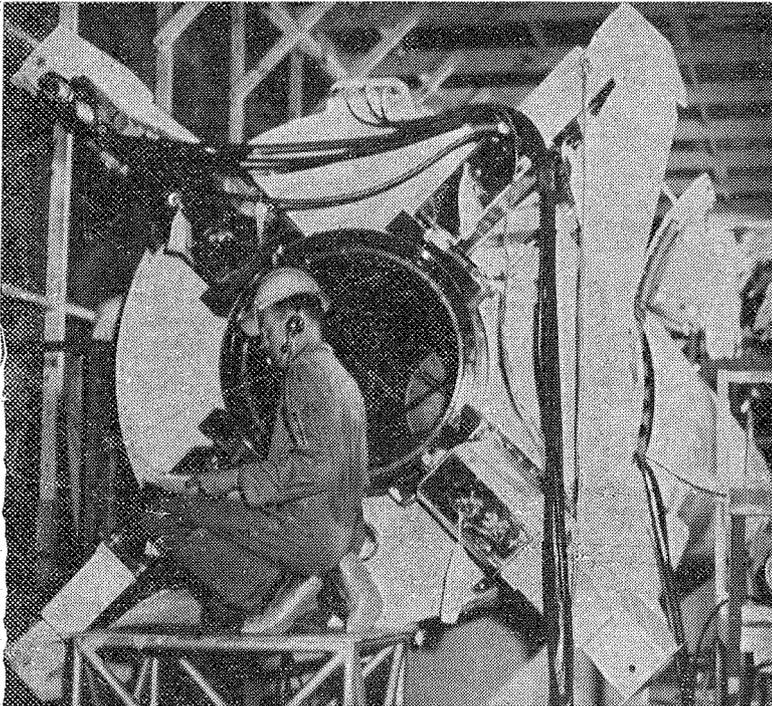


Marshall Star

Vol. 1; No. 1

NASA George C. Marshall Space Flight Center — Huntsville, Alabama

September 28, 1960



REDSTONE SPECIALIST—Astronaut Gordon Cooper, 33, is shown with a Redstone booster during a recent checkout of the Mercury-Redstone booster and capsule at the Marshall Space Flight Center. Each of the astronauts has been assigned an engineering specialty in Project Mercury and Cooper's specialty is the Redstone. In the coming months, Redstones, provided and launched by the Marshall Center, will loft the one-ton Mercury capsule 100 miles high and 200 miles downrange from Cape Canaveral in an engineering buildup to manned Atlas-booster orbital flights. The astronauts are part of NASA's Space Task Group, which directs Project Mercury, based at Langley Field, Va.

Dr. von Braun to Address AOA at Shreveport Friday

Dr. Wernher von Braun, director of the Marshall Center, will discuss "The U. S. Space Carrier Vehicle Program" at a dinner meeting of the American Ordnance Association at Shreveport, La., on Friday evening.

Dr. von Braun will be introduced by the Honorable Overton Brooks, member of Congress and chairman of the House Committee on Science and Astronautics.

Attending will be AOA members from Western Louisiana, Eastern Texas and Southern Arkansas. Dr. von Braun's address, which will include numerous illustrative slides, will be televised by Channel 12 at Shreveport.

The meeting will be held at 8 p.m. at the Washington-Youree Hotel.

MSFC Opens UGF With Spirited 'Kick Off' Rally

The Marshall Space Flight Center's 1960 United Givers Fund campaign opened Wednesday with a spirited "kick-off" rally at the Rocket Auditorium.

The colorful, one-hour ceremony featured speeches by MSFC Director Dr. Wernher von Braun and Dr. Jerry C. McCall, assistant to the director and chairman of the Center's UGF drive.

Attending were some 450 UGF workers and agency representatives from the Marshall Center, Huntsville and Madison County.

Fair Share Set

Each Marshall employee will be asked to donate 80 per cent of one day's salary as his "fair share" toward meeting the Center's \$60,000 goal. The Marshall

400 Attending Industry Conference at Marshall

A two-day industry conference opened yesterday at the Marshall Center with about 400 representatives of U. S. industry, research institutions and government agencies attending.

Purpose of the conference is to acquaint firms and agencies with the Center's present and future projects and the type of industrial and scientific support needed.

MSFC Programs Described

The meeting is being held at the Rocket Auditorium. Dr. Wernher von Braun, Marshall Center director, welcomed conferees and scheduled talks are covering a number of MSFC programs including development of the giant Saturn space vehicle, Project Mercury, the Agena-B and Centaur rocket systems, and supporting research. Procedures for transacting business with the Center are also being outlined.

The conference will end today with a tour of Marshall laboratories.

Limitation of facilities required a controlled attendance by invitation only. About 400 organizations

were invited to send one representative each.

Conference Purpose

In inviting conference attendees, Dr. von Braun said, "the provide industry with a clear con- (See CONFERENCE on Page 2)"

SEAMANS NAMED TO NASA'S TOP CAREER POSITION

Robert C. Seamans, Jr., 41, former chief engineer of the Missile Electronics and Controls Division of the Radio Corporation of America, was recently named associate administrator of the National Aeronautics and Space Administration by Dr. T. Keith Glennan, NASA administrator. He assumed the position on September 1.

Dr. Seamans toured facilities of the Marshall Center last Thursday and visited the Launch Operations Directorate on Friday, accompanied by other officials of NASA Headquarters (see photo inside).

At the federal space agency, Dr. Seamans now occupies the top (See SEAMANS on Page 4)

'Star' to Appear Weekly at MSFC

This is the first issue of the "Marshall Star," a weekly newspaper published for employees of the George C. Marshall Space Flight Center.

A copy of the "Star" will be distributed to every MSFC employee each Wednesday.

The paper is prepared by the MSFC Public Information Office and employee news contributions and suggestions are welcomed. Forward contributions to M-PIO indicating originator's name, association with the Center and phone number. Deadline for submission of material is noon Monday.

The "Marshall Star" will not publish advertising.

drive will continue through November 4.

Addressing Marshall's UGF agents, coordinators and committee-men, Dr. von Braun declared, "... in supporting such a voluntary agency like this you are sharing in democracy at its best. Who ever heard of a United Givers Fund in a dictatorship?"

"By working for and contributing to the UGF, you are living up to your personal responsibilities. You are developing still further your capacity as a good citizen.

"This team of ours," he concluded, "is pretty well known for its brains, but it has a big heart, too."

(See UGF on Page 8)

The MARSHALL ☆ STAR

A weekly newspaper for employees of the George C. Marshall Space Flight Center, National Aeronautics and Space Administration.

The Marshall Star is published every Wednesday by the Public Information Office at the Marshall Space Flight Center.

