

Space News

ROUNDDUP!

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OCTOBER 31, 1962

NASA Pays Tribute To Four MSC Divisions

J. V. Piland To Participate In Project 60

J. V. Piland, assistant to Kenneth S. Kleinknecht, manager of Project Mercury, will serve as MSC representative in a joint study to improve field operations in the Management of Department of Defense and NASA contracts.

Major purposes of "Project 60," which will terminate with a final report early next year, are to improve the effectiveness of field contract management, be more responsive to buying offices and systems project offices, assist NASA with its increasing contract management requirements with a minimum of additional personnel, and assure continued contract management efficiency in times of national emergency.

Field offices responsible for contract management now exceed 500, employing some 30,000 persons, and performing functions such as quality control, inspection, production surveillance and expediting, industrial security, review of contract changes, auditing, contract termination, property administration and public information.

Piland will be especially concerned with the engineering liaison portion of the study, and he will represent NASA in this capacity.

A good part of his time during the next three months will be spent in Washington, D. C.

Under present arrangements, contractors have to deal with various departmental procedures and requirements which have grown up over the years.

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J. V. Piland



NASA ADMINISTRATOR James E. Webb presents a group achievement award to the Flight Operations Division, represented by its chief, Chris Kraft, in ceremonies in Washington, D. C. October 25. Three other group achievement awards and two individual awards were presented to MSC personnel.

Graves Named Asst. Director For Info, Control Systems

George Barry Graves, formerly assistant chief of the Instrument Research Division at Langley Research Center, has joined Manned Spacecraft Center as assistant director for information and control systems.

The directorship includes the Instrumentation and Data Systems Division and Computation and Data Reduction Divisions. In addition to management of all operational elements under him, the assistant director for information and control systems will serve as the main point of contact for establishment of in-house operational support for development and maintenance of the flight control center.

Gilruth Will Edit First Publication Of Joint ARS-IAS

MSC Director Robert R. Gilruth will be guest editor of the first issue of the joint American Rocket Society - Institute of Aerospace Sciences publication.

The two organizations are in the process of merging.

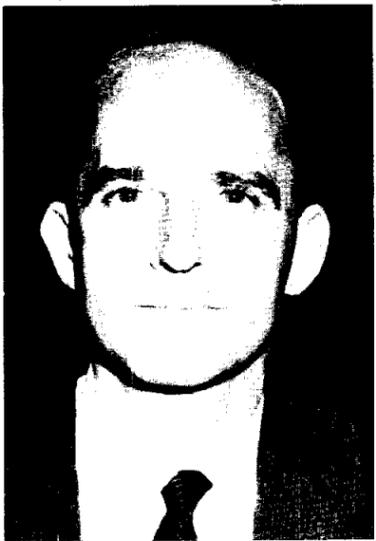
Authors for the various papers to be presented in the first issue of the joint magazine will be personnel from Manned Spacecraft Center, who have taken on the responsibility of providing the written material for the issue to be published in February.

Commented Dr. Gilruth, "I am looking forward to this opportunity to present in a collected and orderly fashion a picture of the past, present, and future in the field of manned spacecraft development and operations."

Graves was born March 30, 1925 in Augusta, Ga. and attended Peabody High School in Trenton, Tenn. before earning a B.S. in electrical engineering from Alabama Polytechnic Institute in 1946.

In October of that year he joined Langley Research Center as an electrical engineer in the Instrument Research Division.

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George B. Graves, Jr.

Gilruth, Williams To Receive ARS Honors Nov. 16

MSC Director Robert R. Gilruth and Associate Director Walter C. Williams will be present to receive honors at the Honors Night Banquet of the American Rocket Society's 17th annual meeting at the Beverly Hilton Hotel in Los Angeles November 16.

Dr. Gilruth will receive the Society's highest award, the Robert H. Goddard Award "for general eminence in the field of rocket engineering and space flight, for achievements which are of a scientific, technical, philosophical or sociological nature, or which have other aspects considered as deserving of such merit."

Williams will be made a Fellow Member of the Society, an honor granted annually to a maximum of one tenth of one per cent of the total ARS membership for "valuable and

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Faget, Graves Also Receive Other Awards

The National Aeronautics and Space Administration honored two assistant directors and four working teams of Manned Spacecraft Center last Thursday in the annual award ceremony held in Washington.

Maxime A. Faget, assistant director for research and development, and George B. Graves, Jr., the Center's new assistant director for information and control systems, were presented with Outstanding Leadership Medals.

Faget received his award for the basic design configuration of the Mercury system and for his leadership of the team of scientists and engineers developing the spacecraft systems that led to successful manned orbital flights.

Graves was honored for his role in the establishment of the world-wide Mercury tracking and ground instrumentation network including "leadership in guiding the electronic design" and in "the technical management of contractual activities."

Group achievement awards were presented to the Directorate of Engineering and Development, headed by Faget; the Pre-Flight Operations Division, headed by G. Merritt Preston; the Mercury Project Office, headed by Kenneth Kleinknecht; and the Flight Operations Division, headed by Christopher C. Kraft, Jr.

The engineering and development award was received by Charles W. Matthews, chief of the Spacecraft Research Division.

The Mercury Project Office award was received jointly by Kleinknecht and James A. Chamberlain, now project

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Effective Oct. 9, Douglas R. Hendrickson was designated acting chief of the Financial Management Division, following the death of Financial Management Chief Rex Ray. Hendrickson is located in Building 316, Ellington Air Force Base, extension 7231.

Warren Gillespie Receives Cash Award For Satellite Idea

A patented invention entitled "Passive Communications Satellite" has brought to Warren Gillespie of Space Environment Division the sum of \$400 "for the intangible benefits of your invention to the U. S. Government."

The check was awarded by the NASA Inventions and Contributions Board under the

incentive awards system.

Gillespie's invention is for an improvement over the Echo spherical satellite which has been in use for some time.

"On Echo, only a small surface is usable for transmission between two ground stations," Gillespie explained. "I worked out a different configuration in which only one segment is

used, and this segment is kept oriented toward the earth's center, permitting either the development of a larger and more efficient satellite with no increase in weight, or a smaller satellite with the same effectiveness; and described the method by which it would be fabricated and erected."

Gillespie received his check in mid-October.

47 Staff Members To Get 20-Year Awards In Ceremonies Thursday

A special Achievement Awards Ceremony will be held for employees of Manned Spacecraft Center starting at 9 tomorrow morning in the Cullen Auditorium of the University of Houston.

All MSC offices are urged to release personnel desiring to attend these ceremonies. But transportation will be provided from each of the sites to the University and return. Departure times will be 8:00 and 8:30 a. m.

Project 60

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This makes it difficult and often costly for contractors and subcontractors to meet Government requirements, particularly for reports on contract status.

The increasing volume of NASA contracts over the past year has further complicated the situation. NASA, in lieu of establishing a complete field organization for management of its contracts and sub-contracts, prefers to use existing DoD capability in this area.

Awards

(Continued from Page 1)

manager for the Gemini program, for his work with Mercury in years past.

Faget's group was honored "for exceptional ingenuity in defining requirements and establishing the systems concepts for the Project Mercury spacecraft flown in the first United States manned space flight missions."

Preston's division was given its award for "expert preparation and checkout of the Project Mercury spacecraft flown in the first United States manned flight missions."

The Mercury Project Office was cited "for outstanding competence in managing the development of the Project Mercury spacecraft flown in the first United States manned space missions."

Flight Operations received its award for "superior planning and operational control of the first United States manned space flight missions in Project Mercury."

Individual achievement awards will be presented to Maxime A. Faget and George Barry Graves.

Group awards will be extended to Mercury Project Office, Flight Operations Division, Preflight Operations Division and Spacecraft Research Division, as they were in the Washington ceremony.

Recipients of 20 year awards from MSC will be: Raymond L. Zavasky, executive assistant to the director; Center Manager Martin A. Byrnes; Robert D. Harrington of Flight Operations Division; Joe Harris, Glenn F. Bailey, Ernest A. Gillem, and Arthur A. Atkinson, of Procurement and Contracts Division; Willard M. Taub, of Spacecraft Research Division; William T. Lauten, of Systems Evaluation and Development Division; Russel C. Connelly of Financial Management Division; Paul S. Armstrong, of Administrative Services Division; John H. Peterson and Charles J. Coler of Public Affairs Office.

