Dr. P. R. Bell To Head MSC Science Division

Dr. Persa R. Bell, formerly senior physicist with Union Carbide Corporation at the Oak Ridge National Laboratory, Tenn., has been named to head the Lunar and Earth Sciences Division of the Science Applications Directorate.

The appointment of Dr. Bell to the post was announced last week at a Lunar Receiving Laboratory press tour by MSC Science Applications Director Dr. Wilmot N. Hess. Dr. Bell will also serve as manager of the Lunar Receiving Laboratory. The LRL facility (Bldg 37) was partially occupied last week. (See June 23 *Roundup* centerspread.)

A native of Ft. Wayne, Indiana, Dr. Bell is a graduate of Howard College, Birmingham, Alabama where he received a Bachelor of Science in 1936 and an Honorary Doctor of Science in 1954.

Following his graduation from Howard College, he joined the University of Chicago where he participated in the installation and the early operation of the Chicago cyclotron in 1941. Dr. Bell later joined the staff of the Massachusetts Institute of Technology Radiation Laboratory where he was primarily involved in radar development.

In 1946 he joined the staff of Union Carbide at the Oak Ridge National Laboratory and began development of and research with the scintillation counter, linear amplifiers and other physics instrumentation developments for low-energy nuclear physics.

Before joining NASA, Dr. Bell was manager of the DCX-2 project for Carbide at the ORNL. This experiment is one of the several large complicated devices built to do research on the problem of controlled fusion systems. The DCX machines hold the present record for coming closest to achieving the conditions desired for a thermonuclear burn. The plasma in this machine has the highest temperature and the longest containment time for any of the controlled fusion devices.

Dr. Bell has authored more than 60 articles and three chapters in different books on general radiation field and energetic particles. He attended, as a US representative, the World Conference on the Atomic Energy in 1958 at Geneva, Switzerland. He was also a member of the US team which reviewed Russian thermonuclear work in 1960, and in 1965 served as a member of the Geochemistry Working Group for the NASA Summer Conference on Lunar Exploration and Science, Falmouth, Mass.

He is a Fellow of the American Physical Society and a member of the Society of Nuclear Medicine and the American Geophysical Union.

Staking a Claim

LUNAR LANDING AHEAD OF SCHEDULE?—No, not quite. But a recent filming of a documentary motion picture at night on the Lunar Topographic Area allowed the photographer to capture a realistic picture of a pressure-suited test subject emplacing components of the Apollo Lunar Surface Experiment Package (ALSEP).

ROUNDUP

NASA MANNED SPACECRAFT CENTER HOUSTON, TEXAS

VOL. 6, NO. 19 JULY 7, 1967

ERC Contracts With MIT for Advanced Gyros

The NASA Electronics Research Center, Cambridge, Mass., has announced the award of a $7.9 million contract to the Massachusetts Institute of Technology for research and development of high performance gyroscopes and accelerometers.

Technology resulting from this research effort is expected to contribute to the evolution of precision instruments to guide and control the vehicles planned for the complex aeronautical and space missions of the 1970s and 1980s.

It is anticipated that these instruments will make possible systems which will navigate advanced supersonic transports with sufficient precision to intercept runway landing beams without the aid of present radio aids; to provide highly precise pointing references for satellites; and to guide interplanetary vehicles on missions lasting a year or more.

The NASA contract will be performed over a three-year period by MIT's Instrumentation Laboratory which is under the direction of Dr. C. Stark Draper. This laboratory pioneered development of the gyroscopes and accelermoeters which led in 1953 to the first successful coast-to-coast flight of an aircraft guided and navigated without assistance from pilots or radio aids.

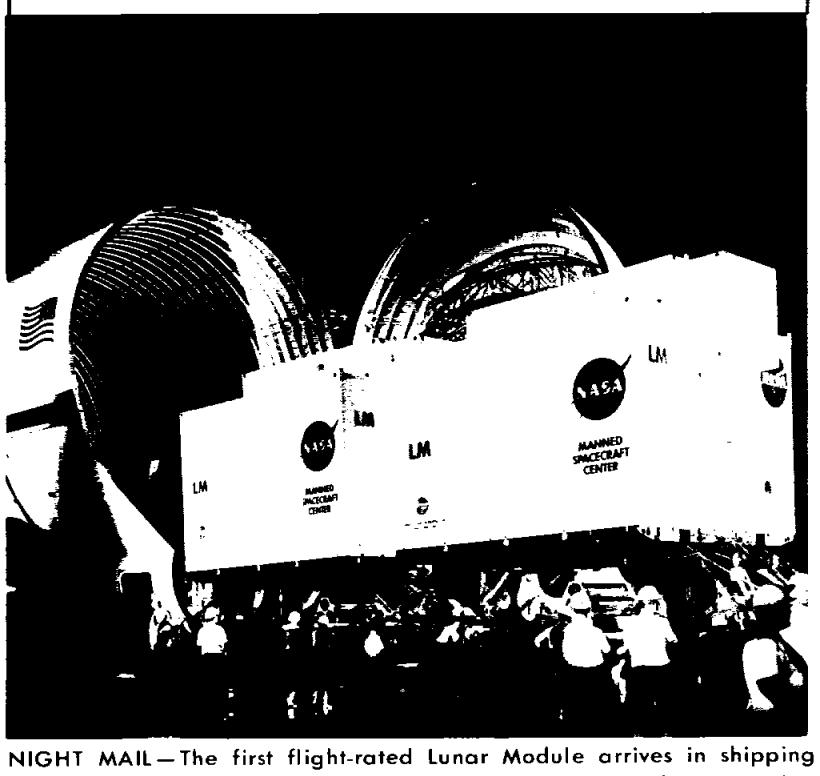
MSFC Buys 60 F-1 Engines

The NASA-Marshall Space Flight Center here, has bought 60 additional H-1 rocket engines from Rocketdyne Division of North American Aviation, Inc., Canoga Park, Calif., for use in the Apollo Applications Proram.

Estimated cost of the 60 engines is $14,811,540. The type of contract is fixed price incentive.

Delivery of the engines will continue through September, 1968.

Would You Believe It's a LM?



NIGHT MAIL—The first flight-rated Lunar Module arrives in shipping containers at Kennedy Space Center from Grumman Aircraft Engineering Corporation aboard the Super Pregnant Guppy. After prelaunch checkout at KSC, the LM will be mated to the Apollo/Saturn 204 launch vehicle for launch later this year in an unmanned test of the module's propulsion systems.

California Meet Covers Post-Apollo Objectives

More than 120 outstanding government, industrial and university scientists are scheduled to take part in a national conference sponsored by the NASA at the University of California, Santa Cruz, to formulate scientific objectives for lunar exploration beyond the Apollo mission.

The two-week conference—Apollo Applications Summer Meeting—is scheduled for July 31-August 12 at the University of California, Santa Cruz. It brings together the outstanding scientists of the nation in the fields of geology, geochemistry, geophysics, geodesy/cartography, particles and fields, biosciences, and lunar atmospheres and astronomy. Scientists in these disciplines will meet together as working groups at the Santa Cruz campus to prepare sound, feasible, scientific exploration programs for the moon beyond Apollo.

The conference is sponsored by MSC and is under the direction of Dr. Wilmot N. Hess, Director of Science and Applications.

The conference is a follow-on to NASA's 1965 session on Lunar Exploration and Science which was held at Falmouth, Massachusetts. The Apollo Lunar Surface, Experiments Package (ALSEP), a series of scientific instruments which will be placed on the moon's surface by an Apollo crewman, was the outgrowth of the 1965 Falmouth conference.

Each of the working groups is expected to generate working papers on five principal subjects: scientific requirements for lunar surface mobility, scientific requirements for mission duration, typical scientific mission profiles, orbital studies required (for the mission), and utilization of major hardware items (such as Local Surface Service Module, Lunar Flying Vehicle, Emplaced Scientific Station and others).

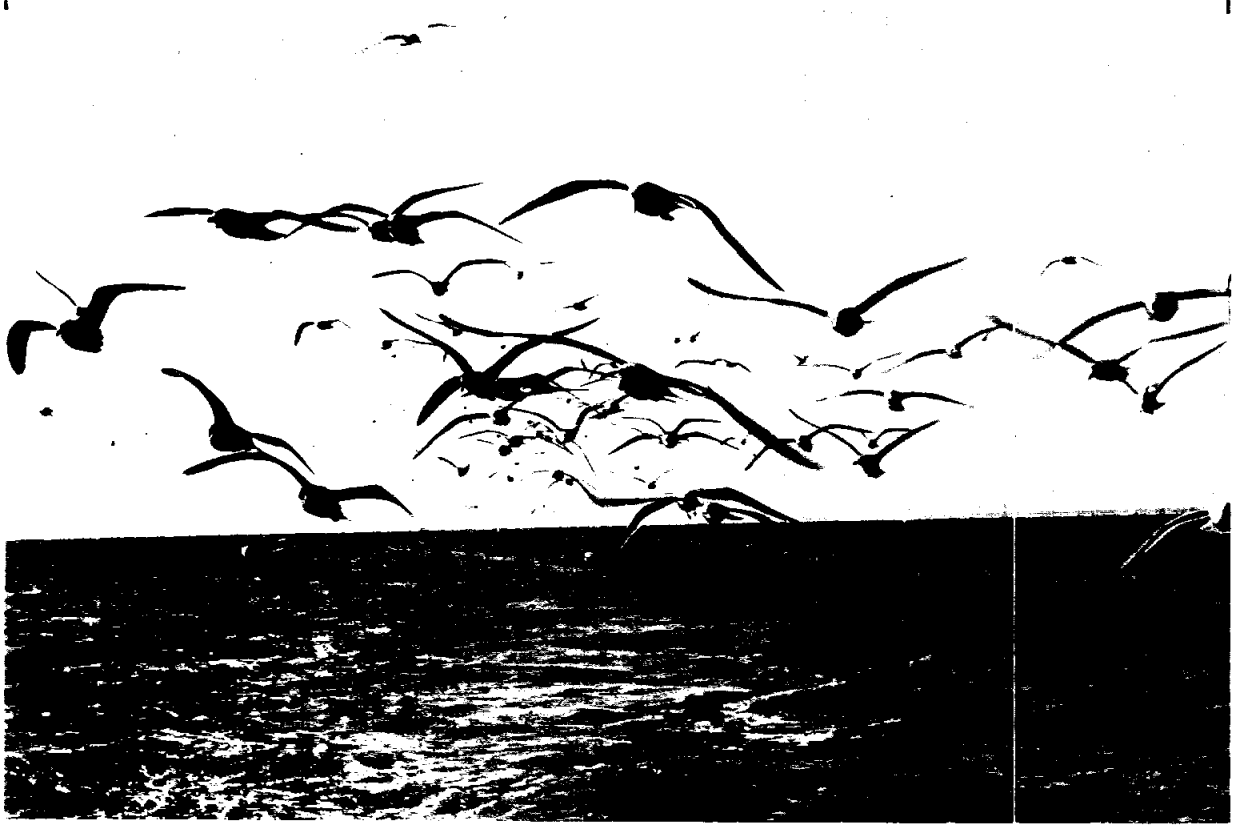
Like the Falmouth conference, the findings and recommendations of the Apollo Applicatons Summer Meeting will serve as a guideline in planning future lunar exploration missions.