Contributions should be submitted to the MSFC Public Information Office (M-PIO), Bldg. 4484, ext. 876-1959, and include originator's name, connection with the Center and telephone number.

The Marshall Star does not publish advertising.

Theater League to Offer Four Plays

The season's local entertainment scene will include four plays direct from last season on Broadway, complete with name stars and professional casts. The plays will be staged one night each in the Huntsville High School Auditorium.

The first production "The Pleasure of His Company," starring Joan Bennett and Donald Wood is scheduled for Friday, Oct. 7. A musical "Once Upon a Mattress" starring Imogene Coca and Edward Everett Horton will follow on Nov. 28. Brian Donlevy will star in "Andersonville Trial," Mar. 2; and John Carradine in the Pulitzer Prize winning "J. B." on Mar. 25.

The Broadway Theater League of Huntsville, a community service organization sponsored by the Huntsville Business and Professional Women's Club, is presenting the plays.

Admission will be by season membership which includes the same reserved seat for all four plays. A limited number of memberships are still available. Memberships may be secured from any member of the Business and Professional Women's Club or by calling Mrs. Rodgers, JE 6-2502.

Nebraska Groups To Hear Kuettner

Dr. Joachim Kuettner, Mercury Project manager at the Marshall Center, will address physicians, dentists and pharmacists in Omaha, Alliance and Lincoln, Nebraska, on October 1, 2, and 3.

Dr. Kuettner will discuss various aspects of "Man's Round Trip to Space" during the three addresses which are part of an Inter-professional Airborne meeting.

Dr. Kuettner was director of the Zugspitze Mountain Observatory, Germany, prior to coming to the U. S. in December 1948. Thereafter he was employed by the Air Force Cambridge Research Center and was scientific director of the Mount Washington Observatory before joining the rocket development team at Huntsville in 1958.

Page 2

CONFERENCE

(Continued from Page 1)

cept of the role of MSFC in the overall mission of the National Aeronautics and Space Administration and a comprehension of the scientific and technical work of the Center. It will enable industry to understand the support MSFC will require in its present and future missions and objectives.

"It is NASA's policy," he explained, "to utilize the capability and resources of industry to the maximum. The mutual understanding derived from the conference will enhance the attainment of future goals."

Similar Briefings Held

A similar industrial briefing was held at NASA Headquarters, Washington, D. C., in late July, covering the entire space and aeronautical field. Each major NASA field activity in conducting a conference this fall dealing with its particular technical activity and the kinds of industry support it requires.

Largest and newest of NASA's field installations, MSFC has a current budget of about \$360 million a year, and is responsible for developing and launching NASA's space vehicles.

Conference Presentations

Those making presentations during the MSFC conference and their respective subjects include: Dr. Eberhard Rees, deputy director for research and development, "Internal Operations"; Dr. Oswald Lange, manager, Saturn Systems Office, "Saturn Program"; Dr. Joachim Kuettner, Mercury Project Manager, "Mercury"; Hans Huetter, manager, Agena and Centaur Systems Office, "Agena-B/Centaur";

Dr. Kurt Debus, director,

GREEVER TO HEAD JUNO II PROJECT

Bill B. Greever, formerly of the Saturn Systems Office at the Marshall Center, has been placed in charge of the Juno II Project at MSFC and is now attached to the office of the deputy director for research and development.

Prior to joining the Huntsville rocket development group in 1957, Greever was an engineer with the U. S. Navy Bureau of Yards and Docks at Washington, D. C.

NASA Marks Beginning Of 3rd Year Saturday

The National Aeronautics and Space Administration will mark its second birthday on Saturday, October 1.

Established in 1958 by Congressional passage of the National Aeronautics and Space Act, NASA is charged with conducting the nation's scientific space exploration programs. Dr. T. Keith Glennan is the organization's first administrator.

The addition of the Marshall Space Flight Center to NASA on July 1 completed a evolutionary two-year consolidation of the national space effort. It also overcame the Space Administration's one major deficiency—a field installation to take charge of the development and launching of space vehicles, and brought to the organization Dr. Wernher von Braun and a group of scientists having more than 20 years' experience in pioneering rocketry.

Nucleus of NASA is the former National Advisory Committee for Aeronautics (NACA), which was founded in 1915 to study the problems of flight with a view to practical solutions.

During its 43 years of operation, NACA helped blaze aviation history. In early years, it revolutionized basic aircraft design and construction. Its wind tunnel and other research facilities made NACA technical reports the basis for aviation progress and by the end of World War II these efforts led into space.

More recent NACA accomplishments include the research rocket aircraft program which resulted in development of the X-1 in which man first broke the speed of sound in 1947; the "area rule" which is indispensable to high performance of supersonic jet aircraft; the "blunt body" concept for atmospheric re-entry which paved the way for practical design of ballistic missile nose cones as well as the Mercury capsule; pioneering research in the field of ion propulsion, and more than 3,000 rocket launchings at Wal-

lops Island Station, Va.

These accomplishments illustrate the long tradition of broad research and development experience around which the NASA organization was formed.

The 8,040 NACA personnel and the NACA laboratories were transferred immediately to NASA becoming the Langley Research Center, Hampton, Va.; Lewis Research Center, Cleveland, Ohio; Ames Research Center, Moffett Field, Calif.; Flight Research Center, Edwards, Calif.; and the Wallops Station, Wallops Island, Va.

To this core of personnel were added, on NASA's first day of business, Project Vanguard and 400 Naval Research scientists who now help staff NASA's new Goddard Space Flight Center at Beltsville, Md. The Goddard Center is named after the American rocket pioneer Dr. Robert H. Goddard, who successfully launched the world's first liquid-fuel rocket in 1926.

Also transferred to NASA from the Department of Defense were certain earth satellite and space vehicle programs including "super thrust" propulsion systems.

Two months later, on December 3, 1958, the President transferred functions and facilities of the Jet Propulsion Laboratory, Pasadena, Calif., from the U. S. Army to NASA.

Founded in 1936, JPL developed jet-assisted takeoff (JATO) rockets during World War II, and thereafter was active in various rocket programs of Army Ordnance as well as the space vehicle field. JPL designed, built, and tested upper stages, payloads and tracking systems for the first Explorer satellites.

Also on December 3, NASA and the Army reached an agreement whereby the Army Ordnance Missile Command at Huntsville, Ala., and its subordinate organizations would be responsive to NASA requirements.

Within the entire governmental structure, NASA coordinates fully on all space related matters with all other departments and activities. This includes the Department of Defense and the various military missile and space-oriented programs.

The X-15 is a joint NASA-Air Force-Navy program, while the Mercury manned space program under NASA's direction involves close and detailed mutual support across the board.