Graves Named Asst. Director

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sion, where he developed several systems which were the first of their type.

Graves conceived subminiature radio telemetry instrumentation not available on the open market for use in small-sized, high-speed rocket research models. He carried out fundamental research in the field of infrared automatic missile guidance systems, and developed an 88-channel remote instrumentation system for use in the X-15 research airplane.

He also planned and designed long-range tracking radar equipment which substantially increased the usefulness of the NASA station at Wallops Island, Va.

During this period he was appointed head of the Telemeter Component Development Section, in 1956.

When Langley Research Center was given responsibility for constructing the Mercury world-wide tracking and ground instrumentation sys-

tem, Graves was named head of the Navigation and Communication Research Branch and Tracking Unit and Ground Instrumentation for Project Mercury, in December of 1959, guiding the electronic design of the Mercury range.

In March of 1961 he was promoted to the position of assistant chief of the Instrument Research Division. In addition to his duties as acting branch head of the Navigations and Communications Research Branch and head of IRD's temporary Tracking and Ground Instrumentation Unit, he was primarily concerned with planning and direction of IRD's efforts on telemetry, beacons, radar systems, antenna systems and acquisition of data from space vehicles.

In June of 1961, Graves was awarded a Sloan Fellowship in executive development at Massachusetts Institute of Technology and spent 12 months there. He received his Master's degree in industrial management from MIT last June.

New Pay Law Goes Into Effect Immediately

A new pay bill for Civil Service employees was signed into law this month by President John F. Kennedy in order to establish the policy that Federal pay shall be comparable to rates paid by private enterprise for the same work levels.

For many MSC employees it meant an immediate small raise in pay, with a larger one to be effective at the beginning of 1964.

Among the changes put into effect were the provision that the President shall have annual surveys made by the Bureau of Labor Statistics, obtain the advice of agencies involved, and make a report to Congress annually as to needed adjustments to the pay scale, to maintain this policy.

The bill also revised pay step procedure. Advancement is to be made from step one to step two, from two to three and three to four at one-year intervals, regardless of grade. From step four to five, five to six, and six to seven each two years; and from seven to eight, eight to nine and nine to ten after three years in step.

Heads of departments will now be permitted to reward superior performance by granting an extra step increase as often as one each year.

Those promoted from one grade to the next will receive at least a two-step increase in pay.

As in the past, higher minimum steps in the range for particularly critical occupations will be permitted, to meet problems of recruiting and retaining qualified personnel. But the act provides that the amount added to the first step when such an employee begins service shall be added also to each succeeding step he advances in that grade.

To the extent that the step-range permits, those supervising Wage Board employees may now be paid at such step rates that their pay will exceed that of the highest paid Wage Board employee they supervise. Such pay, however, must not exceed the maximum in that grade.

Those brought into Classification Act (GS) positions from other systems, such as Wage Board or Foreign Service, will now be able to retain their prior salary even though the rate is higher than the top step for their particular GS grade.

The new bill does not incorporate, however, the provision that would have permitted use of a higher than minimum step for individuals coming from outside the Government.

Two Inducted Into Toastmistress' Club

Two MSC employees, Virginia Thompson and Mrs. Josephine Townsend were among six ladies inducted into the Ellington Toastmistress Club October 2.

Speaker on the program was Silvie Kelarek, secretary to the assistant director for administration. She is a charter member and past president of the Ellington Toastmistress Club.

PERT Seminar To Start Sunday, Run Till January

The first of 11 seminar sessions on Program Evaluation and Review Techniques (PERT) designed to provide MSC technical and staff personnel with the capability for implementing and operating the NASA PERT and companion cost system will be held in Houston Sunday.

Ten other sessions will follow, beginning November 25 and lasting through January, at the Holiday Inn North in New Orleans, La.

The seminars are taught by a New York City management firm under contract with NASA Headquarters.

A special seminar on PERT for top management personnel will also be held here at Manned Spacecraft Center November 13 and 14 and again December 13 and 14 to acquaint directors with the PERT system.

Course For MSC Secretaries To Be Held Tues., Wed.

A correspondence and office practices training course will be held for MSC secretaries in the East End State Bank Building classroom next Tuesday and Wednesday.

The course will cover the new MSC correspondence manual.

Supervisors must recommend their secretaries for the course. Those desiring information should contact Jack Lister in the Training Office or Doris Kresge in Steno Services.

FGAA Names Four Groups

The Houston Chapter of the Federal Government Accountants Association named four committees during their October meeting.

The Publicity Committee includes J. M. Hanberry, of MSC, as chairman, and Oneida Woolford, Roy L. Parks and Charles Freeman. The Education Committee includes Charles H. Branch, Jr. as chairman, Woody W. Gavenda and Jack I. Shearin of MSC, and E. F. Kuropata.

The Editorial and Research Committee includes Herb L. Richter, chairman, A. E. Hyatt of MSC, Ara E. Coker, George Newsom, Jr. and H. W. Yeager. The Financial Committee includes J. K. Bember and S. M. Jasinski.



NASA Administrator James Webb pins the Distinguished Service Medal on Astronaut Walter M. Schirra, Jr. in ceremonies at Oradell, N. J., the town where the astronaut grew up. In the center is Mrs. Schirra.

Credit Union Has More Than 400 Members; Deposits Urged

The MSC Federal Credit Union now boasts 415 members with assets totaling \$62,000.

The loan demand at present is exceptionally heavy, and the Credit Union needs depositors.

Current indications are that the Credit Union will be able to pay a dividend as of December 31, which will run between three and four per cent, according to Credit Union Manager Joseph Murray.

Murray commented that the MSC Credit Union is attracting attention among the state's credit unions because of its unusually rapid growth.

Texas alone has 756,000 credit union members. The state's first credit union was formed in 1929 and there are presently 1,200 of the non-profit financial organizations in the state with assets of more than \$373 million.

The idea of groups of people saving their money together and making low-cost provident loans to each other started in Germany 113 years ago. It came to America at the turn of

Astronauts To Hear Computer Lectures

The nation's 16 astronauts will soon hear a series of computer lectures by an engineering professor at Texas A and M College.

Their instructor will be Robert L. Smith, Jr., director of the A and M data processing center.

The lectures will be held October 30-November 20 here at Manned Spacecraft Center.

Smith said the lectures marked the beginning of a program of academics for the astronauts. His class sessions will deal with familiarization with computers and computer science to prepare the astronauts for operation of computers on board future spacecraft.

the century and gained impetus in the United States through the efforts of Edward A. Filene, Boston merchant and philanthropist.

Today the credit union movement is teaching people in 67 countries of the free world how to "lift themselves by their own bootstraps" through saving their own money, even if it is only pennies a month.

There are 21,000 credit unions in the United States and 7,500 in 66 other countries.

Thiokol To Build Gemini Rockets

The Gemini two-man spacecraft will be returned to earth by Thiokol Elkton retrorockets. The Gemini predecessor, the Mercury spacecraft, is also returned from orbit by action of Thiokol retrorockets.

Four retrorockets will be aboard the Gemini Spacecraft. These will be spherical motors made by Thiokol and will represent current state-of-the-art. In the event of a launch malfunction, occurring after attaining 70,000 feet but less than 500,000 feet altitude, these units will lift the spacecraft free of the launch vehicle for a safe landing. At altitudes of less than 70,000 feet, the astronauts will use ejection seats for abort.

These small man-rated rockets will maintain the high reliability and advanced engineering characteristic of the rockets used on the Mercury Spacecraft.

The Gemini spacecraft is being built by McDonnell Aircraft Corporation for Manned Spacecraft Center.

Schirra Gets New Jersey's Welcome; NASA Award And Chat With JFK

Astronaut Walter M. Schirra, Jr. received an enthusiastic welcome October 15 from the towns of his birth and boyhood, places he left 20 years ago.

He received the NASA Distinguished Service Medal from NASA Administrator James E. Webb, had a park dedicated to him, and went on to Washington, D. C. the following day for a chat with the President, and the award of Navy astronaut wings from Navy Secretary Fred Korth.

