

# SPACEPORT



# NEWS

Volume 2, Number 37

NASA Launch Operations Center, Cape Canaveral, Florida

September 12, 1963

## NASA GETS NEW BARGE FOR SATURN V TRAVEL

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A contract for the conversion of the vessel, which is still docked at Orange, will soon be awarded.

Its future cargo, the Saturn V first stage, is the world's largest rocket — 33 feet in diameter and 138 feet in length. The vessel will be used to transport the booster between the following production, test and launch sites: Marshall Space Flight Center, Michoud Operations (New Orleans), Mississippi Test Operations, and the Merritt Island Launch Area.

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Modification of the vessel will include the addition of a booster cargo hangar, 200 x 44 feet on deck and 46 feet high. Living quarters will be added for approximately 16 men. Special flume stabilizers will be added in the hull to greatly reduce roll.

Two diesel engines will provide 175 kw of power for on-board operations. This is more than double the power available on the Promise for Saturn I transport.

In the inland river system, the vessel will be pushed; it will be towed in deep sea use. Its speed will be about 9 1/2 knots on the open Gulf, using a 1500 hp tug.

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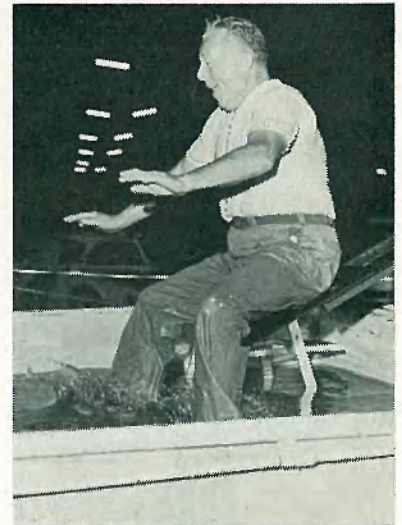
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Gone!

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## ON CITIZENSHIP

Next Tuesday is Citizenship Day, marking the adoption of the U.S. Constitution in 1787 by the Constitutional Convention in Philadelphia.

It would be, perhaps, a good time for reflection on what our citizenship means.

U.S. citizenship is our passport to freedom. It is our most valuable possession. With it we are free to do what we wish, where and when we want to; without it, our movements would be limited and our privileges few.

To those of us born to citizenship, it is far too easy to take for granted. To those of us who gained citizenship through naturalization, although it may be fresher in our minds, we should remind ourselves to never lose sight of how much it meant to gain this status.

For, after all, citizenship includes responsibilities.

How long has it been since you thumbed through the Bill of Rights, read some passages on American History, or attended a city council meeting?

## HERE'S LOOKING AT YOU

No part of the human anatomy has less protection from the elements, yet receives more attention and care (especially on the part of the female of the species) and is a better indication of character than the human face.

Some oil it and some dry it. Some have it lifted while others pat down its wrinkles and curves, and some are by nature more poker-faced than others. It still remains a rather pitiless, accurate map that indicates its owner's mileage and life story.

To the eye of one beholder, a baby's grimace may seem like a smile, to its mother, a bit of colic. Perhaps strangest of all, it takes fewer muscles for a face to smile than to frown, yet some people actually prefer the latter contortion.

## PRESIDENTIAL MESSAGE

"In all Government activities we need to make full use of employee skills and abilities without discrimination as to race, creed, sex, or individual handicap.

"To this end — and to assure each of you equal opportunity in the Federal service — we have firm policies to guide management. But these alone are not enough.

"Your attitude toward your fellow employee is of utmost importance in keeping the Federal service free of any discrimination. Let us cast aside the narrow labels that can set us apart — and wear only the proud mark of Americans."

—From a Recent Speech by  
President Kennedy.

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Published each week by the National Aeronautics and Space Administration's Launch Operations Center, Cape Canaveral, Florida.



STUDENTS of Philadelphia's Northeast High School are briefed on NASA's Saturn operations by Albert Siefert, Deputy Director of LOC. The students, who are making their own capsule simulator as a science project, toured NASA facilities.



