

SPACEPORT



NEWS

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New Machine To Generate Hot, Hot Air

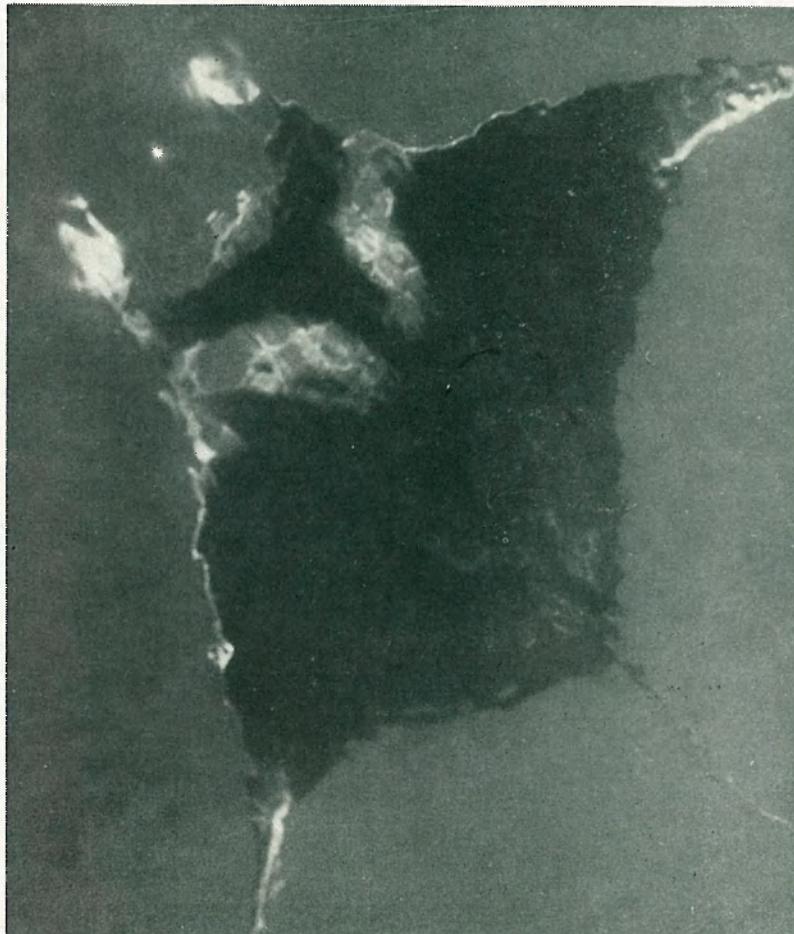
Since time immemorial the great scientists of the world have looked for the impossible — a perpetual motion machine, a way to turn lead into gold, or a useful machine with no moving parts.

NASA engineers at the Lewis Research Center in Cleveland haven't found any of these — but they have come up with an idea, which, if it works, should heat an air stream almost as hot as the sun's surface with no moving parts to fail under such high temperatures.

Idea Developed

The idea for this device developed from an interesting but as yet rarely used item called a Hilsch tube. A stream of pressurized air is introduced into the center of the tube and eventually passes out one end as a refrigerated stream. But, the air near the walls experiences tremendous friction as various air layers slide over one another. This high friction creates heat and the air rushing toward the other end of the tube becomes 40 per cent hotter than the incoming stream.

What would happen if a number of these tubes were strung together in series like Christmas tree bulbs? Starting with 2000 degree air, the air out of the first tube would be heated 800 degrees F. Thus, the air into the second tube would be at 2800 degrees and, as it swirled through the second tube, it would be heated even more. The resulting hot stream passing into the third tube would be even hotter and so on throughout a system of Hilsch tubes until finally air at temperatures above 4500 degrees Fehrenheit is obtained.



AT FIRST GLANCE the above configuration might appear as part of the Rorschach Ink Blot Test. Actually, it's a manta ray, or "devil fish" that was photographed swimming just under the ocean's surface about 150 yards off the Canaveral shoreline, east of Launch Complex 34. The creature had a wing span of approximately 12 feet. As a note of reassurance to bathers, however, it was heading out to sea.

News Photo by Charlie Wilson

SPLISH-SPLASH SLOSHING SUPPRESSED

Got a new idea on how to stop sloshing?

Don't suppress it, pass it along. Werner R. Eulitz of the Marshall Space Flight Center did — and collected a \$1,000 incentive award!

He invented a simple, reliable and rugged device to suppress propellant sloshing

THE INSIDE STORY

Weightlessness Page 4
Vapor Trails Page 7
Whiskers Page 8

in space vehicle tanks. The invention is applicable to liquid propelled rockets, rocket launchers at sea, stabilization of ships in high seas, and stabilization of platforms — such as oil drilling rigs — on the high seas.

His invention replaces previously used surf breaking devices which were bulky, added considerable mass, and were effective over only a portion of their length.

Many rockets have been lost due to insufficient slosh suppressing.

'QUIET SUN' YEAR BEGINS JANUARY 1st

The new acronym, IQSY, stands for International Quiet Sun Year, and in the months ahead there will be much written about this major venture by scientists of more than 50 nations.

The two-year program begins January 1, 1964, when sunspot and solar flare activity will be at its low point during an 11-year solar cycle.

American scientists, including many from NASA, will participate in this sequel to the work of the International Geophysical Year (IGY) on earth-sun relations.

During the International Geophysical Year of 1957-58, scientists gathered data when solar activity was at its highest level in 200 years.

This will be compared with data gathered during the International Quiet Sun Year when solar activity will be at a low level.

Scientists will concentrate on geomagnetism, aurora, air-glow, meteorology, ionospheric physics, radio astronomy, solar physics, the interplanetary space medium, cosmic radiation, the Van Allen radiation belts, and aeronomy.