Schirra landed at Newark, N. J. airport October 14 with his family to be greeted by a crowd of 2,000 and by Gov. and Mrs. Richard J. Hughes, Senators Harrison Williams and Clifford Case, Rep. Peter Rodino and Newark Mayor Hugh Addonizio.

A motorcade took him directly to the home of Oradell Mayor Frederick E. Wendell for dinner and to spend the night.

The following morning a 15-car motorcade, with Schirra and family as the leading attraction, moved eight miles from the Bergen County Courthouse in Hackensack, N. J. to River Dell High School stadium in Oradell, cheered along the way by a crowd of more than 50,000.

Schirra said the greeting left him "much more shattered than I was at the countdown."

The cars moved through River Edge and the lower part of Oradell and then swung through New Milford before re-entering Oradell. Included in the motorcade was Gov. Hughes, Sen. Case and Administrator Webb. The line of March took Schirra past the house on Maple Avenue in which he once lived and the church he attended during the 18 years he lived in the town.

A crowd of 8,000 saw Schirra receive the Distinguished Service Medal at the stadium. Webb added to his own congratulations to Schirra those of President Kennedy, whose telegram he read to the throng.

"That we are climbing back up the ladder is apparent in

the matchless performance of our most recent flight," the President said. "I am convinced that although we are still second in hardware, we bow to no one in the quality of our space team—that their devoted and determined effort will in this decade restore our leadership."

"I am particularly proud of Commander Schirra for the great professional skill and personal courage he demonstrated in his magnificent flight."

In his response, Schirra cited Dwight Morrow High School, the Newark College of Engineering, the Naval Academy, and Oradell as contributing to his development, and called his flight "the sum effort of many."

The Schirra family received as gifts an 88-piece china service embossed with the Sigma-7 he rode in space October 3; a silver tray from the people of Oradell; a black and white screen print by artist Ben Shahn and a distinguished alumnus medal from Newark College of Engineering, which he attended for three semesters.

A luncheon at the Hackensack Golf Club in Emerson attended by 252 persons followed. There were no speeches.

A one-acre public tract was dedicated as Schirra Park before several thousand persons in the afternoon, and Schirra was honored by Boy Scout Troop 36, to which he once belonged. He was given a special merit badge for "achievements

in astronautics."

After a visit at Mayor Wendell's house, the Schirra party left for Teterboro Airport by the nine mile route along which Schirra used to bicycle from his home to watch the planes.

The following day, President Kennedy played host to Schirra, his pretty blonde wife Jo and red-haired Marty and Suzanne. Sitting in his rocking chair, Kennedy discussed Schirra's nine-hour, six-orbit flight and swapped small talk with the youngsters.

The President took the children to see the ponies kept at the White House for the two Kennedy children and asked Suzanne if she had watched her father's flight on television. She nodded.

Later Navy Secretary Fred Korth pinned the Navy's astronaut wings on Schirra in a ceremony at the Pentagon, as Jo Schirra watched.

ARS Honors

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important engineering or scientific contributions in or related to rocketry and astronautics, and for those who have attained national merit or have been in responsible charge of important scientific groups or engineering programs."

The 17th annual meeting is coupled with a space flight exposition including four days of lectures, meetings and exhibits November 13-16. Manned Spacecraft Center will furnish one of the exhibits.

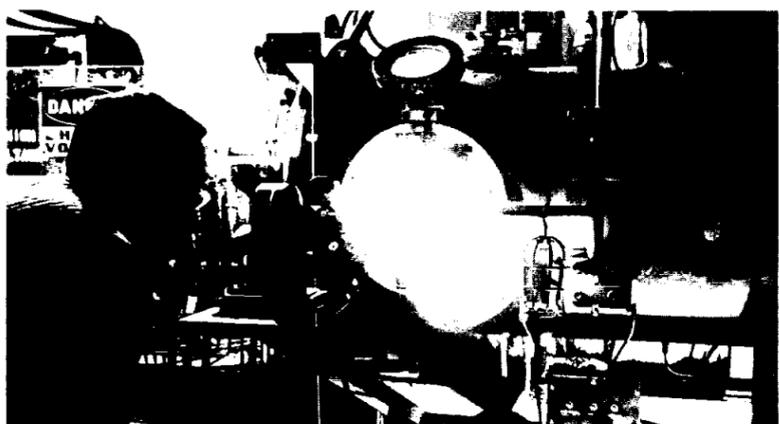


AN INFORMAL CHAT in President Kennedy's office highlighted the astronaut's brief visit to Washington, where he also received astronaut wings from Secretary of the Navy Fred Korth.

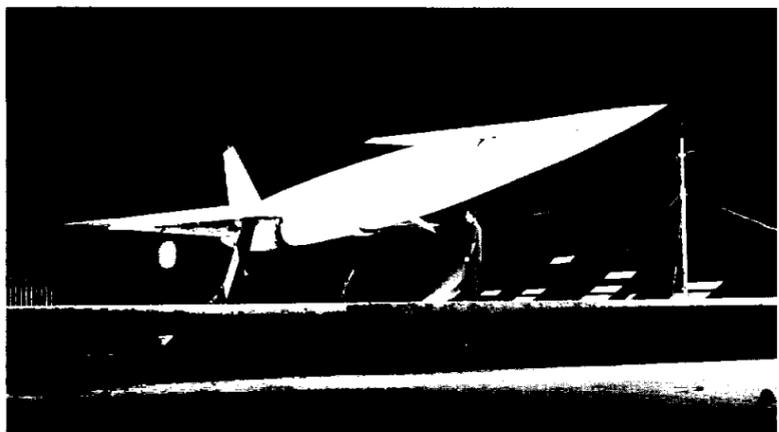
California's Ames Research Center Does Work On



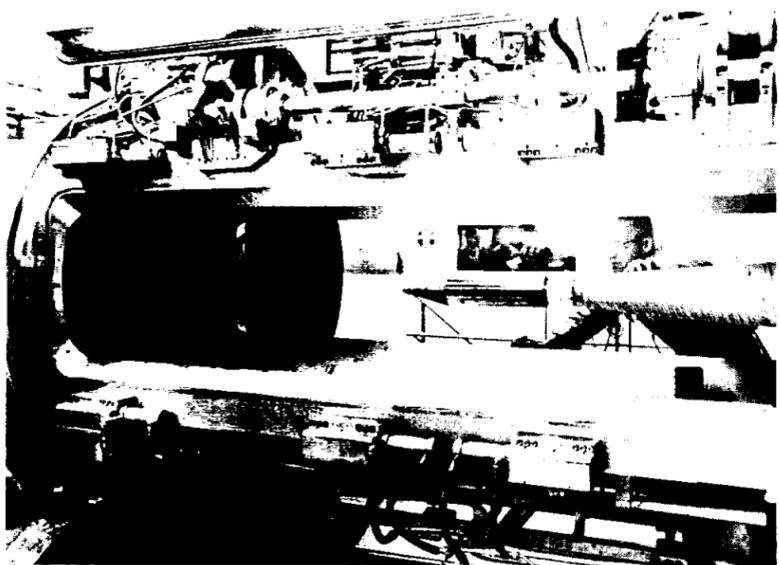
The administration building at Ames houses the management staff, including the director, associate director and four assistant directors.