NASA relies heavily in American industry in all areas of aeronautical and space operations.

MARSHALL ☆ STAR

Oct. 1 Deadline To Enroll In NASA Life Insurance

All Marshall Center employees are urged to enroll at once in the National Aeronautics and Space Administration Employees Benefit Association Group Life Insurance Program.

No medical examination or health statement is required if enrollment is completed before Saturday, October 1. Thereafter employees will have to show evidence of insurability satisfactory to the insurance company.

The NASA life insurance program, in effect for nine years throughout other NASA installations, has over 6,000 members insured for more than \$45,000,000. It is administered by the Home Life Insurance Company of New York City, which is more than 100 years old and one of the largest life insurance firms in the U. S.

The plan is for NASA employees only; no one else employed in the federal service is eligible.

Dr. T. Keith Glennan, NASA administrator, has stated that "favorable experience to date under the NASA plan shows that we are able to provide more insurance protection per dollar of cost than under comparable group plans offered by the government or by commercial companies."

The average NET COST of the plan after dividends to the 6,000 members insured at other NASA installations during the past nine years has been less than \$4.50 per year per \$1,000. It is expected that with a high enrollment of MSFC employees, the NET COST will be even lower in the years to come.

All that is necessary to join the plan is completion of an enrollment card and payment of the first quarterly premium. Each quarter thereafter, enrolled employees will receive a statement telling them where to send payments.

Enrollment cards and addition-



DR. VON BRAUN ENROLLS—Dr. Wernher von Braun (seated), director of the Marshall Center, was the first MSFC employee to enroll in the National Aeronautics and Space Administration Group Life Insurance Program. Witnessing his enrollment are, left to right, Paul C. Perry, Personnel Branch, MSFC; Winston Whittemore, representative, Home Life Insurance Co.; John A. Packal, field underwriter, Home Life Insurance Co.; Arthur E. Sanderson, director of personnel, MSFC; A. William Rose, district group manager, Home Life Insurance Co.; and Jack Evans, vice-president, Home Life Insurance Co. Dr. von Braun encourages all MSFC employees to join the insurance plan.

al information regarding the plan are available in all MSFC administrative offices.

The current campaign to enroll MSFC employees in the NASA program began on September 1, with representatives of the Home Life Insurance Company holding meetings throughout divisions and offices to explain the plan to all employees. Response to date has been reported excellent and enrollment cards are being received in volume daily.

"If you haven't submitted your enrollment card, do it now," urges Arthur E. Sanderson, director of

Personnel Branch, MSFC. "This is an excellent opportunity," he points out, "for everyone to buy low cost life insurance to protect the financial security of their families."

Andalusia Clubs Hear MSFC Man

Keith Wible of the Marshall Space Flight Center, National Aeronautics and Space Administration, discussed "Subversion and Infiltration" in an address at Andalusia last night.

Chief of the Marshall Center's Security Branch, Wible addressed the annual joint meeting of the Andalusia Business and Professional Women's Club, the Pilot Club and the Altrusa Club.

Wible joined the research and development group at Huntsville in June 1952 and was chief of the Intelligence and Security Division at Redstone Arsenal before accepting his present position.

He holds a BS degree in business education from Ball State College, Muncie, Ind., and has done post-graduate work at Indiana University. He is a member

Joint AEC-NASA Office Established

John A. McCone, chairman of the Atomic Energy Commission and Dr. Keith T. Glennan, administrator of the National Aeronautics and Space Administration recently announced the establishment of the joint AEC-NASA Nuclear Propulsion Office (NPO).

The new office will consolidate the work which has been carried out by organization in each agency to develop nuclear energy for space missions.

Harold B. Finger, Chief of Nuclear Propulsion for NASA, was named manager of the joint office. The deputy manager will be Milton Klein who has been assistant manager for Technical Operations of the AEC's Chicago Operations Office.

The new office will be staffed by employees drawn from both the AEC and NASA. It will be located at the AEC Headquarters at Germantown, Md.

The NPO will integrate the Project Rover Nuclear Powered Rocket development programs which had been carried out previously by the AEC thru its Aircraft Reactors Branch of the Division of Reactor Development and the nuclear propulsion organization in NASA's office of Launch Vehicles.

In accordance with statutory responsibilities of both agencies, AEC will have primary responsibility in this program for the development of all reactors and their components, including those for flight missions specified by NASA; NASA will have primary responsibility for research and development of non-nuclear components and integration of the nuclear components in engines and vehicles of rocket systems.

The Rover program was initiated in 1955 by AEC and the Air Force. When NASA was established in 1958, Air Force responsibility in this program was transferred to NASA.

Development of the reactor system is being carried out by the Los Alamos Scientific Laboratory, operated for the Commission by the University of California. Tests of two reactors, Kiwi-A and Kiwi-A Prime, have been conducted at the AEC's Nevada Test Site in July of 1959 and July of 1960. A third reactor Kiwi-A-3, is scheduled to be tested later this year.

The Atlas-Agenda-B series replaces the Vega program which NASA canceled last December.

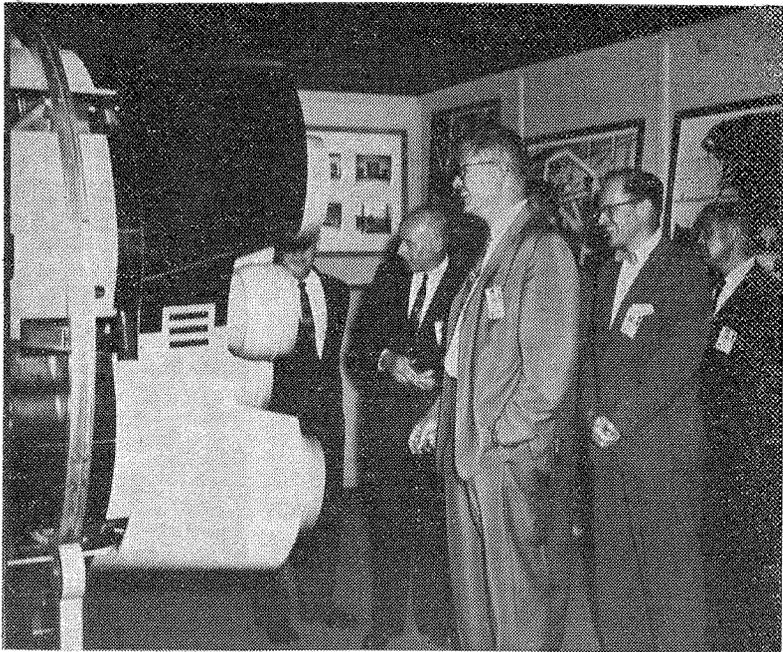
of the American Society for Industrial Security, the Benevolent and Protective Order of Elks, and the Monte Sano (Huntsville) Civic Organization.