RUBY AIDS TRACKERS

A small, cold ruby crystal, tucked in the center of giant NASA parabolic antennas, helps to accurately track spacecraft millions of miles away.

The crystal is the central element of a maser unit which amplifies radio signals received from deep space. For efficient operation of the ruby crystal, its temperature is reduced to near absolute zero using liquid helium as a coolant.



SPOTLIGHT

WHERE TO DRAW THE LINE

As government employees, we must walk a fine line. Every taxpayer has a critical eye focused on every action involving Federal funds. This is as it should be.

It is particularly true here at Canaveral where international attention remains fixed on the Free World's Spaceport.

Therefore, we should double our efforts not to place ourselves in a position where a conflict of interest exists between personal affairs and government responsibilities — or even where others might reasonably suspect such conflicts exist.

NASA regulations are quite explicit regarding conflict of interest situations and gratuities.

For example, one may not use his position to obtain financial or other personal gain. Neither may he perform work for any other organization while on the job here. And, last, all outside employment must be approved.

In no instance may a government employee accept cash, gifts or anything of value which might be construed as influence from any person or group.

When offered a gift or gratuity, NASA employees should be guided by the following:

- * When the offer is made in person to NASA personnel, all gifts should be courteously declined.

- * When gifts are received indirectly (i.e.; by mail or through a third party), they should be returned to the sender.

Exceptions include advertisement articles of nominal value, such as calendars and inexpensive ball point pens.

Perishable items which cannot be feasibly returned should be given to a charitable organization of the recipient's choice, with notification of such action to the donor.

If you find it awkward to handle a gift situation, the appropriate personnel office will provide assistance.

When you return a gift, such actions should be a matter of record. A copy of your letter, returning the gift, should be forwarded to Personnel.

By complying with these reasonable rules we improve not only the government's image, but ourselves as well.

ON THAT 19TH STRAIGHT

Almost buried in the news that a communications satellite, Syncom II, had entered a synchronous orbit above the earth last week, was the fact that a Delta booster had placed it there.

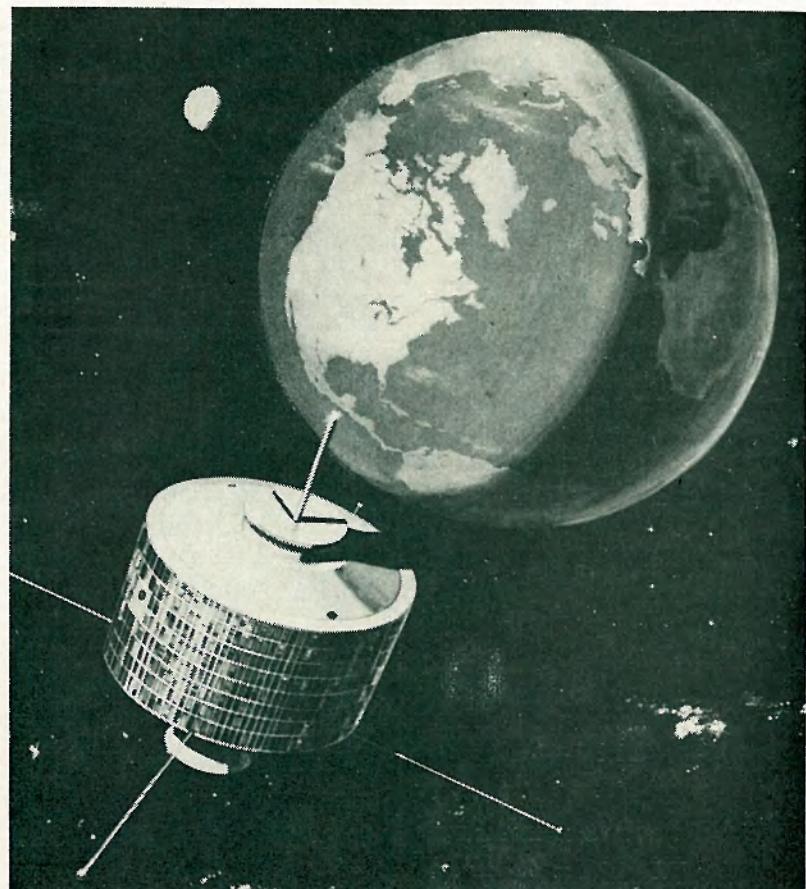
It is an unfortunate fact of life that successful Delta missions have become so commonplace — 19 straight — that they are accorded little recognition, and all too often are taken for granted.

Yet, imagine if you will what would happen if Stan Musial ripped off 19 consecutive base hits, or Whitey Ford chalked up 19 wins in a row. These, of course, would be record-breaking performances.

Delta's remarkable string is also truly a proud and unparalleled record.



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



SYNCOM II, launched last week into a synchronous orbit some 22,000 miles above earth, is shown in this artist's concept as it flies elongated figure eight patterns above and below the equator

C. U. Milestone

The NASA-MILA Federal Credit Union reached another milestone yesterday when its 300th member signed up. Total deposits have also reached a new high — \$18,000.

Material Support Fete Termed Huge Success

The Material Support Branch of the Base Operations Division held its annual picnic at McClarity Park in Rockledge Saturday, and 120 employees and members of their families turned out.

The picnic committee, headed by Ines Ulman, Edna Stamp and Jerry Ulman led the festivities in arranging the menu and beverages.

Steiner Rowell was master of ceremonies. Highlights included a softball game that ended in a 4-4 tie, and a hula dance in native costume by Rhonda Beane, daughter of Pat Beane.

The picnic was such a success that a tentative party is planned in the near future.

FLUORINE MIXTURES TO BE RESEARCHED

NASA's Office of Advanced Research and Technology has signed a \$980,488 contract with Pratt & Whitney to conduct research involving fluorine-oxygen mixtures and pure fluorine in combination with hydrogen, for use as rocket propellants.