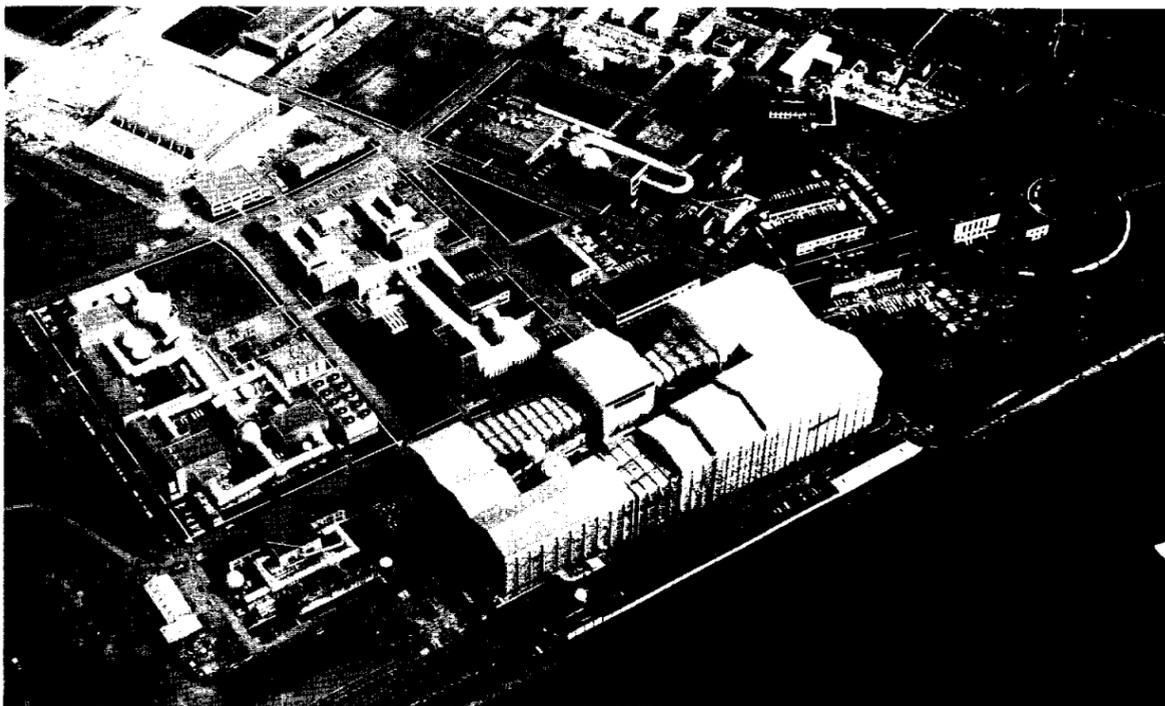
America's lunar spacecraft, Apollo, will return to the Earth's atmosphere at much higher speeds than satellite craft, and suffer much higher heating. This is the combined radiative-convective heating simulator.



The giant 40 by 80 foot wind tunnel at Ames is the largest wind tunnel in the world. Shown in it is a one-third scale model of a generalized design for a supersonic transport airplane, with delta wings and large flaps. The canard control surface mounted forward replaces the usual horizontal tail. Beneath the model, raised from the floor of the tunnel, is a ground plane, useful in research on the effects of flight near the surface.



The smallest of Ames' wind tunnels is this 3.5 foot hypersonic tunnel with four interchangeable nozzles for tests from Mach 5 to Mach 15, using very small scale models.



This aerial view of Ames Research Center at Moffett Field, California, shows the numerous wind tunnels which form a major part of the Center's working tools.

It isn't in the official description, but "variety" might be called the watchword of NASA's Ames Research Center.

Most of the Center's research efforts involve space vehicles and their crews, but the rest of it is devoted to aircraft ranging from the fastest to the slowest.

Traditionally expert in advanced high speed aerodynamic research, Ames has now moved heavily into studies applicable to manned space flight, with emphasis on simulators for advanced spacecraft such as Apollo, and a major expansion in life sciences research.

The Center is located 35 miles south of San Francisco, along one side of California's Moffett Field. Currently staffed by more than 1,600 employees, about a fourth of them scientists and engineers, Ames is directed by Dr. Smith J. DeFrance. Associate Director is John F. Parsons.

Now one of NASA's nine major research centers, Ames was founded in 1940 and named after Dr. Joseph S. Ames, chairman of the National Advisory Committee for Aeronautics (NACA) from 1927 to 1939.

Major programs being carried out by the Center include development of multi-purpose advanced space vehicle motion simulators applicable to Apollo-type spacecraft and supersonic transport studies; development of life-support systems for extended simulator runs; guidance control and reentry studies with applications to Apollo, Dyna-Soar and other manned spacecraft; and life sciences, broken down into exobiology, environmental biology, physical and behavioral sciences and biotechnology.

Mercury-Apollo

To the Mercury program, Ames has contributed important wind tunnel studies on basic atmosphere re-entry heating of the spacecraft and

the Mercury-Atlas combination.

For Apollo, the Center is performing wind tunnel studies on the command module, the escape tower, the forward portion of the launch vehicle, and combinations of the three units.

Studies are also being accomplished on optical instrumentation for the lunar mission; space vehicle attitude control; influence of crew station design on performance of Apollo guidance, control and navigation tasks; and pilot-operated attitude stabilization and control systems.

Research in atmosphere reentry forms a large share of the Center's activity. The fundamental concept of bluntness for reentry vehicles, in fact, was originated at Ames by H. Julian Allen, now an assistant director of the Center, in 1952.

Since then, the staff has produced major contributions to the numerous solutions of the reentry problem required for manned satellites, boost-glide vehicles, proposed manned interplanetary and lunar craft, and ballistic missiles.

The research has led to fuller understandings of the energy exchange between a vehicle and its environment in terms of the characteristics of the atmosphere; the heating problem; various techniques for protection against destructive heat; design and materials approaches; and the problems of stability and control during reentry flight.

An active program to explore the ability of a human pilot to control a vehicle during reentry flight has been going on at the Ames Research Center for several years. Corollary research work seeks design techniques whereby vehicles capable of human control can be built.

Because of the Center's remarkable expertise in guidance

and control, it is providing research for stabilizing and controlling NASA's advanced meteorological satellite (Nimbus) and an Orbiting Astronomical Observatory.

Facilities

Wind tunnels are a major part of Ames' stock in trade. There is everything from the 40-by-80 foot wind tunnel, largest in the world, down to the 3.5 foot hypersonic wind tunnel, only three and a half feet in diameter and 10 feet long.

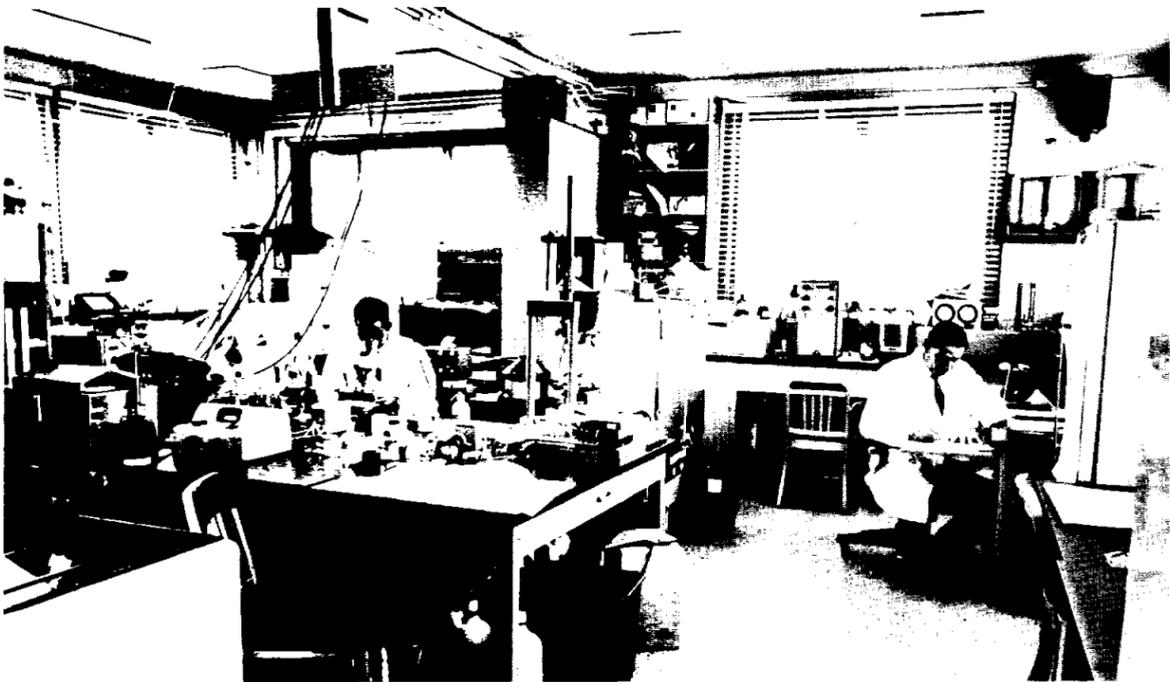
Wind tunnels are part of the language at Ames, too. For instance, the Center's paper, the "Astrogram," speaks conversationally of "reproduction equipment available in room 209 of the 3.5-Foot Building." The uninitiated's first reaction to that statement is that it's a mighty small building. But the name refers to the size of the wind tunnel located therein, not the building.

