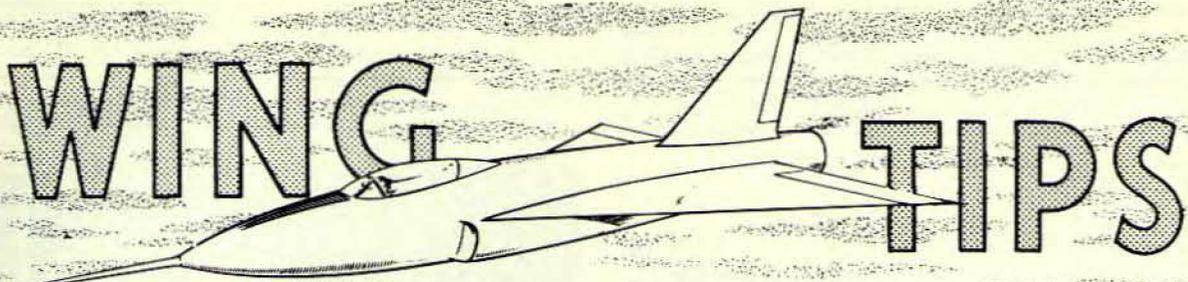


WING TIPS



Vol. XVI

Cleveland, Ohio, May 13, 1958

No. 9

On Capitol Hill

Photographed during Dr. James H. Doolittle's testimony before the Special Committee on Space and Astronautics of the U.S. Senate on May 6th were Paul Demling, NACA Legal Advisor, Dr. Doolittle, NACA Chairman and Abe Silverstein, Associate Director, NACA-Lewis.

Dr. Doolittle's statement before the Select Committee on Aeronautics and Space Exploration of the House of Representatives on April 29th is printed on page 3.



VICTORY SPEAKS IN CLEVELAND



Dr. John F. Victory, Executive Secretary of the NACA, will spark the discussions of the Small Business Opportunity Conference with his talk on research and development in a new era of national security.

The two-day conference, to be held May 14-15, will present opportunities of small manufacturers to make rocket and missile parts for the defense program. The conference is sponsored by the Cleveland Chamber of Commerce.

Additional Facilities to be Built at Plumbrook

Construction of facilities for study of long-range ballistic missile and space flight rocket systems will begin soon at the 3600-acre NACA Plumbrook site, south of Sandusky, Ohio. The new Rocket Research facilities are expected to be completed in about two years and cost \$5,480,000. Our \$10,735,000 reactor for Nuclear Propulsion research has been under construction at Plumbrook since 1956 and will be completed next year.

The first of the new Rocket Research units at Plumbrook, for the site facilities for operation of portable rigs for static firing, will be completed late this summer. The second facility will be a complete Rocket Systems Laboratory, consisting of rocket systems stands, rocket turbopump performance and control stands, pump and turbine test cells, propellant hydraulics and lubricants laboratories. No rockets will be launched at Plumbrook. All tests will be on ground static test stands.

On completion, about 20 service personnel will be employed at the site. About an equal number of scientists and technicians from the Lewis Laboratory will operate the facilities.

Rocket Test Site Set For Plum Brook

No Launchings; Hastens Work On Missile Research

Construction of facilities for National Advisory Committee for Aeronautics study of long-range ballistic missile and space flight rocket systems will begin soon at the 3,600 acre NACA Plum Brook site, south of Sandusky.

The new Rocket Research facilities are expected to be completed in about two years and cost \$5,480,000. A \$10,735,000 reactor for NACA Nuclear Propulsion research has been under construction at Plum Brook since 1956 and will be completed next year.

The first of the new Rocket Research units at Plum Brook, for the site facilities for operation of portable rigs for static firing, will be completed late this summer. The second facility will be a complete Rocket Systems Laboratory, consisting of rocket systems stands, rocket turbopump performance and control stands, pump and turbine test cells, propellant hydraulics and lubricants laboratories. No rockets will be launched at Plum Brook. All tests will be on ground static test stands.

Hasten Solutions

In announcing the new construction at Plum Brook, Dr. Edward R. Sharp, director of the NACA Lewis Flight Propulsion Laboratory at Cleveland, which will operate the new research center, said, "The increasing application of rocket power plants for missile and space flight, and the use of new propellants has brought new and pressing problems. Use of the new facilities at Plum Brook will hasten their solution."

Dr. Sharp added that for the past 43 years, research activity of the NACA has been directed toward solution of the problems of flight. Until the end of World War 2, these programs were focused mainly on problems peculiar to airplanes.

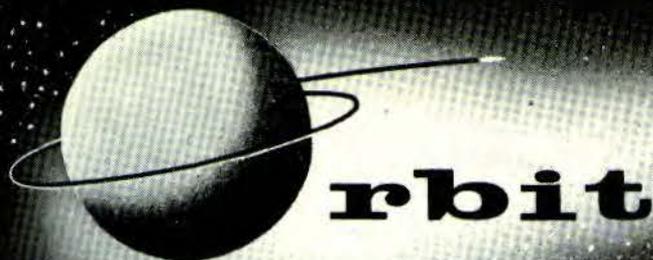
Erie-co In Vital Role

Since then, NACA work has been increased to provide information for the design of missiles. Today, some 50 percent of NACA effort is applicable to missiles, satellites and space flight.

Erie-co's role in this effort will be of increasing importance to our nation's technological development.

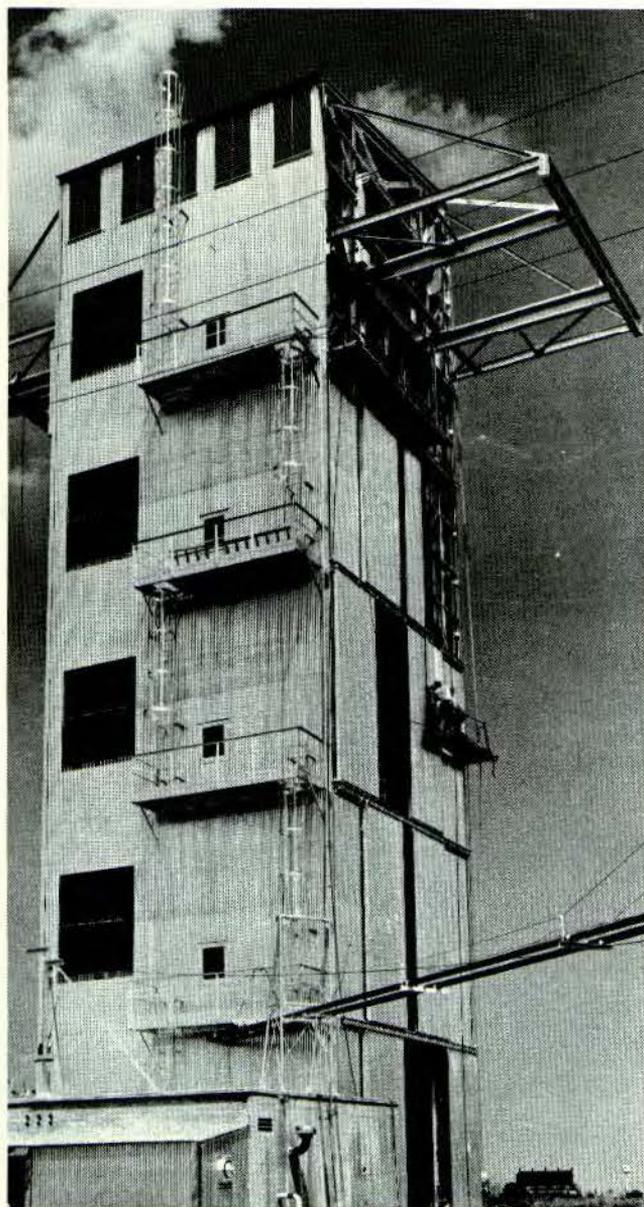
Both new research facilities will be located on land, formerly part of the Plum Brook Ordnance Works, acquired by the NACA from the Army on March 1. The site of the portable rigs will be off Taylor-rd 1200 feet south of Fox-rd. The Rocket Systems Laboratory will be erected near the intersection of Fox and Ransom-rds.

On completion, about 20 service personnel will be employed at the site. About an equal number of scientists and technicians from the Lewis Laboratory will operate the facilities.



THE PLUM BROOK STORY - A PROGRESS REPORT

(This week ORBIT visited Plum Brook to report on the construction progress of the rocket test facility and the research reactor facility. The first installment is devoted to the rocket project; the second, to appear next month, will cover the reactor. Subsequent stories will be devoted to a number of significant Plum Brook subjects.)



Among the new facilities under construction at Plum Brook is the 117 foot high Dynamics Facility, or "Shake Tower." This silo-like, 30 foot square tower will be used for two types of missile research: structural dynamic testing, and fluid flow investigations.

One of the reasons for failure in missile launchings has been failure of structural components due to compression- and bending vibrations of the missile structure which are excited by the rocket motor. For example, steering control gyros, which measure the vehicle attitude can be misled by bending vibrations of the structure. If these bending vibrations are not properly recognized in the design of the steering control the gimbaling motor will re-enforce the bending motion and result in the destruction of the missile.

These vibrations will be simulated in the Shake Tower (left) for study of the problem. The tower is constructed to hold a missile the size of an Atlas, or scale models of larger missiles. Built of structural steel, the tower doors slide open, the beams are dropped out, and the large crane at the top of the tower lifts the missile into place.

Simulating free flight as nearly as possible, the missile will be supported by cables inside the tower and placed on a "soft spring" - one which provides a big deflection with a small weight. The missile will be connected to a large vibration exciter, producing 15,000 pounds force which will excite, or "shake" the suspended missile in a vertical plane. A smaller, 200-pound force exciter will be used for lateral shaking. A power amplifier housed in a concrete block house next to the tower will accuate the exciters.

(Continued on page 2)

ORBIT, an official publication of the Lewis Research Center, National Aeronautics and Space Administration Cleveland 35, Ohio, is published bi-weekly in the interest of Lewis employees. Send contributions to the Editor, 258 ERB, telephone 3284. Deadline: Thursday after pay day.

