

Yet at the FDA, STP samples—or what seemed to be samples—indicated a derivative of mescaline. The reports clearly did not match.

Moreover, STP reactions seemed to be confined to California. In New York, where the drug has been reported, Bellevue Hospital, for instance, saw no such reactions, though it usually gets the cases of drug-induced psychosis.

Drug pushers were probably selling more than one chemical, possibly as many as six, under the name of STP, which certainly contributed to the confusion.

Whatever its nature, STP use is dying out for now, says Dr. Frederick H. Meyers, a pharmacologist at the University of California Medical Center in San Francisco. No new STP supply has appeared since June, he says.

Dr. Meyers, who maintains contact with San Francisco hippies through a voluntary clinic in their Haight-Ashbury district, says users have become frightened of STP. Most have come to believe the experience is too rough, he says. Some have reportedly been seeking reassurance that their "acid" (LSD) is not STP.

The clinic is an informal medical center established in anticipation of the summer's hippie invasion. Except for a few cases in southern California, most of the STP reactions have turned up there.

In all the confusion, one thing seems fairly definite—California's STP is not the FDA's STP. Or if it is, there is some new and far more potent mescaline around.

"If you believe the FDA report, there must be more than one kind of STP," says Dr. Donald Louria, a Cornell University professor and well known drug expert.

**Dr. Milton Joffe**, of the FDA, agrees. The California intoxications must be coming from some other compound than the one he has, says Dr. Joffe.

He says he knows of no hospital cases the symptoms of which would correspond to the chemical analysis made on his version of STP, even though the basic mescaline molecule is somewhat modified in the samples he has.

"I wish we could come to some reasonable solution," says Dr. Joffe. "It makes us look pretty bad to say we don't know what this is."

Mescaline, a derivative of the peyote cactus, has been used by American Indians for centuries. It is now legal only as part of a ritual in the Indians' Native American Church.

If STP were the usual mescaline, it

would have produced anxiety and some perceptual distortion, but not the wild, long-lasting mania and physical side effects reported from California.

**Altogether** a dozen or more STP cases came to medical attention during the height of the fad. Physical effects included dry mouth, blurred vision, dilated pupils, and some pre-convulsive jerks. The patients were wildly excited and in some cases, violent. One STP user almost knifed another patient.

These are the symptoms of anticholinergics which act by blocking the parasympathetic nervous system. In sufficient amounts—and the margin of safety is relatively small—such a drug first sedates its user, then produces psychosis—including hallucinations, mania and terror—then convulsions and sometimes death. Death is usually caused by respiratory paralysis.

The only safe place for someone with anticholinergic poisoning is in a padded cell, says Dr. Joffe.

None of the California cases he saw was close to death, says Dr. Meyers. The main danger was that physicians would mistake an STP high for LSD and administer an antidote that would only make things worse. The drug chlorpromazine is often given to arrest psychotic reactions to LSD—hippies carry it around with them—but combined with an anticholinergic, the drug could be lethal.

The Army has reportedly developed an antidote to the anticholinergic drugs, but that substance is not readily available.

**Besides the Army** compound, BZ, the anticholinergic class includes an experimental drug called Ditrane, which never proved medically valuable. It was supposed to have been an anti-depressant. Dr. Meyers first thought of Ditrane when he encountered the new highs, he says. Since then he has become as confused as the FDA.

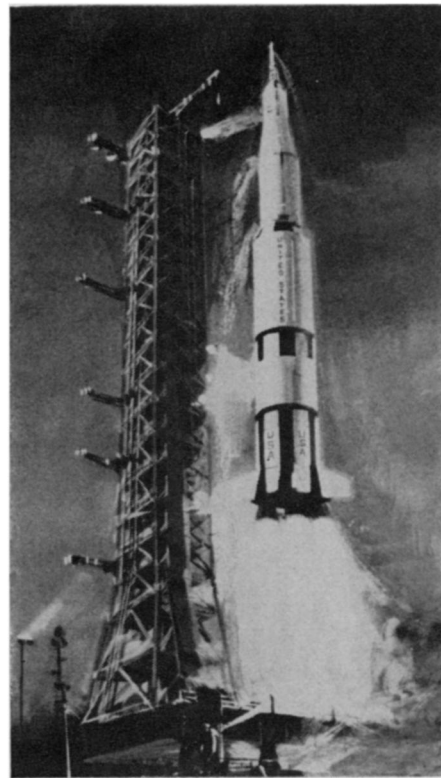
"Eventually we'll find out what this is," he says. But for the moment, the source of STP—an inhabitant of Haight-Ashbury—has disappeared. He hasn't been seen for days, says Dr. Meyers.