NASA EMPLOYEES BENEFIT ASSOCIATION

Group Life Insurance Program in Brief:

Class	Base Annual Earnings	Amt. of Life Insurance	*Quarterly Payment
1	Less than \$4,000	\$2,000	\$ 3.20
2	\$4,000 but less than \$5,000	\$4,000	6.40
3	\$5,000 but less than \$6,000	\$6,000	9.60
4	\$6,000 but less than \$7,000	\$7,000	11.20
5	\$7,000 but less than \$8,000	\$8,000	12.80
6	\$8,000 but less than \$10,000	\$10,000	16.00
7	\$10,000 but less than \$12,000	\$12,000	19.20
8	\$12,000 but less than \$14,000	\$14,000	22.40
9	\$14,000 and over	\$15,000	24.00

*First year quarterly cost. Dividends earned after first year will reduce cost considerably.



DR. ROBERT C. SEAMANS, JR. (center), recently named associate administrator of NASA, examines the quarter scale model of the Saturn booster in the Fabrication and Assembly Engineering Division at the Marshall Center during a tour of MSFC facilities last Thursday. Shown with Dr. Seamans are, left to right Max E. Nowak, chief of the Assembly Engineering Branch, F&AE Division; Dr. Eberhard Rees, deputy director for research and development, MSFC; Albert P. Siepert, director, Office of Business Administration, NASA; and Maj. Gen. Don Ostrander, director, Office of Launch Vehicles Programs, NASA. Dr. Seamans visited the Launch Operations Directorate at Cape Canaveral, Fla., on Friday.

Seamans

(Continued from Page 1)

career post, serving under the presidentially-appointed administrator and deputy administrator. He succeeds Richard E. Horner, who resigned earlier this month to become senior vice president, technical, at Northrop, Inc.

A graduate of Harvard University, and the possessor of master's and doctor's degrees from the Massachusetts Institute of Technology, Dr. Seamans has been active since 1941 in the fields of missiles and aeronautics. From 1941 to 1955, he held teaching and project-management positions of increasing responsibility at M. I. T., including associate professor of the Department of Aeronautical Engineering, chief engineer of Project Meteor, and director of the Flight Control Laboratory.

Dr. Seamans went to RCA in 1955 as manager of the Airborne Systems Laboratory and chief systems engineer of the Airborne Systems Department. In 1958 he became chief engineer of the Missile Electronics and Controls Division, and in this capacity supervised all scientific engineering and technical personnel in the division.

No stranger to NASA and its predecessor organization, the National Advisory Committee for Aeronautics, Dr. Seamans served on technical committees of NACA

MSFC BUDGET IS \$350.1 MILLION

Budget for the current fiscal year (FY 61) at the Marshall Center is \$350.1 million, more than a third of the entire approved National Aeronautics and Space Administration budget of about \$915 million.

Of the \$350.1 million to be allotted to MSFC, \$77.4 million is slated for support of the Huntsville facilities; \$218.2 million for research and development, and \$54.5 million for construction and equipment, including one project not yet released from the Bureau of the Budget reserve.

The \$77.4 million for support of Huntsville facilities will be used for the direct costs of operating the Marshall Center, including salaries, support of plant and other housekeeping expenses. Payroll at the center was recently estimated at more than three-quarters of a million dollars a week.

Since a large part of the Marshall Center work involves preparation of invitations for bids by industry, evaluation of contractor

from 1948 to 1958. He was a consultant to the Scientific Advisory Board of the Air Force from 1957 to 1959 and earlier this year was appointed a member of that Board.

Marshall Center Included In NASA Flight Schedule

National Aeronautics and Space Administration East Coast installations are now serviced with an airlift operation which includes a Redstone route between the Marshall Center and Patrick Air Force Base.

NASA personnel traveling on official business are requested to use the airlift service in lieu of commercial travel. Non-NASA personnel may use the service on a "space available" basis.

The Redstone route, serviced by a Super C-46, operates on Tuesday and Thursday. The flight leaves Redstone airport at 7 a. m. CST and arrives at Patrick at 11:30 EST. In the afternoon the flight leaves Patrick at 2:30 p. m. EST and arrives at Redstone at 5 p. m. CST.

Two other routes in the NASA plan are the Tidewater route, serviced by a passenger DC-3 and providing transportation between NASA Headquarters, Langley Research Center and Wallops Station, and the Mercury route, serviced by a pressurized Martin 404 and operating between Langley Research Center and Patrick Air Force Base.

The Tidewater route operates on Monday, Wednesday and Friday leaving Bolling Air Force Base at 7 a. m. EST, Langley at 8:05 a. m. EST, Wallops at 8:50 a. m. EST and arriving back at Bolling at 9:35 a. m. The afternoon flight leaves Bolling at 4:30 p. m. EST, Wallops at 5:30 EST, Langley at 6:30 EST and arrives back at Bolling at 7:20 p. m. EST.

The Mercury route operates on Monday, Wednesday, Tuesday

proposals, procurement and contracting operations, testing of contractor products, systems management, and launch operations for launch vehicles developed by industry, only about one-half of the \$77.4 million will be devoted to "in-house" development.

Of the \$54.5 million for MSFC construction and equipment, \$27.9 million will go to Saturn launch facilities at Cape Canaveral.

The \$350.1 million budget figure for the Marshall Center excludes customer orders — that is, work done for other NASA centers, the Army and other organizations. During FY 61, about ten per cent of Marshall's "in-house" effort will be devoted to the Army's Pershing system, which was initiated while the Marshall Center was still part of the Army Ballistic Missile Agency.

and Friday. On Monday and Wednesday it leaves Langley at 6:30 p. m. EST and arrives at Patrick at 10 p. m. EST. The return flight on Tuesday and Friday leaves Patrick at 5 p. m. EST and arrives at Langley at 8:30 p. m. EST.

The airlift service has been arranged through the contracting office of the Military Air Transport Service. Contractors operating the routes have compiled fully with the regulations and requirements of the Civil Aeronautics Board and the Federal Aviation Agency.

Official travel orders covering transportation by NASA airlift service should specify "travel by Government aircraft, if available" and indicate the specific route. Such orders will be the authorizing document for NASA personnel to board the plane.

Reservations on all flights should be made at least four hours prior to scheduled departure time.

Light snacks will be served without charge on the Tidewater and Redstone routes. Dinners served on the Mercury flight will be listed on travel vouchers and a deduction of \$1.50 will be made for each dinner listed.