The research will be conducted over a 13-month period, using components of the RL-10 hydrogen-oxygen engine modified for use with fluorine.

Objective is to demonstrate the feasibility of a complete engine system using the two mixtures.

The contract is part of the NASA research program on the feasibility of using high energy propellants. Fluorine-hydrogen gives the highest performance yet obtained experimentally with chemical reactions and has the potential for increasing payloads of space missions and for performing difficult space missions.



A NEW ARTIST'S CONCEPT of NASA's Merritt Island Launch Area, by Don Mackey, gives a good perspective of the industrial area, left foreground, in relation to the Vertical Assembly Building, arrow, and Launch Complex 39's three pads, top arrows. At lower right is the hypergolic test area.

LAKE ERIE AIR DROP TESTS COMPLETED AT LEWIS RESEARCH CENTER

In a program to develop a new recovery system for sounding rocket payloads, NASA has successfully completed one of a series of air drop tests into Lake Erie.

NASA's Lewis Research Center, in conjunction with

the U.S. Coast Guard, conducted the drop test of a simulated recovery package into Lake Erie last week.

Lewis is developing a recovery system to return a camera compartment from a WASP sounding rocket, which will

be launched from NASA's Wallops Island Station in Virginia next winter.

The WASP was developed at Lewis specifically for Project MECA to study the effects of weightlessness on fluid systems in future space power generating equipment.

RELIABILITY WORKSHOP SUCCESSFUL

A recent Reliability Workshop in San Diego co-sponsored by the Air Force, NASA and General Dynamics Astronautics attributed the high reliability of Mercury-Atlas to managerial techniques for obtaining quality work.

The significance of motivation at all working levels was repeatedly emphasized to the 300 management officials attending from 40 major aerospace companies.

G. Merritt Preston, Manager, Manned Spacecraft Center Operations, Cape Canaveral, said the one-day workshop was conducted in an effort to transfer the managerial know-how from Project Mercury to future space programs. Preston was chairman of the two-hour session on test control.

New Techniques

NASA Mercury Operations Chief Walter C. Williams said that for all its technical importance the Mercury program was equally significant as a management exercise to originate new techniques in developing manned space systems.

J. R. Dempsey, president of GD/A, said the strong sense of responsibility for human life is a major reason for 100 percent reliability of the Mercury-Atlas manned vehicles. He noted when astronauts toured GD/A and talked to workers about their jobs, the improvement in the quality of work was immediate and dramatic.

To capitalize on the weapon system background of Atlas, program management insisted upon rigid control of design changes. Speaking from experience, Mercury-Atlas managers discouraged uncontrolled trouble-shooting, quick fixes, and improvised modifications. Everything that may alter the hardware must receive the benefit of top design talent if reliability is to be assured.

It was felt that the Mercury-Atlas management techniques in developing manned space systems could be fruitfully applied to future space programs.

MSC-IBM SIGN PACT FCR DATA CENTER

NASA's Manned Spacecraft Center has signed a contract for \$36,200,018 with IBM Corporation to implement the computing and data processing center of future manned space flights.

It is from this center that MSC will control and monitor all future missions in the manned space flight program beginning with Gemini's first rendezvous flight.

Four IBM 7094 computers, and related computing equipment will monitor and analyze data from Gemini missions, the first attempt to rendezvous in space, and future Apollo flights.

IBM will be responsible for the launch trajectory data system and for the transmitting and processing of guidance data.

Johnston To Direct Crew Systems Div.

A young research chemist with 15 years experience in developing life-sustaining systems from submarines through spacecraft has been named Chief of the Manned Spacecraft Center's Crew Systems Division.

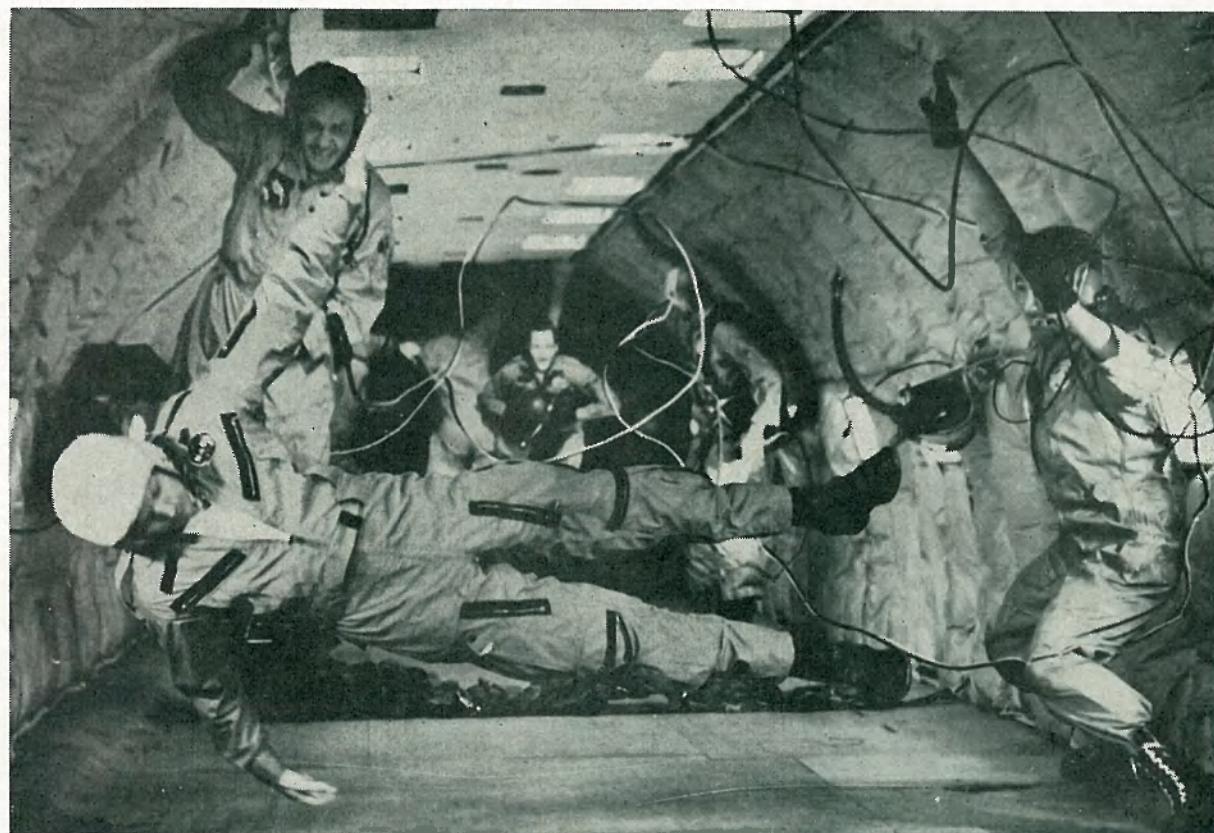
Richard S. Johnston, 36, formerly Deputy Chief of the Division, was named to his new position by Dr. Robert R. Gilruth, Director of MSC.