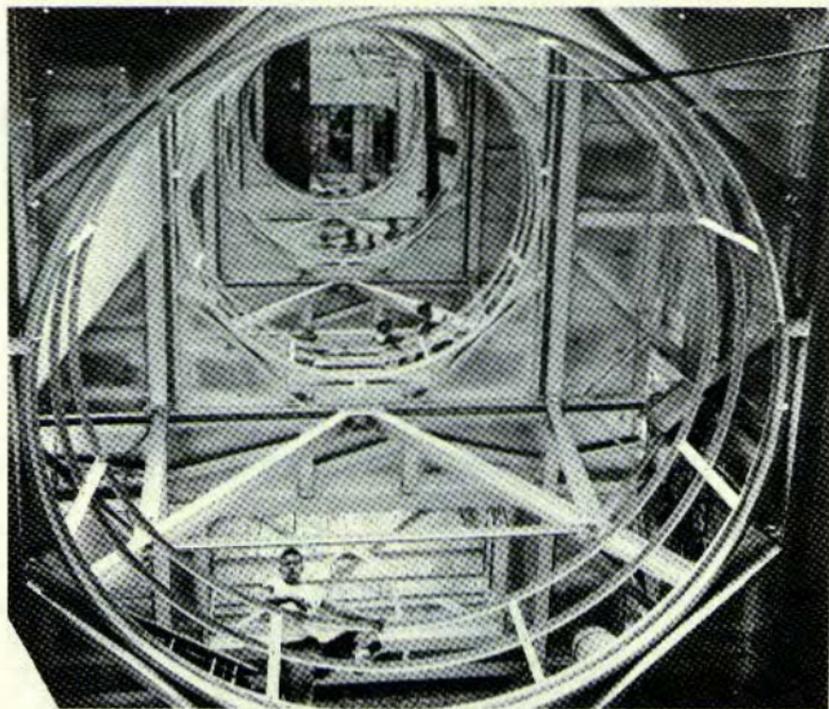
Editor.....Marjorie Hyre

Reporters.....NASA Employees

plum brook (Continued from page 1)

The central control building, which will control all operations, will be located 1000 feet away.

The Dynamics Facility will also be used to study complete rocket systems. The tankage and related pressurization and flow systems, including the turbo pumps, will be investigated. The propellant will not be burned. Combustion chamber pressure will be simulated by a controls device. This will permit studies of the effect of changes of combustion pressures on the flow dynamics. Designed for cryogenic fuels liquid Hydrogen and liquid Oxygen, complete safety features have been incorporated in the design.



Inside the Shake Tower - looking up.

PLUM BROOK TODAY - A PROGRESS REPORT

THE PILOT PLANT AND THE BARRICADE AREA

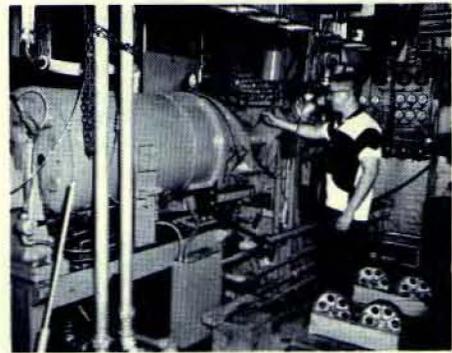
Continuing in the series on Plum Brook facilities, ORBIT takes you to the Rocket Components area. In construction here are five main rocket components test facilities and the central control building. In operation are the Pilot Plant and the Barricade Area.

THE PILOT PLANT consists of two test buildings and a combination control and instrumentation tank. The word "tank" is used in its most literal sense, for two ammonia storage tanks, 39 feet long and 9 feet in diameter have been combined and adapted as control and instrumentation housing. These tanks are earthed-over for protection. One of the problems of this earth covering has been in ridding it of burrowing groundhogs!

Periscopes are installed in the control tank for viewing during operations in either of the two test buildings. These test rigs are located 350 feet from the control building. In building #1 a gaseous hydrogen turbine is in operation. Within a few days, operations will begin on a liquid hydrogen pump in building #2.



Looking past Pilot Plant control tank (right) to test rigs.



Dick Jarvis inspects cold flow turbine rig.



Barricade Area with Pilot Plant in distant background.

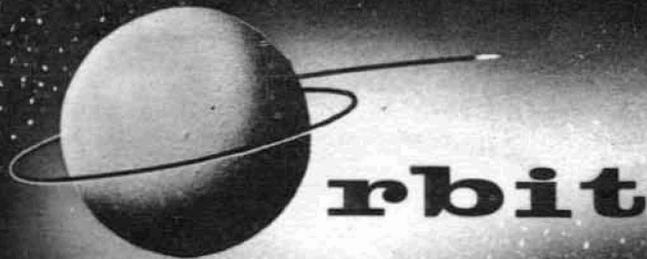


Ron Williams & Dick Jarvis in control tank.

THE BARRICADE AREA is located approximately 2500 feet from the Pilot Plant. This area has been designed to house three particular test rigs. In operation is the gas generator rig. Soon to be in operation will be the 20,000 pound vertical rocket trailer, and the ground handling system. Controls and instrumentation for the Barricade Area are housed in movable trailers which were secured from Army surplus and adapted to their present usage.

A compliment of 25 research and service personnel is required to set up, maintain, and operate both the Pilot Plant and Barricade Area. Most of the staff have already transferred to Plum Brook.

The Fluid Systems Division is conducting research in both the Pilot Plant and the Barricade Area. In the very near future, the Propulsion Systems Division will begin research in the Barricade Area.



Vol. XVIII

Cleveland, Ohio, January 22, 1960

No. 2

PLUM BROOK TODAY

Keeping pace with the fast-moving developments at Plum Brook, ORBIT presents the latest views. The photos you see in this edition show significant changes which have taken place at both the reactor and rocket test areas since our last reporting.

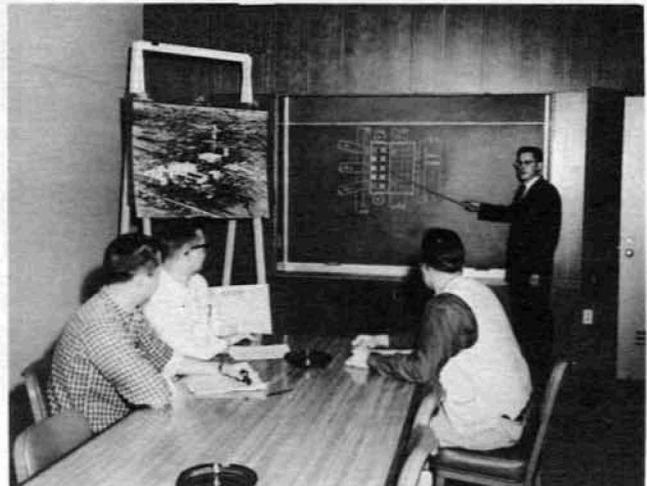
At this date radioactive fuel elements are expected to arrive in the near future. This means that the reactor's "critical" status is drawing closer.

Entrance to the fenced-in Nuclear Reactor area will be through the Security Control building. Starr Truscott, Administrative Officer is seen entering the nearly completed building.



The Lobby of the Nuclear Reactor building will receive visitors at this reception desk. Posing for Orbit camera are secretaries Mrs. Arlene Ann Case (left) and Miss Ruth Ann Oetzel.

In one of the Conference Rooms in the Nuclear Reactor building, Dr. Theodore Hallman, Chief of Reactor Research discusses the blackboard diagram of the reactor core with (l to r) engineers William Poley, Harold Giesler and Thomas Tambling.

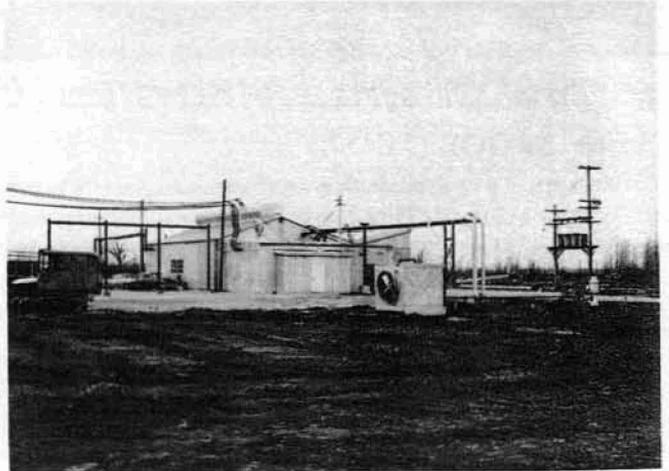


(Continued on page 2)

ORBIT, an official publication of the Lewis Research Center, National Aeronautics and Space Administration, Cleveland 35, Ohio is published bi-weekly in the interest of Lewis employees. Send contributions to the Editor, Room 5, Administration Building.
 Editor Marjorie A. Hyre Deadline: Friday after pay day. Reporters NASA Employees

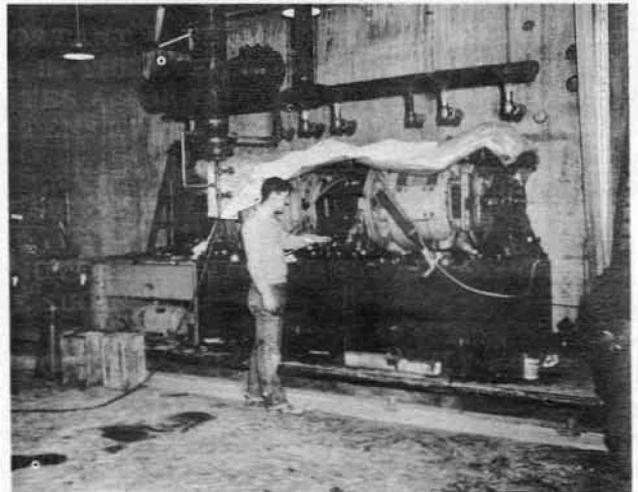
PLUM BROOK TODAY (Continued from page 1)

Exterior view of "I" Site Pump Rig showing the start of cryogenic piping installation. The concrete wall area contains a carbon reactor in which boiled off gases are captured and decontaminated before exhausting into the air.



Interior of "I" site Pump Rig showing the external containment vessel in the center of the photo. This 134-ton tank was formerly used by Erie Ordnance for ammonia storage. A 9500 pound stainless steel internal tank is used as the pump capsule. The entire rig is mounted on tracks so it may be moved outside for easier pump installation.

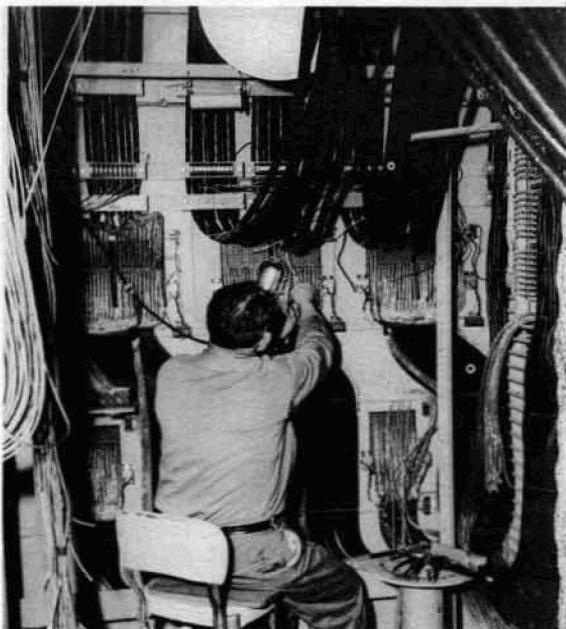
A permanent fixture in the "D" Site Turbine Rig are these dynamatics. Mounted on bed plate, they act as electrical brakes in the overall job of checking the thrust developed by the turbines. Formerly used in Engine Research Building at Lewis, the dynamatics were overhauled and taken to Plum Brook. Ted A. Klonk is seen standing by the dynamatics.