Contractors for the airlift service carry minimum liability coverage of \$75,000 per passenger for bodily injury sustained as a result of the operator's negligence. This coverage is to protect the carrier and passengers can recover only by legal action. For passengers desiring personal insurance, individual insurance policies may be obtained with policy rates and coverage equal to those issued for commercial air travel.

Cargo can be shipped on all three NASA routes. Arrangements for cargo shipment should be made with the local transportation office at least eight hours in advance of the desired service.

Further details regarding the NASA routes are available in the Traffic Management Branch of the Office of Management Services at the Marshall Center.

Dear Mr. Marshall . . .

It had to happen, and it did. But it didn't have to happen four or five times.

Several recent letters to the Marshall Center have begun:

"George C. Marshall Space Flight Center

"Huntsville, Alabama

"Dear Mr. Marshall . . ."

MARSHALL ☆ STAR

Dr. Wernher von Braun, Marshall Center Director

(Editor's note: The following story on Dr. Wernher von Braun, director of the Marshall Center, is the first in a series of biographical sketches on key personnel at MSFC which will appear in the "Marshall Star," primarily for the benefit of new employees).

Dr. Wernher von Braun, director of the George C. Marshall Space Flight Center, brings to the U. S. space effort more than thirty years of experience in rocket development.

Born in Wirsitz, Germany, on March 23, 1912, he received his bachelor's degree at the age of 20 from the University of Berlin and two years later was awarded a doctorate in physics from the same institution.

In 1930, he joined a group of inventors who made up the German Society for Space Travel, and in 1932 was employed by the Ordnance Department of the German government. For the following five years he served as chief of a small rocket development station near Berlin, where the forerunners of the V-2, the liquid-fueled A-1, A-2 and A-3 rockets, were developed.

In 1937 he became technical director of the Peenemuende Rocket Center where the V-2 was developed. As World War II came to a close, he led more than 100 of his fellow scientists to the West and surrender to the Allied Powers.

Dr. von Braun arrived in the U. S. in September 1945 under contract to the U. S. Army. During the following five years he directed high altitude firings of captured V-2 rockets at White Sands Missile Range, N. M., and was project director of a guided missile development unit at Ft. Bliss, Tex., where some 120 of his Peenemuende colleagues were employed.

In 1950, the Ft. Bliss rocket development group was transferred to Huntsville, where the Army centered its rocket development activities.

Dr. von Braun and 102 of his associates and their families received American citizenship on April 15, 1955.

On July 1, 1960, Dr. von Braun's rocket development team was transferred to the National Aeronautics and Space Administration, making up the major element of the George C. Marshall Space Flight Center, and the Marshall Center was charged with the responsibility for developing and launching space vehicles and conducting related research.

Dr. von Braun has received numerous professional and scholastic honors for his leading role
MARSHALL ☆ STAR

in rocketry and space research. Among the most recent was the Distinguished Federal Civilian Service Award which he received last year from President Eisenhower.

"Space," Dr. von Braun declares, "has beckoned to man since he worshipped the Sun, the stars and the planets. Man employed ships to discover new continents. He used airplanes to conquer heights never previously attained. He will also take advantage of the possibilities inherent in rocket propulsion to use space vehicles to probe the unknown regions beyond Earth's atmosphere. It is a man's greatest adventure and his biggest opportunity to contribute to world understanding and peace."

Echo Radio Beams Working Part Time

National Aeronautics and Space Administration scientists recently announced that Project Echo's radio tracking beacons are operating only in sunlight.

During light periods, the two 107.94 mc beacons are directly dependent on 70 solar cells carried in each transmitter assembly. The nickel-cadium storage batteries which had powered the tracking beacons during periods of darkness have apparently failed.

The five rechargeable batteries in each transmitter began to lose their power about two weeks after launch, August 12. This caused signal "fading" which became more pronounced until the transmitters stopped operating upon entering the Earth's shadow. For the past few weeks, the satellite has been spending about 30 minutes out of each 118-minute orbit in darkness.

Wired five each in series, the chemical batteries provided a total of 6 volts for each transmitter.

The storage battery failure was probably caused by the extremes of temperature encountered by the satellite: -80 degrees F while in darkness, and about 240 degrees F when in sunlight.

Although the radio beacons are not operating while the Echo sphere is in darkness, it can be tracked by radar. The satellite will continue to be used in conducting communications experiments.

Radar measurements continue to show that the satellite is maintaining its spherical shape. In spite of the fact that there is a slight wrinkling in the satellite's skin, it continues to be an excellent reflector of signals.



MSFC DIRECTOR—"The mastery of space is man's greatest adventure and his most inspiring undertaking. It should spur us to maximum effort. The nation which mastered all of man's earthly environment—land, sea and air—owes to its destiny the mastery of the limitless environment of space."—Dr. Wernher von Braun.

Stuhlinger Speaks On Electric Power For Use in Space

Dr. Ernst Stuhlinger, director of the Research Projects Division at the Marshall Center, discussed "Long Range Space Power Requirements" in a luncheon address yesterday at the American Rocket Society Space Power Conference in Los Angeles, Calif.

"Electric power requirements in space will go up by an order of magnitude as soon as human existence must be supported over a period longer than a few hours," he explained. "Even though the first pioneers in space will have no need for a lawn mower, a flat iron, and an electric train," he continued, "the average power equipment to support one person in space is of the order of 1 kw.

"A crew of about 10 men, occupying an installation for continuous lunar and space exploration, possibly even with some highly specialized mining operations, and with a space port for ferry vehicle traffic between Moon and Earth, should have a power station which produces 300 to 500 kw of electric power continuously. A need for a power station of this magnitude may arise in the period from 1970 to 1975."

Dr. Stuhlinger also discussed

requirements for electric space power in connection with electric propulsion systems, pointing out that the only two promising sources of primary energy available today are the sun and the nuclear fission reactor.

"The fundamental requirements which must be placed upon an electric space power system," he pointed out, "are light weight, small size, long operating life, and highly reliability . . . the same qualities which have been required of aircraft engines ever since the flights of the Wright Brothers."

He outlined the following possible requirements for electric space power: 1-3 kw, 1961; 30-60 kw, 1964; 300 - 1000 kw, 1968; and 10-20 mk, 1970-1975.

In conclusion, Dr. Stuhlinger pointed out that in addition to electric power, another kind of power—brain power—is required for the exploration of space, citing the urgent need for scientists and engineers to conduct the U. S. space program.

The Agena-B is designed to restart in space and will carry a guidance unit. It is assembled by Lockheed using engines built by Bell Aircraft Co., which burn nitric oxide and hydrazine. Agena-B is five feet in diameter, more than 25 feet long and its engine will develop 15,000 pounds thrust.