Roughly 15 per cent of the Ames research effort is concerned with hypersonic and supersonic aircraft, including work which has application to supersonic transport aircraft, as well as to military programs. The fundamentals of hypersonic aerodynamics have been extensively worked out, and basic information on which practical designs may be founded is already in hand.

The 40-by-80 foot tunnel works in the speed range most critical for landing and take-off of high speed aircraft—zero to 250 miles per hour. Among its uses are establishing basic knowledge necessary to solve critical landing and take-off problems of 2,000 mph passenger aircraft.

Ames is pursuing a comprehensive program of research into the problems of vertical and short take-off and landing aircraft. The 40-by-80-foot tunnel has been used extensively in the program, supported by flight activity with actual aircraft, including the Bell XV-3,

Everything From Spacecraft To 'Slow' Airplanes



A major research activity in the life sciences is carried on at Ames. This is a section of the environmental biology lab, Ames is also involved in exobiology, physiological and behavioral sciences and biotechnology.

the Bell X-14A, and the Ryan Vertiplane.

In the 12-foot low-turbulence pressure wind tunnel, full-scale flight conditions can be more nearly simulated than in any other tunnel in the world. Its air stream travels at 750 miles per hour.

A 14-foot transonic wind tunnel, which can handle nearly 10 million cubic feet or 240 tons of air each minute, was developed by NASA for research in the critical range of speeds near the speed of sound.

In the supersonic free flight wind tunnel, small scale models of the X-15 research airplane have been photographed in flight at two and a half times the speed of sound.

One of NASA's largest and most modern supersonic wind tunnels is the Unitary Plan Wind Tunnel with three large test sections, one 11 by 11 feet, one 9 by 7 feet, and one 8 by 7 feet, which operate from seven-tenths the speed of sound to three and a half times sound speed.

In the 3.5 foot hypersonic tunnel, four interchangeable nozzles permit tests at Mach numbers (Mach 1 is the speed of sound) of Mach five, seven and one-half, 10 and 15. The tunnel provides aerodynamic and heating information needed for the efficient design of vehicles capable of entering the atmosphere, and for aerodynamic vehicles intended to fly at extreme speeds.

Simulation techniques and devices form a vital part of Ames' capability in the area of vehicle dynamics. They have been employed in the VTOL program as well as in studies of piloted reentry. A five degrees-of-freedom motion simulator is expanding the research capability of the Center. For

simulation studies in flight, the Bell X-14A twin-jet VTOL machine has been converted into a variable stability aircraft which will greatly enlarge the area in which VTOL/STOL investigations may be pursued.

There is an atmosphere entry simulator, in which a gun-launched model flies at full reentry velocity into the simulator nozzle and experiences during a few thousands of a second—and a few feet of actual flight—the decelerations, stresses, pressures and temperatures of actual reentry into the atmosphere. Scientists can thus determine quickly and economically the in the laboratory whether a specific design can survive atmosphere entry.

America's lunar spacecraft, Apollo, will return to the Earth's atmosphere at much higher speeds than those experienced by a satellite returning from orbit. It will experience heating much more intense as a direct consequence of its higher speed.

Research to understand and conquer the heating problem for Apollo is moving forward rapidly at Ames Research Center in facilities like the Combined Radiative-Convective Heating Simulator. While convective heating is important for entering satellites, radiative heating grows more serious at higher speeds. Hence NASA scientists have devised a research implement in which both kinds of heating can be directed upon a test model at the same time.

Intense radiation is generated by an electric arc of the kind used in theater-type motion picture projectors. At the same time, an air stream charged with energy from a separate electric arc source is

driven over the test specimen. The intense radiation which results is apparent in the photograph at the left. Through their ability to vary each type of heating independently, NASA scientists are better equipped to obtain fundamental knowledge of heating vital to the success of manned missions into space.

Life Sciences

A Life Sciences research facility established at the Center under the direction of Dr. Webb Haymaker, assistant director for life sciences, studies the expanding field of biospace technology. Its four divisions include exobiology—the study of life on other planets, life synthesis, molecular biology and instrumentation for search and identification of extraterrestrial life.

Another division in environmental biology—the effects of environments on earth organisms.

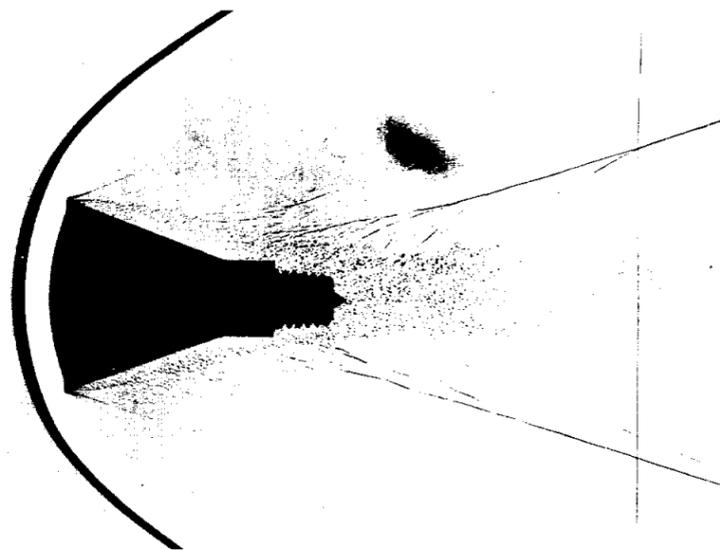
Biotechnology takes in the integration of man and his machine, engineering psychology, life support, personal equipment, crew accommodation and nourishment, gaseous and temperature control, radiation protection and waste disposal.

Physical and behavioral sciences at Ames study man under conditions of high acceleration, weightlessness and radiation phenomena, and includes basic and applied research in aerospace medicine.

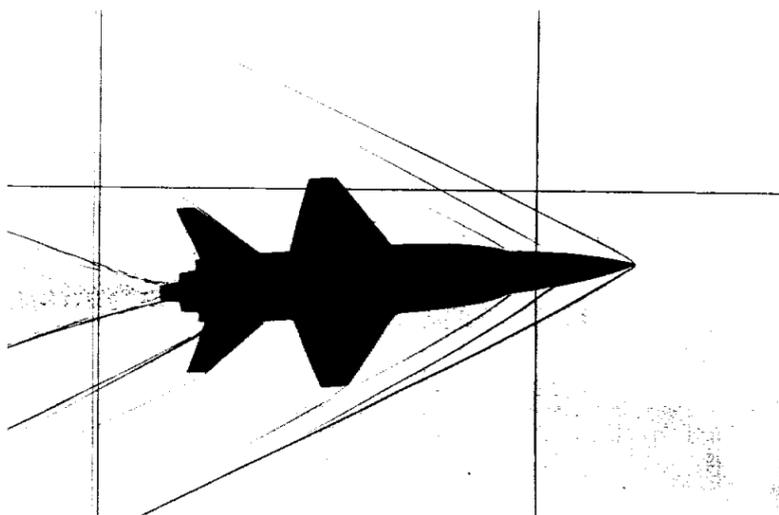
As early as last April a NASA research pilot and a Stanford University physiologist spent seven days in a simulated lunar spacecraft in about 90 cubic feet of usable space. Alternating on a four-hour-on four-hour-off work and sleep-rest schedule, the crew was presented with emergency conditions such as loss of electronic and communications facilities which required immediate action. The accuracy of these actions and the reaction times were then measured and evaluated.



Looking upstream into the Ames atmosphere entry simulator, the camera's eye follows the curved walls which allow the air to expand and thus decrease in density in the same way the Earth's atmosphere varies in density with altitude. Openings in the walls of the simulator permit shadowgraph pictures of test models in flight, such as those below.



Recognize the model? It's the Mercury spacecraft, launched at Mach 3 by a high-speed gun, flying through an instrumented range. The shadowgraph technique shows shock waves and other air flow. The serrated portion at the base permits holding the model firmly in the launching gun.



A scale model of the X-15 research plane photographed at two-and-a-half times the speed of sound by the shadowgraph method. Note the pattern of shock waves around the four-and-three-quarter-inch model. The fine grid of wires visible is used to measure the model's position and angle of flight very accurately.

