

Destination Mars

It was a long row to hoe, but after what seemed to be interminable simulations, meticulous investigations, tests and launch-holds, the United States finally got off a spacecraft, Mariner 9, toward Mars this week. The successful launch of the Mars orbiter at 6:23 p.m. May 30 came three weeks and a day after the failure of Mariner 8 (SN: 5/15/71, p. 330) and two days after the second straight successful Soviet launch of a Mars-bound craft (Mars 3).

Now, if all goes well, three spacecraft will begin probing the secrets of the red planet in November. The first hints that Mars 2 and 3 would at least orbit Mars, and probably land, were proffered, rather evasively, by Soviet scientists this week in two Moscow newspapers. The articles mentioned the possibility of using "scoops and culture mediums" (much like those planned for the United States' Viking landers in 1976) in an effort to discover whether life indeed does exist on the planet.

Whether the Soviet scientists will be any more open with their findings from Mars 2 and 3 than they have been about the goals of the launches themselves is still uncertain, but, says Dr. George Low, deputy administrator of the National Aeronautics and Space Administration, "We're optimistic."

A hybrid orbit has been tentatively selected for Mariner 9. Originally Mariner 8 would have mapped 70 percent of the planet while Mariner 9 studied the atmospheric and surface changes. The new orbit of Mariner 9 will now be inclined 65 degrees. The Mariner will orbit the planet every 12 hours at altitudes ranging from 750 to 10,300 miles. It will be able to map somewhat less than the 70 percent of the surface, but with the same resolution as originally planned. Instead of studying six areas every five days (to map seasonal changes), it will study about 17 smaller areas every 17 days.

After the failure of Mariner 8 on May 8, NASA engineers traced the cause in the Centaur stage to a failed diode that should have protected the integrated circuit in the pitch channel of the rate gyro reamplifier of the autopilot. This protective device, either damaged or loosened, then permitted an electrical short during launch to damage the integrated circuit, resulting in the failure.

The engineers had just homed in on that one when another shorted part was found, this time in the Centaur's propellant utilization system, which measures the amount of hydrogen and oxygen and controls their flow to the engines. The tank had to be opened, the circuits split and fixed. The short was probably due to "dew contamination," says Vincent Johnson of NASA.

The launch, then rescheduled for May 29 was delayed twice again even

after the fixes. There appeared to be problems with both the diode and the propellant utilization system again; much to the relief of the engineers, these problems turned out to be malfunctions in the ground support equipment that sends messages to each of the units during prelaunch tests.

Thus many sighs of relief accompanied the successful launch of Mariner 9 as it locked on to the star Canopus and began its 247-million-mile journey to a planet then 63 million miles away. □

INTERNATIONAL CONFAB

Quakes, science and NATO

Any serious earthquake is predictably followed by a rash of conferences and committee reports, and the Feb. 9 San Fernando quake has been no exception. So far, the U.S. Geological Survey, the National Bureau of Standards, and the National Academy of Sciences/National Academy of Engineering have prepared reports on the quake (SN: 3/27/71, p. 211).

Last week, the United States, Turkey and Italy sponsored an international meeting of earthquake experts and Government officials. Delegations from 17 nations and seven international political and scientific organizations attended. Though the meeting, held in San Francisco, had been planned for more than a year, much of the input and impetus came from the San Fernando and other recent disasters. The delegates met for six days, and produced recommendations that will be passed on to the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society.

The recommendations themselves were far from radical: systematic collection of all existing relevant data; improved mapping of seismic risk areas; increased strong motion equipment; replacement of dangerous buildings; prompt field investigation of earthquake damage to structures; building code improvements; improved public awareness of earthquake hazards; increased international cooperation for disaster assistance through existing organizations; establishment of a central disaster agency to coordinate the activities of governments, universities, industry and volunteer groups.

There were some specifics however. One working group proposed that NATO develop a capability for rapid assessment of damages in order to assist member nations in reconstruction, and that an international meeting be held to formulate an accord through which signatory nations, in time of disaster, can remove or modify legal barriers to foreign assistance. The group also recommended that resettlement of vic-

FDA science activities get mixed review

The Food and Drug Administration last week made public a critique of its scientific operations. Dr. Roy E. Ritts Jr. of the Mayo Graduate School of Medicine and four other medical school professors compiled their report after a year of observing FDA activities. It was the first time in FDA history that an extramural group was invited into the FDA maze to probe, pry, tell it like it is.

The Ritts Committee Report scores the FDA for lax, misdirected, uneven research; substandard conditions in some of its labs; less than electric morale among researchers, and a curious aura of secrecy—in short, for not better managing its scientific effort.

This indictment didn't surprise some FDA watchers of long standing, who hold that where scientific data are incomplete or inconclusive, FDA bureaucratic considerations seem to overrule the recommendations of FDA's scientific

researchers. Granted, FDA scientific judgment is circumscribed by Congressional law. The recent FDA decision to yank cyclamates from the market was based both on shaky animal test data and on the Delaney Amendment, which forbids any product in foodstuffs that causes animal cancers.

In spite of its scorching criticism of specific areas of FDA operation, the Ritts report praises the FDA for doing an extraordinarily competent job in view of the thousands of food additives and drugs the FDA has to evaluate. More, some of the report's recommendations for the FDA are already being implemented, including one to place consumer specialists on the National Advisory Committees in each of the FDA bureaus. Consumers have never been represented in the United States' oldest and largest consumer protection agency before. With the Ritts report, the consumer era may be coming of age.

tims of a natural disaster be an agenda item for the United Nations Conference on Human Environment in 1972 and that nations set up an international program to develop self-help projects, such as home-building kits.