With Crew Systems Division since it was organized in April, 1961, Johnston first became associated with Project Mercury and its originating Space Task Group in 1959.

He supervised the design, layout and acquisition of equipment for the astronaut transfer van used at Cape Canaveral to transport the space suit-clad astronaut from Hangar S to the launch pad.

In a working paper he presented in November, 1960, Johnston detailed a medical operations plan which has been used throughout the Project Mercury space flights.

During his early work with MSC, he contributed to the development of spacecraft life-supporting systems, including pressure suit and restraint systems.



EXPERIENCING THE SENSATION of weightlessness for the first time are, left to right, Astronauts Edward H. White II, James A. McDivitt and Neil A. Armstrong. They were flying in a specially-equipped, high-speed Air Force plane.

EVEN MICROSCOPIC DUST SPECKS ARE TABOO IN NASA'S CLEAN ROOM

Even meticulous housewives who insist on a shiny, spotless home would have a tough time making the maintenance team these days at NASA's Lewis Research Center in Cleveland.

The largest dust particle allowed there —in a new "clean room" where SERT (Space Electric Rocket Test) payload parts will be assembled — is only 4/10,000ths of an inch in size.

The room, to be completed by mid-August, won't be hospital clean, but atmospherically spick and span.

Any equipment coming into the room can be pre-cleaned or vacuumed. The work bench itself is even cleaner than clean. The circulating system collects air, re-filters it and blows super-clean air across the table.

An ultra-sonic cleaner allows workers to clean small components by vibrating them in a basin filled with a fast drying liquid such as freon. This ultra-sonic vibration

shakes off any over-looked specks of dust.

Housekeeping problems won't be too complex. In the first place, no one with muddy feet gets in. A person entering the 13-by-27-foot room must first enter an airlock. After sitting down on a bench and putting on clean booties, he must then swing about on the bench to put his now-clean feet on the clean portion of the floor. Then he must don coveralls and cap before ac-

tually entering the room.

Furthermore, there are no annoying little dust traps to keep clean. The wall, floor and ceiling are all as smooth as possible.

Stainless steel walls avoid catching dust. The ceiling is glass lighted from behind which provides both shadowless lights and a smooth ceiling surface. The floor is dust-free Tessera. There are no right-angle corners. Floor and walls blend into one another in a smooth curve. Ceiling and walls are likewise continuous curves. The four windows are ledgeless as possible, and the only real projections in the room are the flat handles of the plate glass doors.

But, alas, even the filtering system in the clean room is only 99.7 per cent effective. Lewis officials, however, are striving to improve this. By adding an air shower, they expect to boost their rating.

Then, even "Mr. Clean" will have trouble gaining admittance.

Distant View

Saturn V Project officials say Orlandoans will be able to see the 524-foot-tall Vertical Assembly Building — on a clear day — when it is completed.

And when the Saturn V vehicle, attached to its umbilical tower, is on its pad, the top of the tower will stand almost 500 feet above sea level and may also be seen from great distances.

Simulated Moon Base

FIVE ENTER CHAMBER FOR MONTH-LONG TEST

Five men have entered a space chamber in Seattle for an engineering test of an integrated life support system that may run for a month.

The Boeing Company's system, the first to include all elements of life support for a 150 man day space mission, was designed and built for NASA's Office of Advanced Research and Technology (OART).

The chamber simulates quarters on a space station or at a moon base, for the current test.

Its equipment includes an environmental system producing cabin oxygen from solid, Super oxide chemicals. A waste disposal system collects, processes and recovers water from body waste, cabin condensation, and sink draining.

Crew members bathe in a closed circuit shower. The shower, designed for use under weightless conditions, has a separate water supply which is filtered and chemically treated for re-use.

Special diets of freeze-dried food, some of it in squeeze tubes for simulated weightless feeding, includes such items as shrimp, strawberries, and peanut butter sandwiches.

Associated with the life support equipment are specific crew tests simulating problems of space flight.

A heavy work load on crew members covers navigating, scope reading, tracking, time estimating, decision making, attention span tests, and others.

Psychologists outside the capsule are able to observe the test crew through one-way glass windows.

ARINC Employees

Arrive At Canaveral

Representatives of the ARINC Research Corporation are arriving at LOC from Huntsville, Santa Monica, and Sacramento, to continue their reliability studies of the SA-5 vehicle.

A NASA contract requires ARINC to perform a three-phase reliability analysis. This includes reliability analysis and evaluation of the S-IV stage at the California facilities of Douglas, the S-1 stage at MSFC, and vehicle and ground support equipment pre-launch test, checkout, and launch operations concerning the overall Saturn vehicle system at LOC.