(Continued on page 6)

PLUM BROOK TODAY (Continued from page 2)

The Central Control Building will be the terminal point of 14.3 miles of cable from six separate facilities at Plum Brook. From each of these six sites (A, C, D, E, F & I) there are 926 conductors to Central Control. These are instrumentation, coaxial and TV control cables. Warren Bordine, construction engineer, shows the patch board side of Instrument Data Switching Cabinet.



A technician connects a myriad of vari-colored wires in the Instrument Data Switching Board in the Central Control Building.

things to come

Film Classics Club will show "The Prisoner" starring Alec Guinness & Jack Hawkins on January 22. This story roughly parallels the case of Cardinal Mindzenty. On January 29th "The White Sheik" will be shown. This is an Italian comedy, originally scheduled for December 18.

Information Session - The Speech Class soon to begin, will hold an information session on Tuesday, January 26, 8:00 p.m. in the Auditorium. All employees are welcome without charge or obligation. Mr. William McCleery, speech instructor at Berea High School will answer questions and make final arrangements for the series of eight two-hour sessions in effective speaking. Course fee is \$16 per person. For further advance information contact the Training Office, 5261 or LLama Club members.

Mardi Gras - M & S Division's 4th Annual Dance will be swinging on Saturday, February 20. Social hour from 7 to 8 p.m., dinner 8 to 9 p.m., dancing and usual refreshments from 9 p.m. on. Tickets are \$5 per person - everything included. To join the Mardi Gras celebration, see Phil Romano.

East Siders - Have you ever considered attending a Llama Club meeting but postpone doing so because it is too much trouble to go home for dinner and return to the Center? Wait no longer. Every Llama meeting is a dinner meeting. Come to the Wednesday, February 3 meeting as a guest of the club. Call John Everett 3138 or Cliff Talcott 2218. (West Siders are invited too!)

Two Test Facilities Completed At NASA; Experiments Started

By A. L. McCALL

Although the rocket test facilities at Plum Brook are not scheduled for completion before next summer, scientists at the National Aeronautics and Space Administration (NASA) installation are already busy attempting to solve several missile and space vehicle problems.

Two of the test facilities have been completed for some time and are being used each week for experiments and research. Six other installations are nearing completion. The rocket testing facilities are in an area roughly bounded by Taylor, Fox and Ransom-rds. all familiar Perkins-tp thoroughfares of pre-war days.

At the "portable rig" site scale models of rockets or component parts are given tests in one or the other of two bunkers. When a test is being run a trailer is parked about 1,000 feet away. The trailer is connected to the bunkers by means of many cables that carry electrical impulses to start the test and bring back various reports which are recorded from dials and other instruments. Closed circuit television is also used to observe the tests, with cameras in the bunkers and viewing screens in the trailer. The site is off Taylor-rd near Fox-rd.

On Fox-rd west of Taylor-rd is located the "pilot lab" where full scale models of rocket pumps and turbines are given tests based on information received from portable rig experiments. When the "pilot" pumps and turbines are approved they are turned over to manufacturers for production. The full scale model pumps or turbines are made at the NASA Lewis Research Center, Cleveland, "parent" of the local facility.

The fluorine pump testing facility off Taylor-rd is scheduled to be in operation by Jan. 1. Other test sites to be completed between Jan. 1 and next summer are: hydraulics laboratory, turbine testing facility, dynamics facility, pump facility and turbo-pump facility. Each of these six facilities will be connected to a central control and instrumentation building by miles and miles of cable.

During the coming months employees of the Universal Marine Construction Co., Sandusky, will be busy connecting the miles of cable to instrument cabinets and control equipment in the central building. When completed each of the test facilities will be operated and observed by remote control for the protection of NASA scientists. Many types of rocket fuels are to be used in the various tests and extreme safety precautions are being taken to protect employees and equipment.

Approximately 600 control cables will radiate out from the central control lab on Ransom-rd to the six rocket facilities. Nearly 500 pairs of instrumentation cables and eight television co-axial cables will lead

from the various sites to the lab, where experimental data is to be recorded. After installation all of the cables and equipment will undergo countless tests before being put into use.

Another interesting installation of the rocket "lab" is the dynamics facility or "shake tower" as it is known to NASA personnel. The 30-foot square steel building is 117 feet high and will be used for two types of missile research: structural dynamic testing and fluid flow investigations.

Doors at five levels may be opened and beams removed so that a missile the size of an Atlas may be lifted into vertical or launching position by means of an overhead crane. The missile will be connected to a large vibration exciter, producing 15,000 pounds of force to excite or "shake" the test object in much the same manner as on take-off from a launching pad. A smaller, 200-pound force exciter will be used for lateral shaking.

One of the reasons for failure in missile launchings, it was said, has been the failure of structural components due to compressional and bending vibrations of the missile structure which are excited by the rocket motor. Steering control gyros, which measure the vehicle attitude can be misled by bending vibrations of the structure.

The "shake tower" will simulate missile free flight as nearly as possible so that scientists may study the missile or scale model and work out solutions to various vibration problems. The tower will also be used to study complete rocket systems. The tankage and related pressurization and flow systems, including the turbo pumps, will be investigated. The propellant will not be burned, however.

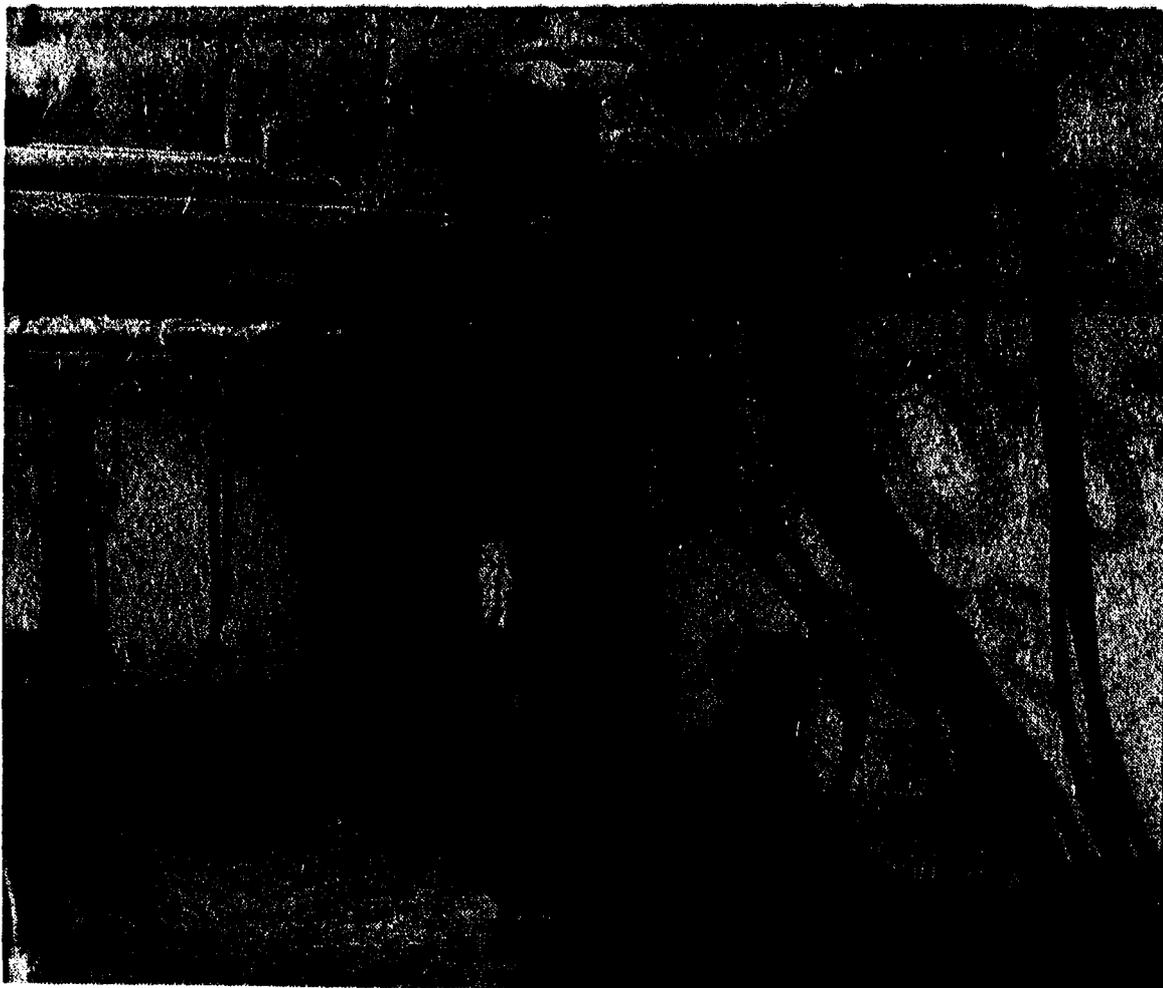
Scientists at Plum Brook and other NASA installations hope to provide the "acorns" from which the future U.S. space program will grow. The scientists are attempting to keep their research program about five years ahead of the current missile and space pace.

Future articles in the Register will keep readers abreast of the research program at Plum Brook, the only installation of its kind in the nation.

Slight Change

LONDON (UPI)—Oops!

This week's edition of the humor magazine Punch contains the following note: "The title of Eric Burgess's thriller, reviewed in last week's issue, is 'Divided We Fall,' not 'United We Stand.'"



—Register Staff Photos

THE DYNAMICS FACILITY or "shake tower" at NASA's Plum Brook rocket laboratory is pictured at right and described in the story. Employees of Universal Marine Construction Co., Sandusky, face the task of hooking individual wires in the above tangle of cables to instrument cabinets in the central instrumentation and control building at the rocket lab. A quarter mile or more away the other ends of the cables will be connected to equipment in six experiment buildings.