Editor's Note: This is the third in a series of feature articles about the activities of other NASA installations. The information concerning Ames Research Center, its major projects and its facilities was supplied by the Ames Public Information Office.

The **SPACE NEWS ROUNDUP**, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Houston, Texas, is published for MSC personnel by the Public Affairs Office.

Director Robert R. Gilruth
Public Affairs Officer John A. Powers
Chief, Internal Communications Ivan D. Ertel
Editor Anne T. Corey

Editorial

With this issue, the Space News Roundup begins its second year of publication.

One year ago tomorrow our first issue, published at Langley AFB, Va., carried the banner headline, "STG Renamed; Will Move."

At the time, Manned Spacecraft Center in Houston was occupying its first 3,000 square feet of temporary office space in Gulfgate Shopping City. Most of our people—and the Roundup—were still at Langley.

The past year has been an eventful one. Our back files chronicle its events in headlines such as "MA-5 Flight Termed Success," "John Glenn Orbits Earth Three Times," "Peninsula Turns Out For 'Mercury Day,'" and "Tidewater Lives Up To Its Name"—the story of the tidal flood which put a good portion of Langley under water last March.

In April, the Roundup announced "More Astronauts To Be Picked Soon" and "First Construction Contract Work Underway at Clear Lake." In April, the Roundup also moved to Houston, and the next month was able to proclaim "Three More Orbits Added To Record"—Scott Carpenter's MA-7 flight. In June there was the MSC barbecue at the Coliseum, and Astronaut Walter M. Schirra was announced as pilot for the MA-8 mission.

In that same issue, we ran a picture page on the Telstar satellite, and the following month Schirra spoke to the world via Telstar television. In August, the MA-7 Results Conference was held in Houston; in September, President Kennedy visited MSC, and the Center announced nine new space pilot trainees.

This month, it was a distinct pleasure to close our first year of publication with the news of Astronaut Walter M. Schirra's success on MA-8.

We look forward to the next year with every assurance that it will be as eventful as the last.

In keeping up with the fast-paced progress of Manned Spacecraft Center, and with the communications need which it serves, we of the staff are asking the help of you, our readers.

This is a time when all of our people need to be kept well informed. In an organization of this size, it is all too easy to miss or overlook a story which might prove valuable and interesting to our readers.

We need your ideas, your suggestions and your information. The Roundup will be only as good as you want it to be. We will do our utmost to cooperate with you.

For your extensive help during our first year, a sincere "Thank you."

For your assistance in the future, our phone number is 3671.

—The Staff

On The Lighter Side

Most of us know that the term for a satellite's position nearest the earth is "perigee," but what about the near point to the moon? During a survey of Lunar literature at MSC by the Rendezvous Analysis Branch of Flight Operations Division, these variations turned up:

Pericynthian (most common), pericynthys, periselenene, periselenium, periselenium, perilune, and even perimoon!

EDITORIAL EXCERPTS

The Christian Science Monitor
September 21, 1962

NASA OFFICE OPEN FOR BUSINESS

Greater Boston civic and business interests who fought hard and lost in the establishment of the National Aeronautics and Space Administration's man-on-the-moon project in this area, nevertheless are being brought in on the program.

NASA's new Northeast Operations Office, one of the first such space agency offices outside of the main project located in Houston, now is "open for business" at the former Arthur D. Little Building at 30 Memorial Drive, Cambridge.

The office is headed by Franklyn W. Phillips, a graduate of Massachusetts Institute of Technology, who has 22 years' of experience in the nation's air and space projects.

Mr. Phillips told the Armed Forces Communications and Electronics Association meeting here that he now is in the process of recruiting a staff which, he hopes will be New Englanders who know the area and who will bring more New England industry into the moon project.

Welcome Aboard

Manned Spacecraft Center acquired 48 new employees between October 1 and October 10, one in White Sands, N. M. and the rest in Houston.

Gemini Project Office: Hilary A. Ray, Jr., Jerome W. Kalk, Robert W. Malley, and Jimmy L. Wyche.

Apollo Project Office: William G. Frye, Thomas J. Dalton, Lynn E. Erickson, Jerry S. Lowe, Walter E. Smith, Jr., Theodore S. Michaels, Claudia W. Simmons, Jerry H. Anderson, and James G. Prejean.

Spacecraft Research Div: Bass Redd.

Life Systems Division: Gloria C. Corbett.

Flight Operations Div: Frank J. Shinkle, Amelia V. Sustaita, Mason Hagan, Bobby J. Pierce, Wilfred W. Helm, M. P. Frank.

Flight Crew Operations: Leonard W. Loomis.

Procurement and Contracts Div: H. Steward Cobb, Jr., William G. Allison, and John J. Twohig, Jr.

Office of Chief Counsel: Henry W. Flagg, Jr.

Logistics Division: Herman P. Fisher, and Marvin D. Emert.

Administrative Services: Sherry A. Jackson, Judith Mainard, Carol A. Petrich, and Leah M. Runyan.

Personnel Division: Joy S. Morris, and Billie J. Peto.

MSC PERSONALITY

Center Mgr. Marty Byrnes 'Keeps The Place Running'

The snow-white crew out of Center Operations Manager Martin A. Byrnes, Jr. is a familiar sight around Manned Spacecraft Center, as he goes about the business of directing six divisions primarily responsible for providing administrative and technical support for the Center.

As Byrnes' phrases it, "We keep the center running so the scientists can get their work done."

Byrnes' major at St. Mary's University in Baltimore—and maybe it isn't as irrelevant as it sounds—was philosophy, in which he got his BA in 1942. (Possibly it takes a philosophical type to run a center this size smoothly.)

Born in Washington, D. C. and growing up in Newport News, Va., he got his primary and secondary education at St. Vincent's Grammar and High School there. After graduation from St. Mary's, he served four years in the U. S. Army Corps of Engineers, as headquarters commandant of a combat engineering depot with the First and Fifteenth Armies.

As a result of this affiliation with Army supply, he joined the Langley Research Center staff in May, 1946 as procurement clerk. Three years later he transferred to NASA Flight Research Center at Edwards, California as procurement officer and five years later was made budget officer on the staff of Walter C. Williams, then chief of the high speed flight station.

He stayed at Edwards until the X-15 program, and left in the middle of it to return to LRC as management assistant to the director for Project Mercury.

In this position he established the administrative organization at Cape Canaveral, including support agreements with the Air Force, Navy and Army in relation to their participation in the Mercury tracking network. He was also instrumental in developing the foreign relations, financial management and logistical portions of the operating procedures for the management of the network, and the recovery operations.

He prepared initial proposals and follow-through for the

Steno Services: Bonnie J. Cobb, and Wilhemina B. Cox.

Spacecraft Technology Div: Ann J. Read.

Data Computation Div: John R. Craven, Yvonne Randolph, and Dell Bias.

Program Analysis & Evaluation: Anselm H. Pepp.

Business Manager Resident Office—White Sands: Thurlow C. Lorenz.

Photographic Services Div: Clarence P. Stanley.

Systems Evaluation & Development Div: Warren G. Glover.

Management Analysis Div: Beulah R. Guidroz.

Financial Management Div: Florence V. Izard.



Martin A. Byrnes

establishment of the air charter service between Langley and the Cape, and Langley and Houston.

During the sub-orbital flights of Alan B. Shepard and Virgil I. Grissom, Byrnes served as senior NASA representative with the Navy recovery forces aboard the prime recovery ship at sea. During John Glenn's flight he served the same capacity at the Bermuda recovery center.

Byrnes was a member of the Site Survey Team which participated in the selection of the Houston area as a permanent location for MSC in September, 1961.

He was then appointed site manager in Houston pending the arrival of the director.

Together with "two personnel men, two contract people and a public affairs man," he recalls, "I was in the group of six that moved into our first office in Houston—two store fronts in Gulfgate."

Byrnes was then responsible for obtaining the temporary sites for MSC operations, the first group of those buildings in which the center is now located.

He was responsible for establishing, working community relations, personnel offices and contracting sources, favorable local business relations, and working relations with other Federal agencies in the area.

Last March, as the final portion of MSC personnel moved to Houston, Byrnes was appointed to his present position, under Assistant Director for Administration Wesley Hjernevik.

