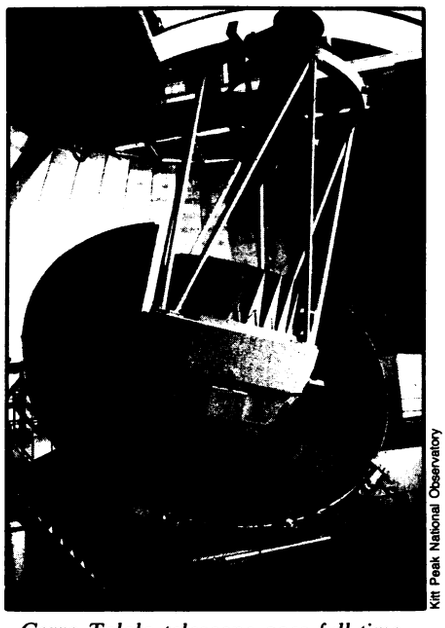
Milestones at Cerro Tololo and Arizona

A pair of astronomical milestones—one just passed and the other imminent—are being noted south and north of the equator.

The four-meter (157-inch) reflecting telescope at the Cerro Tololo Inter-American Observatory in Chile was declared fully operational on Jan. 12, a decade after its conception, although it was first used for scientific observations nearly 15 months earlier. The $10 million project, funded jointly by the U.S. National Science Foundation and the Ford Foundation, is operated under contract to NSF by an academic consortium called AURA, the Association of Universities for Research in Astronomy. Plans were first announced in April 1967, but seven years of work were required on the instrument's primary mirror, including more than 30 months of grinding and polishing the 15-ton disk to tolerances of millionths of an inch. It began operations on Oct. 18, 1974, when Victor M. Blanco used it to obtain "the first scientifically useful photographs" of the globular star cluster 47 Tucanae (SN: 11/9/74, p. 295), and more than a year of testing and alignment followed before the secondary mirror was installed last month.

Meanwhile, atop 8,650-foot Mt. Hopkins in the Santa Rita Mountains south of Tucson, Ariz., officials of the University of Arizona and the Smithsonian Astrophysical Observatory are preparing for Feb. 7 ceremonies inaugurating construction of the housing for their unusual Multiple Mirror Telescope, or MMT (SN: 8/18-25/73, p. 118). The instrument will use six 72-inch mirrors in unison to achieve the light-gathering power of a conventional 176-inch telescope. The MMT is expected to become operational early in 1978. □



Kitt Peak National Observatory

Cerro Tololo telescope goes full-time.

Mars-bound Vikings reveal cold ovens

Engineers at the Jet Propulsion Laboratory in Pasadena have discovered identical malfunctions aboard the two Viking spacecraft bound for summer encounters with the planet Mars. The implication is that each of the two landing modules will be able to conduct only two, rather than three, organic analyses of the planet's soil.

The problems were discovered last week during an analysis of data from an "in-flight" test of the second spacecraft's gas chromatograph/mass spectrometer, a 0.27-cubic-foot miracle of miniaturization that will be used in separate operations to study the Martian atmosphere and soil. In the soil tests, the Viking lander's claw-like scoop will pick up a sample from the surface and dump it into a hopper. From there, the sample will pass into a tiny "oven," where it will be heated, with the resulting vapors then driven off to the mass spectrometer for spectral analysis. The dump-heat-study cycle is intended to be repeated three times, using three separate ovens rotated into position by a sort of "lazy susan."

The data from last week's test indicated that one of the ovens on the Viking 2 lander simply wasn't heating up. A check of a test made back before the instrument was installed in the spacecraft revealed that the same failure had occurred then, apparently undetected because the device's operating sequence went properly (but without the proper current reaching the heater). This prompted the Viking team at JPL to consult the pre-flight test of the Viking 1 instrument, which revealed the same malfunction. A "reasonable suspect area," says one official, is the final assembly of the instruments, which might have resulted in a broken connection that went undetected by the kind of analysis being done at the time. Each instrument, however, will apparently be able to perform two complete analyses of different soil samples, one after the other. The malfunctions have no effect on the complex, life-seeking biology instrument or other experiments.

Meanwhile, the demanding mission is becoming ever more so as the two spacecraft near their goal. On Feb. 20, the Viking hoardes at JPL will begin a full-scale, 11-day simulation of the arrival-and-landing operations, using computer models of the spacecraft and their instruments to run a 24-hour-a-day test of what will happen between the third day before landing and the eighth day after. Some 500 people will take part. □

Lingering wastes

Like the proverbial skeleton in a closet, carelessly disposed radioactive wastes in Canada and the United States are popping up to haunt authorities just at a time that nuclear safety is returning to the political spotlight. The Environmental Protection Agency (EPA) has announced that plutonium buried at Maxey Flats, Ky., is percolating through the soil. A General Accounting Office report recounts additional instances of radiation leakage. And authorities have had to evacuate a school and five homes in Port Hope, Ontario, where contaminated building materials and landfill have apparently caused bone marrow abnormalities among residents.

These various incidents, summarized in the Feb. 2 BUSINESS WEEK, may give critics new ammunition in the growing debate over nuclear power (SN: 1/17/76, p. 44 and 1/24/76, p. 59). Many of the waste disposal practices that led to the present trouble have been abandoned—plutonium, for example, is no longer just buried—but new proposals, such as storing wastes in casks until a permanent storage site can be found, will surely come under renewed scrutiny. Meanwhile, Ontario's chief of health services is quoted as saying, "We'd like to give as little information as possible." □

EEC pollution controls

Common Market countries have finally overcome their differences on environmental policy enough to hammer out an agreement that should substantially lower pollution levels in Europe's great rivers. Environment ministers of the nine-nation European Economic Community (EEC) have announced a two-part option by which individual countries can choose to lower source emissions to pre-set limits, or to maintain certain standards of quality in the receiving waters.

At the heart of the controversy was British insistence that natural conditions be taken into account in setting standards—that industries located on more swiftly flowing estuaries, for example, be able to release more pollutants than those on slower ones. For countries which cannot hope to maintain the same water purity in their rivers as others may do, however, the uniform emission standards approach would be more advantageous. Either way, the aim is to limit accumulation of toxic and noxious materials.

The EEC environmental council will be responsible for drawing up emission and water quality standards, and the EEC Commission will begin to participate in ongoing negotiations aimed at improving conditions along the Rhine, one of Europe's toughest environmental cases. Details are reported in the Jan. 19 CHEMICAL AND ENGINEERING NEWS. □