Blast, Fire Hits 8 Warehouses At Jersey City

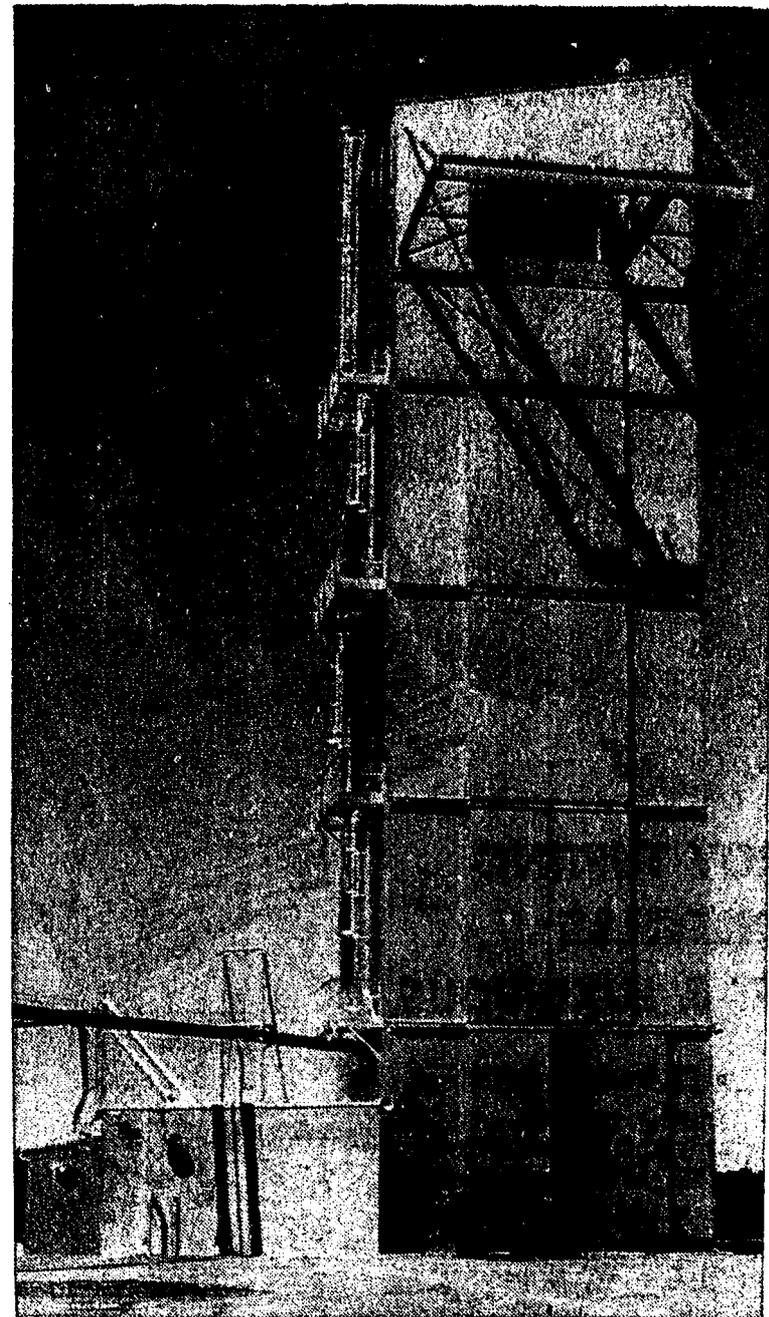
JERSEY CITY, N.J. (UPI)—An explosion and fire swept eight chemical warehouses along the Jersey City waterfront Wednesday, injuring 28 firemen and causing millions of dollars in property damage.

At the height of the blaze, a 1,000-foot wall of flames stretched along the waterfront across the bay from Manhattan and within sight of the Statue of Liberty.

Two thunderous explosions which set off the blaze reduced eight corrugated metal warehouses to rubble and shattered windows in homes a half mile from the scene. Flames, feeding on liquid anti-freeze, refrigerants and other highly volatile materials, shot hundreds of feet into the air at the center of a thick column of black smoke.

SHIMMY'S LEGAL AGAIN

JAMESTOWN, N.Y. (UPI) — After more than 30 years, the bunny hug and the shimmy are legal again in Jamestown. They were banned during the jazz-age '20's by the outraged townfolk. Recently, the dances were removed from the prohibited list by the city council.



Ohio Recreation Meet Dates Set

COLUMBUS—The annual Ohio Recreation Association will hold its conference here on Wednesday, Thursday, Friday, Nov. 4, 5 and 6. Headquarters will be in the Neil House.

Many of the sessions will cover the field of parks and recreation. To highlight the conference, topflight speakers are being con-

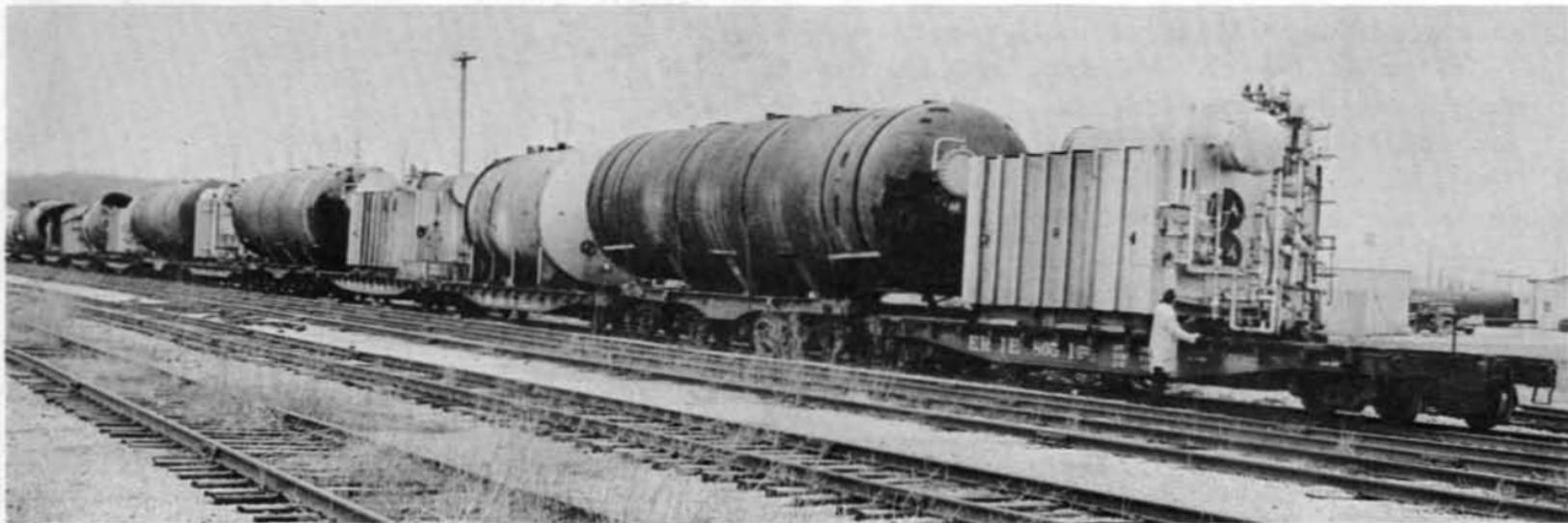
tacted, including Dr. Arthur Fleming, director of national health; the Rev. Robert Richards, Olympic champion, and Dr. R. C. Anderson, Ohio state director, Ohio Mental Hygiene Department. President of the Ohio Recreation Association is William "Bill" Willis. Convention chairman is Nick J. Barack and program director is Harry H. Feldman.

LOOK AT TODAY'S PICTURES

Equipment arrives for new facility at Plum Brook

These steam accumulators arrived by rail recently at Plum Brook for the Altitude Rocket test stand site. The equipment will comprise the major components of the altitude exhaust system. The tanks, weighing 140 tons each, will be used as energy storage devices for operating the altitude equipment.

The surplus equipment was shipped via flat cars from New Jersey. It took eight days to transport the tanks to Plum Brook, since the train was restricted to a maximum speed of 25 miles an hour, and could be moved only during daylight hours. These unusual precautions were necessary because of the size and weight of the tanks.





SANDUSKY REGISTER

WEATHER

Clear and quite cool tonight with the low about 56 near the lake and 45 inland. Friday sunny and pleasant, high 70 to 75.

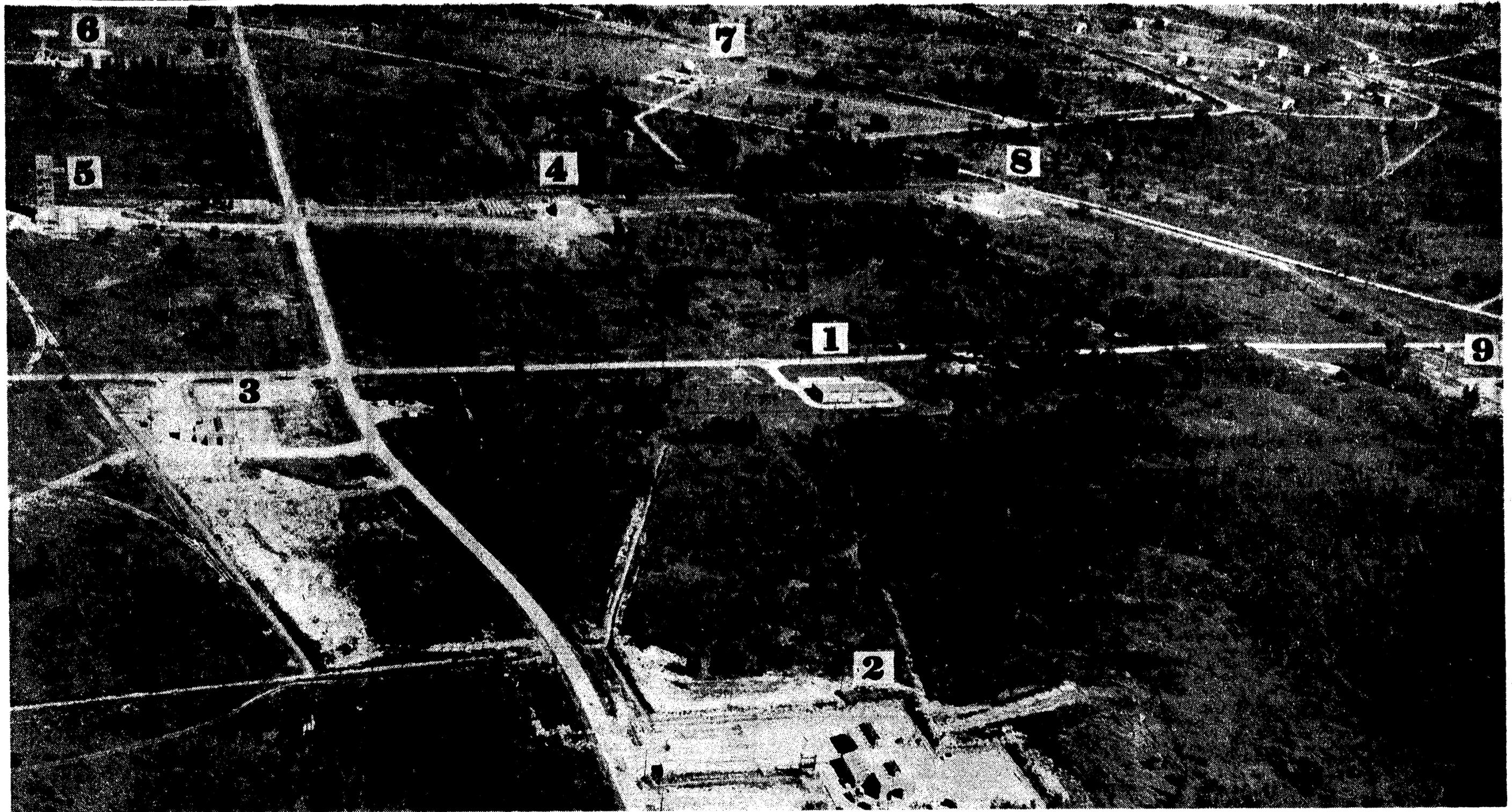
Founded 1822. Vol. 137. No. 125.