He is married to the former Kathleen Curran of Tannersville, N. Y., and the couple has a son, Dennis, 13, and a daughter, Elizabeth, 10. Asked about his hobbies, Byrnes mused a moment, and finally said cryptically, "Fresh water fishing is one of them."

Gears To Be Built By Chicago Firm

Ordnance Engineering Associates, Inc., Chicago, Ill. announces the award of a sub-contract from McDonnell Aircraft Corp., St. Louis, Mo. on the Gemini Program. The sub-contract is for the design, development and manufacture of landing gear system pyrotechnic devices.

OEA specializes in the research, development and manufacture of propellant actuated devices being used in the personnel escape systems of high speed aircraft and various missiles and weapon systems.

A Titan II missile was launched on a successful 5,000-mile flight at Cape Canaveral Friday, its fifth success in seven test firings.

All objectives were met on the 30-minute flight, the Air Force announced. Titan II is being developed as this nation's most powerful military rocket and as the booster for the Gemini and Dyna-Soar manned spacecraft.

Education

(Continued from Page 8)

transfer) is going to Rice; Frederick Stebbins (structural analysis) is going to Texas A and M; and Howard Robbins (vehicle integration—mission design) is going to VPI. All are working toward Ph D's. From Flight Operations, Robert Ernull (flight control) is attending University of Houston and James Satterfield (mission control) is at N. C. State College in Raleigh. Both are getting Master's degrees.

Eagle Picher Co. To Build Batteries

The Eagle Picher Company, Joplin, Mo., has been selected to build the batteries that will provide electric power for NASA's Apollo Manned Spacecraft during and after reentry into the earth's atmosphere.

The order was placed by North American Aviation's Space and Information Systems Division, Downey, Calif., principal Apollo Spacecraft Contractor. Amount of the contract is being negotiated.

The Apollo Space Vehicle, scheduled to take three Americans on a round trip to the moon before 1970, will receive electric power at other times from a fuel cell in the service module.

Just before entering the atmosphere on the return flight to earth, the service module will be jettisoned. At this point, two of the three batteries are turned on, providing power for the astronauts' life support systems in the command module.

The third battery, with a life span of three days, takes over after the Apollo spacecraft has landed, operating its life support systems and recovery equipment until pickup.

Each battery will be about the size of a lunch box and weigh 18 pounds.

These five full-time students also have tuition and salaries paid by MSC. They must remain with the center three times the length of their training, after graduation.

Graduate study under the Center training program is guided by a steering committee of which Special Assistant Paul E. Purser is chairman.

Small Astronaut Microphone Comes Into Being From Idea On A Napkin

During MA-8, Astronaut Walter M. Schirra's voice came to Mercury control and to the various tracking stations through a miniature microphone so compact it was barely visible within the face plate of his helmet.

Weighing only two ounces, the microphone is visibly smaller and lighter than its earlier counterpart, which partially hid the pilot's lower jaw.

Yet, a year ago, the device and the corporation which manufactures it—were merely concepts sketched out on a paper napkin in a northern California restaurant by two enterprising young men named Keith Larkin and Courtney Graham.

Within one "short and hectic" year, the idea on the napkin was transformed into a research and manufacturing facility which has grown from two to 24 employees and produced a product which has been recognized as the first major improvement in microphone-receiver equipment in 30 years.

The firm is Pacific Plantronics, Inc., now a sub-contractor to McDonnell Aircraft Corporation, builder of the Mercury spacecraft. PPI will supply the new microphones for future Project Mercury pressure suits.

Development of the microphone began in mid-1961 when a commercial air line directed an inquiry to Larkin and Graham concerning their interest in developing a smaller substitute for the con-

ventional microphone equipment in the airline's jet fleet.

Obtaining financing through home mortgages and personal loans, the two used technical help wherever they could find it and came up with a working prototype within two months—a new design concept utilizing an acoustically engineered sound tube which mechanically compensated for those deficiencies usually found in miniature microphones.

The new mike was flight tested in a DC-8 with highly satisfactory results. Larkin and Graham filed patent applications and incorporated Pacific Plantronics, Inc. as a closed corporation.

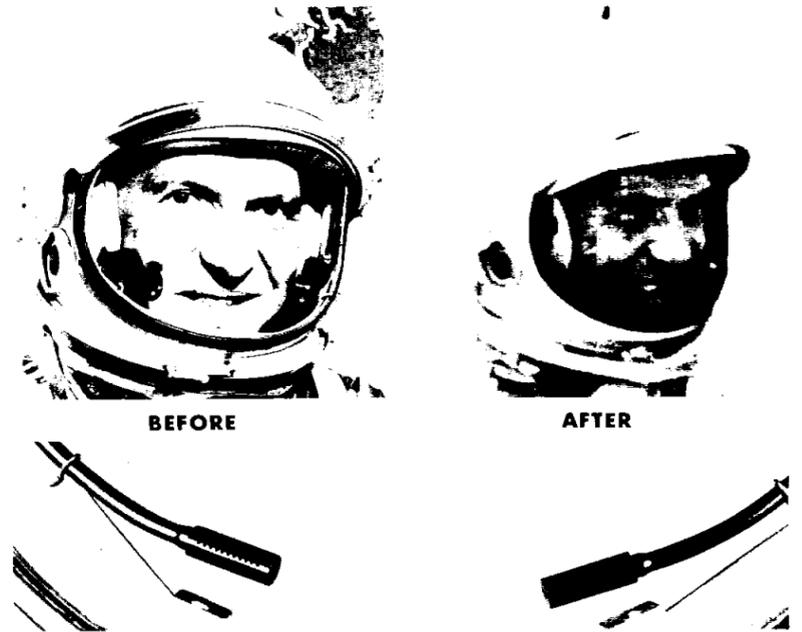
The airline later converted their entire jet fleet to the new

microphone, now called model "MS-50."

Evaluation contracts and purchase orders began to come in from space, military and federal agencies, and several major telephone companies began to negotiate for use of the mike with telephone switchboards.

Recently Project Mercury officials at McDonnell and NASA scientists at Cape Canaveral conducted a detailed evaluation of the new microphone, and awarded PPI the above mentioned contract.

The success of the small firm is evidence enough that American economy still permits a "little fellow" to get in the fight with the "big guys" if he can manufacture a better mouse trap.



CLOSE-UP OF TINY NEW MICROPHONES

Here's What You Can, Can't Do Under The Hatch Act

Many election-year questions are addressed to the Civil Service Commission, which is responsible for Hatch Act enforcement. Some of the questions deal with Federal employees' rights and restrictions under specific provisions of the Hatch Act. Others deal with the Federal Government's attitude toward cooperating with local authorities in an effort to get citizens to register and vote.

The following questions and answers have been prepared for the guidance and information of employees.

Registration, Voting

Q. What is the Commission's general philosophy with regard to the individual's participation in registration?

A. The Commission, over the years, has expressed the view that it believes all citizens should be encouraged to register and to vote, and that no impediment should be permitted which would hamper an individual from participating in registration activities and voting.

Q. May a Federal employee participate in a registration drive conducted by a political party which is not carried out

on behalf of specific candidates?

A. Yes, with certain qualifications. If the Federal employee is engaging in registration activities for the purpose of encouraging the registration of voters on a partisan political basis, such activity would violate the Hatch Act. The employee must see to it that his role in the drive is wholly non-partisan in character and that he impartially registers voters for the party of their choice without attempting to influence the individual being registered.

Q. In most states a registrar is appointed by the County Clerk or Clerk of the Court. Can a Federal employee accept such appointment?

A. Yes, if in doing so he gets permission from his agency and the work does not interfere with his agency's business. This is a matter for each agency to decide.

General Restrictions

Specifically, an employee covered by the Hatch Act cannot run for any office as a partisan candidate or campaign for any partisan candidate or engage in any partisan political management. By partisan can-

didate is meant one representing a National or State political party such as the Democratic or Republican Party. He may not run for office, even as an independent, in an election in which partisan political designations are used, unless he lives in one of the communities to which the Civil Service Commission has given partial exemption.

Q. What employees are prohibited by the Hatch Act from active participation in politics?

A. Employees of the executive branch of the Federal Government and the Government of the District of Columbia, including temporary and part-time employees. The political activity of employees of any State or local agency whose principal employment is in connection with a Federally-financed activity is also restricted.