BERT GREENGLASS, Chief of LOC's Resources Office, will be installed tonight as Vice President of the American Institute of Industrial Engineers at a charter dinner meeting at the Crossway Inn in Cocoa Beach.

## GROUP TOURS GAPE, TO BUILD CAPSULE

A select group of 18 students toured Canaveral last week and were briefed on NASA operations here by Albert Siefert, Deputy LOC Director.

The students, all members of Northeast High School in Philadelphia, also toured NASA centers at Houston, Huntsville, and Greenbelt, Maryland during a 15-day trip.

NASA invited the group because of the unique objectives and achievements of their SPARC (Space Research Capsule) program.

The students plan, within the next year or two, to construct a completely operational flight simulator. Three student-astronauts will "ride" the capsule simulator while a ground control group monitors the test flights. The objective is a completely simulated circumlunar flight.

More than 50 members of the SPARC group have put in several months of study and research to formulate these objectives.

## Thanks Expressed

Mrs. Paul Taeger, Fred, and family have sent a note addressed to all NASA employees saying "we gratefully acknowledge and thank you for the flowers and your kind expression of sympathy."

# SKIN DIVERS INSTALLING BANANA RIVER PIPELINE

Skindivers have been at work 20 feet below the Banana River's surface the past few days, fitting 860 feet of six-inch pipe into a trench parallel to the Banana River-Orsino Causeway bridge.

The pipe, part of a six-mile line, will protect communications cables running from the Cape Canaveral Telephone Building to the Telephone Building on Merritt Island.

## Close-range Lunar Photos Necessary

A project to send a series of five instrumented spacecraft on close-range lunar photographic missions by 1966 has been announced by NASA.

The prime project objective is to secure topographic data regarding the lunar surface. These are necessary for the selection and confirmation of landing sites for Apollo manned lunar landing missions and will greatly extend our scientific understanding of the moon.

The lunar orbiter will team with a Ranger hard lunar landing spacecraft and the Surveyor soft-lander in the effort to blaze the way for the Apollo manned lunar landing mission.

The lunar orbiter photographic project will be under the over-all direction of NASA's Office of Space Sciences, with project management the responsibility of the Langley Research Center.

Atlas-Agena launch vehicles, capable of placing slightly more than 800 pounds into lunar orbit, will be launched from Cape Canaveral, with the photo-reconnaissance spacecraft.

The proposal request asks for design of a spacecraft capable of obtaining its pictures from an altitude of not more than 22 miles above the surface of the Moon.

According to present plans, medium resolution photographs are needed to make an initial screening of the lunar surface to avoid landing Surveyor soft-landers in areas clearly unsuitable for landing the Apollo lunar excursion module.

All but the 860-foot underwater segment will be buried underground along the route across the causeway.

But because the Banana River bridge will be opened occasionally for barge passage, it was necessary to go underwater for that segment.

Divers Bill Sproul, Buddy Thompson and Jerry Faircloth, working for the Atlantic Electric Company, a subcontractor on the project, have been taking turns on the sub-aquatic work.

### Sealed Then Floated

The pipes are sealed, then floated on the water's surface until they are over the spot where they are to be positioned. Water is pumped in, and as the pipes sink the divers guide them into place and fasten them between pilings.

After they are properly fitted, the pipes will be swabbed clean. Cables will be threaded through them in a few weeks.

The pipes are buried under about two feet of river bottom once they are in place.

The divers use regular aqua lungs when working, and have had to contend with jelly fish, which sometimes slip under their clothing and sting.

"We've also spotted some good-sized sheepshead around the pilings," diver Thompson says, "but we've been too busy to think about them."

The underwater work is expected to be completed within a few days.

### UK-3 SET FOR 1967

UK 3, the first all-British satellite, is expected to be launched by NASA in about four years.

The third in a series of joint British-American scientific research satellites, the UK (United Kingdom) 3 will weigh 140 pounds and will be five feet high. It will be launched into a circular orbit 400 miles above the earth and is expected to transmit data for a year.



**DIVERS** Bill Sproul, left, and Buddy Thompson inspect pipe as it is lowered into the Banana River. They have been working 20 feet deep, installing the pipes in underwater trenches.

