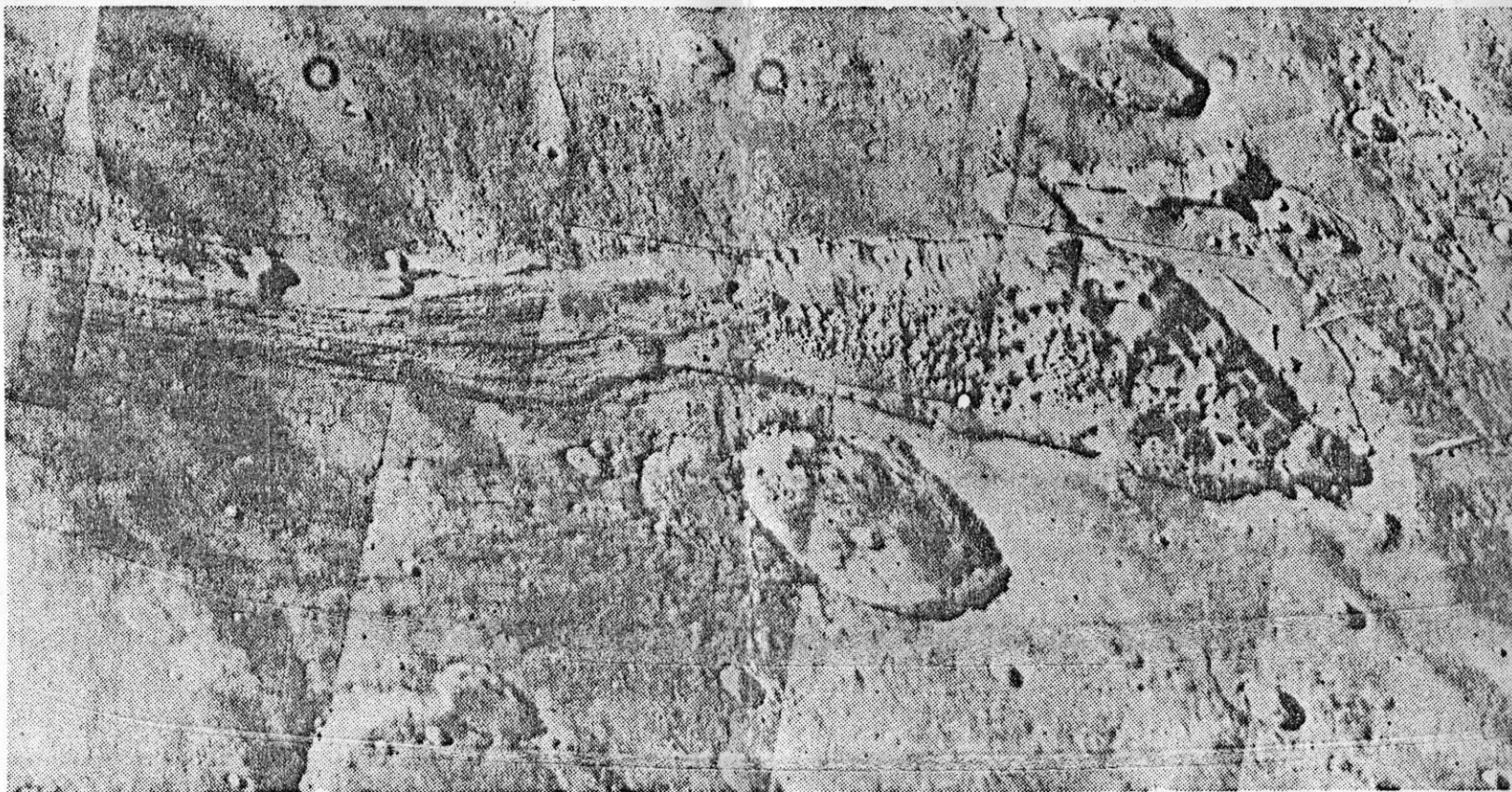
An international gathering of more than 500 astronomers, scientists and planetologists attending the opening session at Caltech of the most complete colloquium on Mars ever held saw a dramatic 3-D movie of martian surface features and slides of a number of formations which have so far defied explanation.

