Briefings

edited by DAVID HAMILTON

Leaky Pipes Delay Astronomy Mission

The space shuttle is grounded again, this time by plumbing troubles. If they are not fixed by mid-September, an ambitious astronomy mission will be seriously delayed.

A leak has been detected—but not located—in the shuttle's hydrogen fuel lines. To avoid risking a Challenger-type explosion, NASA chiefs ordered the shuttle back to the hanger for an indefinite period of inspection and repair. Normal operation will not resume before mid-July, and already the delay means that each flight this year will cost about $50 million more than expected.

Columbia was originally meant to take off in late April or early May carrying three ultraviolet sensors and an x-ray scanner, a package known as Astro-1 (*Science*, 1 June, p. 1081). The delay has already caused headaches for project scientists because many objects scheduled for study will no longer be visible by the time the shuttle takes off. And if Astro-1 doesn't fly before 15 September, NASA officials say it will be bumped until at least November. The reason: the launch pad must be cleared for the Ulysses mission, which must get off this autumn or lose the unique celestial configuration needed to "slingshot" its payload through the solar heliosphere.

Astro-1's instruments were originally intended for use on unmanned rockets, but by the early 1980s NASA had eliminated all alternatives except the space shuttle. The manned vehicle has not lived up to expectations, however, and the six to eight Astro flights that were promised have been cut to one. Today the question is whether the last surviving Astro mission will expire like the others—a victim of leaky plumbing.

MIT Picks a President—Again

The Massachusetts Institute of Technology's long and frustrating search for a new president has finally come to a close. Charles M. Vest, provost and former dean of engineering at the University of Michigan, has been selected by MIT Corporation's executive committee to succeed retiring president Paul E. Gray. At the time *Science* went to press, Vest had not yet been confirmed by the MIT Corporation itself, which was scheduled to meet on 18 June. University of Michigan officials said Vest, whose training was in mechanical engineering, would have no comment until after his confirmation.

University of Michigan

Engineering to the fore. *Charles M. Vest, the next president of MIT.*

"Our committee has always had a pretty clear notion of what a president of MIT should look like, and Chuck Vest fit it very well," said Robert Solow, MIT economist and chair of the faculty search committee. "We're happy to have an engineer, since engineering is the heart of the Institute. He's an expert administrator, and someone who's thought a lot about the role of science and engineering in society."

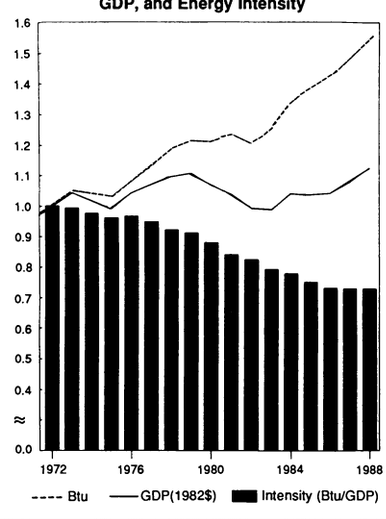
Solow was clearly relieved that the search was finally over. "We've really looked for two presidents, you know," he said, referring to the abortive selection of MIT biologist Phillip Sharp last February. Sharp withdrew his name a week after he was chosen.

One of Vest's first tasks will be to fill four high-level administrative positions. Provost John M. Deutch, an early contender for the presidency until he withdrew from consideration last January, will be leaving his post on 30 June, followed closely by Dean for Student Affairs Shirley M. McBay and Dean of Humanities and Social Sciences Ann F. Friedlaender. Dean of Engineering

Growth Without New Energy

The conventional wisdom about national energy policy and its relation to economic growth could be lifted from a TV spot: "A strong, growing economy requires new sources of energy. To improve our standard of living—and that of our children—it's important to expand our energy exploration and development capabilities." Depending on who's paying for the ad, what follows next might be a plea to open the Arctic National Wildlife Refuge for oil and gas drilling or a call for federal dollars to support the next generation of nuclear power plants.

Figure 1 - Index of U.S.Energy Use, GDP, and Energy Intensity



The energy gap. *From 1972 to 1985, energy consumption increased by 0.3% annually, while GDP grew by 2.5%. Energy "intensity," the amount of energy needed to produce a unit of economic output, declined during the same period. Energy use resumed rapid growth from 1985 to 1988, causing intensity to level off.*

But the conventional wisdom is exaggerated, according to a working paper from the Office of Technology Assessment.* In the years 1972 to 1985, U.S. energy consumption was nearly flat, while gross domestic product (GDP) grew an average of 2.5% per year. About two-thirds of this improvement in energy use was due to conservation and efficiency measures, such as new manufacturing processes, while the remaining third resulted from the economy's structural realignment toward services, such as finance and health care.

The OTA did find a return to pre-1972 energy consumption patterns from 1985 to 1988—an 8% rise in that period. The report blames this increase in part on even higher GDP growth (averaging 3.7% annually), but also notes a 10% increase in energy-intensive defense spending, a shift in national consumption toward manufactured products like machinery and chemicals, and a surge in exports of machine tools and computers.

Will this latest trend continue through the '90s? Probably not, says the OTA, although the difficulty of predicting the structural composition of the economy makes forecasting a dicey proposition. The report notes that a "wide variety" of energy-saving technologies holds the potential for "significant gains in efficiency," assuming that industry is willing to use them.

**Energy Use and the U.S. Economy* (Office of Technology Assessment, U.S. Congress, June 1990).