News Photo by Russ Hopkins



**DIVERS** are at work just to the left of the Banana River-Orsino bascule bridge, above. Water is 20 feet deep in the channel.

## NASA-MICHLOUD PLANT TWO YEARS OLD

MSFC's Michoud Operations, production site of Saturn space boosters, is now two years old.

NASA announced on September 7, 1961, selection of the sprawling Michoud Ordnance Plant for fabrication of the first stage rockets that will be used in the United States' manned lunar landing program.

Until that date the 20-year-old plant had seen relatively little use. Designed originally

as a shipyard, the plant was used briefly for the manufacture of plywood cargo planes and later, during the Korean conflict, for the manufacture of tank engines. The facility remained idle from July 1953, until its selection by NASA.

Today, the Michoud Operations, as it is now named, is a bustling, truly space-age industrial complex.

More than 7,800 persons are presently employed at the main Michoud facility.

# CANAVERAL IMPRESSES KING AND QUEEN



**AFTER BEING BRIEFED** on Centaur operations at Complex 36, the royal party heads for next stop at Hangar S. King Zaher is second from left, and is accompanied by Lt. Col. Abdul Shukour, Aide-de-Camp, U. S. Ambassador John Steeves, and LOC Director, Dr. Kurt H. Debus.



**DURING A REFRESHMENT** break in the blockhouse at Complex 37, the King is served orange juice by Betty Latham of LOC's Protocol Office. In center is Major General L. I. Davis, Commander of the Air Force Missile Test Center, and at right is LOC Director Dr. Kurt H. Debus.

News Photos by Bob Figlioli



**QUEEN HOMAIRA** is briefed on the SA-5 at Complex 37 by Bob Johnson of Protocol. Her Majesty made a short tour of Canaveral Saturday afternoon.

News Photo by Bob Special

King Mohammed Zaher and Queen Homaira of Afghanistan toured NASA facilities at Cape Canaveral Saturday and were greatly impressed with what they saw.

The 49-year-old King was given a complete briefing and tour of Complex 36, Hangar S, Hangar AE, and Complex 37. The Queen took a shorter, separate tour later in the afternoon.

King Zaher was particularly impressed with the size of the SA-5 vehicle at 37, and with the Mercury spacecraft in Hangar S.

The royal couple and their party, which included Princess Bilqis, members of the Afghanistan Cabinet, and U.S. Ambassador John Steeves, arrived at Patrick AFB aboard a 707 jet shortly after 2 p.m., where they were greeted by LOC Director Dr. Kurt H. Debus and his wife, and Major General L. I. Davis, Commander of the Air Force Missile Test Center, and his wife.

A lengthy motorcade which also carried newsmen of both the U.S. and Afghanistan then proceeded to the Cape after dropping the Queen and Princess off in Cocoa Beach for a rest.

At Complex 36, the King, dressed in a conservative black suit, was briefed on NASA's Centaur program by Dodd Brandt, Assistant Centaur Operations Manager.

At Hangar S, G. Merritt Preston, head of MSC's Preflight Operations Division at Canaveral, briefed the King on manned space flight programs.

In Hangar AE, John Neilon, Deputy Chief of Goddard's Field Projects Branch, told the King of NASA's unmanned space programs.

The motorcade then arrived at Complex 37, where Lt. Col. Rocco Petrone, LOC's Assistant Director for Plans and Projects Management, explained both the Saturn I and Saturn V programs, and how the astronauts would land on the moon and return to earth.

After a coffee break, King Zaher was taken to Pad B at 37, where the SA-5 vehicle is housed in the service structure. He rode high up in the elevator to get a close look at the giant vehicle and also walked onto a platform under its eight engines for a first hand inspection.

## Afghanistan Facts, Figures

Afghanistan is a landlocked country virtually the size of Texas, located half-way around the world from Canaveral in mid-Asia. It is bordered on the west by Iran, on the north by Russia, and on the east and south by Pakistan.

It is a constitutional monarchy with a population (1960) of 13 million.

Afghanistan is a mountainous country. Towering above the capital city of Kabul are the Hindu Kush Mountains.