United Press International

SANDUSKY, OHIO, THURSDAY, SEPTEMBER 10, 1959

MAIn 5-5500

Price Six Cents



See Story, Pictures Page 22)

Nine buildings and other installations of the rocket testing facility of the National Aeronautical and Space Administration (NASA) at Plum Brook south of Sandusky are shown in this aerial picture taken by Dale Sprague, Register staff photographer, while riding in an airplane piloted by Harry Griffing. The view is towards the east.

Building 1 at center along Ransom-rd is the central control and instrumentation building from which is operated by remote control six other installations in the vicinity. Closed circuit television will be used at times to permit scientists to observe tests under way a quarter mile or more from where they are situated in the control building. No. 2 is the hydraulic laboratory. No. 3 is the turbine

test facility. No. 4 is the rocket pump testing center. No. 5 is the dynamics test tower. No. 6 is the pilot laboratory now in operation. These installations are beside Fox-rd. No. 7 is the portable rig site along Taylor-rd, which has been used for several months. No. 8 is the fluorine pump testing facility scheduled to be completed by year's end. No. 9 at the intersection of Taylor and Ransom-rds is the

turbo-pump test site.

At upper right are former TNT production buildings of Area B which have stood idle since the end of World War 2. About a half mile to the left of the above photo is located the multi-million dollar nuclear reactor facility of NASA, which is scheduled to be in operation late this year or in early 1960.

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

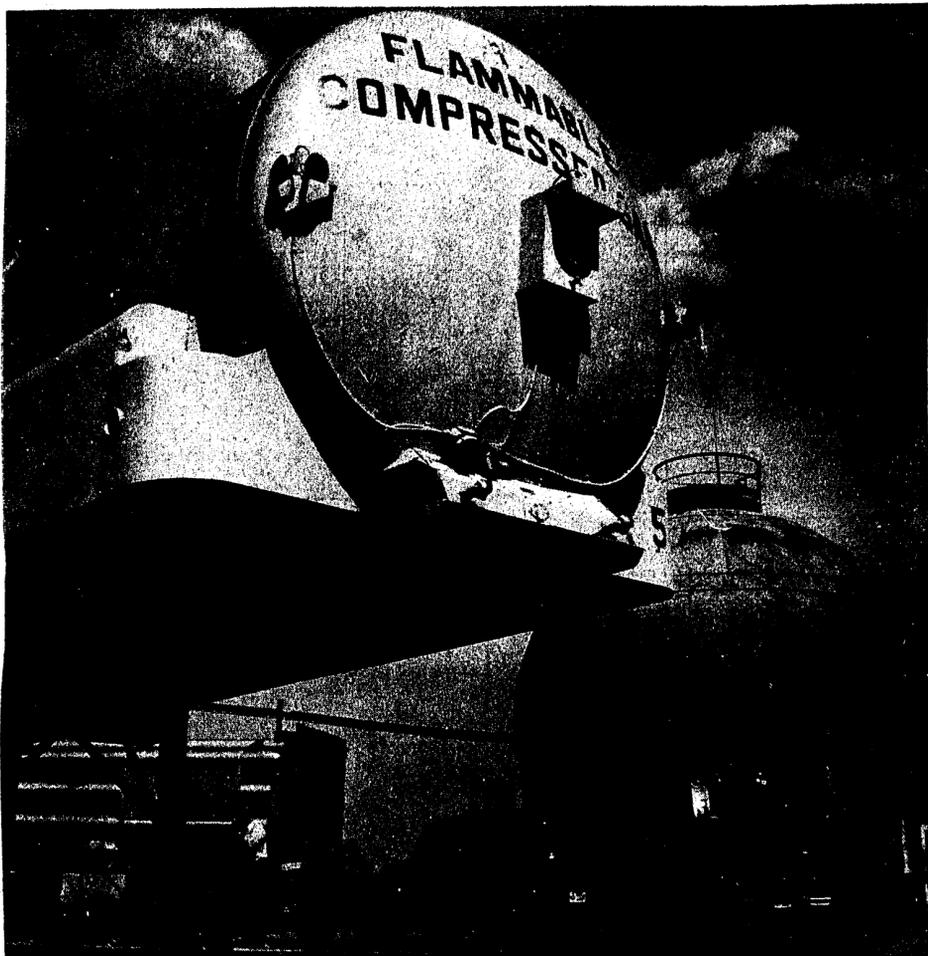
Cape Canaveral or elsewhere.

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.

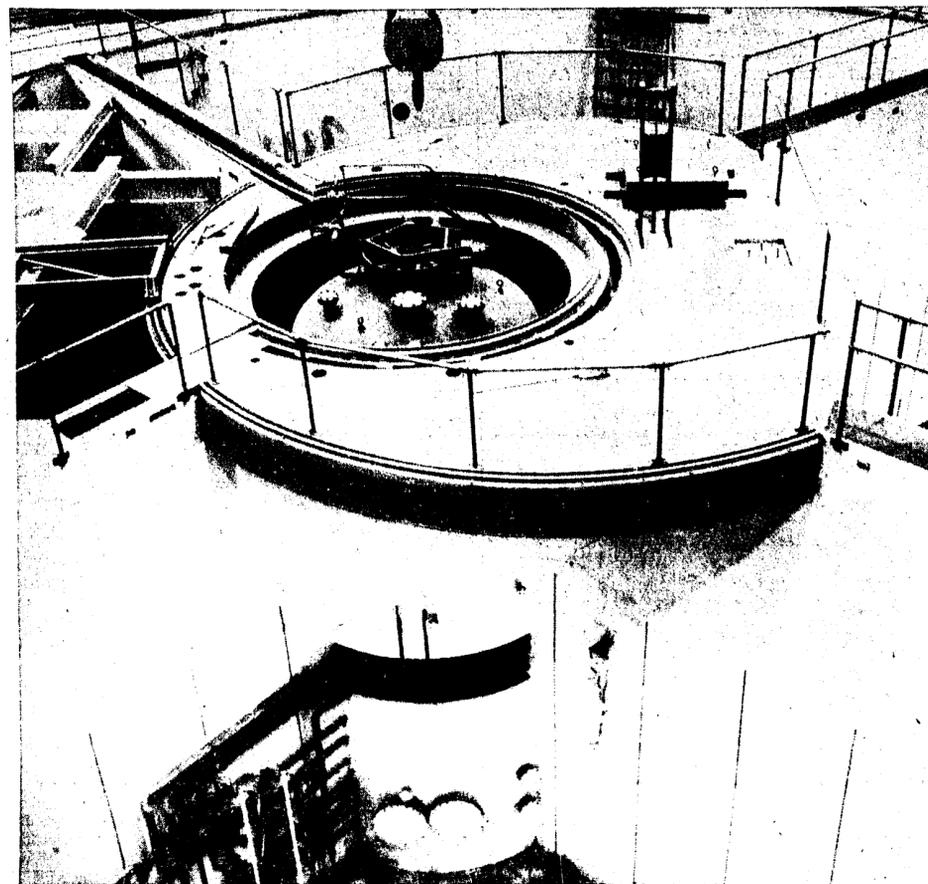
Although much has been written about the atomic reactor now nearing completion on the NASA property, many Sandus-

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

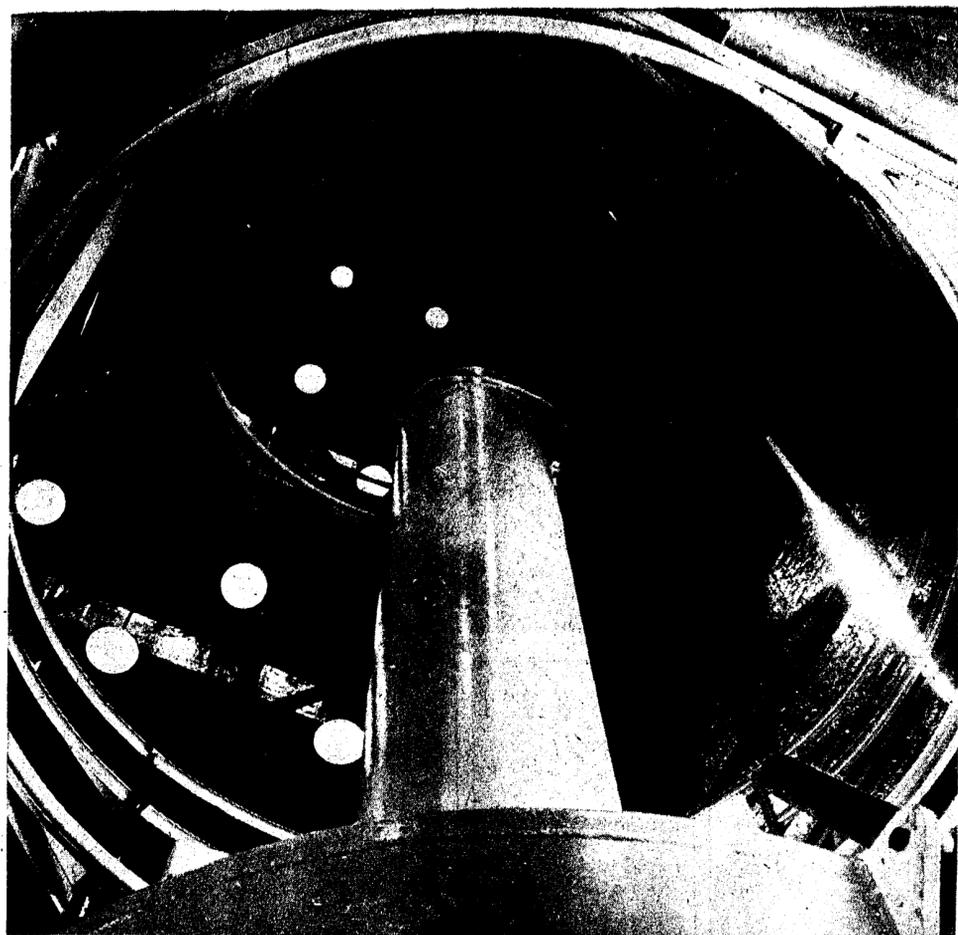
During World War II much rocket study was conducted at the Lewis Flight Center at Cleveland Hopkins Airport by the NACA scientists, predecessors to NASA. After the Plum Brook property became available it was decided to establish a rocket testing facility at Sandusky to supplement the work



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.