ARINC performed similar studies for NASA on SA-2 and SA-3. One representative, A. P. Dinsmore, has been assisting LOC since April to evaluate the Launch Complex 37B facility and GSE compatibility tests with the SA-5D test vehicle.

The LOC Reliability Office is the technical supervisor of ARINC's activities at Cape Canaveral.



AS THE DOG DAYS of August approach, pert Juliette Ray of LOC's Saturn Project Office, enjoys a time-honored way of beating the heat. Looks like fun doesn't it?

News Photo by Russ Hopkins

Interplanetary Trip Plans Require Meticulous Packing

If you've ever pondered over what to pack for a weekend trip, you have a faint inkling of what faces those who are planning interplanetary flights.

NASA has signed a contract with the Douglas Aircraft Company to find out what 10 men would need to make a successful three-year expedition to Mars, sometime

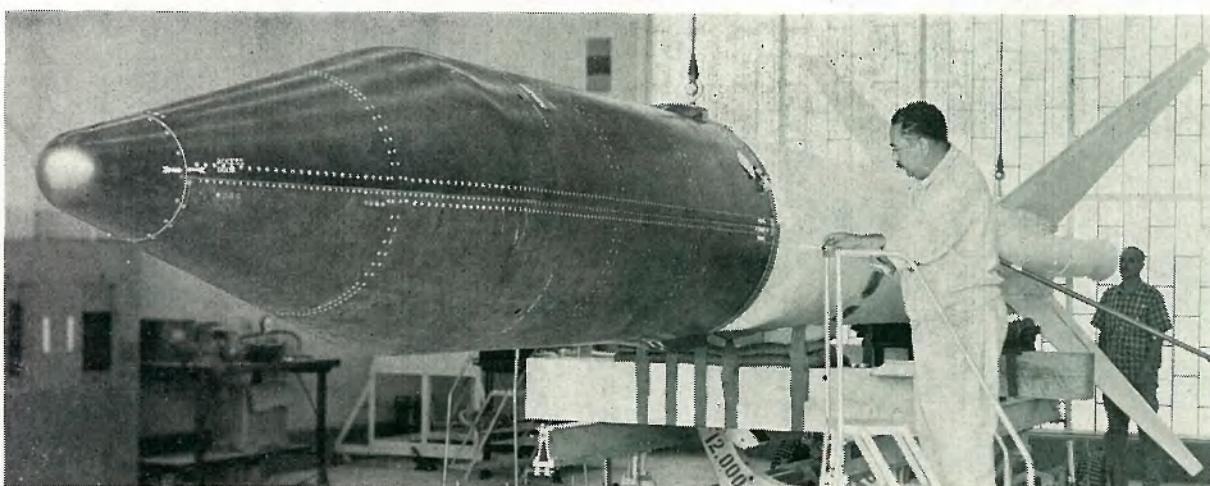
between 1975 and 1985.

As few as three or as many as 10 astronauts would make the 300-million-mile round trip, according to the study specifications outlined by the Marshall Space Flight Center's Office of Future Projects.

Previous studies have indicated that a manned Mars flight within the next 10 to 12 years — when conditions will be favorable — is not likely because space systems for such a long trip may not be ready by then.

The Douglas study will include analyses of the most favorable calendar dates for takeoff and landing, the amount of payload that will be possible and necessary, and the choice of trajectory or route.

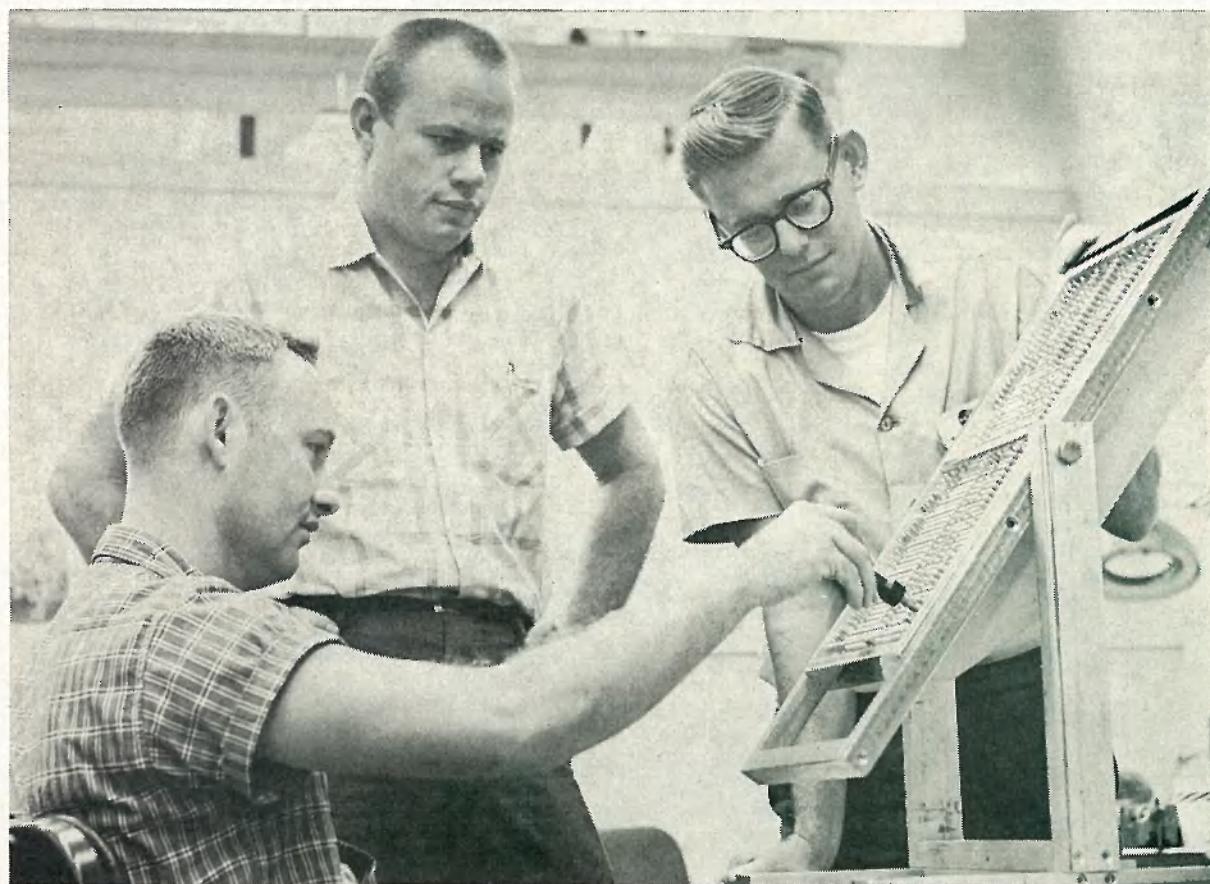
The spaceship would be launched into orbit around the earth and then re-launched from earth orbit into the orbit of Mars. The return flight to earth is expected to require speeds of 45,000 mph.



