

## Apollo: Calm to Come

As the Apollo program gets raked over the coals in the aftermath of the January 27 fire that killed three astronauts, policy makers are trying to see into the future to tell whether other programs are likely to be burned as a result. Despite its troubles, 1970 is still Apollo's target for a manned lunar landing. But with the increased emphasis on finding practical uses for satellites (see p. 412), many Federal agencies are hoping that Apollo's troubles will make more money available for earth-directed applications.

Might such funds result from a slowdown in manned flight programs in general and post-Apollo and Apollo Applications programs in particular? "Absolutely not," says Dr. Edward C. Welsh, head of the prestigious National Aeronautics and Space Council. In fact, he adds, just the opposite might take place; that is, a pulling-away of funds from satellite applications for Apollo.

The most likely occurrence, Dr. Welsh believes, is that neither will happen. Rather, the furor will subside and both areas will develop, neither one at the other's expense.

Dr. Welsh is a staunch supporter of the manned moon program. As recently as April 10, in the same week as the release of the Apollo accident investigating board's report (SN: 4/22), Dr. Welsh warned the Aerospace Medical Association that the U.S. must not abandon its efforts to be first on the moon. "We cannot afford such folly for even a minute," he said.

Apollo also has friends on Capitol Hill. "As far as the House committee is concerned," says Representative Edward J. Gurney, a Republican from the Cape Kennedy area of Florida and a member of the subcommittee investigating the Jan. 27 accident, "there won't be any stealing from Apollo to give to other programs."

But this does not mean that Apollo will not be radically changed. In fact, five astronauts told the House investigators last week that they will refuse to enter an Apollo spacecraft until its many shortcomings are corrected. To this end, said Astronaut Walter Schirra, who piloted Mercury 8 and Gemini 6 and was to have been the backup command pilot for the first Apollo flight, a mockup spacecraft is being fitted with noncombustible materials arranged to inhibit the spreading of a fire. "Pretty soon we'll start a fire deliberately in this mockup just to see how it might spread," Schirra said. "And I can guarantee you that if it does spread, we'll change the spacecraft again."

While the one Congressional subcommittee was chewing up the Apollo

program, others last week were munching on NASA's proposed \$5.06 billion budget, which includes \$2.606 billion to complete the lunar landing and another \$455 million for future expanded use of Apollo hardware. James E. Webb, head of the Space Agency, said that even if the budget is passed intact, it will be so spare that another major accident would force him either to revise the program or ask for more money.

## Hemispheric Science

The technological gap which faces developing countries got special emphasis from the American chiefs of state during the meeting that ended in Punta del Este, Uruguay, last week.

The key ideas, in science as in other areas, were self-help and a pooling of effort.

The Presidents proposed formation of multi-national scientific and technological institutions which would benefit the whole continent. As in the Common Market concept, these regional centers would save duplication of effort and concentrate scarce resources.



Alliance For Progress

Latins jointly fight animal disease.

Instead of each country having its own small center for research in tropical agriculture, for example, an international center might be set up in Brazil for the use of all; metallurgical research could be carried out in Chile, again on an international basis.

The emphasis on developing technical knowledge in the Latin American countries is a frank recognition that economic development depends on self effort—that technology can't be imported, gift-wrapped and ready for use.

State Department spokesmen say experience with foreign aid shows that even the most successful technology developed here has to be adapted to

local conditions before it will work.

Beyond that, they say, the development of a self-sustaining economy needs the development of a local technology to feed it, more-or-less independently of continual inputs from abroad. Not only adoption of existing technology, but furthering of new ideas and techniques are needed.

Because of the time it takes to build up a scientific establishment, countries that are just starting to industrialize have to start now to make sure their technology will be adequate when it is needed.

The conference's action paper states, "science and technology are genuine instruments of progress for Latin American and require an unprecedented momentum at this time."

## Humphrey and Science

The week after next the 17-nation disarmament conference at Geneva reconvenes. Before it, Washington hopes, will be a draft of a treaty, agreeable to almost every nation, halting the proliferation of atomic weapons among countries that do not now have them.

But getting the advance agreements has been tough—and all are not in the bag. Vice President Humphrey, in his recent two-week swing through Europe, tried to allay the fears of our allies, and to some extent—as yet unknown—succeeded. He also, through science advisers accompanying him, laid the ground work for some increased scientific cooperation across the Atlantic.

On the treaty, the West German National Defense Council met last week in what may have been the key session in a world-wide diplomatic effort to make nonproliferation both acceptable and useful.

The Germans, despite a stream of assurances from the United States and Britain, fear that abjuring the bomb might cut them off from peaceful advances in nuclear technology.

The German meeting was to be followed by a 15-member North Atlantic Treaty Organization session in Paris, where the Europeans would decide whether to go along with the U.S. plan to proceed quickly with talks with the Soviet Union.

Meanwhile, India protested the treaty because it did not, at that stage, include guarantees from both East and West protecting her from the infant atomic arsenal of Communist China. Also, she felt, the nuclear powers who sign ought to give a quid-pro-quo to those who agree not to build the bombs. India suggests a thinning of the Soviet and U.S. nuclear stockpiles.

Japan feels, as Germany has, that the treaty might cut it out of basic peaceful industry. She sent an ambassador to Washington to talk with William C. Foster, director of the U.S. Arms Control and Disarmament Agency. A German and an Indian emissary also flew in.