Press Group Names Kraft No. 1 Virginian

MSC Director of Flight Operations Christopher C. Kraft, Jr. June 24 was presented the Virginian of the Year Award by the Virginia Press Association at a Richmond awards banquet.

The Award was the first annual Parks-Mason Memorial Award and was in the form of a silver reproduction of an antique printer's type composing stick mounted on a piece of wood from historic Gunston Hall. Gunston Hall, just south of Washington, D.C., was the home of George Mason, author of the Virginia Declaration of Rights—a forerunner of the national Bill of Rights—a section of which guarantees freedom of the press and speech. The Award memorializes Mason and colonial printer William Parks.

Feathered Followers



HITCHCOCK'S BIRDS?—The wake of the NASA Motor Vessel *Retriever* turns up tasty tidbits for seagulls during a recent Landing and Recovery Division exercise in the Gulf of Mexico. The wheeling gulls are interesting to watch provided the observer is upwind of the gulls and not directly under them.

New Langley Laboratory Explores Metal Fatigue

A new science laboratory to greatly extend the capability and capacity of NASA to investigate the problems of fatigue in aircraft structures and space vehicles is being placed in operation at the NASA Langley Research Center, Hampton, Virginia.

Langley, the principal NASA center concerned with pioneering research in aerospace structures and materials, has been studying the fatigue problem both in the laboratory and in flight for the past several years to provide new technology aimed at increasing flight safety and economy of operations.

Fatigue is a mechanism by which materials fail due to the application of many cycles of load—any one of which usually causes no measurable damage. It is responsible for much of the cost of maintaining civil and military aircraft, and can become a threat to safety, if undetected.

As one example of the subtle process known as fatigue of metals, NASA scientists explain that each time the wings of an airplane deflect due to flight loads or gusts, very minute amounts of metal throughout the structure get a little more tired. When the structure becomes overtired, it begins to crack.

The new laboratory, staffed by a group of experts who have published over 100 technical documents on the subject during the past several years, will be utilized in a continuing full-scale attack to scientifically determine the when, where, and why of the phenomenon of structural fatigue.

The $1.3 million Fatigue Laboratory is a 30-foot high steel-framed building providing 100 to 200 feet of floor area. The laboratory section includes 5,000 square feet of heavy duty floor made of four-foot-thick reinforced concrete. There is a two-story brick office portion 98 by 40 feet.

Wide Load Variety

The laboratory, located in the heart of Langley's West Area, houses a large variety of research apparatus ranging from breadbox size plate-bending fatigue machines to 20-foot-high, million-pound tensile machines. Fifty testing devices will be used in the laboratory to simulate loads, temperatures and other environmental conditions encountered by the materials in the structures of aircraft and space vehicles.

Some of the devices can apply a complex history of loading to a specimen at rates up to 400 cycles per second. Others are capable of loads up to 1,000,000 pounds at high speeds.

Temperatures up to 3,000 degrees F. are used to simulate conditions that will be encountered in future hypersonic aircraft—those capable of flight in excess of five times the speed of sound.

Space environment is simulated in the laboratory through the use of vacuum chambers.

An outdoor test device evaluates the effects of environment on fatigue behavior of representative materials. The deterioration in fatigue strength brought about by the natural elements is compared with artificially altered lives in the laboratory—thus forging a link between laboratory results and real life.

Since previous extensive research indicates that variations in atmospheric conditions in a laboratory can influence test results, most of the new facility is air conditioned to provide controlled temperature and humidity in areas where scientific investigations of specimens representing basic aerospace materials will be conducted.

Another portion of the building, not air conditioned, utilizes an existing 10,000,000-watt power supply for radiant heating equipment in tests of structural components at elevated tempertures.

The staff of the Fatigue Laboratory is called upon frequently to advise other NASA centers, the Federal Aviation Agency, the Department of Defense, and other organizations on the solution to such fatigue problems, including those critical to the success of major national programs.

Compressed Time

A current Langley project is devoted to the development of a method for reducing the time required to demonstrate the adequacy of the SST structure in fatigue.

Under present procedures, the aircraft should be tested on a schedule simulating loads and temperatures on a realistic time scale—taking into consideration such factors as 50,000 hours of flying time and allowing for variations in behavior and inevitable delays in test for breakdowns, inspections, and repairs.

With all the structures and materials problems posed by the SST, a realistic ground test would consume an estimated six to ten years. The Fatigue Laboratory staff will develop methods for reducing fatigue testing time to within satisfactory limits. A variety of techniques are seen for accomplishing this goal:

1. Identification of those elements in the SST environment which will not influence fatigue life and can safely be eliminated from the test schedule.

2. Substitution of many cycles of one type of load by a few cycles of another.

3. Increase test temperature to speed up metallurgical changes in a controlled manner.

In other programs, efforts are under way at Langley to develop concepts which will help designers make structures that are tolerant to fatigue or accidental damage.

SNAP-8 Power System Development Extended

NASA's contract with the Aerojet-General Corp. for research and development work on the SNAP-8 nuclear reactor electric power system has been extended for another two years.

Cost of this phase through September 1969 with Aerojet's von Karman Center, Azusa, Calif., will be approximately $17 million.

The SNAP-8 development is a joint project of the Atomic Energy Commission and NASA. AEC is responsible for the nuclear reactor system. NASA is responsible for the power-conversion system, flight radiator system and its eventual integration with the nuclear system and radiator.

The objective of the SNAP-8 development project is to obtain the technology leading to the eventual development of a 10,000-hour, 35-kilowatt nuclear electric generating system suitable for space applications in the mid-1970s and beyond. Principal applications proposed for SNAP-8 are large earth orbiting space stations, lunar exploration, direct television broadcast statellites and manned planetary missions.

Aerjoet will be rquired to conduct a 2,500-hour demonstration of the power-conversion system components, followed by a similar test of the major components grouped, or breadboarded, to form a power-conversion system. Typical space start, shutdown and restart capability also will be demonstrated, using the breadboard system where necessary. Finally, Aerojet will be required to assess capability of the components to withstand the expected launch environment and operation in space.

The power conversion system consists of the boiler, turbine, alternator, heat exchangers, pumps and associated controls. The system also includes the primary liquid metal loop, a heat rejection loop and the lubricant coolant loop.

In SNAP-8, heat from a nuclear reactor is used to vaporize liquid metals which turn a turbine. In this way it is similar to ordinary steam generating plants; SNAP-8 however, makes use of several liquid metal loops to transfer heat from the reactor and later recondense the working fluid to be used over again.

NASA's Office of Advanced Research and Technology has assigned management of the project to Lewis Research Center, Cleveland.

Saturn I Items Pact Extended

NASA has signed a two-month extension of a contract modification with the Chrysler Corp. for procurement of long-lead time items for additional Uprated Saturn I first stages.

The $2.4 million extension, to continue in force through Augst 31, 1957, was awarded by NASA-Marshall Space Flight Center. It will enable Chrysler to continue procuring the materials, components and engineering support necessary to maintain its capability to assemble four Uprated Saturn I boosters per year. The initial long-lead time supplemental agreement valued at $7.2 million was awarded in December, 1966.

Chrysler is presently under contract to assemble and test twelve of the 1.6 million pound thrust stages at the Marshall Center's Michoud Assembly Facility, New Orleans.

Guest Speaker

CORNHUSKER--Kay Anderson of Personnel Division was guest banquet speaker at the Omaha, Neb. Cornhusker Girls' State festivities. Kay took part in the same event in 1940.

Slow-Pitch Softball League

Standings as of June 30

AMERICAN DIVISION			NATIONAL DIVISION		
TEAM	WON	LOST	TEAM	WON	LOST
Animals	5	0	FSD (Supporters)	6	0
Mets	5	1	Packers	5	0
C. Brown All-Stars	4	1	TSD	4	2
Apollos	4	2	Becker	3	2
RMD	3	2	MPAD-G&PB	3	3
CAD	3	3	LRD-Blue	3	3
GRPB	2	3	LRD-Gold	3	3
Hustlers	2	3	Old Timers	2	4
Procurem't & Ctrcts	2	4	SMD	2	4
CSB	1	4	Lunartics	1	4
S&AD Comets	1	5	Rats	1	4
BeePees	1	5	Coast Guard	1	5

Mars 'Chute Testing Reaches Halfway Point

NASA has successfully passed the halfway mark in its program of rocket-launched flight experiments to test parachute designs and techniques in support of future attempts to soft-land unmanned instrumented capsules on Mars.

The launch of a two-stage Honest John-Nike Rocket at 10:45 am CDT June 20, from the White Sands Missile Range, N.M., was the sixth of ten planned rocket propelled research flights to study under simulated conditions the problems of decelerating a spacecraft to assure a soft landing on Mars.