The gathering, with representatives of Western Europe, Japan, the People's Republic of China, the Soviet Union, Australia and Israel, as well as the United States, were among the first to see the recently compiled 3-D martian movie, which was made possible because both the Viking orbiters and landers were equipped with two cameras.

Using advanced computer techniques, Elliot C. Levinthal was able to assemble pictures from the craft into a 3-D format reminiscent of 3-D monster movies of a couple decades ago because observers had to wear special glasses to get the full effect.

The result was an aerial and ground level vista of the red planet which closely resembled what an on-the-spot observer would have seen rather than flat, two-dimensional photographs.

Canyons the size of the Grand Canyon were shown in full relief, while surface features on the ground near the landers leapt dramatically into the foreground while background crater rims and rocks were seen as clearly etched topographical features.



**SURFACE SUBSIDENCE** — This mosaic represents a small section of a larger assembly of pictures taken of a high plateau area somewhat south of the martian equator. A sinuous rille can be seen near the

The effect was like looking at a detailed relief map rather than the more prosaic world maps posted on so many living room walls.

Another highpoint of the first session was a discussion by Thomas A. Mutch, the head of the Voyager imaging team, about many surface features of the

martian landscape for which scientists as yet have no explanation.

Mutch said these features have not received much publicity, perhaps because scientists don't like to talk about things they can't explain.

All of the features are slated for in-depth study in the future,

top of the picture which may have been formed during a volcanic epoch or perhaps as a product of water erosion. The large triangular valley is believed to be the result of a subsidence process.

but have remained largely mysteries until now because the Voyager teams have been spending most of their time since the landings simply sifting through the reams of data sent back over the past 30 months.

The general outline of much of this data has been processed, providing mankind with his first

in-depth review of the weather, geology and other facets of Mars.

The Viking missions, which are providing most of the data for the 80-plus papers being presented at the colloquium, are not over, however. Two landers and an orbiter are still working, having lasted far longer than anyone had dared hope. There was talk at the

session that they may provide data for as long as 10 years in view of their reliable performance up to now.

One orbiter died when a small jet was fouled and its fuel drained into space, depriving that craft of the ability to correct its orbit.

Although scientists have not been able to explain the odd features, Mutch assured the gathering that, despite the almost geometric shapes of some of them, "they were not produced by advanced civilizations."

His remarks drew chuckles from the audience.

Many of the features look at first glance as if they can be explained by understood mechanisms for change in martian geological features such as the action of ice, water flow, permafrost and simple geological collapse.

"At first glance, they look straightforward," Mutch said, "but a closer look shows they are more complex."

The features Mutch pictured covered a variety of phenomena, from deep craters with strangely layered walls to vast systems of interlocking ridges. Some of the inexplicable features look like vast systems of interlocking worms. Others show matter ejected from craters at impact which is lower than the surrounding surface, although one would expect a new layer of material dropped on the surface to be higher than the ground it landed on.

# A solid marriage: music and computer

By Paul Hertelendy  
Staff Writer

**I**T was like a 21st century Stonehenge ritual, with the Druids replaced by the do-its of computer technology.

Stanford's new music group was out communing with the elements and making a little history in the process.

Close to 300 people sitting on a scenic campus hill witnessed the whimsical rituals beginning at the moment of sunset Thursday night and spent

---

## Concert Review

---

the next three hours under the stars drinking in digitally synthesized music and three-dimensional film from the surface of Mars that awed the assemblage.