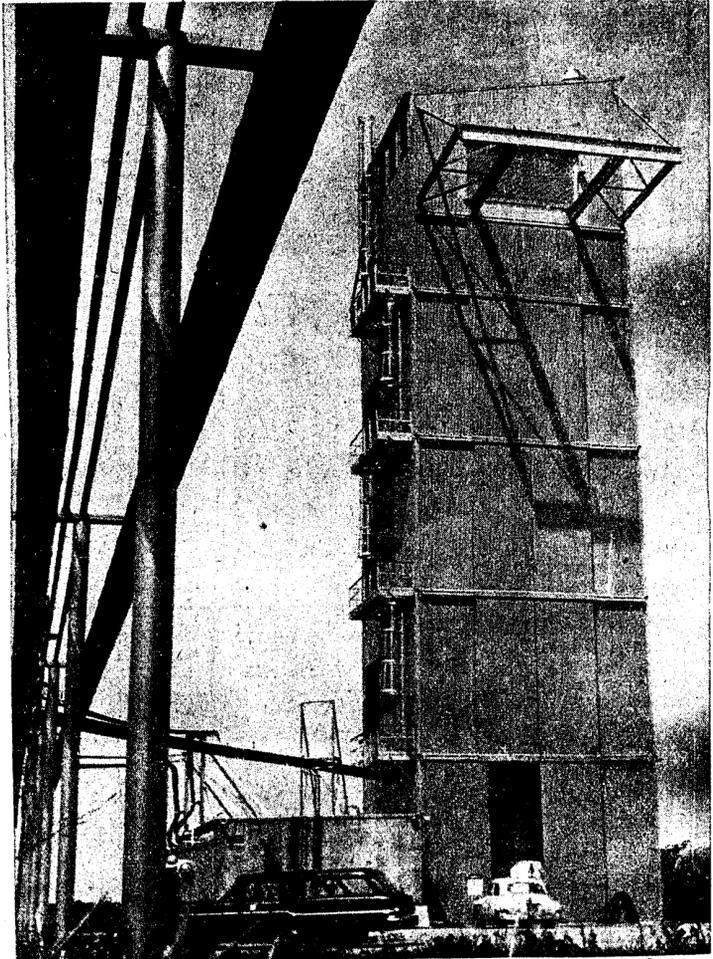
After an experiment has been set up in the tower the various operations will be carried on by remote control from the central building, using part of the wires to start and stop the tower equipment. Results obtained during the test will be recorded on various instruments in the central building. Closed 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.

Plum Brook Project Given 'Green Light'

Space Unit Puts Unanimous OK On \$40 Million

The House Committee on Science and Astronautics has unanimously accepted a recommendation of a subcommittee calling for the expenditure of nearly \$40 million at Plum Brook in the next fiscal year.

The committee's approval means that NASA's plans for the sprawling former ordnance depot here are virtually certain to reach the House floor uncut. And a recommendation by the "space" committee in the complex field of rocket propulsion, and in Congress' current mood, is considered the next thing to money in the bank.

THE COMMITTEE made substantial cuts in NASA's proposed 1963 budget, totalling \$3,787,276,000. Altogether, about \$50 million was lopped off. But funds for Plum Brook were left intact.

NASA's proposed expenditures here were reported in the Register more than a month ago.

They include:

- A "space tank" to imitate conditions moon rockets will encounter outside the earth's atmosphere, at an estimated cost of \$25,000,000.
- A laboratory to test systems for storing and using liquid hydrogen at \$2,400,000.
- A huge test stand to operate motors which will return future moon explorers to earth at \$6,275,000.
- Enlargement of the facility's present small rocket test stand, with a new building and power lines costing \$3,500,000.
- Improvement of roads, administration buildings, and utilities, a new railroad spur and a new guard house, costing \$1,508,000.

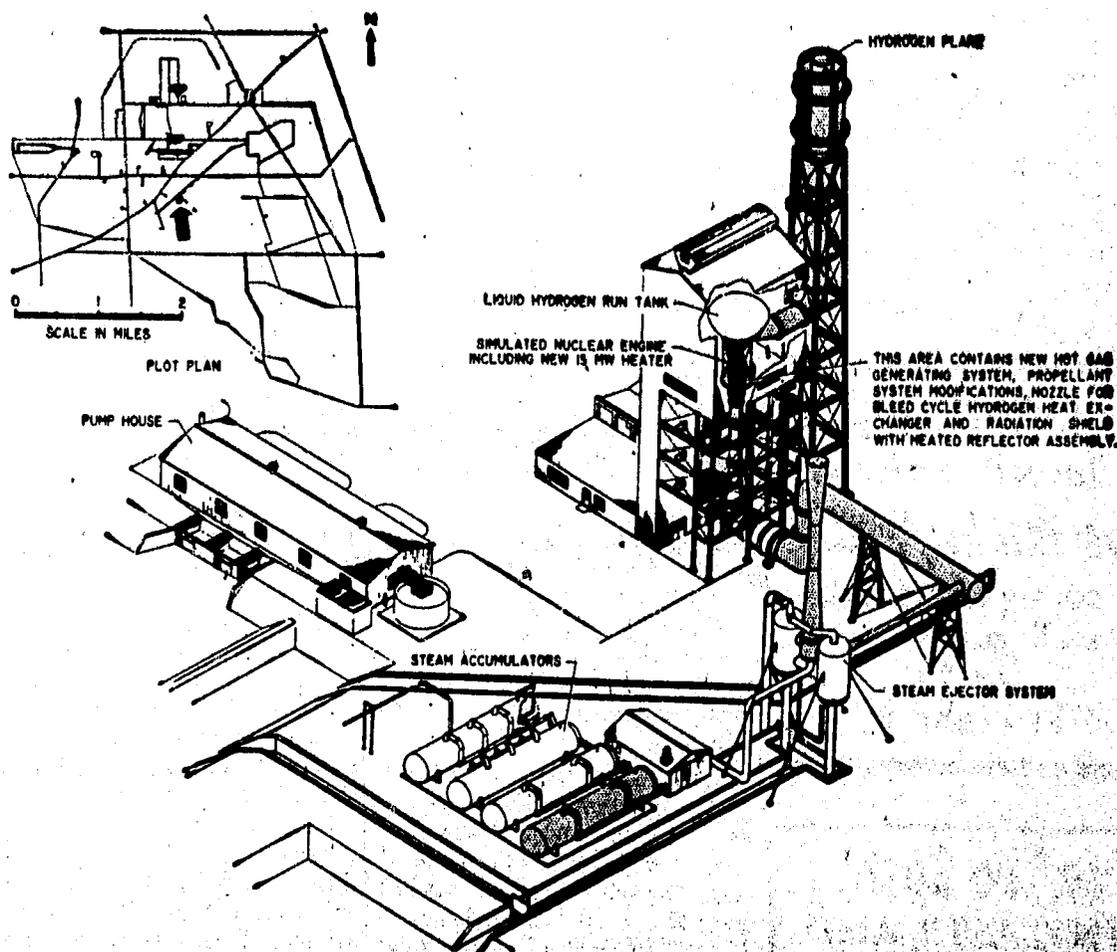
THIRTEENTH DISTRICT Congressman Charles A. Mosher, a member of the space committee, reported the approval of the subcommittee's report following an executive session today.

He said the special study group has been going over NASA's figures for more than a month with a fine-tooth comb.

Mosher added that the House would probably get

(Continued on Page 14, Col. 1)

NUCLEAR ROCKET DYNAMICS AND CONTROLS FACILITY



THIS IS ONE of three major new projects scheduled for Plum Brook in NASA plans accepted by the House "space committee." See other sketches, page 14.

Train Wreck Toll At 154; Probe On

TOKYO (AP)—An engineer and four other trainmen involved in Thursday's three-train wreck which killed more than 150 persons were arrested today on suspicion of criminal negligence.

Both houses of Parliament scheduled extraordinary Sunday sessions to begin an investigation of the tragedy.

Police, reducing their casualty figures, listed 154 dead and 165 injured. The fire department list had 152 dead and 336 injured, 144 seriously.

The engineer of a freight train involved in the crash, Norifumi

Injured, stunned survivors poured out of the passenger train's windows and doors and huddled in the darkness on a nearby track. Then another commuter train roared into the wreckage, sliced through knots of survivors, jumped the tracks and plunged down an embankment into a row of houses.

It was Japan's second worst train disaster since World War II.

No Americans or other Westerners were reported among the victims.

Espy, Armstrong Will Miss Game

Ben Espy from Sandusky High and Huron's Billy Armstrong will both miss Ohio State University's spring game Saturday, marking the windup of practice.

Espy, who had been one of the "Red 1" (offensive first team) halfbacks since practice began, suffered a leg injury earlier this week and the OSU athletic department said this morning he was definitely out of action for tomorrow.

Armstrong, the Buckeyes' regular center, is one of 22 lettermen from 1961 engaging in spring practice.

City Briefs

GOOD SAMARITAN HOSPITAL
 Discharged from Good Samaritan Hospital were: Frank Dorpots, 615 Columbus Ave.; Mrs. Lee Asher, Huron; Mrs. Robert Bickley, Milan; David Strom, Huron; Mrs. Walter Bertach, 2504 Milan Road; Mrs. Frederick Orr, 423 Shelby St. and Mrs. Gregory Frankart, 808 Woodlawn Ave.

MEMORIAL HOSPITAL
 Discharged from Memorial Hospital were: Debra Caskey, 921 Fulton St.; Mrs. Ruth Cheek, Bay Bridge; Mrs. Ruth Senseney, Fremont; Mrs. Harold Iles and baby, Norwalk; Savi Ignatoff, 3608 Spencer Ave. and Forrest McCumber, Rt. 2, Port Clinton.