#### AFTER APOLLO

### NASA: Walking Orders

"Walk, do not run," is likely to be the United States' motto for space exploration once it reaches the moon. Brought up short by the spacecraft fire that killed three astronauts on Jan. 27, the post-Apollo space program is already beginning to suffer as legislators slash the thin roots of seedling projects.

Soul-searching, redesigning and management-shuffling on both the Government and industry sides of the Apollo effort to put men on the moon (SN: 4/22) has apparently restored much of the confidence that was lost as one unpleasant truth after another was un-



NASA

#### With Apollo gone: 'Walk, Do Not Run'

covered by Apollo investigators. But though Apollo may ultimately be repaired, much broader damage has been done.

**Every step into space** after the moon will be longer than the one before, with development for many missions having to begin a decade or more in advance. It is here that Congress is tightening the reins.

The Senate cut not a penny from Apollo in passing its version of the National Aeronautics and Space Administration's authorization for fiscal 1968, yet slashed almost one quarter of a billion dollars from the space agency's total request of \$5.1 billion. All the severe damage was done in the future plans department.

Every penny was knocked out of the Voyager program, for which NASA had asked \$71.5 million to begin an effort that could be expanded to include manned and unmanned spacecraft landing on both Mars and Venus, and possibly some of the outer planets. A bigger bite—\$120 million—came out of the Apollo Applications Program, a wide-ranging plan to use Apollo hardware for orbiting laboratories, observatories and other projects. NASA had

asked \$454 million for its first-year funding, trying to get as many AAP irons in the fire as possible.

The House of Representatives was even harsher, taking out \$309 million; it hacked away at NASA plans extending even further into the future. But Apollo escaped almost unscathed, with a trivial cut of one percent.

Again the big loser was AAP, to the tune of \$75 million. Though the Congressmen cut only \$21.5 million from the Voyager program, they lopped off more than half of NASA's \$150-million bid to buy additional rockets to launch future missions. Another \$20 million in hardware money was trimmed from a \$70 million package for the development of a nuclear rocket, an on-again, off-again program which had been especially backed by President Johnson (SN: 4/8). NASA has ideas for nuclear-powered missions reaching decades into the future.

Though the House and Senate bills are both oriented toward keeping

NASA's post-lunar plans in better check than was Apollo, the two proposals must still be hammered together into a single authorization. Both bills will be thrashed over in a conference of members of both houses, expected to convene late this week or early next. After several days of haggling, during which various members will stoutly defend pet projects, the resulting compromise will be subjected to both houses for approval. The President, who is expected to sign the bill promptly, may find it on his desk well before the end of the month.

At NASA and at Apollo-building North American Aviation, Inc., most of the pieces of the initial lunar landing program are being picked up, to the tune of lilting press releases touting the project's new look. If all is indeed well, Apollo should finish out its moonward journey almost in the style to which it has been accustomed; after that, NASA's brisk pace will suddenly slow down.

weather, the aurora is planetary. It is caused by hot, ionized gases shot out by stormy regions on the sun, and shaped on a grand scale by earth's radiation belts.

The varicolored arcs and streamers of light result when huge streams of these electrified particles, spewed forth from the sun much like water from a rotary lawn sprinkler, catch earth in their path.

The earth and its magnetic field are confined in a huge cavity, called the magnetosphere, around which the solar wind flows.

The shifting patterns of the aurora over the night sky give scientists evidence of changes in the magnetic and electric fields as the spray of solar particles interacts with earth's environment. Auroras, Dr. Brian J. O'Brien of Rice University believes, play "the pivotal role in the vast array of solar-terrestrial interactions and magnetospheric phenomena."

Light from auroras, he notes, was the first evidence analyzed, some 60 years ago, that the oxygen and nitrogen in earth's atmosphere "actually extend to altitudes of hundreds of miles." This means mankind inhabits a three-dimensional terrestrial environment.