A 40-foot cross-type parachute, one of three designs being studied in the NASA Planetary Entry Parachute Program, was deployed at an altitude of 130,000 feet—where the Earth atmosphere compares with that of Mars—to investigate its flight characteristics in that environment.

At the time of deployment the parachute was traveling at a speed of about 1,100 miles, an hour. It descended with a 200-pound payload, simulating an unmanned instrumented Mars lander, suspended from it.

A cross-type parachute consists of two rectangular panels joined at their centers to form a cross.

Philco MCC-H Support Contract Extended Year

NASA has approved Modification Number 47 to Contract NAS 9-1261 with the Philco-Ford Corporation's WDL, Palo Alto, California, for continued systems engineering and operational support of the Mission Control Center located at MSC. The contract was extended through June 1968.

The contract modification also provides for the work to be performed under a multiple-incentive arrangement covering cost, performance, and schedule at an estimated cost including incentive fee of $45,757,000.

Philco-Ford's principal responsibilities under the contract will involve the manning of MCC-H systems consoles during mission periods, the reconfiguration of the Center on a mission by mission basis, the evaluation of technical systems performance and preventive maintenance on the equipment.

The Mission Control Center-Houston monitors and controls manned space flight missions from liftoff to recovery. Mission simulations and tests of the tracking network are also conducted here.

Mimosa Bowlers Meet To Organize

The Mimosa Men's Bowling League July 21 will hold an organizational meeting for the 1967-68 season. The meeting will be in the MSC Aduitorium at 4:30 pm and is open to anyone associated with the Mimosa League.

For additional league information, call Dan Kennedy at 5455.

Exchange Sells Space Books

Books with a space slant are on sale at the MSC Exchange Store in the Bldg 3 Cafeteria, and they are sold at the same price charged by the Government Printing Office for individual mail orders.

Among the titles available are *Astronomy in Space* $.45; *Space Science 1965* $1; *The Space Program in the Post-Apollo Program* $.50; *Federal Employees' 1967 Almanac* $1; *This New Ocean* $5.50, and available in the near future, *Earth Photographs from Gemini III, IV and V* $7.

Paperback titles at $1.95 each include the following: *History of Space Flight, Manned Space Flight, Chemistry in the Space Age, Guidance and Control Spacecraft, Communications in Space, Unmanned Space Flight, Our Space Environment, Meteorological Satellites,* and *Extraterrestrial Biology.*

Spanish Club Varies Program

In addition to providing conversational Spanish practice for each member at meetings, the MSC Spanish Club offers programs aimed toward furthering appreciation for Spanish-speaking peoples and their cultures. The Club meets every other Tuesday at 5:15 pm in Room 118 Bldg 13 and has featured speakers from Rice University and the Houston Museum of Fine Arts who presented various aspects of the language and life of Spanish-speaking countries.

Part of each Club meeting is devoted to topic discussions and prepared presentations by Club members—all in Spanish.

On the social side, the Club plans trips including dinner at a Mexican restaurant followed by a Mexican film at a downtown theater.

Now sanctioned by the Employee Activities Association, the Spanish Club July 11 will hold an election of officers. President, vice president, secretary, treasurer and program chairman will be elected from the following members:

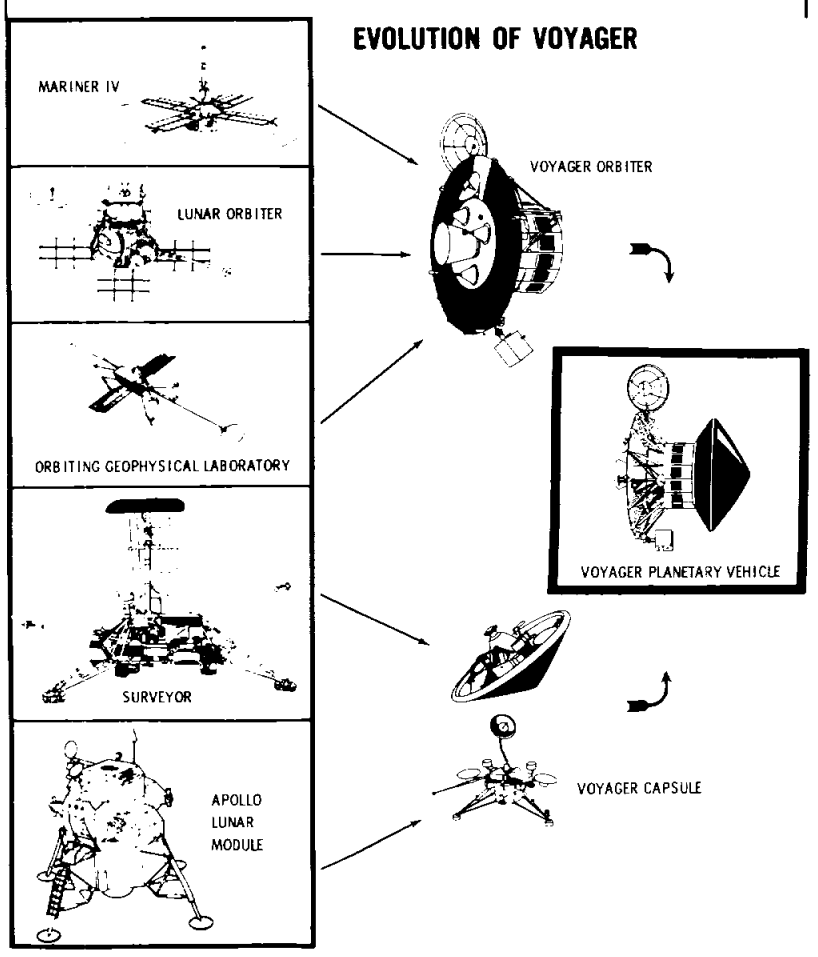
Rex Bauerlein, Juan Bruce, Jack Capps, Norn Chaffee, Marie Dietz, R.H. Dietz, Steven Gilbreath, Lester Goodhardt, E.N. Herrin, Herschel Jamison, Harry Kline, Imogene McDonald, Ramon Mireles, Raquel Mireles, Helen Newton, Loretta Orlando, Jose Perez, Nick Reyes, Conchita Reyes, Jackie Rogers, Nancy Shrimpman, Jerry Swainnick, Raul Tijerina, Sal Villareal and John Williams.

Venga y vote! Se necesitan miembros nuevos.

Ping-Pongers Organize

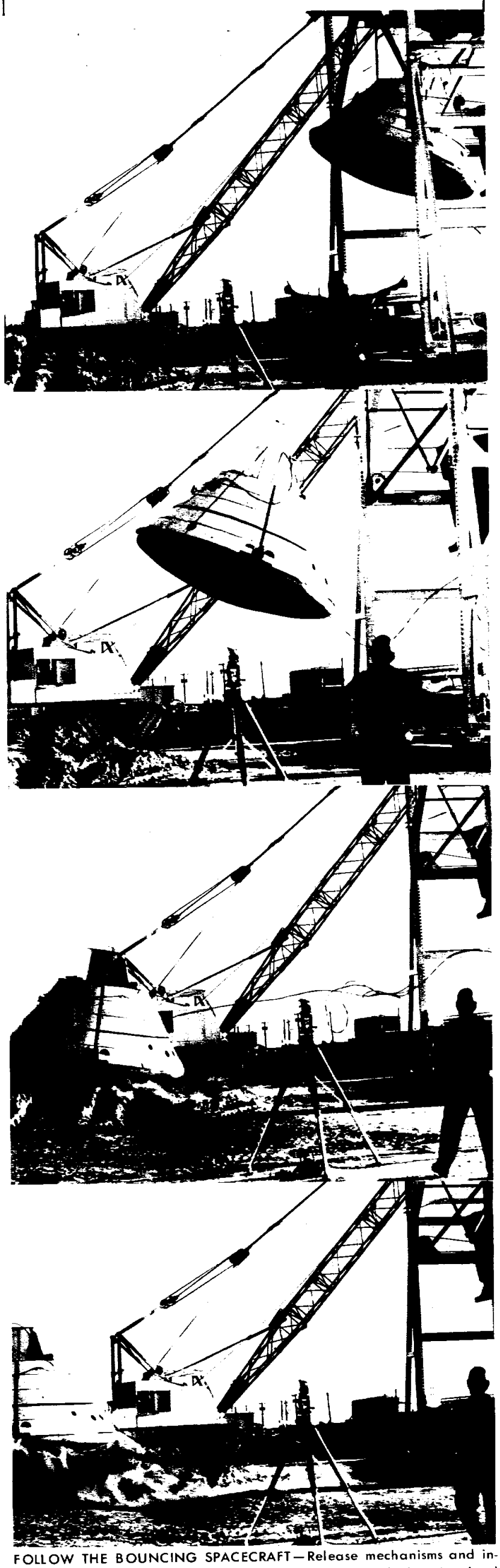
Some 30 ping-pongers responded to Dutch von Ehrenfried's appeal in the last issue of the *Roundup*, and an informal league planning meeting was held. Anyone else for ping-pong should call von Ehrenfried at 2337.