PROVIDENCE HOSPITAL
 Released from Providence Hospital were: Kenneth Bongiovanni, 3225 W. Monroe St.; Leo Dendinger, Clyde; Mrs. Emma Lazzara, 216 E. Boalt St.; Mrs. Ralph May Jr. and baby, 2252 Pipe St.; Junior McGowan, 2608 Tremper Ave.; Carol Moore, 1407 Pierce St.; Mrs. Wesley Moyer, 2801 Fairmount Lane; Osmond Pearson, 1701 S. McDonough St.; Thomas McFarlin, 514 Putnam St.; Samuel Graves, 1210 Buchanan St.; Mrs. Dorothy Jagel, 1203 Johnson St.;

Catherine Shelton, 533 Winnebago Ave.; Alexander McKenzie, 1102 W. Madison St.; Mrs. Ida Seilagy, Gypsum and Benjamin Work, Rt. 1, Sandusky.

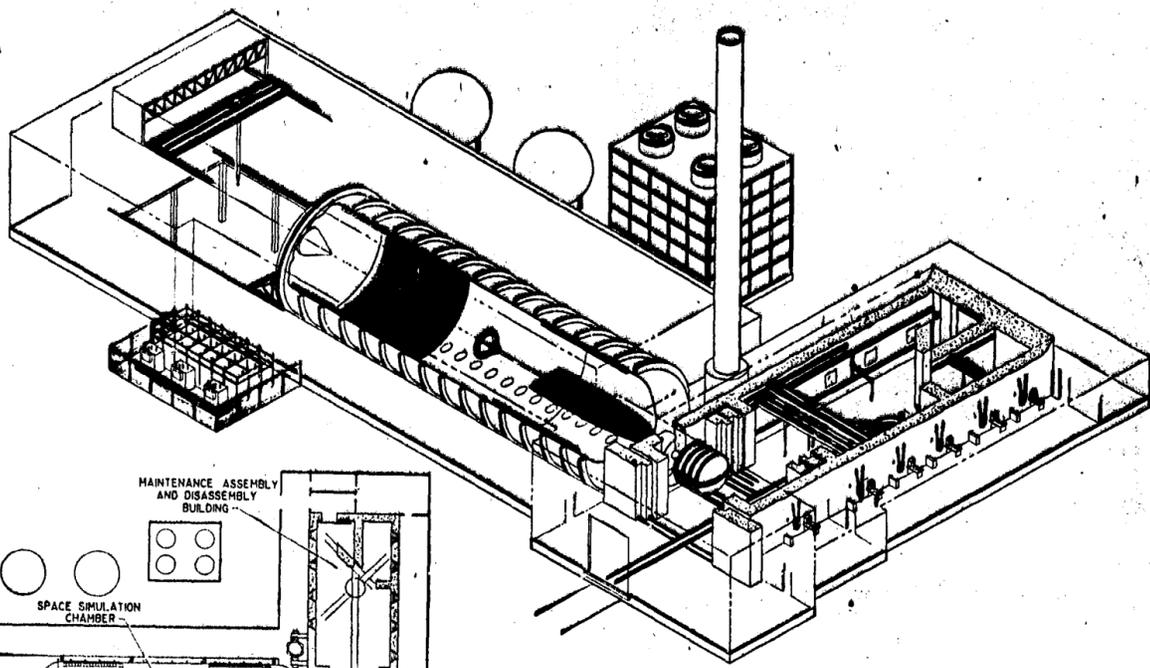
MARINE NEWS
 The C. S. Robinson, W. W. Holloway, Steelton and Shenango have cleared the Lower Lakes Docks. Due are the E. L. Ford and U.S. Gypsum.

ASSOCIATION MEETS
 There will be a meeting of the Sandusky Memorial Day Association in the Amvets club rooms at 8 p.m. today.

SENIOR PARTY WINNERS
 Winners of the Senior Citizens Club card party Thursday afternoon at Holy Angels hall were: Louis Meyers, Mrs. Florence Windau, Mrs. Albert Homegardner, Michael Herb, Miss Etta Steinle, Miss Mathilda Fitz, Mrs. Walter Holzinger and Mrs. Clara Buiting.

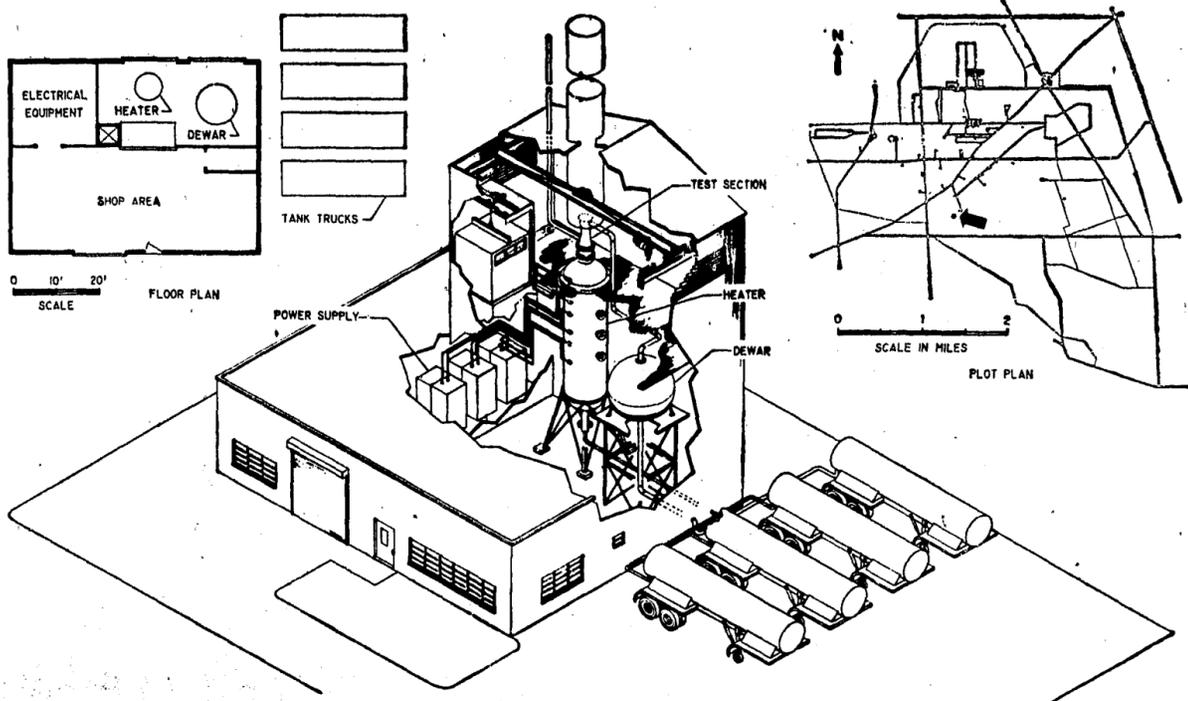
CARD PARTY WINNERS
 Knights of Columbus card party winners Thursday night were: Elmer Brehm, Norbert Bock, Fred Hanneman, K. G. Martin, Burnell Frey and John Manuel.

SPACE PROPULSION FACILITY



SPACE TANK (above) will test nuclear rocket engine under extreme heat, cold and radiation encountered in space. Liquid hydrogen will be tested in facility below.

HYDROGEN HEAT TRANSFER FACILITY



Plum Brook Plan Gets Green Light

(Continued from Page 1)

the full committee's recommendation approving all of the Plum Brook funds next week, with passage of an authorization bill to follow.

NASA HAS ABOUT \$40 million invested in Plum Brook's atomic reactor and rocket research facilities now. The 1963 budget will nearly double that figure.

In addition, the space agency plans to spend nearly \$8 million here for operation expenses in fiscal 1963.

The "space tank" or space propulsion facility (see illustration) is the biggest item in the current expansion program.

THIS WILL BE a 100x350-foot building housing a tunnel-like vacuum chamber in which temperatures can be reduced to a minus 450 degrees. This will hold Plum Brook's second operating atomic reactor — a model small enough to power space ships.

NASA plans to modify the space tank eventually so that the atomic rocket engine can be subjected to extremes of both heat and cold at the same time.

Eventually, the facility will even be able to bombard its reactor with "solar radiation."

THE NEW TEST stand (illustrated) will fire rockets up to 60,000 pounds thrust. These will constitute the final stage of the massive "Apollo" moon vehicle. They will be used to slow the descent of America's first moon explorers toward the moon's surface, to boost them off the moon for the return trip and ease them back to a safe landing on earth.

Plum Brook does fire small rockets in its present test stand; these will be much larger.

But all the rockets fired will be firmly anchored to the ground.

THE HYDROGEN laboratory (illustrated) will test various methods of cooling rocket nozzles subjected to the intense heat of liquid hydrogen propulsion.

This facility was planned for Cleveland in NASA's 1962 budget, but shifted to Plum Brook partly because of the local station's "remote" location.

However, NASA says the building to house the lab will be "explosion proof."

MEANWHILE the Atomic Energy Commission has scheduled a public hearing May 22 on an application to operate the present Plum Brook reactor at full capacity.

The commission has stated that the reactor could operate without danger to the public at its full rated power level of 60,000 kilowatts.

So far, it has been tested at only 100 kilowatts.

The commission's final decision on the application by NASA will be based on the record of the hearing.

The commission said in an analysis of the Plum Brook facility that the nearest residence is approximately 3,200 feet from the reactor.

"THE AREA surrounding the facility is completely surrounded by dikes which impound surface drainage," the report said.

"A tornado is not expected to damage the reactor or contaminate the structure," it stated, and "if an earthquake should occur it is probable that the damage to the reactor would be negligible."

The report said, "The major hazard would result from release of radioactive gases into the atmosphere." It said the prevailing winds are from the south, southwest and west about 55 per cent of the time — "towards areas of high population density."

Deaths—Funerals

Henry A. Ahlers, Retired Brewmaster, Dies At 90

Henry A. Ahlers, 90, a retired brewmaster, died Thursday night in his home at 1335 Harrison St., after a lengthy illness.

Mr. Ahlers retired in 1948 after more than 60 years' service with the Cleveland and Sandusky Brewing Co. He was a member of Zion Lutheran Church and Vacationland Aerie of Eagles.

Surviving are two sons, Arnold and Elmer and a daughter, Mrs. Gustave Hemmer, all Sandusky; eight grandchildren, 25 great-grandchildren, a great-great-granddaughter; two sisters, Mrs. Lena Lemke, Norwalk and Mrs. Louis Koch, Sandusky; a brother, Robert Stuewe, Orlando, Fla. and several nieces and nephews. He was preceded in death by his wife, Bertha, in 1951 and a son, Reinhold, in 1928.