Ames Research Center Pursues Aeronautical, Space Flight Research

(Editor's note — the following article on the Ames Research Center is the first in a series of articles to appear in the "Marshall Star" describing the activities of other NASA installations throughout the U. S.).

The National Aeronautics and Space Administration's Ames Research Center at Moffett Field, Calif., pursues basic and applied research on aeronautical and space flight problems.

Founded in 1940 as the second major aeronautical research establishment of the National Advisory Committee for Aeronautics (NACA), Ames was named in honor of Dr. Joseph Sweetman Ames (1864-1943), a noted physicist, president of Johns Hopkins University, and chairman of NACA from 1927 until 1939.

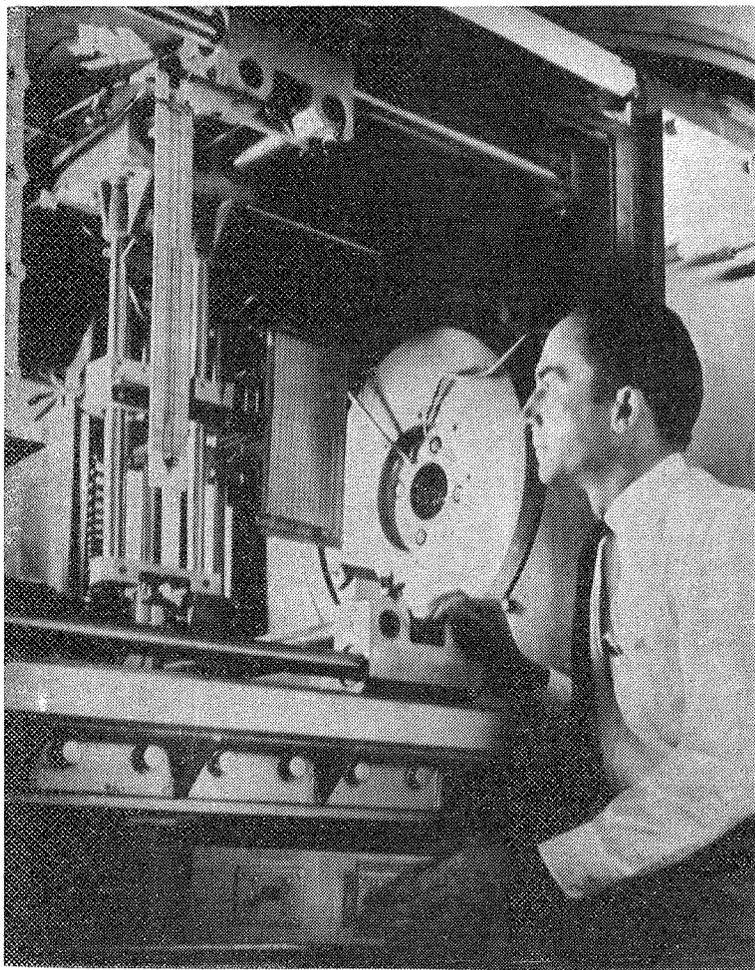
On October 11, 1958, the Ames Center became part of the new National Aeronautics and Space Administration. Dr. Smith J. DeFrance has been director of the Center since its inception.

From an establishment traditionally expert in high speed aerodynamics research, the Ames Center has developed into an integrated group of scientists making important contributions in such varied areas as re-entry, vehicle stabilization and control, flight dynamics, fluid mechanics, vibration and flutter, hypersonic aerodynamics physics of the upper atmosphere, impact studies, and VTOL/STOL aircraft research.

Two-thirds of the Center's programs apply to space vehicles of many kinds; the remaining third are in the field of aircraft—ranging from the slowest to the fastest. Much of the work is basic in nature and useful for both civil and military purposes, while some is in direct support of Department of Defense programs for weapon system development.

Research in atmosphere re-entry forms a large and important share of the Center's activity. Since the fundamental blunt re-entry concept was originated at Ames by H. Julian Allen in 1952, the staff has produced major contributions to the numerous re-entry solutions required by manned satellites, boost-glide vehicles, proposed manned interplanetary and lunar craft, and ballistic missiles.

This research has led to fuller understanding 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 de-



THIS LOW DENSITY WIND TUNNEL, one of many test facilities at NASA's Ames Research Center, Moffett Field, Calif., is used for aerodynamic studies at simulated high altitudes. The test section of the wind tunnel, seen above, is closed with a glass viewing plate when a test is in progress. At center right is the circular exit of a supersonic nozzle capable of speeding a stream of very low density air up to six times the speed of sound. The apparatus at left center positions the model in the stream leaving the nozzle. It contains some of the measuring equipment needed to record pressures and other important quantities. Air pressures equivalent to altitudes up to 150,000 feet can be simulated in this wind tunnel and speeds of Mach 6 can be attained.

structive heat, design and materials approaches, and the problems of stability and control during re-entry flight.

Exploring the ability of a human pilot to control during re-entry flight has been another active program at Ames for several years. Allied research work seeks designs techniques whereby vehicles capable of human control can be built.

As a result of remarkable experience in guidance and control, the Center is also conducting research in connection with stabilizing and controlling NASA's proposed meteorological satellite, Project Nimbus, and a proposed Orbiting Astronomical Observa-

tory.

Roughly 15 percent of the Ames research effort concerns hypersonic and supersonic aircraft, including work which applies to supersonic transport aircraft as well as to military programs like the B-70 supersonic bomber. The fundamentals of hypersonic aerodynamics have been extensively worked out, and basic information on which practical designs may be based is already in hand.

At the opposite end of the speed scale, Ames is pursuing a comprehensive program of research into the problems of vertical and short take-off and landing aircraft (VTOL/STOL). The Ames 40-by 80-foot wind tunnel, largest in the world, has been ex-

MSFC PERSONNEL PARTICIPATE IN IRE SYMPOSIUM

HUNTSVILLE, Ala.—Four employees from the Marshall Center, participated in the Fifth National Symposium on Space Electronics and Telemetry held last week in Washington, D. C.

Sponsored by the Professional Group on Space Electronics and Telemetry of the Institute of Radio Engineers, the three-day meeting opened Monday, September 19.

Marshall Space Flight Center participants included: Otto Hoberg, chief of the Instrumentation Development Branch in the Guidance and Control Division, who served as chairman of the session on telemetry; Walter Frost, deputy chief of the Telemetry Section in the Guidance and Control Division, who presented a paper entitled "Space Telemetry, Vehicle Telemetry — A Comparison" at the telemetry session; Olin B. King, a research engineer with the Guidance and Control Division, who presented a paper entitled "Signal Processing in Explorer VII" during the signal conditioning session; and Dr. Russell D. Shelton, chief of the Nuclear and Ion Physics Branch in the Research Projects Division, who presented a paper entitled "A Discussion of the Studies of Ion Propulsion" at the electronic propulsion session, which was jointly sponsored by the American Rocket Society.

tensively in the program, supported by flight with actual aircraft including the Bell XV-3, the Bell X-14, and the Ryan Vertiplane.