Trade routes to India flow through the famous Khyber Pass, from Kabul to Peshawar.

The country's people raise sheep and grow fruit. Chief exports are wool and skins. Fat-tailed sheep also provide the principal meat diet.

The United States supported the building of a major Afghan dam for irrigation and hydroelectric power.

The country's mineral resources include lead, zinc, iron,

silver, asbestos, and oil.

King Mohammed Zaher Shah ascended the throne when he was 19, and has reigned for more than 29 years.



**KING ZAHER** takes keen interest in a Nimbus meteorological satellite model during briefing.

# PHOTOS TELL STORY OF NASSAU CRUISE



## BAILING OUT OF A SUPERSONIC PLANE? USE A PARACHUTE WITH A HOLE IN IT

If you're going to be bailing out of a supersonic airplane, you'll be a lot better off if your parachute has a hole in the middle.

James F. Connors, a scientist at NASA's Lewis Research Center, was recently awarded a patent on this peculiar parachute. Work on what he calls an "annular supersonic decelerator or drogue" began in 1959 with wind tunnel tests to simulate the high speeds and altitudes of both supersonic aircraft and reentering space vehicles.

Conventional ribbon parachutes worked well when deployed at transonic and subsonic speeds to recover payloads such as the Mercury spacecraft. However, the Lewis tests indicated that they would be unsatisfactory with future manned payloads requiring stabilizing parachutes at higher speeds.

At wind speeds greater than Mach 1.5 (one and a half times the speed of sound), a conventional parachute was quite unstable. In tunnel tests, it gyrated so wildly that its payload whiplashed back and forth from one "brick wall" of air to another.

In these tests, a funnel of dead air space had formed around the towline ahead of the blossomed chute. From theoretical calculations, Connors decided that the chute ineffectiveness and instability centered around the interaction of intense shock waves with the towline connecting the chute and its payload.

Subsequent tests proved his theory and the chute with a hole was designed. In this annular chute, the funnel of dead air passes through the hole, leaving the outer circle of the chute stable.



Don Burr



Betty Jones



Sue Morgan



Margie Clark



Ruth Stein

## CAPESIDE INQUIRER

# WHERE WERE YOU FIVE YEARS AGO?

The so-called space age began with the launching of Sputnik I, more than five years ago, on October 4, 1957. NASA came into being less than a year later.

Proof that space careers, for most, are as young as the history of satellite launches, was in abundant evidence when the Capeside Inquirer toured NASA offices to ask: "Where were you five years ago?"

**Don Burr, Base Operations:** "I was living in Detroit and working at the Chrysler Missile Plant. My life was devoted to one objective — being a carefree bachelor."

**Betty Jones, Material Support:** "I lived in Port Arthur, Texas. That year they had a

"Texas Day," and I dyed my hair platinum, but the darned stuff turned purple."

**Sue Morgan, Financial Management Office:** "Five years ago I was single and worked in the office of a shoe factory in Portsmouth, Ohio."

**Margie Clark, Employment:** "I was working for Radiation Inc., at Melbourne, and just previous to that, I was employed in Baltimore for the U.S. Navy Audit Office."

**Ruth Stein, Traffic Services:** "Five years ago I was a housewife in Arlington Heights, Illinois."

**John Donovan, Community Development:** "In 1958, I was the bar and dining room manager of the Cherry Plaza Hotel in Orlando."



John Donovan

## Space Vacuum Chamber Requested By NASA

A vacuum chamber to generate space environmental conditions for use in thermochemical tests has been requested from industry by the Manned Spacecraft Center.

The chamber will permit MSC engineers to study the function of propellant equipment and heat rejection and energy collecting devices during long periods of flight.

The vessel will look like a bathysphere on stilts. It will stand more than 22 feet tall, including the four steel support columns. Inside diameter of the unit will be 15 feet. It will be equipped with a door having an opening nine feet in diameter. The chamber will be fashioned out of stainless steel.

A special feature of the space chamber will be the installation of burst discs. These are safety valves which rupture in the event of equipment failure during testing.

## Research On RL-10s To Be Continued

NASA has announced it will negotiate with Pratt & Whitney Division of United Aircraft Corporation to continue research and development of the RL-10 liquid hydrogen engine.