Many of the meeting's recommendations merely reiterate those of previous conferences and committees. But the significant aspects of this meeting were that it was international and that its recommendations are directed at an existing international organization.

Dr. Charles Richter, professor emeritus of seismology of the California Institute of Technology and a leading earthquake expert, pointed out at the conference that "major earthquake disasters in any one region usually occur at intervals of many years; experience gained may be neglected and forgotten before the next emergency arises." After the San Fernando quake, he noted, there were numerous publicly appointed committees, but "it is doubtful whether there will be sufficient good results to justify the time expended." International cooperation, he believes, may eliminate this problem. "Operation

on the global scale favors more lasting preparedness, preserving what has been learned and applying it at each new occasion."

The San Francisco meeting also brought together for the first time, and on an official basis, governmental and private experts from around the world. Darrell M. Trent, conference co-chairman and deputy director of the White House Office of Emergency Preparedness, told conferees that the North Atlantic Council (the parent body of the Committee on the Challenges of Modern Society) had just approved recommendations on mitigation of flood hazards, and is now considering procedures for coordinating disaster assistance activities in general. Both these areas, he pointed out, were subjects of discussions similar to the current one on earthquakes.

The exchange of information that took place at the San Francisco meeting may in itself be valuable. Whether the recommendations produced will be any more effective on an international basis than they have nationally remains to be seen. □

SOCIOLOGY

Updating the Moynihan report

"The Negro Family: The Case for National Action" was the title of a 1965 U.S. Department of Labor report that called for a bold and important change in Federal civil-rights policy. Dr. Daniel P. Moynihan, co-author of the report, attacked Federal legislation (the school desegregation decision of the Supreme Court and the Civil Rights acts of 1964 and 1965) as inadequate. The legislation, he said, provides for liberty but not for equality. Blacks are free to compete in a white society but due to past and present deprivations "equality of opportunity almost insures inequality of results," he reported. "To bring the Negro American to full and equal sharing in the responsibilities and rewards of citizenship," Dr. Moynihan concluded, Federal Government programs "should be designed to have the effect, directly or indirectly, of enhancing the stability and resources of the Negro American family."

The Moynihan report, and its emphasis on family stability as a criterion for reshaping Government policy, was overshadowed by events of the day. Dr. Lee Rainwater of Harvard University, speaking last week in New York at a briefing held by the Council for the Advancement of Science Writing, explained that increasing American activity in Vietnam forced President Johnson to spend a decreasing amount of time and money on domestic problems. This, and the fact

that interpreters of the Moynihan report emphasized its descriptive materials in an attempt to explain the Watts riot, rather than to develop guidelines for new policies, caused the report to lose its impact.

Dr. Rainwater, reviewing social events since 1965, believes that data used in the report, are still valid and useful today. The deterioration of the black family, pointed to by Dr. Moynihan, continues. In 1950, for example, 18.7 percent of black births were illegitimate. At the time of the Moynihan report the figure was up to 25 percent. Dr. Rainwater points out that data for 1968 show that the figure has risen to 31.2 percent. In 1950 78 percent of black families had both parents in the home. In 1970 this figure was down to 70 percent. The other 30 percent were female-headed. In the early 1960's 25 percent of the poor blacks were on welfare; now 48 percent of them are.

These trends, the Moynihan report implied, are central to the race-equality problem. Female dominance and welfare dependency destroy the black man's drive and incentive. Dr. Rainwater, agreeing with this, says he believes it is time the report's findings and recommendations be reevaluated by sociologists and Federal policy makers. If the problem of inequality is not solved, said Dr. Moynihan, "there will be no social peace in the United States for generations." □

ATMOSPHERIC RESEARCH

Priorities for the 1970's

During the decade of the 1960's scientists gained a better understanding of atmospheric processes. At the same time, they became painfully aware of the unforeseen effects of human activities on these processes.

In a report issued this week, the National Research Council's Committee on Atmospheric Sciences recommends priorities for the 1970's that focus on using improved meteorological capabilities to meet human needs.

The CAS, headed by Dr. Robert G. Fleagle of the University of Washington, gives highest priority to improved prediction, stressing the need for support of the Global Atmospheric Research Program (GARP). In addition, the committee recommends a pilot Local Weather Watch for a selected urban area and a selected rural area. Satellite cloud pictures, ground-based weather radar pictures and automatic station observations would be coordinated by computer and made available to any television screen in the region. To assess the possibilities for seasonal prediction, the committee recommends increased studies of the dynamics of climate.

The second main objective is air pollution control. Development of models of the urban atmosphere should be accelerated, and a field program of at least two years' duration should be carried out to measure the fate of pollutants emitted from an urban area, the group said. To understand the processes that determine air-pollution concentrations on a regional scale, the chemical composition of precipitation would be measured for selected areas.

The scientists also recommend studies of weather modification techniques. The Executive Office of the President should be responsible for examining public-policy issues associated with weather modification, they believe. The committee further urges the United States Government to present to the United Nations a resolution dedicating all weather-modification efforts to peaceful purposes and establishing an international mechanism to consider weather modification problems of potential international concern.

The final major objective for the 1970's, said the CAS study, should be to reduce human casualties, economic losses and social dislocations caused by weather. Achievement of this objective, the scientists emphasize, will depend on accomplishment of the other objectives.

To achieve these goals, the report concludes, predictably enough, that the level of support for atmospheric research must be raised. □