SHOTPUT, a two-stage vehicle without guidance, and stabilized by aerodynamic fins, was launched from NASA's Wallops Island site recently to test instrumentation for the San Marco satellite.



AEROSPACE TECHNOLOGISTS and Electrical Development Technicians in LVO's Electrical Systems Branch, have received service awards. Terry Greenfield, left, Branch Chief, presented the awards to, left to right, Carroll Rouse, 10 years; Roy Lealman, 10 years; Frank Keck, 10 years; Jack Shone, one year; and Willie Hadwin, 15 years.



ELECTRICAL DEVELOPMENT TECHNICIANS John Cressman, left, and Gayle (Bunk) Wolfe, right, show Carroll Rouse the aluminum IBM patch board holding frame they invented. The frame can be tilted and rotated to allow easier handling of the patch boards used in blockhouses at Launch Complexes 34 and 37. Cressman and Wolfe received an incentive award for the device. They are both with the Ground Electrical Systems section of LVO's Electrical Engineering and Guidance and Control System.



Curt P. Herold

★ ★ ★

LOC'S CURT HEROLD WINS \$1,000 AWARD FOR ROCKET DEVICE

A multiple quick-disconnect device which frees a rocket from its external cable connections at the moment of lift-off has won a \$1,000 award for its inventor, an LOC man based in Huntsville.

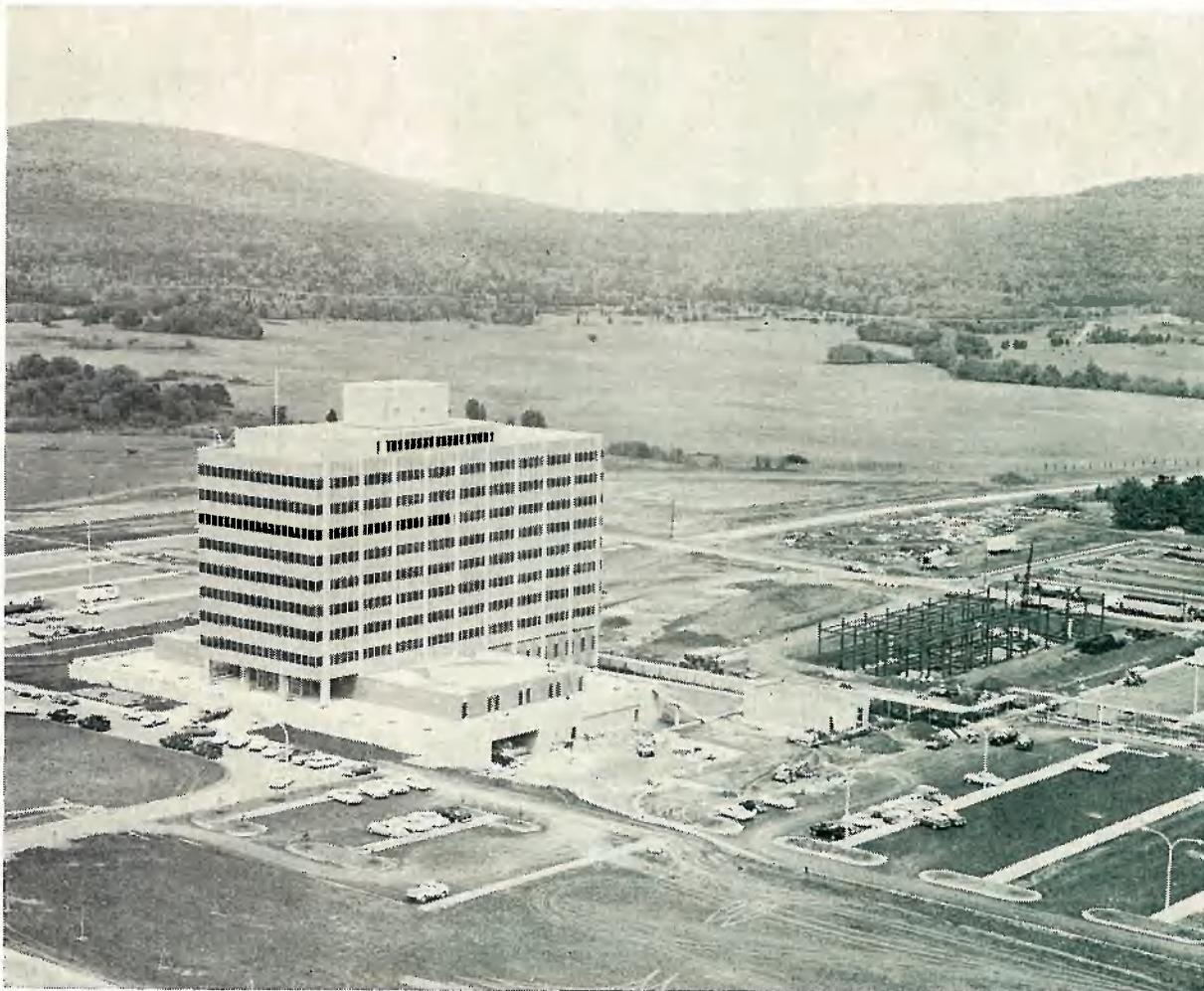
Curt Herold, Deputy Chief, Launch Support Equipment Engineering Division, was presented with the award by Dr. Hugh L. Dryden, Deputy Administrator of NASA in the agency's Washington headquarters.

