

# Plum Brook In The Space Age

## Research Facility Has Varied Chores

"Bugs" which blow up some of America's brightest rocket hopes within a few feet of the launching pads may be eliminated by experiments planned at Sandusky's Plum Brook research center, a facility of the National Aeronautics and Space Administration.

A 117-foot high "shake tower" will be the key to spotting defects in missile hardware before they cost the nation mil-

lions of dollars in wasted effort—and uncountable damage in "space-race" prestige.

Believed to be the only full-size rocket-shaker of its kind in the country, the Plum Brook tower will subject full-size missiles to the same kind of vibration they would encounter on "blast off." Defects which show up after this pummeling can be corrected before the "live" rocket is launched at

Cape Canaveral or elsewhere.

The shake-tower is only one of several major facilities under construction or completed at Plum Brook, being honored by the Chamber of Commerce this evening as the newest addition to Sandusky's industrial complex.

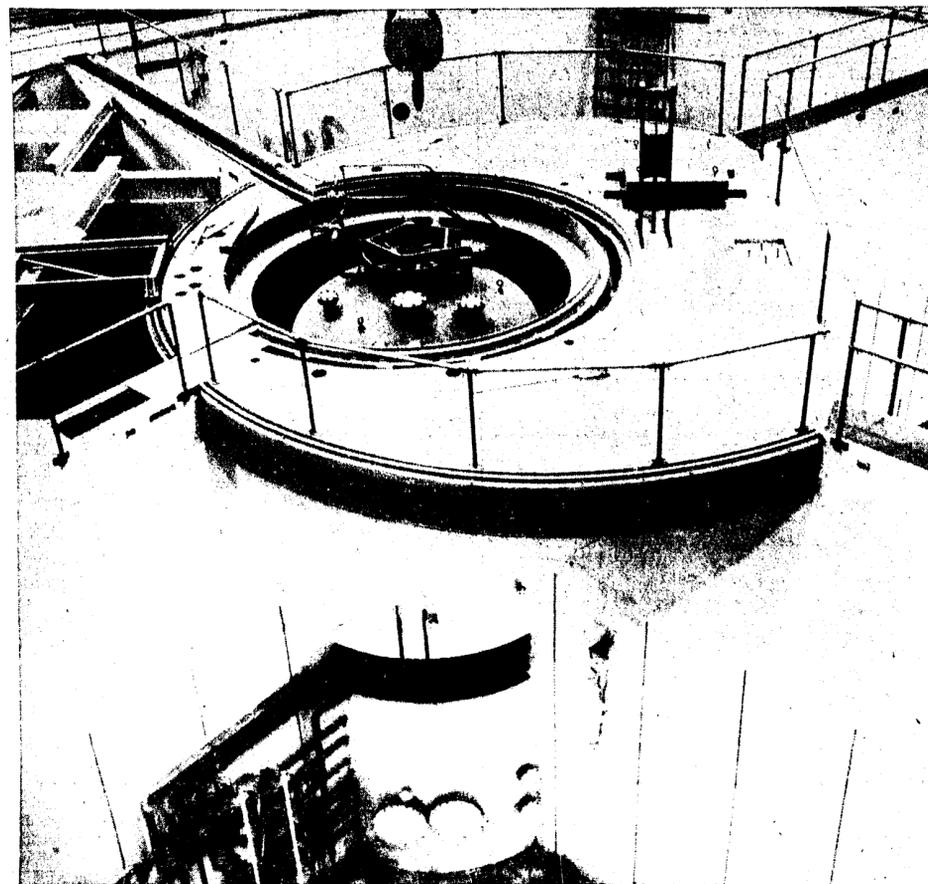
Although much has been written about the atomic reactor now nearing completion on the NASA property, many Sandus-

ky area residents are only slightly aware of the rocket test facilities.