Family Tree



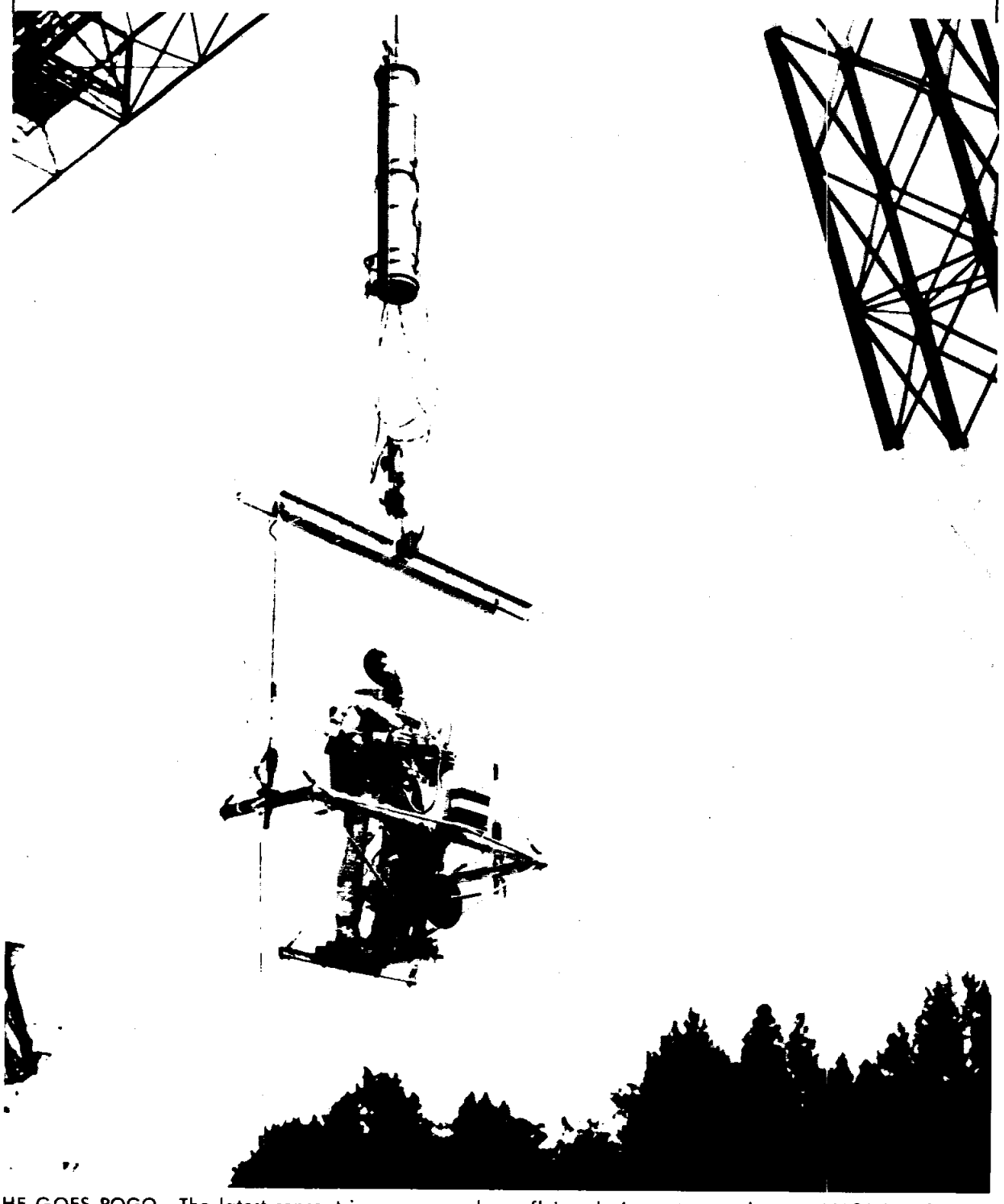
SPACECRAFT GENEOLOGY—Even a spacecraft has ancestors. The Voyage unmanned planetary program planned for the mid-1970s is based upon technology developed in earlier spacecraft systems. Systems and designs features of Mariner IV, Lunar Orbiter, Surveyor and the Apollo Lunar Module will all have contributed to the evolution of the Voyager spacecraft.

With a Dull Thud . . .



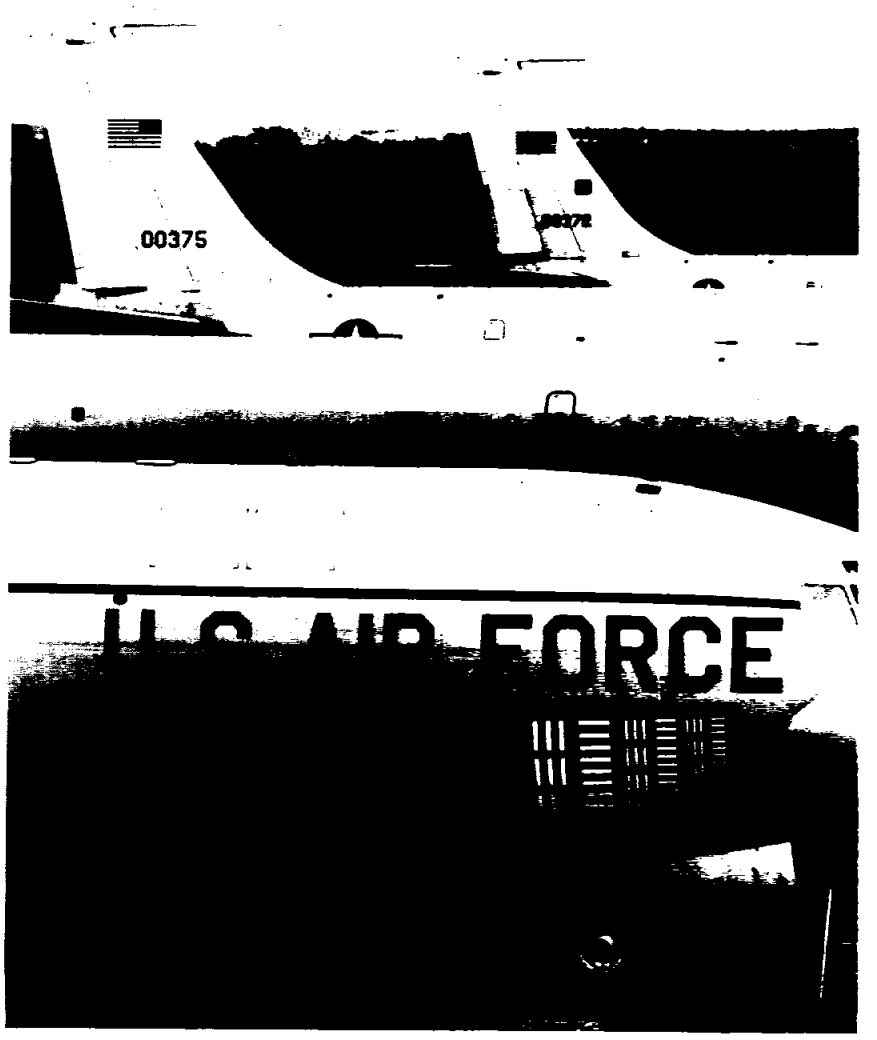
FOLLOW THE BOUNCING SPACECRAFT—Release mechanisms and instrumentation of the Land/Water Impact Facility are checked out in a land drop of an Apollo command module boilerplate. The drop begins with release of the boilerplate from the traveling carriage, the trajectory to impact, and finally exit stage left as the boilerplate bounces out of camera range. The hard-hatted gent in foreground was apparently test conductor-without-baton.

Lunar Surface Motorscooter



HE GOES POGO—The latest concept in a one-man lunar flying device gets a workout on NASA Langley Research Center's Lunar Landing Research Facility. The device is suspended in a tether-gimbal arrangement that simulates the moon's one-sixth gravity and allows flight in any direction. Langley is evaluating the Bell Aerosystems rocket-powered scooter as a possible means on transporting men and equipment on the moon.

Schnozz



BULBOUS NOSES—Four USAF EC-135N jet transports with noses like W. C Range Instrumented Aircraft. Eight of these aircraft are being fitted with 10- and relay of Apollo voice and telemetry. Douglas is prime airframe and i subcontractor for electronic systems.

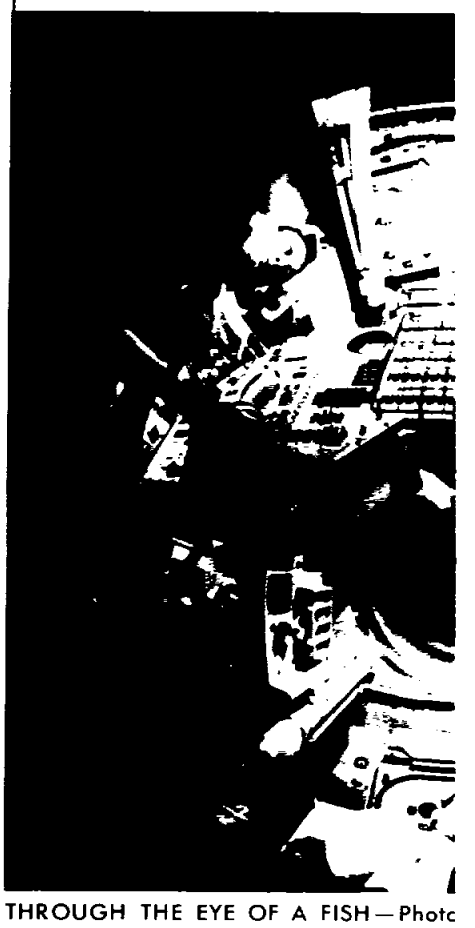
PHOTO ROU

...the space

Nuts-and-Bolts Session

SCHOOL DAYS—Apollo flight controllers from MSC attend a two-week course in Apollo Command/Service Module systems at North American's Space Division in Downey. During missions, flight controllers must have a thorough functional knowledge of spacecraft systems so that they may troubleshoot systems problems from their consoles in the Mission Control center and at tracking stations.

Command Mod



THROUGH THE EYE OF A FISH—Photo ape with the 180-degree super-duper everything from city skylines to oil rigs, i interior of an Apollo command module can's Space Division. The docking tunnel single-piece side hatch is at top center.

