

Technology Notes

PUBLIC POLICY

Legislators Tackle Problems

The Senate hearing that opened last week on the impact of technology on society promises to be the first of a long series that will dot the Ninetieth Congress.

Legislators have been seriously concerned over their failure to understand what looks to them like the sudden technological explosion of recent years. And they lack the legislative machinery to come to grips with it.

Sen. Edmund S. Muskie (D-Maine), the Senator who led the assault in the last two Congresses on the water pollution problem, was not first but was quick to get his oar in on the broader emerging question of the impact of technology.

He proposes establishment of a Select Senate Committee on Technology and the Human Environment, and at hearings last week won the endorsement of prominent scientists, including S. Dillon Ripley, Secretary of the Smithsonian Institution, Dr. James M. Shannon, director of the National Institutes of Health and Roger Revelle, director of the Center for Population Studies at Harvard University.

The Senate currently has no mechanism for the kind of interdisciplinary, interdepartmental approach to technology envisioned by Sen. Muskie's resolution. Its space committee is limited to space, unlike the House of Representatives', which has a mandate in broad fields of science and technology.

It has already been proposed, and may be enacted next year, that there be select committees in both houses, if not a joint Congressional committee to explore the government-wide and society-wide issues raised by science and technology.

Sen. Muskie will probably not be able to fish alone in these waters. At least one other Senate subcommittee, under Sen. Fred Harris (D-Okla.), has also staked a claim. And as the issue becomes more prominent, competition for prominence among influential Senators may continue to prevent any of the proposals from becoming effective mechanisms.

ROCKET PROPELLANTS

Tri-Propellant Rocket

A rocket engine using a tri-propellant combination described as more powerful than any propellant now in use has been successfully test-fired.

The 15-pound-thrust engine, developed by Rocket Research Corp., Seattle, uses lithium, fluorine and hydrogen to produce a specific impulse of almost 600 seconds. This is about 150 seconds greater than the hydrogen-oxygen engines in the Centaur booster.

In the tri-propellant system, lithium and fluorine combine to produce lithium fluoride and heat; hydrogen is then added to condense the lithium fluoride, doubling the available thermal energy, according to RRC.

CRYSTALLOGRAPHY

Improved Synthetic Quartz

An improved way of growing synthetic quartz may greatly expand the role of such crystals in communications devices.

One problem with synthetic quartz crystals in the past has been that they could not be used in oscillators operating at high frequencies. The new growing method, developed by a team including Bell Telephone Laboratories researchers Albert A. Ballman and Robert A. Laudise, will reportedly enable natural crystals to be supplemented with artificial ones, at "substantial" savings in cost.

The new technique involves adding lithium nitrite to the crystal-growing solution, which the researchers claim increases the "Q," or energy-conversion efficiency, of the crystals tenfold.

AVIATION MEDICINE

Toxic Fumes From 'Copter Weapons

Some of the Army's newer, more heavily armed helicopters have been found to be affecting their crews' performance with all the gunsmoke and missile fumes they produce.

Test pilots and crewmen who complained of nausea and dizziness during firing tests have prompted the Army and Air Force to run special analyses of fumes from .50 caliber, 7.62 mm ammunition and 2.75-inch rocket motors.

The gases are being analyzed at the Army's Aeromedical Research Unit, Fort Rucker, Ala.

PIEZOELECTRICS

Super-Thin Ceramic

A piezoelectric ceramic material "so thin you can see through it" has been developed at Rutgers College of Engineering, New Brunswick, N.J.

The material, deposited by a "sputtering" process in a film 0.0001 to 0.00001 inch thick, is composed of lead and zirconate-titanate, a combination commonly used in phonograph pickups and sonar systems.

Chief researcher David A. Lupfer said, "it has the best electrical properties I've ever seen reported for thin films."

SELENOLOGY

Volcanic Moon Is Official

It's official: late photos from Lunar Orbiter 2 have satisfied the National Aeronautics and Space Administration that the moon did have a volcanic past.

The proof was an array of "lunar domes," 2 to 10 miles across and up to 1,500 feet high, which NASA said were probably caused by lava welling up from beneath the surface. The domes were described as "similar . . . to domes of northern California and Oregon."

"Many are rough and show cracks and pits at or near their summits," the space agency said. "The domes seen here for the first time in detail confirm the fact that the moon has had a long and complicated history of volcanic activity."

The photos showed that the rising molten material "warped the overlying rock and in some cases spilled out on the surface as lava."

The presence or absence of lunar volcanism has been a strong bone of contention among scientists however, and the official statement is unlikely to completely resolve the issue.