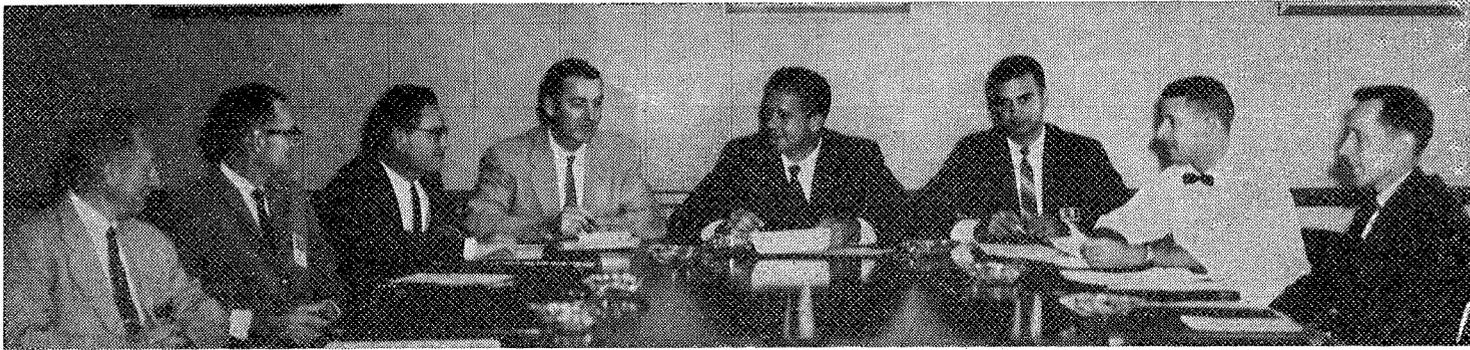
Simulation techniques and devices form a vital part of Ames' capability in the area of vehicle dynamics. They have been employed in the VTOL program as well as in studies of piloted re-entry.

A five degrees-of-freedom centrifuge now under construction will expand the research capability of the Center in simulation work. For simulation studies in flight, the Bell X-14 twin-jet VTOL machine is now being converted into a variable stability aircraft which will greatly enlarge the area in which VTOL/STOL investigations may be pursued.

Supporting the research activities of the Center is a well-founded instrumentation group, active in original research as well as in the direct application of instrumentation techniques to specific research problems.

The Ames Research Center currently has a staff of approximately 1,440, of whom one third are scientists and engineers. It has fully-equipped shops providing necessary technical services.

MARSHALL ☆ STAR



THE EXECUTIVE COMMITTEE for the Marshall Center's 1960 United Drive outlines plans for meeting the Center's \$60,000 goal. Shown, left to right, are Al Frankel, representing Claude Stockton, director of the Office of Financial Management and financial director of the drive; Henry Williams, chief of the Administrative Services Office; Dick Pratt, Public Information Office; Marion Kent,

executive assistant to the director of the Office of Technical Services and administrative director of the campaign; Dr. Jerry C. McCall, assistant to the director and drive chairman; Keith Wible, chief of Security Branch; S. R. Stewart, Engineering Branch of OTS, and Hardy Jackson, Office of General Counsel. Not present was Davis Foxworthy, chief, Maintenance Branch, OTS.

University Will Establish Local Research Institute

As a major step in enlarging and improving its research and graduate programs the University of Alabama plans to establish a science research institute at Huntsville in cooperation with the Marshall Space Flight Center of the National Aeronautics and Space Administration and the Army Ordnance Missile Command.

President Frank A. Rose, University of Alabama, in making the announcement, said he expects the institute to be in operation by January 1, 1961.

The primary mission of the institute at Huntsville, will be to provide basic research services in problem areas encountered at the Marshall Space Flight Center and the Army Ordnance Missile Command. Also, the institute will serve to expand and strengthen the University's graduate training programs.

"In taking this action," said Dr. Rose, "the University joins the ranks of foremost American universities that take part in solving critical military and scientific research problems.

"The University at its institute will employ a number of nationally and internationally known scientists who, in addition to conducting University research under contract to government and industry, will be available to teach graduate programs of the University in Huntsville and to direct research of graduate students."

Over two hundred high-level professional and technical employees at the Marshall Space Flight Center and the Army Ordnance Missile Command now participate in graduate degree classes which the University offers in Huntsville. The University main campus now conducts extensive research under contracts with the two agencies.

Both the research and the graduate training programs are ex-

pected to increase appreciably as a result of the institute development.

The research institute, which will operate directly under the central administration of the University, will have a modest beginning, with an initial staff of a director, approximately three permanent and three visiting researchers, and several research assistants. Some institute research will be performed by additional personnel at the University main campus. There will be an interchange of personnel between the main campus and the institute as research progresses.

Areas of research at the outset will include physics, mathematics, chemistry, and engineering. Specific research projects will be developed by institute staff in conjunction with academic departments of the University.

Initially the institute will be located at the new University Center building on University Drive in Huntsville. Facilities at Redstone Arsenal will be made available for use by the research scientists in keeping with a federal policy established by the Federal Council for Science and Technology on April 26, 1960.

"While existing institutes differ somewhat in basic organization," Dr. Rose stated, "their underlying purpose is the same: to further the urgent need for research in the space age, which requires that the United States make every effort to use all available research talent and facilities and, in addition, encourage further development of research capabilities.

"These organizations have been successful financially and in most cases have expanded into major research operations which have attracted industry and industry-sponsored research to their areas. Thus they have become an important factor in the economic as

NASA, DOD Established New Coordinating Board

The National Aeronautics and Space Administration and Department of Defense have established a joint board for continuing coordination of the nation's aeronautics and space programs. Members of the board are top management personnel.

The agreement establishing the Aeronautics and Astronautics Coordinating Board provides that it will review planning to avoid duplication; coordinate activities of common interest; identify problems requiring solution by either NASA or DOD and insure a steady exchange of information.

The director of Defense Research and Engineering and the deputy administrator of NASA will serve as co-chairman. These positions are now held by Dr. Herbert F. York and Dr. Hugh L. Dryden, respectively.

Organization of the board includes a number of panels which will identify and study problems related to space and aeronautics programs and make recommendations to the board for their solution. Panel chairmen are members of the board.