Friends may call after 7 p.m. Saturday at Quick's Funeral Home, where services are to be held at 1:30 p.m. Monday, the Rev. Theodore Stellhorn Jr., officiating. Burial is to be in Oakland Cemetery.

MRS. HERMAN WOBSEY

Mrs. Nettie Jorgensen Wobsey, 80, died this morning in the home of her son-in-law and daughter, Mr. and Mrs. Joseph Casey, 623 Ogontz St., after a lengthy illness. Her home was at 112 W. Algonquin Trail, Bay View.

Mrs. Wobsey was a member of Trinity Lutheran Church, Venice, and its Women's Missionary Federation. Last July 4 she and her husband, Herman, celebrated their 55th wedding anniversary.

Surviving besides her widower are three daughters, Mrs. Casey, Mrs. Wilbur Fish and Mrs. Willard Gadt, all Sandusky; a son, Clarence, Castalia; four grandchildren, four great-grandchildren; a sister, Mrs. Lena Hocking, Oglesby, Ill. and several nieces and nephews. She was preceded in death by two sons and a

MEINRAD A. CECIL

Meinrad A. Cecil, 77, a native Sandusky, died Wednesday in his home at 4246 Root Road, North Olmsted, following a brief illness.

Mr. Cecil was a retired deputy collector for the Internal Revenue Service. He was a member of Clifton Lodge, F & AM; Thatcher RAM; Hollywood Commandery, Knights Templar; Lake Erie Consistory and Al Koran Shrine.

Surviving are his widow, the former Marguerite Clark; three brothers, Joseph, Otto and Linus and a sister, Mrs. Helen Freidel. He was preceded in death by two brothers, Leo and Edward.

Friends may call at the Mandley Funeral Home, 15480 Triskett Road at Lorain Avenue, Cleveland, where funeral services are to be held at 1 p.m. Saturday. The Rev. Alvin V. Ritts will officiate and burial is to be in Lakeview Cemetery.

MRS. NORA HECHT

Service for Mrs. Nora Hecht were held this afternoon in St. Paul Lutheran Church, the Rev. C. J. Mittermaier, officiating. Burial was in Oakland Cemetery with the Frey Funeral Home in charge.

Pallbearers were: Donald Jaffary, Ben Moore, Donald Alley, Edwin McCormick, Glenn Maus and Edward Browne.

MARCO J. TOFT

Services for Marco J. Toft were held this afternoon in the Andres Funeral Home, the Rev. Theodore Stellhorn Jr., officiating. Burial was in Oakland Cemetery.

Pallbearers were: John, James and Carl Toft, Robert and Russell Meisler and Oswin Hermes.

Aged Woman Starts Peace Corps Tempest

(Continued from Page 1)

these were discussed with her," he said. "One of them was that of all candidates for Brazil she had the lowest language facility."

Mrs. Fletcher told a different story—and she told it in a letter to her senator, John G. Tower, R-Tex. She said she was dropped because "the staff at the camp disliked me because I objected to the training. There could have been no other reason."

Calls Matter Closed

Adams said the Fletcher matter "is closed as far as we're concerned." But Tower demanded an investigation before the Senate votes on the corps \$63.75-million budget.

Mrs. Fletcher said younger Peace Corps volunteers at the Puerto Rico camp stayed up until the wee hours and did much drinking. She said she was "cursed and shoved beyond my strength" in a program that "would do justice to any army training."

Can't Imagine Cursing
 Shriver said he couldn't imagine

anyone in the training camp cursing the Texas schoolteacher. He said night discussion groups were allowed to drink beer, but there was no moral laxity.

He said Peace Corps selections are based on merit, not politics, race, religion or age. "We have said from the beginning that Peace Corps standards would be high," Shriver said. "They have to be and we don't intend to relax them because of political pressure."

Adams said Mrs. Fletcher was one of eight trainees dropped for various reasons from the Brazil-bound group.

"Every Peace Corps applicant is invited to training with the understanding that there will be no final selection for overseas assignment until it is over," he said.

He said three people over 60 successfully completed the training program in Puerto Rico without complaint and now are overseas.

WEATHER

Sandusky and vicinity: Clear and cool tonight, low 54. Saturday mostly sunny and warmer, high 84.

Islands, reefs and Sandusky Bay: West, southwest winds 12 to 18 knots tonight and Saturday with fair skies and cool weather tonight, fair and warmer on Saturday.

Sunset today 7:31. Sunrise Saturday 5:23, sunset 7:32 e.s.t. Barometer at 11:30 a.m. 29.45 at lake level and 30.13 at sea level, rising steadily. Temperature at 11:30 71, rising slowly. Low this morning 53 at 6 a.m., high Thursday 73 at 3 p.m. One year ago the high was 57, low 41. Record high for May 4, 89 in 1955; record low 34 in 1907 and 1954.

McElroy And DiSalle Slug It Out May 8

(Continued from Page 13)

On the Republican side, Robert Taft Jr., son of the late U.S. Sen. Robert A. Taft of Cincinnati, seems an almost sure winner over his only rival, State Sen. Thomas Lowell Fess of Yellow Springs, son of the late GOP U.S. Sen. Simeon D. Fess. Taft now is majority leader of the Ohio House.

Democrats have an 11-man sweepstakes going for their party's nomination for the Congress at-large spot. There is no solid favorite. DiSalle has said he intends to vote for John J. Gilligan, Cincinnati city councilman. However, Alan F. Reeves of Cleveland, a former aide to U.S. Sen. Stephen M. Young has

'Dean' Of Exp Starts New R

NEW YORK (AP) — At 83, Hans Hofmann is painting with as much verve and imagination as a man half his age.

That is the most striking aspect of a one-man show at the Museum of Modern Art, which will travel to five other American cities, and then be sent to Latin America and Europe. There are 40 major works.

The show is not a review of Hofmann's whole career, nor a cross section showing his development. The MMA's associate curator, William C. Seitz, said he selected the paintings "solely for their beauty, profundity and monumentality."

As it turns out, 36 of the 40

were painted in the last nine years, and several of them are dated this year.

This is a good opportunity to see the fruition of Hofmann's long career. He usually is identified as the dean, or Grand Old Man, of abstract expressionism — a sort of combined spark plug and carburetor of The New York School.

One recent tendency of his work is demonstrated clearly in his works of the last five years. He has been preoccupied with vivid patterns built up of rectangles of varying sizes.

Not entirely, of course. There are a number of paintings in which splotches of

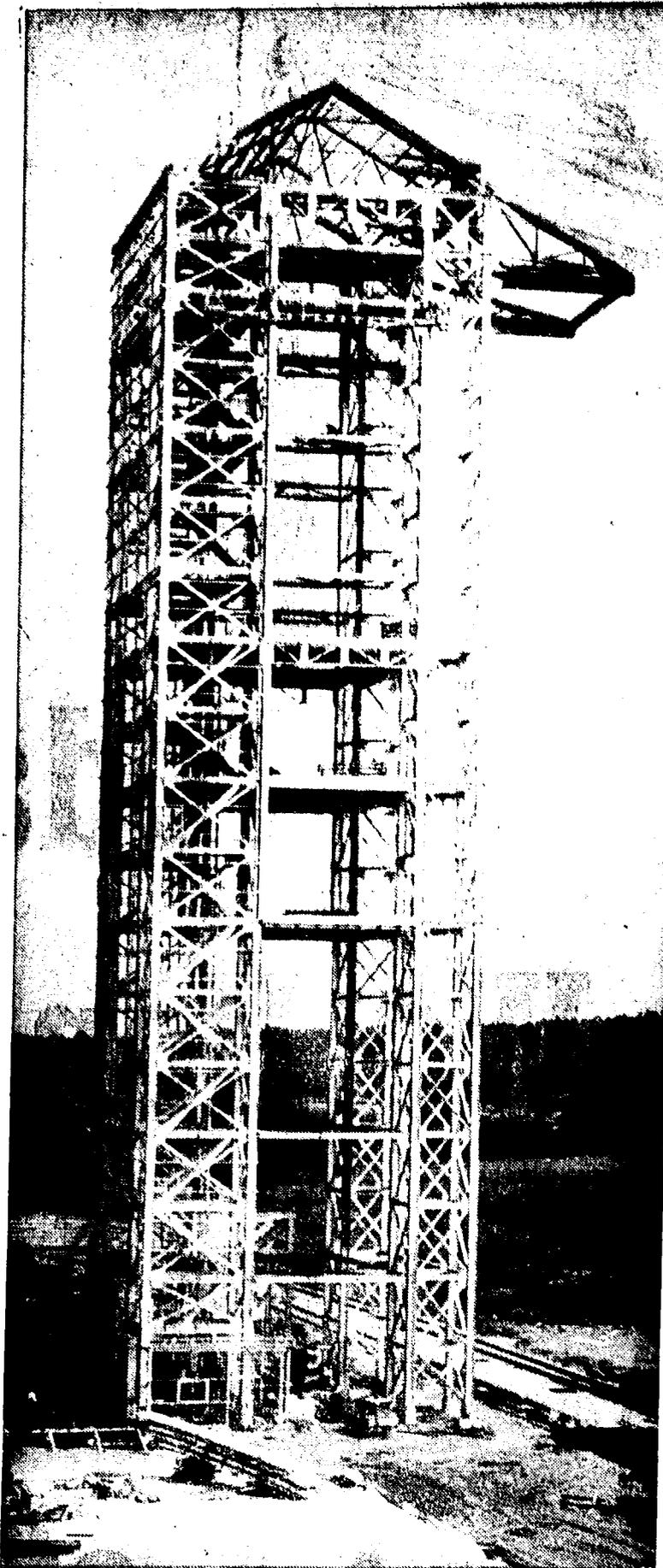
PB Testing Stand Ready Next Year

Construction of the tallest structure currently planned for the National Aeronautics and Space Administration's Plum Brook Station here is moving ahead rapidly.

The 200-foot high stand, known as the Nuclear Rocket Dynamics and Control Facility or B-3 Site, is scheduled for completion late next year. Costing an estimated \$3.5-million, the stand will be used for non-nuclear tests of various components of large nuclear rocket engines such as will be needed for interplanetary travel.

A 47,000-gallon liquid hydrogen flow tank will be mounted in the top of the stand. It will be used in the first project scheduled for the facility—research on turbopumps.

The stand will have a "T" shaped rolling door 110 feet high, the largest ever built. It will also be equipped with a 65-ton traveling crane for lifting large fuel tanks and engine components.



NUCLEAR ROCKET DYNAMICS and Control facility at Plum Brook NASA grounds is scheduled for completion late next year.