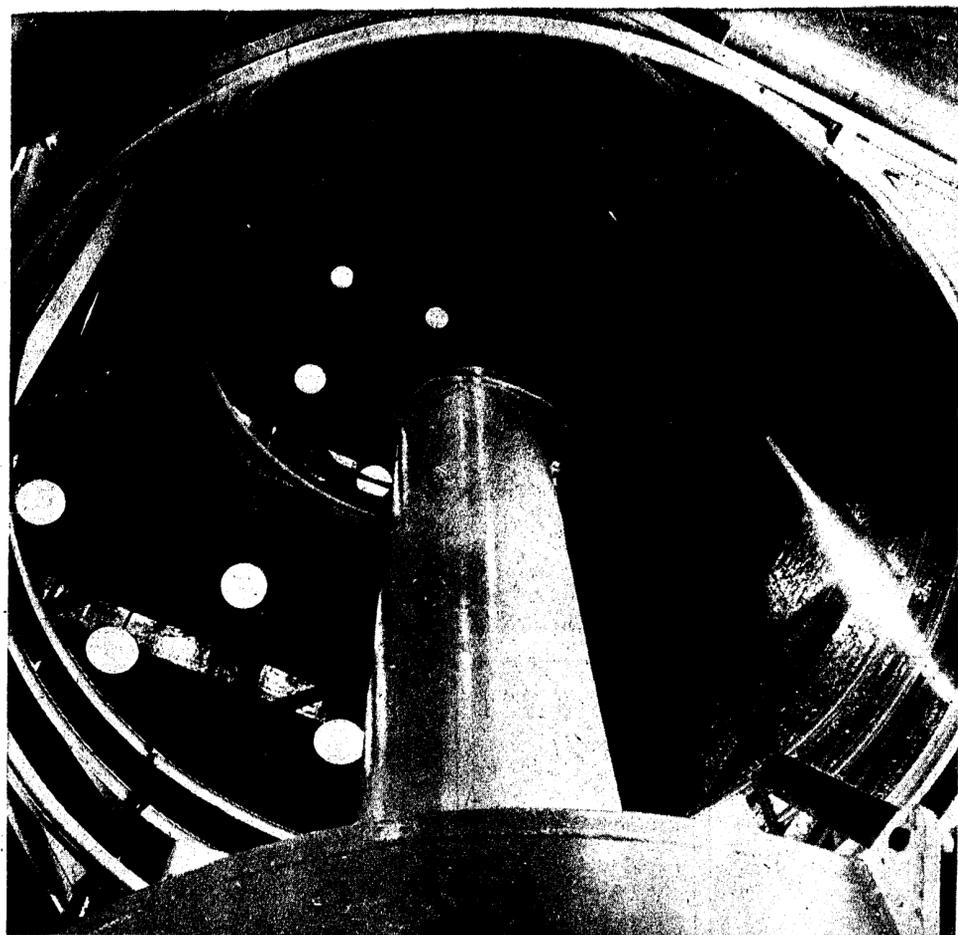
During World War II much rocket study was conducted at the Lewis Flight Center at Cleveland Hopkins Airport by the NACA scientists, predecessors to NASA. After the Plum Brook property became available it was decided to establish a rocket testing facility at Sandusky to supplement the work



**CRYOGENIC FUELS**—Fuels producing very low temperatures for rocket component testing are transported to the local NASA facility in the two tank trucks at left. A Horton sphere, used at the former TNT plant, is now set up at right for housing some of the experiments being carried on by the space scientists. (Register Staff Photos)



**"HOT STUFF"**—Uranium, such as is used to power the U.S. atomic submarines and provides the warheads of many weapons, will be placed in the bottom of the steel tank in the center of the research reactor at the Plum Brook Facility of NASA. The reactor will soon be made "hot" and countless research projects started, leading to atomic powered airplanes and space craft.



**GOING IN CIRCLES**—Various floors of the NASA "shake tower" make a circular pattern around a piece of test equipment. Equipment in the tower will simulate missile free flight as nearly as possible for scientific study. Complete rocket systems may be "ground tested" in the building.

being carried on at Cleveland. Now a "space age village" has been constructed on former farm land. There are eight centers of study plus the control and instrumentation building in the "village" around the triangle formed by Ransom, Fox and Taylor Roads.

Rapidly expanding is the "portable rig site" which has been in operation for some time. Experiments started in Cleveland are put on semi-trailers and brought to the Plum Brook site, where various tests are performed. Cryogenic fuels (liquid oxygen, liquid hydrogen and others) that produce very low temperatures are used in many of these studies.

### Pilot Lab

A "pilot lab" is located near the "portable rig site" and has also been used for some time in scientific work. Here scale models of rocket pumps and turbines are studied. A gas generator rig is also located at the site to provide hot gas used in turbine research.