Panels so far constituted and their chairmen are:

Launch Vehicles — Dr. Courtland D. Perkins, assistant secretary of the Air Force for Research and Development.

Manned Space Flight — Dr. Abe Silverstein, director of Space Flight Programs, NASA.

Space Flight Ground Environment — Lt. Gen. Donald N. Yates, deputy director of Defense Research and Engineering.

Unmanned Spacecraft — Dr. Homer E. Newell, deputy director of Space Flight Programs, NASA. Supporting Space Research and

well as the educational growth of the states in which they are located."

Technology — Ira H. Abbott, director of Advanced Research Programs, NASA.

Aeronautics — Vice Admiral John T. Hayward, deputy chief of Naval Operations (Development).

For the present, the area of Life Sciences is to be covered by the Manned Space Flight Panel. However, NASA and DOD have instituted action to establish a joint Life Sciences Committee to report to the board on matters in this area.

Membership of the board also includes two members-at-large to insure representation of all military departments and equal representation between DOD and NASA. These members and their alternates are:

Richard S. Morse, director of Research and Development, Department of the Army and Lt. Gen. A. G. Trudeau, chief of Research and Development, Army, alternate; Dr. Robert C. Seamans, Jr., associate administrator of NASA, and an alternate to be appointed later.

The board meets at least bi-monthly at the chairman's call.

MSFC to Exhibit At Ala. State Fair

The Marshall Center will be represented at the Alabama State Fair next week with a one-tenth scale model of the Saturn, and a special space exhibit prepared by the Graphic Engineering and Model Studies Branch of the Office of Management Services, MSFC.

The one-tenth scale model will be in the main exhibit building while the space exhibit will be located in the foyer.

The State Fair will be held in Birmingham from Oct. 3 through Oct. 8.

UGF Drive

(Continued from Page 1)

Special Guests

Special guests at the rally were Mayor R. B. Searcy of Huntsville; Dr. Eberhard Rees, deputy director for research and development at the Space Flight Center; Delmar Morris, deputy director for administration at the Center; Harold Bronfin, executive director of the Madison County UGF drive, and Dorsey Uptain, chairman of the United Givers Fund in Madison County, who spoke briefly on the need for UGF.

Mrs. Chessie Harris, founder and director of the Harris Home for Children, and Russell Barber, director of Aid for Retarded Children, also spoke on the specific needs of various charitable agencies.

The Harris Home and Aid for Retarded Children are the only new agencies added to this year's drive.

Hundreds Benefit

The hundreds of needy and physically handicapped children who benefit from UGF were symbolized at the rally by two children representing the Harris Home and the Crippled Children's Clinic. A Boy Scout and a Girl Scout were also seated on the speaker's platform.

In reference to unfortunate children and adults aided by the United Drive, Dr. McCall pointed out during remarks to the rally that, "If there's one thing that all of us have in common, it's our basic desire to help our fellow man. We don't like to see people hungry, or deformed, or turned out in the street."

UGF he added, provides the best opportunity for us to do our part and, at the same time, insures that contributions will be distributed "where they will help the most people in the most effective and helpful way."

Marshall Rockettes

As master-of-ceremonies, Dr. McCall also introduced, for the first time, the Marshall Rockettes, a group of 16 girls chosen from each of the Center's Divisions and Offices. The Rockettes will visit the various elements of the Center as well as the 23 UGF agencies to create interest in and stimulate contributions to the United Fund.

Keith Wible, chief of Marshall's Security Branch, instructed MSFC agents and coordinators in the methods of obtaining pledges and collecting donations so that all employees will be given an opportunity to contribute to the drive.

An administration director and a financial director will assist Dr. McCall in meeting MSFC's 1960 goal. They are, respectively, Marion I. Kent, executive assistant to the director of the Center's Of-



THE MARSHALL ROCKETTES, introduced for the first time during the Marshall Center's UGF "kick off" rally last week, are shown with Dr. Jerry McCall (left), assistant to the Marshall director and UGF chairman; Dr. Wernher von Braun (center), Marshall director; and Dorsey Uptain, chairman of Madison County's UGF drive. The Rockettes are, seated left-to-right: Mrs. Kathy Deaton, Miss Dianne Richter, Mrs. Hylan Walls, Miss Lorinda Noy, Miss Barbara Griffin, Miss Faye Barnett and Miss Ann Battles. Standing left-to-right: Miss Anita Clarke, Mrs. Linda Harris, Miss Linda Edmondson, Miss Carolyn Hartselle, Miss Landa Thornton, Mrs. Mary Le Croix, Miss Sandra Nelson, Miss Carol Thornton and Miss Janeane East. The Rockettes will visit elements of MSFC and the 23 UGF agencies to promote the annual fund campaign.

NUNN NAMED TO NEW NASA POST

Robert G. Nunn, Jr., has been appointed special assistant to National Aeronautics and Space Administration's Administrator T. Keith Glennan.

Nunn, who has been assistant general counsel at NASA, will work on policy problems related to the utilization of non-military communication satellite systems. He will report directly to the Administrator.

"The new technology of utilizing satellite systems, such as Echo, to provide needed additional global communication services is likely to produce the first practical benefit from space research for all the people of the world," said Dr. Glennan in establishing the new office. "Such benefits as expanded trans-oceanic telephone and telegraph services and intercontinental television will require intensive effort in many areas."

Born in Cape Girardeau, Mo., Nunn earned an A.B. degree in 1939 from De Pauw University,

office of Technical Services, and Claude E. Stockton, director of the Marshall Office of Financial Management.

The "kick-off" rally was planned and arranged by Hardy Jackson, an attorney in the Marshall Center's Office of General Counsel and a member of the UGF executive committee.

Greencastle, Ind., and a J. D. degree from the University of Chicago Law School in 1942.

After four years in the Army during World War II and private practice of law for eight years in Washington, D. C. and Terre Haute, Ind., Nunn joined the Office of General Counsel of the Air

Force in 1954. He came to NASA as assistant general counsel in November 1958.

NASA has reported apparent variations in the brilliance of Echo are probably due to a slight wrinkling in the skin of the 100-foot sphere.



FIRST RECORDS MANAGEMENT WORKSHOP — A recent four-hour Forms Improvement Workshop, conducted by A. K. Johnson Jr. (right), chief of the Records Management Division, General Services Administration, Atlanta Regional Office, marked the first in a series of workshops to be held at the Marshall Center in the area of records management. The two, two-hour sessions were held in the Guidance and Control Division conference room with representatives from MSFC offices and divisions attending. The current series of workshops is being sponsored by the Management Services Division at MSFC. Johnson and members of his Atlanta staff are available on request to provide similar services in other administrative areas.