In some way—not yet satisfactorily explained—in the cavity carved out of the solar stream by earth's magnetosphere, the great bulk of energy is concentrated on a comparatively few electrons and protons that are then accelerated to such energies they plunge into the atmosphere, reaching down to altitudes of about 60 miles. This is the altitude where the auroral light is brightest.

One clue as to how and where charged particles are affected in the magnetosphere may come from evidence that electrons responsible for the production of aurora can be significantly affected by processes occurring as much as 33,000 miles away. Drs. D. A. Bryant, H. L. Collin, G. M. Courtier and A. D. Johnstone of SRC Radio and Space Research Station, Ditton Park, Slough, Buckinghamshire, measured pulsations of electrons detected during a rocket flight last March. The timing of the pulsations enabled the scientists to determine the distance of the cause.

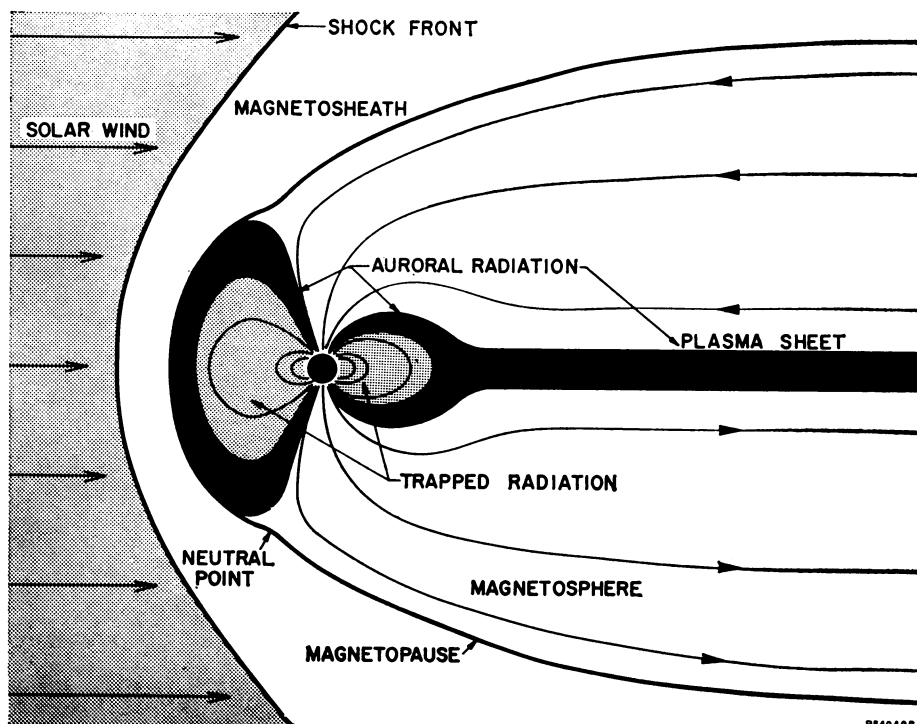
They suggest, in a report in the July 1 NATURE, that a reaction over such a great distance means that the path taken by the auroral electrons from the sun comes close to earth's geomagnetic equator at a distance of 24,000 miles.

Despite some increase in understanding of auroras in recent years, no theory yet advanced satisfactorily explains:

- Why the aurora polaris is more often seen near midnight than at any

## GEOPHYSICS

### Lights in the Sky: Still Enigmatic



Possible configuration of magnetosphere, showing auroral radiation domain.

The earliest known sighting of an aurora was in 502 B.C., according to Greek records, and there are descriptions of auroras in the Hebrew Chronicles dating back to 167 B.C.

When the northern lights occur beyond their normal regions, people have been known to become frightened and pray—or turn in fire alarms.

False fire alarms were sounded in

Rome in 30 A.D., Copenhagen in 1731. Konigsberg in 1831, New Orleans in 1839 and London in 1847.

Like rainbows, dawn and sunset glow, auroras are linked to the sun, but more mysteriously, says Dr. Sydney Chapman of the University of Alaska, College, Alaska.

Although the others are phenomena of the lower atmosphere, the region of