A spokesman from the Launch Support Equipment Office explained that space vehicles require many electrical, pneumatic and hydraulic connections to ground supply sources for many services such as fueling, air conditioning and testing.

The quick-disconnect device is an extremely critical link between the vehicle and the ground supply sources, the spokesman said, because in most cases, the quick disconnect must occur within a fraction of a second just as the vehicle rises from the pad.

A high degree of reliability under severe conditions of vibration is mandatory, he said, because a failure can cause a total loss of the vehicle.

Herold has had broad experience in missile and rocket design, dating back to the early 1940's when he was a member of a design group at Peenemunde, Germany.



AN AERIAL VIEW of the new Central Laboratory and Office Building at the Marshall Space Flight Center, Huntsville, is shown here. The structure, costing about \$4½ million, is now being occupied by some 1,200 Marshall Center employees.

How To Spot A Bird? By Its Vapor Trail

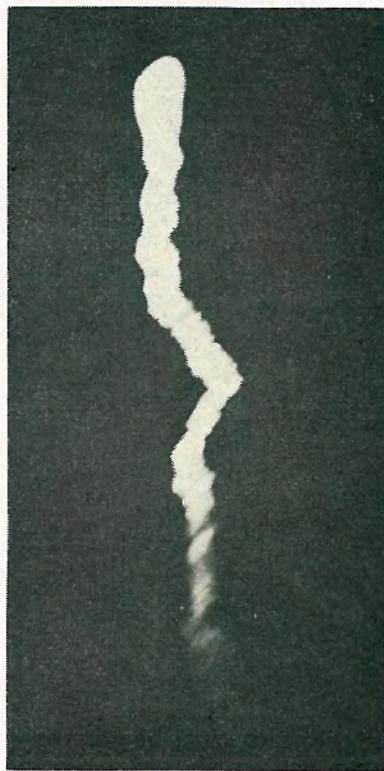
If you watched Friday's Syncom flight from a long distance chances are you didn't sight it until the rocket's vapor trail began.

By that time, the 90-foot-long vehicle was six miles over the Cape and well on its way to orbiting its Syncom payload.

The vapor or con trail (for condensation) is a peculiar phenomenon caused primarily by the different atmospheric conditions the rocket passes through on its way to space.

The trail itself is actually a formation of water droplets or ice crystals, created the same way clouds are formed.

Water is a by-product of the combustion of fuels and oxidizers — used in such vehicles as the Atlas, Delta and Saturn. From the ground up to about six miles, the water is dispersed into the atmosphere.



But at the six-mile level, the air's temperature is so low — minus 70 F. — it condenses the water, and the ice crystals form, creating the familiar trail.

At Canaveral, the "heavy" portion of the trail continues until the rocket is approximately 18 miles up, then, as the atmosphere warms up again and the air becomes more rarified, the trail thins out to eventual invisibility.

Although the actual condensation phenomenon lasts only a few seconds during the rocket's swift ascent, the trail may "hang" in the sky for several minutes or longer, depending on wind conditions.

Against a blue sky, the trails are visible from as far away as Orlando.

Solid propellant rockets also produce con-trails, but smoke from engine exhaust screens them.

\$4 Million Building Opened at Marshall

Some 1,200 Marshall Space Flight Center employees, including Dr. Wernher von Braun are completing a move into a \$4½ million Central Laboratory and Office Building at Huntsville, Alabama.

The new building will consolidate many offices, which have been located in leased facilities downtown and in Army-owned buildings, under "one roof."

The modern, nine-story structure will be the tallest of three planned buildings to be located in a triangle. The second one, a six-story Engineering and Administration building, is under construction now.

Employees began moving into the new building, which contains 235,650 square feet of floor space, last month.

Overall height of the building is 157 feet.

Conference rooms are located on all floors where officials can chart the space vehicle development program. The building also contains an auditorium on the first floor which seats 406.

Industry Symposium

G. A. Michaud, Chief, P&C, and Thomas M. Davis, Industry Advisor, P&C, attended the Second Industry Assistance Symposium Tuesday at Houston.

The Symposium was sponsored by the Houston Chamber of Commerce and the Manned Spacecraft Center in cooperation with Rice University, Small Business Administration, General Services Administration, Department of Commerce and the major prime contractors on MSC's programs.

Racers Score Again

LOC's Sunday sports car drivers, Martha and Leroy Barnes and Charles Buckley, took three first-in-class awards last week at the Hare and Hound Gymkhana race in Rockledge.

Martha, of Personnel, and her husband Leroy of Facilities, raced their Sprite to a double victory, and Buckley, Chief of Security, piloted his MG to a win. A field of 32 was entered.

RETIREE'S TO RECEIVE INCREASED ANNUITIES

Government employees who retire during the next four years will receive larger annuities than they otherwise would get. In addition, Federal workers' survivorship benefits will be liberalized.