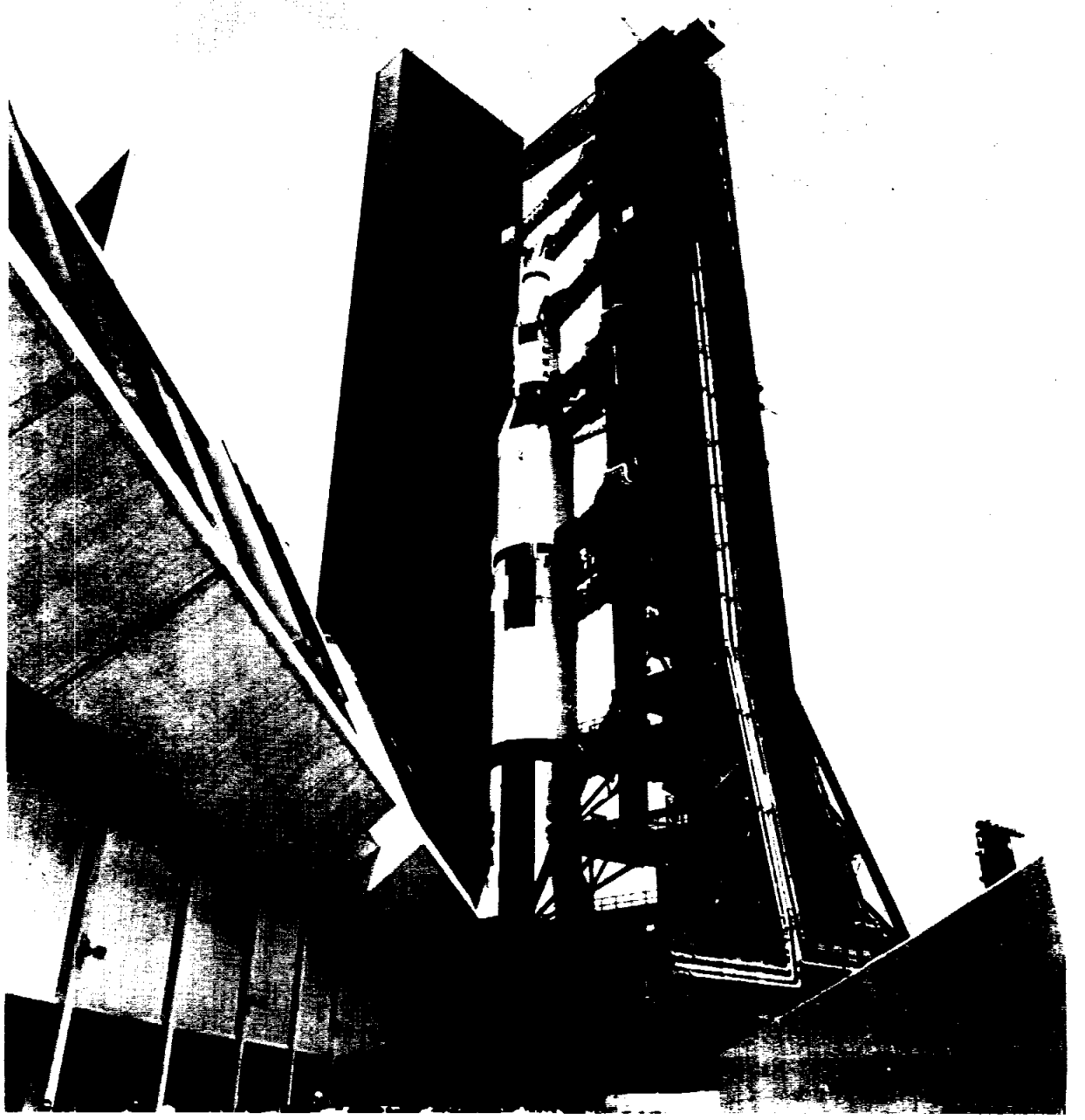
la Row

Fields line up on the ramp at Douglas-Tulsa after being modified as Apollo/ ot long radomes housing spacecraft tracking dish antennas for reception tallation contractor to the USAF Systems Command, and Bendix is major

NDUP

program in pictures

Giant With a Snail's Speed

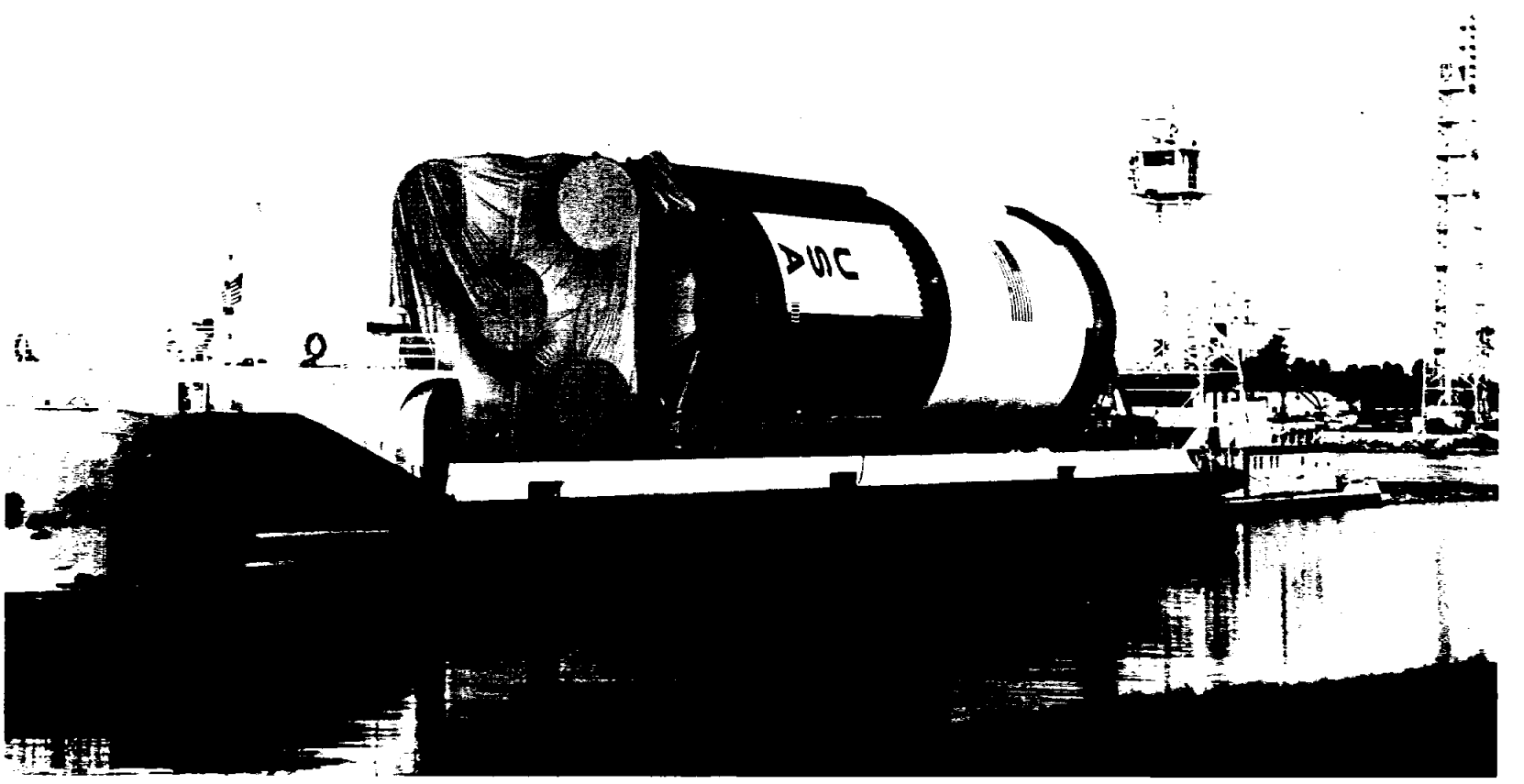


LAUNCH VEHICLE AERIE—This will be the scene at Kennedy Space Center's Vehicle Assembly Building in the near future when the first Saturn V launch vehicle creeps on its mobile launch tower at one mile per hour toward Launch Complex 39. The crawler transporter must carry an 11 million pound load in a vertical position within 10 minutes of arc. Automatic leveling devices keep the 365-foot high launch vehicle and Apollo spacecraft within vertical tolerances during the 3.5-mile trip to the pad.

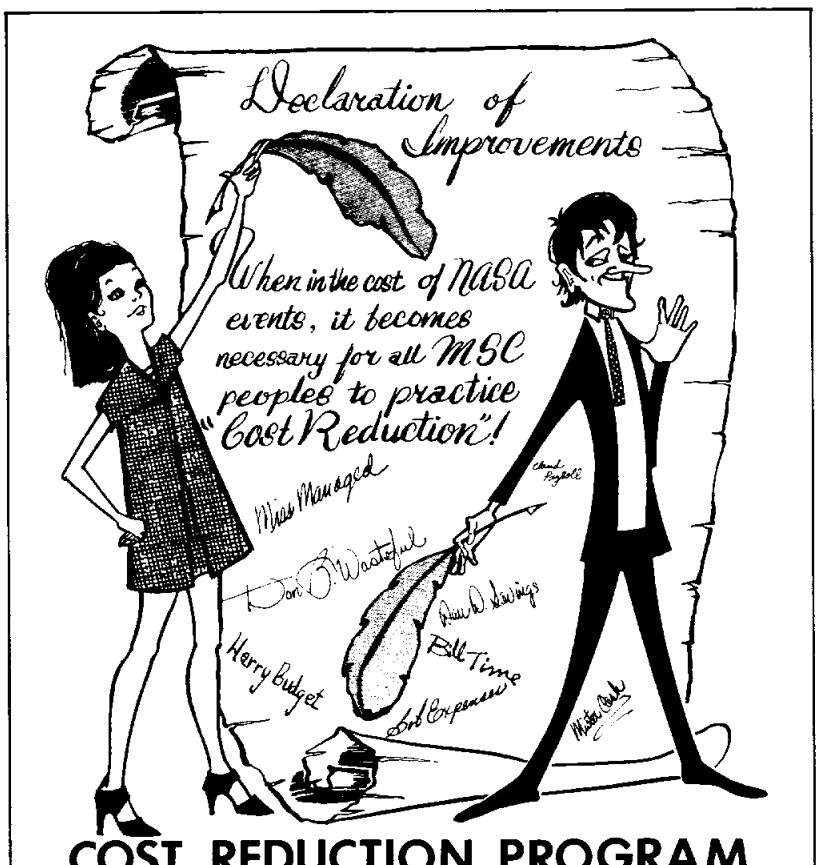
ule Panorama

raphers of late seem to have gone vide-angle fisheye lens in shooting ere is another one. This time it is the ngineering mockup at North Ameri- in the center and the newly-designed

Back Down the River



BARGING ALONG—The fourth flight version of the Saturn V S-IC first stage rides the deck of the NASA Barge *Pearl River* from Nasa Mississippi Test Facility back to NASA Michoud Assembly Facility for final checkout and refurbishment prior to shipment to Kennedy Space Center. The stage was static fired to full duration of 125 seconds at MTF. Note the elevated wheelhouse on the towboat *Apollo* which allows the helmsman to see over the 33-foot diameter stage.



