aerospace

Whither the aimless astronauts?

With only a single team of U. S. astronauts scheduled to see space in the next six years, the National Aeronautics and Space Administration is tightening its belt, reorganizing and consolidating its manned spaceflight activities.

There are 37 astronauts left on active flight status, but only 10 currently have a mission, the prime, backup and support crews for the three-man Apollo-Soyuz rendezvous plus Apollo Soyuz Test Project Special Assistant Eugene Cernan—and that will begin and end in 1975. Not until the planned space shuttle gets going, in 1979 at the earliest, will any more space berths be open.

As a result, NASA is absorbing its present Flight Crew Operations Directorate, in charge of training, scheduling and other activities, into Flight Operations Directorate, which was formerly concerned only with planning the missions themselves and related procedures. The enlarged FOD will be directed by Kenneth S. Kleinecht, now manager of the Skylab program.

The 11 scientist-astronauts will be assigned to offices in the Science and Applications and Life Sciences Directorates, working on crew aspects of various potential jobs for the space shuttle. Of the 16 pilot-astronauts not working on the Apollo-Soyuz project, 15 will be assigned other shuttle-related jobs by the end of Skylab. The 37th man is Charles Conrad, veteran of Gemini 6 and 11, Apollo 12 and Skylab 1, who is resigning Feb. 1 for a job with a Denver cable television company.

Venus drops acid

Droplets of sulfuric acid more concentrated than the acid in a car battery have been identified in the cloud tops of Venus.

The discovery was made using spectra obtained through a 30-centimeter telescope aboard a jet flying at 45,000 feet. Compared with laboratory spectra of clouds containing such materials as iron chloride, liquid water, ice, mercury, ammonium chloride and hydrochloric acid, the Venus clouds best matched sulfuric acid concentrations of more than 75 percent.

James B. Pollack, who headed a nine-person research team from the NASA Ames Research Center in the project, says that the droplets probably lie in the top 10 kilometers of a 33-kilometer-thick cloud layer that extends down to about 32 kilometers above the veiled planet's surface. The brilliance of Venus' cloud tops could be largely due to the fact that the acid droplets seem to be in the highly reflective one-micron size range.

Some theorists have previously pointed out that the presence of sulfuric acid, an effective drying agent, could account for the surprising lack of water vapor in Venus' predominantly carbon-dioxide clouds.

Will Pioneer 10 be found?

The starbound Pioneer 10 spacecraft, already millions of miles beyond Jupiter, carries a message-bearing plaque in case some alien civilization should find it. A 17-year-old student is now working out the chances.

Bruce Allen, of Los Alamitos High School in California, is preparing a series of computer programs to tell him what stars are near Pioneer's path (Aldebaran in Taurus is first), whether they could have life-supporting planets, and even whether the light angles will be right to let strong telescopes see the probe coming.

The chances, he acknowledges, are small.

science and society

A warning on disasters . . .

Just before Christmas a year ago, at midnight on the 23rd of December, Managua, Nicaragua was destroyed by an earthquake measuring 5.6 on the Richter scale. By sunrise, one percent of the 420,000 inhabitants were dead, another four percent were injured, 60 percent were fleeing the city and 70 percent were homeless. Among rescue workers from many nations was a group of scientists whose task was to determine the human impact of the quake and recommend ways of reducing the impact of future disasters. The Dec. 7 SCIENCE has their report.

Though civil order broke down almost immediately, resulting in widespread looting, and two full days passed before successful mobilization of local emergency organizations, Managuans were lucky in many ways. Nearly 75 percent of the homeless were able to find shelter with relatives because of an extended family system. The absence of private cars and a large pool of public transportation facilitated rapid evacuation. The international community responded quickly and efficiently, with U. S. Army engineers working alongside a Cuban relief team.

The authors reach some sober conclusions about the implication of the Managuan experience to potential disasters in industrialized countries. So-called "seismic resistant" buildings may not collapse but still become unfunctional, as did the major Managuan hospitals. A breakdown of public order, they say, could easily occur in American central cities. Extended families are not the norm here and large numbers of refugees would have to be evacuated and cared for—a task greatly hampered by a transportation system based on private cars and relatively delicate freeway overpasses.

The Managua earthquake was relatively low-energy, they recall, and another "perhaps 1000 times greater, can be expected on the West Coast of the United States within the lifetime of most readers of this article."

. . . and weapons

In his address accepting the 1973 Charles Lathrop Parsons Award of the American Chemical Society, Charles C. Price warned that as public attention on scientific matters has shifted to concern with energy and the environment, nuclear weapons have greatly proliferated and pose an even greater threat. Price, a past president of the society, said that in just the last three years, U.S. nuclear warheads have increased from 4,000 to 10,000, despite SALT talks.

Particularly objectionable, he said, was the absence of any Government employee with even part-time responsibility for planning total disarmament. "Under President Eisenhower and President Kennedy, the U.S. Government supported a top-level civilian effort devoted to planning for and negotiating the revolutionary goal of general and complete disarmament. . . . After President Kennedy's assassination, planning and negotiation for this goal were abandoned."

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The editors of SCIENCE AND GOVERNMENT REPORT say they have been inquiring among knowledgeable people about the probability that nuclear weapons exist in the Mideast, following the revelation by a highly placed Egyptian spokesman that his country has attempted to become a nuclear power. They conclude that Israel has locally produced enough plutonium to build a bomb more or less anytime they want, while recent efforts to bring home Egyptian scientists working abroad, perhaps to staff the secret Egyptian nuclear research center, look suspicious.