**One result** of Mr. Humphrey's trip was the apparent loosening of the bind caused by the inspection section of the treaty. Germany and Italy, among others, have objected to inspection of their nuclear plants by representatives of the International Atomic Energy Agency, which might include Russians. They prefer inspection by their own international organization, Euratom. But Euratom has softened its stand, and might agree to "external verification" of the results of its inspections. The IAEA, on its part, declared that if a nation objected to any given inspector in its plants, it could simply turn him away.

**While the diplomats buzzed** and the problems seemingly softened, members of Mr. Humphrey's entourage reported opening new channels of communication with science ministers and oceanographers in the seven nations visited.

The "technology gap" a standard bugaboo in Europe, is Europe's own fault, they said, and it may get worse, particularly in oceanography, where the U.S. is mounting a major effort. They offered support to European oceanographic efforts—perhaps the gift of mothballed U.S. ships for research, or low-level funding of experiments.

The Humphrey party negotiated only one firm agreement during its tour. By trans-Atlantic telephone, it arranged for an extended lease for the prime Italian oceanographic vessel, a former U.S. Navy fleet tug remade by the Italians. The lease was almost up, and the Italians feared the U.S. Navy would want the vessel back.

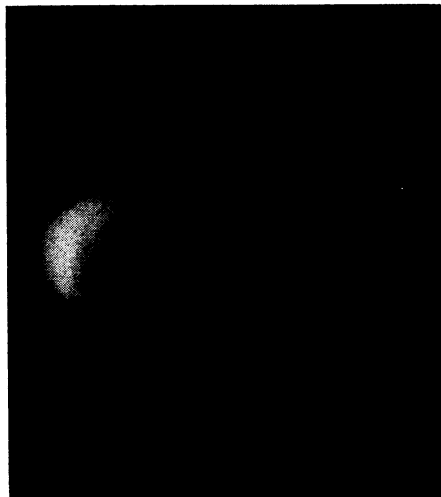
## Comets Simulated

One widely accepted theory of the formation of comets is that they are frosty conglomerations of debris from the solar system fused by frozen water, ammonia and methane, with carbon dioxide as one of several minor constituents.

**Experimental support** for this model of what constitutes a comet was reported last week to the American Geophysical Union meeting in Washington, D.C. by two scientists from Advanced Kinetics, Inc., Costa Mesa, Calif., who have created artificial comets in their laboratory.

The synthetic comets have the same general features as the natural objects.

They are made by bombarding, in a vacuum, a small piece of solid carbon dioxide with a stream of hydrogen gas accelerated to a speed of 200 kilometers a second.



Synthetic comet: dry ice and a tail.

The hydrogen plasma simulates the solar wind, an overall neutral stream of protons and electrons hurled from the sun. The wind heats a natural comet, ionizing a part of it which streams away to form the tail.

Carbon dioxide is used as the comet's nucleus in the laboratory model because it is easy to handle. When the simulated solar wind strikes the solid carbon dioxide, a tail resembling that seen in the sky is formed.

## Games for the Slums

A pinball machine can and has been used to teach mathematics painlessly to young slum dwellers.

Painless education, or rather educational fun, is what delinquent slum children need to bridge the gaps between themselves and middle class society—at least in the view of Bertram M. Beck, director of New York's Mobilization for Youth, Inc.

Last week at a Harvard symposium on child guidance, Beck gave his reasons why most rehabilitation programs fail.

**Until now, recreation** has existed for its own sake, and has amounted to "importing wood lore, cookie sales and basketball to the slums," as part of social workers' efforts to pass on middle class values.

But what the child too often needs is basic intellectual repair, help in mastering concepts middle class children learn when they are still playing with dolls and trunks.

Many slum youngsters lack a grasp of time, health and training as ideas; they don't understand duty, responsi-

bility, or even self-betterment, said Beck. Their level of abstraction is insufficient to allow them to function successfully in society.

Most social work has had only an accidental effect on this intellectual dysfunction. But Beck believes games with an educational hook can help develop these functions, and Mobilization for Youth hopes to stock its four adolescent centers with gaming devices. "If we could get the money, we would equip an entire center with pinball machines," said Dr. Harold Weissman, a Mobilization social worker. Besides pinball, computerized teaching machines can be used to entice delinquents into playing, and in the process, learning.

**If educational games** are new to social work, they are not new to education. "There is a tremendous move toward applying games to teaching," explained Dr. Alan Cohen, formerly a Mobilization worker, now a psychologist at Yeshiva University. Johns Hopkins University, Columbia and Yeshiva all have work in progress on game teaching.

Dr. Cohen himself has developed games for use in a New York reform school. Homework is sent home in coded riddles; problem-solving is taught by means of a naval battle, each child with his own fleet of ships.

The first five months brought a tremendous change, said Dr. Cohen. From a state of total illiteracy, the children, aged 10 to 14, had begun to read words. They clamored for homework, and the improvement in behavior was phenomenal, he said.

## Miltown Contest

Formal objections to the FDA's tentative order to place special restrictions on the tranquilizer Miltown and other brands of meprobamate are being filed by the manufacturer.

Kirby Peake, president of Carter-Wallace Inc., which holds exclusive rights to marketing meprobamate, says FDA failed to prove that the drug has a potential for abuse as defined by the Drug Abuse Control Amendments of 1965.

FDA says evidence presented during a four-month hearing last year showed that the prescription tranquilizer has been abused and its abuse is likely to increase unless it is controlled under the 1965 amendments.

Following the formal objections, due by May 13, FDA allows 90 more days before making a final formal order. Officials of Carter-Wallace say the company will probably take the case to the Court of Appeals in Washington, D.C., if FDA carries out its restriction plans.