COST REDUCTION PROGRAM

Mariner V's New Path Passes Nearer Venus

Mariner V, now in the twenty-fourth day of its four-month flight to Venus, will fly by the planet at an altitude of about 2,500 miles.

Mariner was launched at 1:01 am CDT, June 14 from Cape Kennedy and executed a mid-course maneuver at 6:08 pm CDT June 19.

Tracking data received at deep space stations in California, Australia, Spain and South Africa and relayed to the command center at the Jet Propulsion Laboratory in Pasadena, Calif., indicate that the trajectory correction maneuver was executed successfully.

Prior to the maneuver, Mariner's flight path would have taken it across the orbit of Venus some 42,000 miles from the planet's surface on October 18. This flight path was chosen prior to launch to preclude the possibility of an impact on the planet.

The new trajectory, in addition to closing the distance, delays the Venus encounter some 15 hours to the desired time – about 12:35 pm CDT, October 19.

The spacecraft, at 2 pm CDT June 23 had traveled 13,859,132 miles of its nearly 217-million-mile trip. It was 1,588,936 miles from Earth and increasing its distance from earth at a rate of 6,609 miles per hour. On October 19, the communication distance between Venus and earth will be 49.5 million miles.

Bridge Points . . .

The MSC Bridge Club June 6 held a six-table Mitchell Movement, and winners were: North-South – M. Richter and W. Schmidt, 1st; M. Powell and L. McCullough, 2nd; East West – J. Brown and L. Bockman, 1st; R. Clemence and J. Herrmann, 2nd.

Winners in the June 13 8½-table Mitchell Movement were: North-South – W. H. Hamby and R. Cohen, 1st; M. C. Powell and Fuad Tawil, 2nd; East-West – C. Heddick and S. Haddick, 1st; L. Bockman and B. vander Meyden, 2nd.

Personal Visitors Must Be Badged

During the summer months, MSC employees have many visitors and it is understandable that they have an interest in visiting the Manned Spacecraft Center. As an aid to employees, the Security Branch has furnished the following information regarding unofficial, personal visits.

Visitors to any building at MSC, except Buildings 1, 3, and 11, must be badged. The badges may be obtained at the Visitor's Registration desk in Building 100 at the Second Street entrance. Employees may escort visitors to the Auditorium, Building 1, and to the cafeterias in Buildings 3 and 11 without badges. If an employee has permission to bring visitors to his immediate work area, the visitors must be badged for the particular building involved. Extended visits during working hours are to be discouraged because of the obvious interruption involved.

Employees are encouraged to take advantage of the Open House held Sunday afternoons from 1 pm to 5 pm. During these hours, movies are shown every 30 minutes in the Auditorium of Building 1. Since most of the buildings at MSC are locked over the week-ends, employees may not take visitors to their work area during the Open House.

The *Roundup* is an official publication of the National Aeronautics and Space Administration Manned Spacecraft Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for MSC employees.

Director . . . . . Dr. Robert R. Gilruth
Public Affairs Officer . . . . . Paul Haney
Editor . . . . . Terry White
Staff Photographer . . . . . A. "Pat" Patnesky

Judokas Cop Trophies In Regional Trial Meet

The MSC Judo Club June 16 trekked to Barksdale AFB, Louisiana, to compete in the Southern Regional Judo Trials for the Pan American Games to be held in Canada this year.

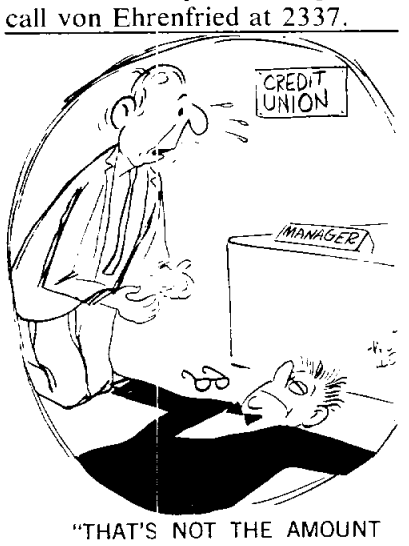
Four trophies were hauled home by the team. Ray Feutral placed second and Dick Stachurski placed third in the open class. Dale Moore took second place in the unlimited weight class and Manfred "Dutch" von Ehrenfried placed third in the 176-lb class. Others competing were Mac McCarty and Ernst Kloss.

The MSC Judo Club has been competing on a monthly basis but this was their first major match. The Barksdale match was sponsored by the AAU and hosted by the Armed Forces Judo Association (AFJA). It was the Club's first match under the new contest rules of the International Judo Federation.

AFJA officials Maj. Phil Porter, *Yondan* (4th degree Black Belt) and Rick Mertens, *Sandan* (3rd degree) June 18 held a judo clinic and promotional review board attended by MSC Judo Club members. Porter will be the Club's guest in September for another clinic and promotion review.

The Club tentatively plans a series of judo demonstrations in support of fund raising for the Edward H. White Memorial Youth Center in Seabrook.

Persons wishing to take part in Club activities as a means of keeping physically fit (or getting back into shape) are urged to call von Ehrenfried at 2337.



"THAT'S NOT THE AMOUNT I WANT TO BORROW — THAT'S MY SOCIAL SECURITY NUMBER!

NASA, Interior Expand KSC Wildlife Refuge

Expansion of land and water areas for controlled public usage on the NASA Kennedy Space Center, Fla. was jointly announced June 23 by the Department of Interior's Bureau of Sport Fisheries and Wildlife and NASA.

The center will add 11,436 acres to the territory managed by the Bureau under land use agreement. The additional area encompasses submerged land and water areas, including the Mosquito Lagoon from Haulover Canal southward, within the Merritt Island National Wildlife Refuge.

A portion of the beach in this area, reached by State Road 402, will remain under the operation of the Brevard County Commission in accordance with a separate agreement with NASA. This will continue the Playalinda Beach program conducted by the county for the last two years.

The Bureau operates the Merritt Island National Wildlife Refuge and permits public hunting during the waterfowl season in blinds constructed for this purpose. Areas within the Refuge are also open to fresh water fishing.

Straight Talk from your Credit Union

Has the New Car Bug bitten you? This is the time of year he strikes!

His cousin, the Late Model Used Car Bug, is also at work looking for those who don't contract the new car fever.

If your old car is ready for retirement and a shiny new one (or clean late model) is in your future, better head for the Credit Union.

We'll be happy to give you the facts you need before you see the dealer. And we'll show you how you can save by financing the deal at the Credit Union. Remember, there are no extras, no hidden charges.

When you deal with your friends and fellow members at your Credit Union, you can always be sure of a fair deal.

Two major factors make your Credit Union a better deal:

Loan protection – Your Credit Union provides life insurance for eligible members to cover the amount of their loan balance to a $10,000 maximum at no extra cost to you.

Life savings insurance – Your Credit Union provides life insurance for eligible members according to how much they save – matches dollar-for-dollar money saved (up to $2000) between ages six months and 55 years (declining scale after 55) at no extra cost to you.

The NASA *Handbook for Employees*, NPC 103, reminds Credit Union members that "employees are expected to pay their just debts and maintain a reputation in the community for honoring debts. The reputation of NASA employees as good credit risks must be protected against the detrimental effect of the action of a small minority.

"For these reasons employees are expected to

- honor valid private debts or adhere to satisfactory arrangement for settlement
- make timely payment of any indebtedness to the United States, or
- make prompt payment of a just debt to a state or local government or to a Federal Credit Union after his attention has been called to the matter by supervisory officials.

"Failure to pay just debts may be cause for disciplinary action."

Co-op of Month

INITIATIVE – When not in school at the University of Louisville, Ky., George W. Mohns is a co-op employee in the Measurements Section of the General Instrumentation Branch, IESD. He was cited by supervisors for his initiative in an assignment in the logic design for AAP automatic fuel control system for RCS engines, as well as capable handling of other complicated assignments.

Sense in the Sun

by Evelyn D. West, Chief Nurse

Someone's sense of humor brought laughter when they tied a "Sense in the Sun" pamphlet around the neck of one of the MSC ducks! But, there is more truth than humor to this. Our feathered friends are provided feathers to protect their skin, plus a built-in lubricating system. Mother Nature was not so benevolent to mankind.

"Sense in the Sun," a film provided by the American Cancer Society, pointed out the dangers of overexposure to the sun. It was shown in June for the benefit of all NASA and contractor employees at MSC – 636 attended.

The film emphasized four points:

- With proper dress or sun screen cream, you can work in the sun or enjoy outdoor activities without painful sunburn or possible skin cancer.
- Continued overexposure to the sun can result in skin cancer.
- If a sore does not heal in a reasonable length of time, see your physician.
- Skin cancer can be removed and cured.

Enjoy the outdoor activities – work in the sun – but have "Sense in the Sun."

Roundup Swap-Shop

(Deadline for classified ads is the Friday preceding *Roundup* publication date. Ads received after the deadline will be run in the next following issue. Send ads in writing to *Roundup* Editor, AP3. Ads will not be repeated unless requested. Use name and home telephone number.)