Pratt and Whitney started the development of the RL-10 engine in 1958 and delivered its first engine for vehicle ground tests in July 1960.

The RL-10 engine, the nation's first rocket engine using the high energy propellant combination of liquid hy-

drogen and liquid oxygen, produces 15,000 pounds thrust. Two engines serve as the propulsion system for the second stage of the Centaur launch vehicle. A cluster of six RL-10 engines power the S-IV second stage of the Saturn I vehicle.

Flight tests of this engine are scheduled later this year in both the Centaur and Saturn I launch vehicles.

Estimated cost of the contract will be approximately \$30 million.

## Temperature Range Of Space Materials To Be Determined

A research facility for testing space vehicle materials at very low temperatures will be built at the NASA-Marshall Space Flight Center, under a \$317,260 contract.

Materials will be tested to determine how they react in temperatures in the liquid hydrogen range of minus 423 degrees Fahrenheit.

Upper stages of the Saturn rockets use liquid hydrogen propulsion systems.

The structure will have a reverse slope roof to reduce the possibility of trapping escaped hydrogen near the ceiling. It will have reinforced concrete walls, grounding facilities, special air conditioning to provide once-through, high volume air flow, and explosion-proof electrical equipment. Walls will also have special spark-proof finish.

# 'BEACON' SATELLITE SET FOR LAUNCH

NASA will attempt to launch an Ionosphere Beacon Satellite (S-66) into circular polar orbit, from the Pacific Missile Range within a few days.

Designed to make global measurements of the ionosphere, the octagonal-shaped scientific satellite is scheduled for launch aboard a Scout vehicle.

The 120-pound Ionosphere Beacon Satellite's primary objective is to conduct measurements which will make it possible for scientists to plot

the form and structure of the ionosphere and to describe its behavior under varying conditions of solar activity, season, and time of day.

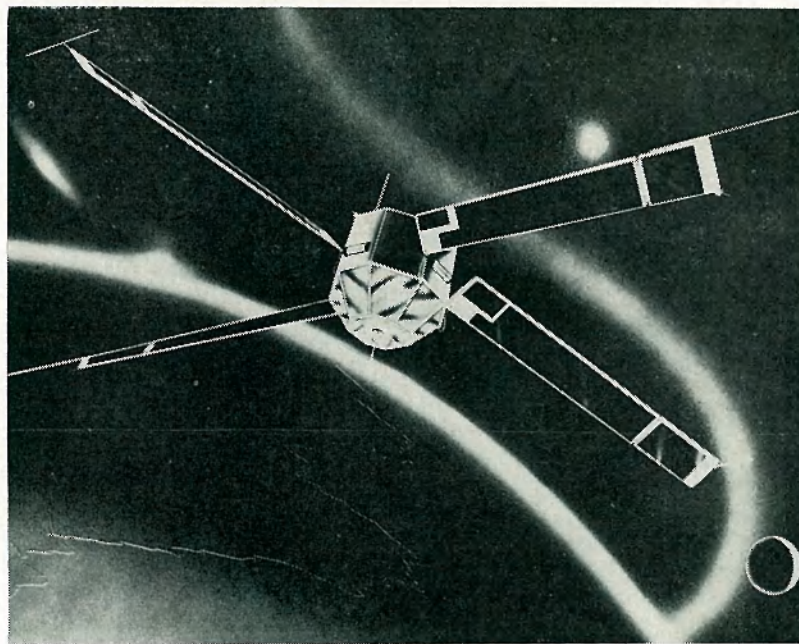
It is the ionosphere, a region of electrically charged gases beginning about 35 miles above the surface of the Earth, which makes it possible for man to bounce radio signals from continent to continent.

In addition to the major ionosphere experiment, a LASER test will be attempted by means of glass-like reflectors attached to the spacecraft. This will be the first time LASER experiments have been conducted on a space-borne satellite.

## Wide Participation

While the radio beacon experiment is only one of a number of ionosphere satellite experiments conducted by NASA, it is significant in that the simplicity of read-out equipment needed (antenna, radio receiver, timing device, and a recorder) to gain satellite information will permit scientists all over the world to participate in the experiment.