A short distance away from the "pilot lab" is located the dynamics facility or five level "shake tower." The 30-foot square steel building is 117 feet high with doors at each level which may be opened to admit a missile the size of an Atlas. Vibration exciters shake the test missiles in much the same way they are shaken in actual take-offs.

John H. Weeks, chief of rocket systems operations, said today that the "shake tower" is expected to be in operation in the near future. A vast network of wires runs from the tower to the central control and instrumentation building.

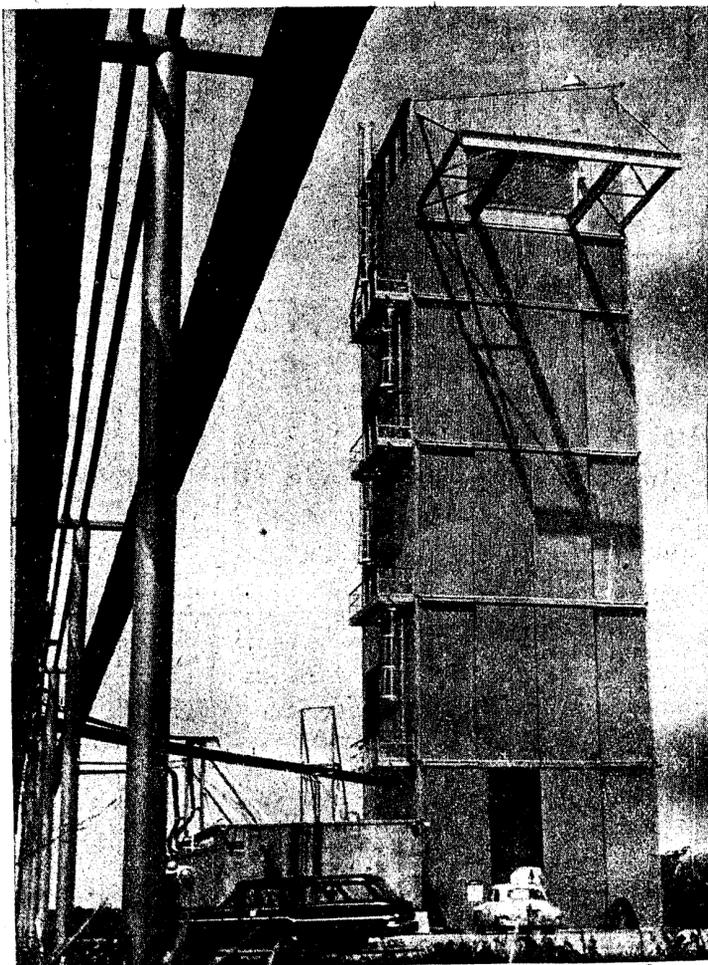
After an experiment has been set up in the tower the various operations will be carried on by remote control from the central building, using part of the wires to start and stop the tower equipment. Results obtained during the test will be recorded on various instruments in the central building. Closed circuit television will also be used to visually observe the tests being carried on several hundred feet away from the scientists.

### Other Centers

Other "centers" of rocket research will be in the following buildings: hydraulics laboratory, turbine testing facility, pump facility, turbo-pump facility and fluorine pump testing facility. When present contracts are completed at these five centers in the near future, "dry runs" will be made before experiments begin.

Weeks pointed out that various types of liquid rocket fuels are and will continue to be used in the many Plum Brook studies of rockets. All experiments here will be ground tests rather than actual launchings. NASA now has several launching centers, the most famous of which is located at Cape Canaveral, Fla.

Pumps, turbines, turbo-pumps, fuel tanks, gas generators, piping systems and various fuels used in rockets will be under scientific study at the Plum Brook facility for years to come, according to Weeks.



**DYNAMICS FACILITY**—Nearing the operational stage is this dynamics facility or "shake tower" at the Plum Brook Facility of the National Aeronautics and Space Administration. At left overhead are hundreds of control and instrumentation wires connecting the tower and the operations building.



**"COLD STUFF"**—Emil Napholz, an NASA mechanic, is holding a special test tube in which moisture from pipe lines has been collected and frozen. At the portable test rig high pressure gas is used for some operations and the lines must be free of moisture, with liquid nitrogen being used to freeze the moisture.