Q. What is the penalty for violation of the Hatch Act by a Federal employee?

A. The most severe penalty for violation is removal. The minimum penalty is suspension without pay for 90 days.

Q. Please explain for employees affected by the Hatch act what their responsibilities and

rights are under the act.

A. They have the right to vote and to express their political opinions, but are forbidden to take an active part in partisan political management or in partisan political campaigns. In connection with Federal employees' right to vote, the Commission emphasizes that political-activity restrictions do not relieve employees of their obligation as citizens to inform themselves of the issues and to register and vote.

Q. May a Federal employee serve in an unofficial capacity at the polls as a checker, challenger, distributor, or watcher, or in any other post in behalf of a partisan political candidate or partisan political party?

A. No. He may not assist such candidate or party in any way.

Q. May a Federal employee use his auto to take voters to the polls on election day, or lend it, or rent it for this use?

A. Generally, no. However, the employee's auto may be used to transport himself and members of his immediate family to the polls. In addition, members of a car pool may stop at the polling place to cast their votes on the way to or from their places of employment.

Q. May employees covered by the Act attend political rallies and join political clubs?

A. Employees covered by the Hatch Act can attend political rallies and join political clubs, but they cannot take an active part in the conduct of the rally or operation of the club. Other things they are prohibited from doing are becoming involved in soliciting or collecting political contributions, distributing campaign material, and selling dinner tickets, or otherwise actively promoting such activities as political dinners.

Q. May he make a campaign contribution to his party?

A. Yes, but he cannot be required to do so. The contribution cannot be made in a Federal building or to some other employee who is prohibited by Federal law from accepting contributions. Of course, as a Federal employee, he cannot solicit political contributions.

Q. May a Government employee's wife who is not a Government employee help a friend campaign for political office?

A. Yes. The Act does not restrict the activities of an employee's wife or of other members of his family in any way.



NEW OFFICE SPACE close to the headquarters building was provided recently when MSC took over four of the six apartment buildings in Franklin Development Complex. This is the front of the building which faces on Beatty Street. Three hundred additional parking spaces are also being provided near the buildings.

MSC Acquires Additional Office Space Near Hq.

Manned Spacecraft Center has added another site to its temporary facilities in Houston, this one designated Site 13.

It is located in the Franklin Project, on Beatty St., which intersects Telephone Road just south of the Farnsworth Chambers driveway and on the opposite side.

Four of six buildings originally intended as apartments are being modified as offices, and will give MSC an additional 47,500 square feet of office space close to headquarters and the Apollo, Gemini, and Mercury Project Offices.

A swimming pool located in the courtyard surrounded by the buildings will be reserved for the use of the apartment residents in the remaining two buildings.

Lease on the Franklin complex is to run for one year.

The Flight Crew Operations Division has moved from Office City to the new site.

The Technical Information Division will also move into Site 13.

Hecker Company Gets Gemini Parts Contract

McDonnell Aircraft Corporation has awarded contracts totaling over \$100,000 to A. W. Hecker Company of Cleveland for parts to be used in the Gemini Two Man Spacecraft.

The contracts call for machining of structural components of the spacecraft from exotic metals. Gemini is being developed as an intermediate step for extended space missions and rendezvous with another satellite while in orbit.

MSC Cafeteria Opens In Headquarters Bldg.

Manned Spacecraft Center employees are now able to get hot meals during the noon hour in their own cafeteria, which opened October 11 in the Farnsworth Chambers Building.

As of the end of last week, the cafeteria was serving an average of 120 people between 11 a.m. and 1 p.m. each day.

Caterer for the cafeteria is Automation Foods, Inc., under contract with the MSC Exchange Council. Automation Foods serves cafeterias at the University of Houston, Veterans Hospital, a number of Houston banks, Baylor Medical School and Gulf Oil Corporation.

A number of other services are being instituted under the same contract.

Carry-out service will shortly be available from the cafeteria for soup, chili, sandwiches and deserts.

A catering service, featuring plates at \$1.50 and steak dinners at \$2.50, is already in operation for planned luncheons and late conferences. Tuesday, for instance, the service was used at a luncheon for the Manned Spaceflight Council, which was meeting at MSC.

This week the first of several mobile food units was put into operation at HPC and Stall-Myers. Several trucks will be added to the food fleet as soon as they are available, and the mobile service will eventually visit all sites daily, including the permanent site at Clear Lake.

These services, as well as food vending machines in all buildings are furnished by Automation Foods under contract to MSC.

The cafeteria offers three "main dishes," an assortment of vegetables, and salads, bread, pie, pudding, soup and hamburgers on the menu at an average meal price of between 62 cents and \$1.38.

The food is served in the usual "hot line" cafeteria fashion, although the cooking is done off the premises.

Hamilton Standard Gets A Contract For Apollo Suit

The award of a \$1,555,970 contract to Hamilton Standard, a division of United Aircraft, at Windsor Locks, Conn. for the development of a "moon suit" for Project Apollo was announced in Washington this month.

The pressure suit will be used by crew members during the translunar flight and landing on the moon in the Apollo spacecraft.

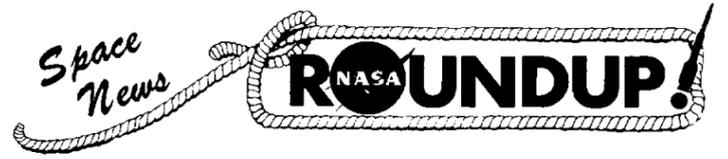
The contract provides that Hamilton Standard will handle the development phase of the first integrated spacesuit assembly. A projection contract for the suit has not yet been awarded.

The Connecticut firm will

manage the development program and design and build life support packs which must supply oxygen and pressurization and control temperatures, humidity and contaminants.

Initial negotiations for the contract were undertaken by MSC; final contract approval came from NASA headquarters early this month.

The contract is scheduled for a 10-month duration.



SECOND FRONT PAGE

Staff Members Improve Job Skills With Study

A startling number of MSC employees are improving their technical and managerial skills by working toward graduate degrees on a part-time basis at Texas universities.

This semester alone, a total of 135 staff members are taking graduate courses at Rice, University of Houston and Texas A and M in everything from physics to business administration.

Another five are going to school full-time, working toward Doctor's and Master's degrees at the three local universities and at Virginia Polytechnic Institute and North Carolina State College.

Despite the problems caused by relocating the entire Manned Spacecraft Center in Houston and setting up a new graduate study program here, the number of MSC students presently enrolled in such courses exceeds percentage-wise the number for any other NASA center.

Those taking courses here in Houston work under a system whereby the government pays tuition and lab fees and the student buys his own books. The courses he takes must be job-related and approved by his supervisor. Most of the courses presently being taught are given during duty hours, and time off is allowed—in most cases two hours a day, two days a week.

A breakdown of the subject matter in courses presently being taken shows 31 students in physics, 61 in math courses, 16 in electrical engineering and the same number in mechanical engineering, eight in business administration courses, and three in chemical engineering.

Texas A and M is teaching celestial mechanics and numerical analysis to 37 MSC employees in the classroom of East End State Bank Building for two hours a day on Tuesday

and Thursday.

The 16 Rice students and 82 taking courses at the University of Houston go to the two university campuses for two hours a day, two days a week.

Most of the employee-students are working toward Master's degrees; six, however, are working on their Ph D's.

"These people are bent on improving their job performance rather than getting degrees per se," said Jack Lister of the Training Office. "We encourage them to go ahead and get graduate degrees—and about 99 per cent of them are planning to do so—but the courses are not really for that purpose."

Of the part time program, Lister commented, "We are encouraging all those who need and can get training at local schools to do so on a part-time basis, without ever going away. This increases their capabilities without depriving the Center of their present job skills."

In addition to the part-time students, five MSC employees are going to school full time for one semester or a year to complete work on graduate degrees.

They include three personnel from the Spacecraft Research Division and two from Flight Operations.

Of the former, Kenneth Weston (structures—heat

(Continued on Page 7)



A MORNING COFFEE held Oct. 11 launched the new employee cafeteria in Farnsworth Chambers. Moving through the coffee-line are (left to right) W. A. Bower of the Exchange Council, Don Gregory, Roy Aldridge and Ray Zavasky.