To date, over 40 foreign and domestic experimenters have volunteered to take part in this program. This represents the largest cooperative group ever to take a direct part in a NASA space satel-



THE S-66 is an ionospheric research satellite. Bar magnets keep the crown of precisely ground quartz prisims facing earthward to reflect a beam of laser light aimed at it from ground station.

lite experiment.

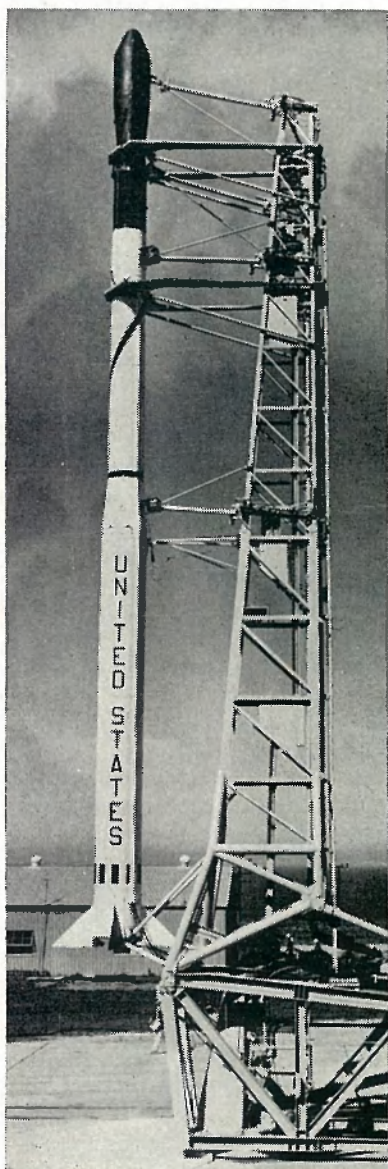
More importantly, it provides a worldwide scientific satellite read-out team contributing toward a long sought goal: to make a global survey of the Earth's ionosphere.

Such a survey of the ionosphere will be as important to predicting communications frequency variations and blackouts as are the Tiros weather satellite photographs of global cloud cover in predicting the weather, because the ionosphere changes just

as rapidly as does the Earth's weather.

NASA will attempt to place the satellite into a near-circular polar orbit, inclined 80 degrees to the equator, at an altitude of about 600 miles. In this type of orbit, the Earth will rotate under the satellite, thus permitting the satellite to view each area of the Earth's ionosphere every 24 hours.

The power system is adequate to operate the satellite components for about three years.



THE SCOUT launch vehicle with the Ionosphere Beacon Satellite mated at the top, is shown erected on its vertical launcher at Point Arguello, California.

## Superstitious?

Be wary of black cats and ladders tomorrow, it will be Friday the 13th.

## PUZZLING IONOSPHERE — HYDRA OF GEOPHYSICAL WORLD

On February 10 and 11, 1958, some 100 transoceanic airplanes set up an emergency radio bucket brigade.

Almost without warning, their usually dependable radio links with the airfields of Europe and North America had been cut. Long-distance radio communications between the hemispheres was blacked out. Only by line-of-sight relaying of messages were the aircraft able to maintain a minimum amount of air traffic control.

Because this event occurred during a highly or-

ganized research effort — the International Geophysical Year — a large variety of measurements provided a fairly comprehensive description of what had happened.

The Earth was suddenly enveloped in a vast cloud of electrified gases that had been ejected by the sun. This produced one of the most widespread geomagnetic storms on record, and the complete shattering of that high-altitude radio mirror — the ionosphere — was but one of its symptoms.

Both as a device for

long-distance radio communications and as an object of scientific study, the ionosphere still is inadequately understood. It is, in fact, a kind of Hydra of the geophysical world, constantly sprouting several new puzzles for each one that is laid to rest.

A new assault upon the complexities of the ionosphere — on an international scale — will begin with the placement of an Ionosphere Beacon Satellite into a near-polar orbit. Its purpose is to extend ionospheric research on a global scale.

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