FOR SALE/RENT-REAL ESTATE

4-bdr 2½-bath, brick ranch, 2000 sq. ft., recently redecorated, in Timber Cove, large family rm with fireplace and cathedral ceiling, detached 2½-car garage, large patio, ½ block from Taylor Lake boat launching ramp, bus to all schools, assume 5¼% loan, payment and taxes $165/mo. Maj. John C. Marshall, 877-3100.

Lovely, spacious story-and-a-half home for rent. Two bdr and bath upstairs, master bdr and bath downstairs, large family rm with open balcony, formal living and dining rm, large kitchen. In Oakland Addition, Dickinson. Paul O. Ferguson, 534-3681.

4-2-2 brick in Pearland. Central air/heat, built-ins, family rm, kitchen w/dining area on large corner lot. $3000 equity, no reasonable offer refused. Avail July 15. W. Graves, HU 5-2933 or C. Cunningham, HU 5-1895.

For Sale: Two adjoining lots, each 50' x 110', Caney Creek. Small equity, balance $20/mo. Alma A. Hurlbert, HU 2-1340 after 4:30.

For sale by owner custom-built O'Donnell home, 7 rooms. 3-bdr, 2-bath, separate living rm, formal dining rm, den w/cathedral ceiling, all kitchen built ins, 2-car detached garage. Highly restricted, well-planned community. Concrete streets, sidewalks, streetlights, large free subdivision swimming pool 4 blocks. Jim Bone, GR 1-3528.

3-bdr, 2-bath custom home in Fulfway Terrace. Complete modern kitchen, central air, carpet, drapes, Nutone FM/AM, corner lot, tool shed and back yard fenced (wood). Assume 6% loan with $3000 equity, $130/mo. W. L. Thompson, HU 6-3517.

3-bdr in Freeway Manor, den, covered patio, fenced back yard, air-conditioned, drapes, walk to school. $900 equity, assume 5-¾% FHA loan. C. Walsh, HU 6-0441.

For lease: 3-bdr, 2-bath brick home—Unfurnished $135/mo. Located on the Bay, seven miles from NASA. E. L. Randall in League City, 932-3884.

4-bdr, 2-bath in New Meadowbrook near Houston Airport, modern brick, 2-car garage, central air/heat, carpets, built-ins, separate dining, paneled den, fenced yard, enclosed patio, lawn sprinklers, sell equity against 5-¾% conv. loan (payments $159 total) or refinance. John Boynton. MI 3-0926 or HU 4-9319.

3-bdr, 2-bath, 2-car garage in Arlington Heights (211 Parliament). Fully equipped kitchen, large dining rm, large family rm with built-in bookcases and desk, central air/heat, fenced yard, landscaped. A-1 condition. Owner transferred. Assume 6% loan of $19,262.48. Schwartz, Hu 4-4994 or HU 6-9104.

3-bdr, 2-bath, brick in Huntsville, Alabama. Fenced, close to schools and shopping, corner lot 120' x 150'. 5¼% VA, payments $121.65/mo., $2500 equity for $350. W. H. Hooper, GR 1-2823 in LaPorte.

4-bdr, 2-bath in Clear Lake City, paneled family rm, 2000 sq. ft. carpeted, draped and all built-ins, 9 mos. new, 2 blks. to Country Club and Rec Center. $1200 down, $190.60/mo pays all. Would consider trade. Rose Frayer, HU 8-1453.

4-bdr, 2-bath in Clear Lake City. Nice yard, all built-ins and drapes. Avail Sept. 1. 6% assumption available. 1923 Reseda Dr. Allen D. Cummings, HU 8-0316.

3-bdr, 1-bath, pink brick in Baytown. Bath w/double sink, 2-car garage, family-dining rm, living rm, built-ins in kitchen, central air/heat, attic storage, wood fenced back yard, built-in gas grill, brick patio. $700 down and take up notes of $103.83/mo. LeAnne Bible, Ext. 3606 (no home phone).

3-bdr, 2-bath, 2-car garage, living rm, dining rm, breakfast nook, all elec kitchen, brick colonial, less than 1 yr old. Completely fenced yard, in Sagemont, close to school, church, and shopping. Year lease required, avail week of July 17. H. Vogel, 487-2204.

Two lots, 100' x 114' each, fertile sandy loam, large pine trees, all weather roads, elect pwr avail. $1.50/mo. maint. fee provides access to 9 acre lake, country club, and swimming pool, 5000 acres hunting, sandy beaches along San Jacinto River ½ mile away. Lots located in Tall Timbers Development, 7 miles south of Conroe off Hwy 75. $950/ea. or both for $1800. Equity $650 and take over monthly payments of $33. W. H. Hooper, GR 1-2823.

3-bdr, 2-bath all brick in Fairmont Park, 15 minutes from NASA, in perfect condition, avail Sept 1, central heat/air, drapes, large fenced yard, community swimming pool, close to school, all elect kitchen including refrig and other extras, $185/mo. Jack Owens, GR 1-2490.

Nassau Bay: large lot approx 300 ft deep with 133-ft waterfront, near Nassau Bay Yacht Club, Marina and pool. $11,500. D. Bell, 591-2340.

Nassau Bay Colonial 3-bdr, formal dining and living rms, carpet and drapes, large den with round corner fireplace, elect kitchen, fenced back, large corner lot, 2-car separate garage with breeze-way and patio. $24,500. D. Bell, 591-2340.

FOR SALE-AUTOS

1962 Ford Fairlane, 49,000 miles, green/white, new res, has sticker and plates, runs perfect. $500. John Bergeron, 932-2148.

1965 Pontiac Grand Prix, beige with blk vinyl top, full pwr seats, steering, brakes, antenna, windows factor air, magnsium wheels, tilt steering wheel, windshield washers, backup lights, rear seat speaker, console, bucket seats, vinly interior, 25,000 miles. Immaculate. Paul Penrod, 877-4998.

1963 Chevrolet Impala, 4-dr hdtp, auto, air, radio, w/w, P.S., 327 cu. in., 39,000 miles. $950. Jack Burr GR 4-2921.

1953 Stude, Commander V-8, hdtp, many new parts installed, best offer. Paul Horsman, Nassau Bay 591-2185.

1966 Chevrolet pickup Fleetside, long wheel base, bed cover, 283 V-8, overloads, heavy duty clutch, tan/white, radio, heater. Tom Howe, HU 6-3269 after 5.

1964 VW clean, good running, radio. D.E. Newbrough, 877-2315.

1934 Ford 2-dr Sedan, powered by 500 horse Oldsmobile-Toronado engine. Cost $1,500. T. Lane, HU 4-1794.

1967 VW sedan, clean, 53 hp, 10,000 miles, factory seat belts, vinyl upholstering, backup lights, emergency front and rear lights, windshield washer, dual brakes. Will move and don't need two cars. W. H. Hooper, LaPorte, GR 1-2823.

1964 MG Midget, red, radio, heater, 23,000 miles, original owner. Wife's car, must sell. $750 or best offer. R. K. Caldwell, MI 5-5664 after 1 p.m.

1962 Cadillac Sedan deVille, 6 window, extra clean, 66,000 miles, new tires. $1,695. Kyle Abbott, HU 8-4014.

1962 Mercury Comet, 2dr sedan, delux model, one owner, radio, heater, ww tires, air-conditioning, automatic trans, good tires. Good condition. $695. J. C. Whitney, 946-6361 (nights).

FOR SALE—MISCELLANEOUS

Fender Stratocast guitar, new paint, 3 pickups, tremulo bar; Princeton reverb amp, new condition, has vibrato and reverb pedal, 30-ft cord. Guitar alone $150; amp alone $100; both $225. John Bergeron, 932-2148.

Free: 2-yr old back watch dog. Jack Burr, GR 4-2921.

Radio Shack stereo system—Realistic STA-30 AM/FM Stereo Receiver; Garrard Automatic changer and 2 Realistic speakers with oiled walnut cases, 4 weeks old. Judy Mitchell at Nassau Bay, 591-4704 after 5.

Set of twin beds, Stearns and Foster Ortho Posture box springs and mattresses with metal frames and casters. $50. W. E. Thomas, League City, 932-4787.

Fender Mustang Guitar, red exclnt condition, with case $160; small Gibson Amp, $25; 13' x 15' rug, Acrylan, fern green w/foam rubber mat, $40; Roselli accordian, 120 bass, 2 swtiches (lifts), $50. Al Martin, HU 8-2776 or 591-3951.

AKC registered, male, parti-colored Pekingese. 3 yrs old. Pedigree furnished. $50. E. Hillje, MI 9-2065.

8-ft pool table with all accessories. 1½ yrs old. Original total cost $425. Sell for $199. See in Clear Lake City. A. D. Cummings, HU 8-0316.

Stereo amplifier and preamplifier, Leak Point One, 10 watts per channel, exclnt quality equipment. $50. R. K. Caldwell, MI 5-5664 after 1 p.m.

Chain drive tricycle, Sears, $5 Hal Erickson, MI 9-0396.

Baby equipment: Port-a-crib, $7; infant gate, $3; stroller-walker, $4; jumper-chair, $4; EvenFlo automatic sterilizer, $5; bottle-warmer, $1; car seat, $1; scale, $7; diaper bag, $.50; infant thru 3T boy's wardrobe, infant girl's wardrobe. New and good used condition. D. Bell, 591-2340.

WANTED

2-3 bdr unfurnished aptmt or house to rent for mid-July occupancy. Prefer vicinity of NASA. Bill Crea, HU 7-2047.

Ride wanted from Baytown to MSC Bldg. 2, 8-4:30, John Egley, Ext. 2811.

Lady Programmer wants same or similar to share apartment near NASA. Likes cats. HU 6-5252 or 591-3282, Ext. 129.

Stolen: Bicycle—20-inch Matel Stallion, all chrome, from Clear Lake City Rec Center. If abandoned in your area, please call David Pulliam, HU 8-2250.

Need to join or form carpool between Park Place and Bldg. 30, 8-4:30. J. Branderburg, Ext. 5466.