Employees retiring in 1963 will get a 4 percent increase; those retiring in 1964 will get a 3 percent raise; those retiring in 1965, a 2 percent increase; and employees retiring in 1966, a 1 percent boost.

From now on, too, annuities of retired Federal employees — both present employees when they retire and those already retired — will be automatically adjusted in the future as living costs rise. Annuities will not be decreased, however, if living costs drop.

The new provisions were authorized by Public Law 87-793 passed last October 11.

Annuity increases will be based on a minimum rise of 3 percent in the yearly average in living costs as reflected in the Consumer Price Index. The amount of the annuity increase will be a percentage equal to the percent of increase in the CPI, adjusted to the nearest one-tenth of 1 percent. For the first increase, the yearly average of the CPI must rise at least 3 percent above what it was in 1962. For the second and later increases, it must rise at least 3 percent above what it was in the year before the latest increase was granted.

The new law also liberalizes survivor annuities for student children of deceased Federal workers. Formerly, a child's survivor annuity ended when he reached age 18. Under the new law, such child, if in regular full-time attendance at a recognized school, can be paid a survivor annuity up to age 21.

Two major changes in survivor annuity benefits for present Federal employees and their families, provided for in the new law, include a smaller reduction in the annuity of an employee who retires and names his wife as survivor annuitant, and an increase in the amount of the survivor annuity.

Formerly, the annuity of an

employee was reduced by 2.5 percent of the first \$2,400 plus 10 percent of any additional amount used as the base. Now, the annuity of an employee separated after last October 10 is reduced by 2.5 percent of the first \$3,600 plus 10 percent of any additional amount used as the base.

Where the annuity used as the base is at least \$3,600, this results in an increase of \$90 a year in the retiring employee's annuity.

Where death occurs after October 10, 1962, the new law also raises the survivor annuities of (1) widows and dependent widowers of employees who die in service and (2) survivors named by employees retiring after that date. Formerly, the survivor annuity amounted to 50 percent of the annuity the employee had earned at time of death or, in the case of an employee who died after retirement, 50 percent of the amount he had specified as the base for the survivor annuity.

These percentages are now raised to 55 percent.

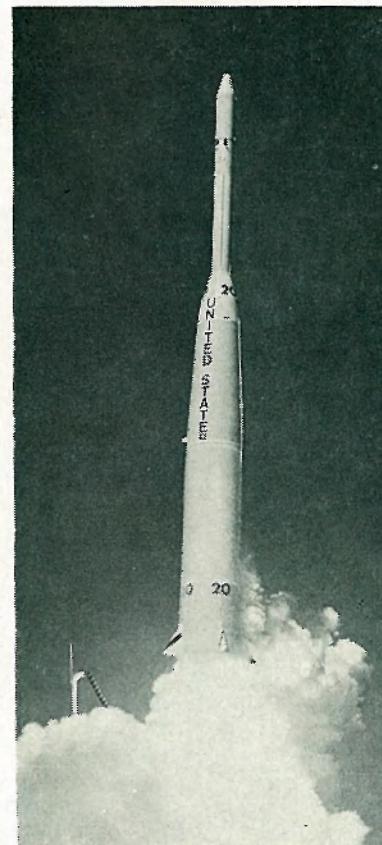
Study To Determine Nuclear Application For Lunar Missions

Compact nuclear power sources for supplying electricity for men and equipment on the moon will be studied for NASA by Atomics International, a division of North American Aviation, Inc.

The contract calls for a nine month study to determine design modifications required to adapt SNAP reactor systems for possible lunar missions.

SNAP (Systems for Nuclear Auxiliary Power) is the Atomic Energy Commission program to develop compact, lightweight, nuclear electric power systems for space applications.

Possible uses for SNAP reactor systems on the moon might include power for communication stations that would operate unattended for long periods, and a power source for charging the batteries of roving electrical vehicles.



SYNCOM II, nestled atop Its Delta booster, embarks from Canaveral for a destination 22,000 miles above earth.



If you hate to shave — as most men do, even with all the modern conveniences on the market today — consider the plight of future astronauts.

Since water will be at a premium on flights, and there will be no spacecraft outlets to plug in electrical razors, they "face" quite a problem.

Whirlpool Corp. of Benton Harbor, Michigan, has a contract with NASA to solve it.

So far they've come up with the novel idea of a spring motor-operated shaver — like a windup toy train — that has a built-in vacuum cleaner to collect cut whiskers. Otherwise, they would float around inside the cabin.

* * *

Such an invention would add to the evolution of shaving equipment. Mankind has used everything from sharpened clam shells to polished flint to scrape with, and even today shark's teeth are used in Polynesia. The first barbers used tweezers.

Perhaps, if the space shaver fails, the astronauts could grow beards. After all, they're still a symbol of manliness in many parts of the world — maybe so on other planets too.

And, according to accepted statistics, a normal person's whiskers grow only 1/2 inch every month. This might even be slowed down somewhat in space, and since the Gemini flights are only programmed for trips up to two weeks, the stubbles would hardly be noticeable, particularly under helmets.

It would save time too. An industrious efficiency expert once figured out that Americans spend five million man-hours a day just shaving.

* * *

It's doubtful if Russia's cosmonauts would ever consider growing beards, however, if they respect their country's history.

Peter the Great regarded whiskers as uncivilized, and once levied a tax on them.



Dear Sirs:

"I would like to go into space. I am 11 years old and could easily be the youngest astronaut in the world."

Geoff S.
Delevan, N. Y.

Secretaries To Meet

There will be a county-wide orientation for all secretaries who are interested in the National Secretaries Association next Thursday at 8 p.m. in the First Federal Building in Cocoa Beach.

The program will cover the main objective of the organization. A brief schedule of local activities of each chapter will be given.

Refreshments will be served and a social period will follow the meeting.

For further information, call Gail Bolan, SU 3-7859 or NE 6-5906.