The scientific film, "Mars in 3D," an afterthought to the electronic concert, consisted of vivid, awesome scenes shot in still photos by the Mars Lander. Producer Elliott Levinthal gave a dry-witted narration which was augmented by an eerie, lucid sound track composed (digitally, of course) by Michael McNabb and Bill Schotts-taedt.

Both composers belong to Stanford's CCRMA, which was giving its summer concert, an event destined to become an annual spectacle by popular acclaim.

On the more serious side, the concert presented a first. The performance of Andrew Schloss' "The Towers of Hanoi" marked the first multi-channel, direct-digital synthesis ever produced in concert, according to CCRMA Director John Chowning. This means that while a computer had compiled all the necessary programs and spewed out the necessary numbers in advance, the CCRMA real-time digital synthesizer read and produced the sounds on the spot (i.e., in "real time"), without having to tape it in advance.

The pieces by a host of CCRMA composers came at the audience from quadratically placed speakers. The electronic sound is both deft and sophisticated, especially in its gradual transformations on one recognizable element — say, a flute — into quite another — as, say, a narrator of poetry. I was bowled over by a pair of works by James Moorer, who altered the mellifluous bass voice of Charles Shere into a tenor (without the usual "chipmunk" effect), the babble of a crowd and a lion's roar.

Gamelan effects permeated the pieces by John Chowning, Schloss and Loren Rush. Rush showed a strong Steve Reich influence in his "A Little Traveling Music," with a live keyboard part as one ingredient. In "Desert Dance," Paul Kirk used electronic effects like bells and violin and McNabb's "Dreamsong" went from bell to soprano, a transition that has become one of the CCRMA concert signatures.

FOR INFORMATION CONTACT: Marcia Tanner, 497-3812

FOR IMMEDIATE RELEASE

STANFORD—

"Mars in 3-D," the recently released film based on photographs taken during the Viking Mission to Mars, will be screened at 1, 3, and 5 p.m. Saturday, April 28, in Dinkelspiel Auditorium at Stanford.

The movie is in 3-D, and the audience will be lent special glasses to enjoy its full effects.

Admission to each showing is \$2 general, available in advance from Tresidder ticket office (497-4317) or at the door.

The event is being sponsored jointly by the Music Department and the Music Guild at Stanford, whose scholarship programs will benefit from the proceeds.

Subtitled "Images from the Viking Mission," the movie was developed with advanced computer techniques by Elliott C. Levinthal, adjunct professor of genetics at Stanford. Its stereo sound track features narration by Levinthal and computer-generated music by two Stanford graduate students in composition: Michael McNabb and William Schottstaedt of the Center for Computer Research in Music and Acoustics (CCRMA).

Views from cameras in different positions on the Viking orbiter and two landers produced the three-dimensional images in "Mars in 3-D."

The film presents scenes from the orbiter, from the science test lander, and on the Martian surface.

Canyons as deep as the Grand Canyon are shown in full relief. Surface features on the ground dramatically project into the foreground. The ridges, outcrops, drifts, and craters of the Martian terrain are seen in vivid, realistic detail.

"Mars in 3-D" was commissioned by the National Aeronautics and Space Administration as part of the Viking project. Levinthal produced the film, which was directed by Kenneth L. Jones of the Jet Propulsion Laboratory at Cal Tech. Film editor and advisor was Uri Geva, a graduate student in the communication department at Stanford.

The movie, premiered in January at the Second International Colloquium on Mars held at Cal Tech in Pasadena, was shown to overflow crowds at Stanford in March.

Levinthal has just returned from an American tour in which he screened the film at Rockefeller University; as a special feature of the American Photogrammetry Society's annual meeting in Washington, D.C.; and at the annual meeting of the Lunar and Planetary Science Conference at the Johnson Space Flight Center in Houston.

A music lover and member of the music Guild at Stanford, Levinthal is pleased that the proceeds from the April 28 showing of "Mars in 3-D" will benefit the Music Department.

"It's especially appropriate because of the original music composed and donated for the film by two graduate music students here," he said.