Carpool from Meyerland/Westbury area to Center, 8-4:30. C. Velter, PA 3-0928, or Ext. 5305.

Aero Club Polls Need For Instrument School

The Aero Club is polling members and interested non-members to determine the demand for an instrument ground school. The proposed ground school would utilize the Sanderson films visual aid system to provide not only a refresher for private pilots, but also advanced training in radio procedures and navigation facilities, metoerology and the use of various IFR charts and publications—everything except the flying-time requirements.

Experienced instrument-rated pilots will assist in the training, and the cost of the course will be nominal. Contact Aero Club training officer Ken Downing at Nassau Bay 591-3300 for further information and application.

Monthly dues for those Aero Club members flying the Beech K-35 Bonanza have been reduced to $20. More than 60 hours have been logged in the newly-acquired Bonanza by members in less than a month.

Picnic in Works

The fifth annual MSC Picnic will be held Sunday, October 1 at Galveston County Park in League City. Volunteers are being sought to work on the picnic committee by chairman Betty Schick (Ext 3371) and co-chairman Rita Sommer (Ext 2397), who claim it is fun.

EAA Sponsors Youth Symposium

A Youth Space Symposium sponsored by the MSC Employees Activities Association will be held tomorrow in the MSC Auditorium beginning at 9:30 am.

The Symposium program includes a Spacemobile lecture and demonstration by Dr. Matt Story, chief of the MSC Educational Programs Branch, a motion picture on lunar space suit development and a talk by an MSC space crewman.

Golfers Reach Halfway Point In Tournaments

The MSC Golf Association has reached the halfway point in its monthly tournament schedule, with six tournaments remaining to be played—the next tomorrow at Ellington AFB course.

The first five places in each flight are as follows:

Championship — Dana Boatman 147, Max Engert 136, Mitch Secundo 117, Cy Biggers 100 and Tom Hickey 98.

First Flight—Bob Reaves 134, Norm Cooper 129, Lorran Remmich 116, Bob Kosinski 113 and Ed Barker 112.

Second Flight—Lou Leopold 116, John E. Jones 94, C. R. Davis 86, Ed Cawley 78 and Daryl Chilcutt 72.

Third Flight—Sparky Sparkman 95, John Conlon 91, Jim Neal 83, Steve Armstrong 76 and Earl Patterson 75.

The two-man team play entered its final stages the end of June with five teams remaining in each flight.

Dave Brown has resigned as MSCGA president since he is leaving MSC. The remainder of his term will be served by John E. Jones, Jr.

Pasadena Group Sets Horse Show

MSC employees and their families are invited to an All-Breed Horse Show July 15 at the Pasadena Rodeo Arena, 3124 Red Bluff Road. The show starts at 8 am and lasts all day.

Trophies and ribbons will be awarded in more than 25 classes of halter and performance. Entry blanks are vailable at most area western stores, feed stores and stables, or by calling MI 9-3838 or MI 3-6373.

Homemade barbecue, cakes and pies and other refreshments will be served all day, and there will be horseback rides for little cowboys.

A "Western Princess" contest is planned for girls 12 and under.

The show is sponsored by members of Christ Methodist Church, 5145 Allendale Road, to benefit one of their members who has suffered severe illness and extensive surgery during the past several years. Entry applications and further information can be had from Frank Herbert, Landing and Recovery Division, Ext. 4422.

Outstanding Performers

KUDOS TO FIVE—Five Administrative Services Division employees recently were awarded various types of Outstanding Performance awards by Director of Administration Wesley L. Hjornevik, left. Recipients are Stanley R. Richards, Bessie A. Ross, Richard Calda, Jessie Wilder and Judith S. Wyatt.

New MSC Patents Awards Include Cocoon-Like Orbital Escape Device

An orbital escape vehicle complete with a flexible heat-shield, retrorocket assembly and environmental control system is among the latest inventions of MSC employees to be issued U.S. Patents.

A product of C.C. Johnson of Advanced Spacecraft Technology Division of Engineering and Development Directorate, the orbital escape device is designed for use in the event of a manned spacecraft becoming disabled during orbital flight. It is one of four MSC employee inventions issued during June and July according to Marvin Matthews, center patent counsel.

Patents were also issued to William L. Green and Richard W. Bricker for a Mass Measuring System; Jerome H. Grayson from a voltage-Current Characteristic Simulator and Harold I. Johnson and Arthur G. Trader for a Subgravity Simulator.

The proposed escape vehicle which can be folded and stowed aboard an earth orbiting manned spacecraft is designed to return crewman safely to the earth's atmosphere. Comprised of a flexible casing with a zippered opening for ingress-egress, the vehicle has an inflatable bladder system for supporting the crewman and for maintaining a stable aerodynamic shape during its reentry.

The outer surface of the vehicle is covered with a heat ablative material and the inner casing is lined with an insulative material. The crewman is able to sight reference points through a small double-panelled window. The vehicle is also equipped with a solid-propellant retrorocket assembly as well as a gaseous oxygen supply for breathing and cooling purposes. The retro system is equipped air nozzles through which carbon dioxide and used oxygen is expelled thereby providing an adequate means for orienting the vehicle for a proper reentry attitude.

Operation of the vehicle, as described in the patent application, is briefly as follows. The crewman garbed in a extra-vehicular pressure suit and backpack, unstows the escape vehicle from an external compartment of his disabled spacecraft. He next switches his oxygen supply from his backpack to the internal oxygen system in the escape vehicle and then dons the parachute and related survival gear.

After closing the zippered opening the crewman positions himself to work the retrocket assembly. Through the window the pilot is able to determine preselected reference points on earth. After he fires the retrorocket the bladders are inflated providing a definate aerodynamic shape for a high degree of stability during reentry.

Reentry heat will be dissipated by the heat ablative structure, the patent application explains. After reentry and when the escape vehicle reaches lower regions of the atmosphere, atmospheric pressure will cause the bladders to automatically deflate. The crewman, alerted by the deflation of the vehicle, is then able to exit the spacecraft and make a standard "jump" by means of his parachute. Survial gear and an oxygen bottle are attached to the parachute harness.

The patent issued to Green and Bricker relates to a method and apparatus for determining the mass distribution of an irregularly shaped body such as the human form. As proposed in the patent application, the Mass Measuring System would be used in an orbiting rotating manned space station for the measurement of the relative mass of various portions of the body in gravitional environments other than that encountered on earth. Green and Bricker are with the Structures and Mechanics Division of E&D.

Grayson's invention of the Voltage-Current Characteristic Simulator relates to an apparatus for simulating the power output characteristics of solar cell panels. The invention is presently being used at the Goddard Space Flight Center to test circuits designed to operate from solar cell arrays. Although not in use at MSC, the invention may prove useful in future manned Space flight programs where solar cell panels are comtemplated as power supplies.

The Johnson and Trader invention is for use to stimulate partial gravity conditions in the training of crews. Construction of the patented system was carried out here at MSC and is essentially near completion.

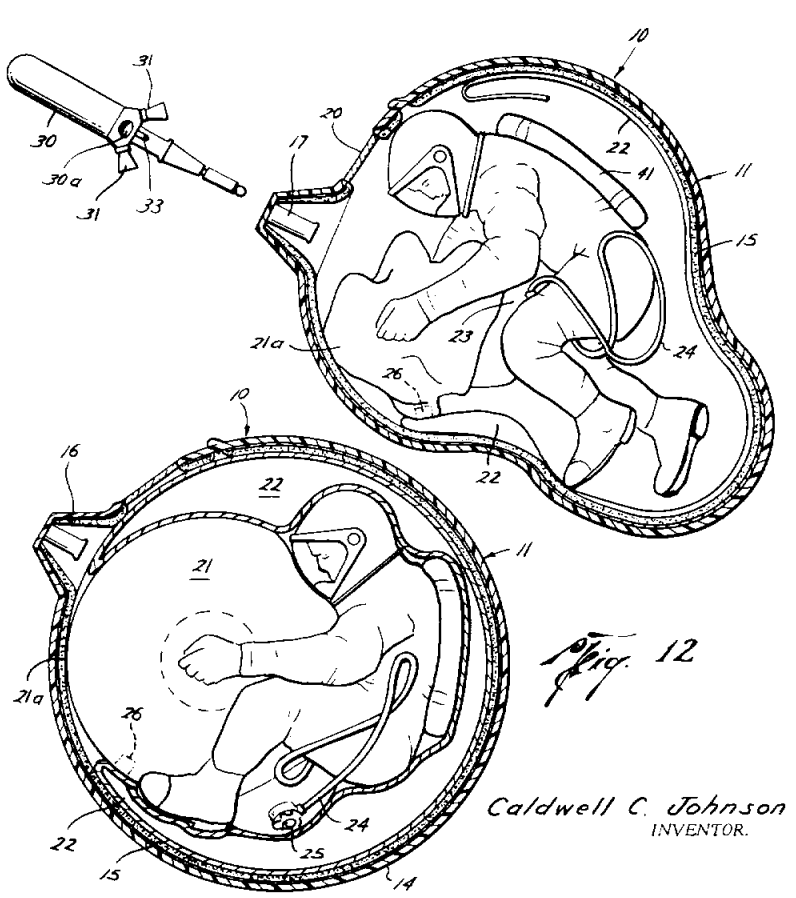


Fig. 12

Caldwell C. Johnson
INVENTOR.

ROUNDUP
SECOND FRONT PAGE

Lunar Lab Debut

PRESS BRIEFING—Telling the Lunar Receiving Laboratory story June 29 to newsmen covering MSC was this lineup of people, left to right: Dr. Duane Catterson, Assistant to the Director of Medical Research and Operations; Dr. Walter W. Kemmerer, Jr. Chief Biomedical Specialties Branch, MRO; Dr. Elbert King, Geology and Geochemistry Branch, Science and Applications Directorate; Joseph V. Piland, Lunar Receiving Laboratory Program Office manager, and Dr. Wilmot N. Hess, Director of Science and Applications.