

# Space News **ROUNDUP!**

## R. O. Piland Will Receive Sperry Award

The Institute of Aerospace Sciences will present the Lawrence Sperry Award to Deputy Apollo Project Manager Robert O. Piland January 22 at the IAS Honors Night Dinner at the Hotel Astor in New York City. The award recognizes annually "notable contributions made by a young man to the advancement of the aerospace sciences." It carries an honorarium of \$250, and will be presented to Piland for his "significant contributions to the early planning and concepts of the manned lunar flight program."

Sperry, in whose honor the award is presented, was responsible for the early development of automatic control in the first guided missiles.

## Elms To Speak At First Meeting Of New Chapter

MSC Deputy Director for Development and Programs James C. Elms will speak at the initial meeting of The Group for Engineering Management, Institute of Radio Engineers, Jan. 31.

The kick-off meeting for the newly-formed Houston chapter will be held at the Houston Engineering and Scientific Society quarters, 2615 Fannin St., at 8 p.m. on that date.

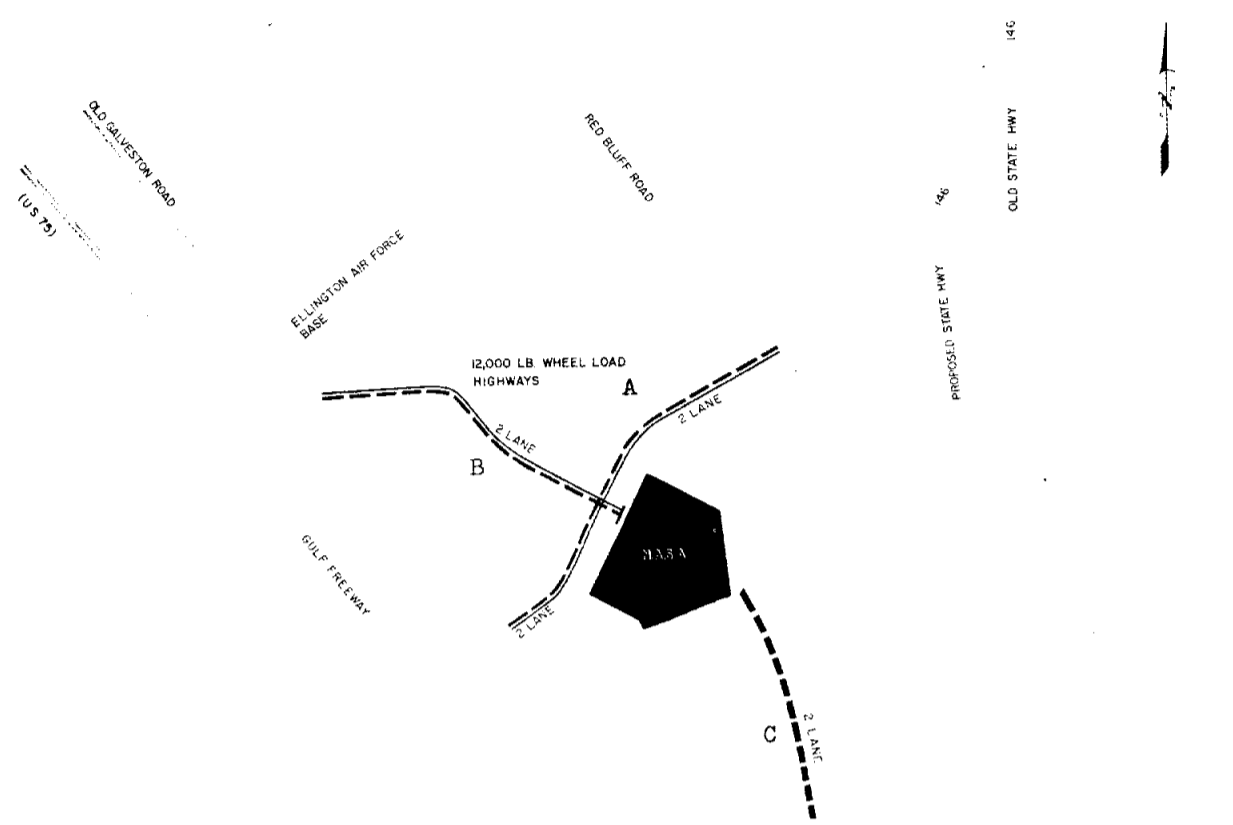
Elms will speak on "Management Requirements for a Large National Program."

All interested persons, whether or not they are members of the organization, are invited to attend. Those interested in becoming members, or TGEM members interested in joining the Houston chapter, are asked to contact Ed Wood in the Apollo Project Office, extension 6241, -2, -3, or -4, as soon as possible. Wood is chairman pro-tem for the new chapter.

## Clear Lake Dock, And Channel Plans To Be Postponed

Plans for dredging a 16-foot channel through Clear Lake and construction of a barge docking facility adjacent to the Manned Spacecraft Center have been deferred for several years, MSC officials have announced.

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**MSC REPRESENTATIVES DISCUSSED possible feeder roads into the vicinity of the Clear Lake site with State Highway Commission officials in a meeting last month. Traffic on such roads by the end of 1965 is estimated to be in the neighborhood of 10,000 persons per day. Routes suggested by MSC representatives are lettered "A," "B," and "C" above.**

## MSC Representatives Discuss Roads With Highway Group

Manned Spacecraft Center officials met with State Highway Commission officials from Harris and Galveston Counties last month to discuss road-net requirements and traffic problems anticipated at the Clear Lake site within the next several years.

"We expressed our concern about critical traffic problems in that area in the near future," said Manager of Center Services Martin A. Byrnes, following the meeting held at State Highway Commission Offices in Austin Dec. 13.

"Our on-site population will increase in the next several years to somewhere in the neighborhood of 10,000 people per day. We are certain that this will happen before any date by which an adequate road-net can be constructed, unless the development of this net is begun almost immediately."

Byrnes said that by the end of 1965, "there will be about 3,000 of our own people, and another 7,000 contractor personnel and visitors going to and from the site. This is in addition to visitors or personnel from nearby developments, or supporting housing and shopping areas. If adequate roads are not available it could lead to a colossal traffic jam."

Byrnes and L. G. Lindquist,

assistant for Congressional affairs to the director, presented figures in graph form showing NASA and Center operating contractor population on the site hitting about 5,000 people by the end of the first quarter of next year.

Including construction contractor personnel and other known allied activities, a daily population of 8,000 by mid-

1964 and 10,000 or more by early 1965 is expected.

"We have not projected . . . any firm figures for the work force of any of the many neighboring private building projects or the traffic generated by the occupants of the estimated 10,000 to 20,000 private homes which we understand are now

(Continued on Page 2)

## RCA To Build Solar Simulation System For New Space Chamber

A \$3,690,000 contract has been awarded to RCA Service Company for systems engineering, fabrication, installation, and testing of a solar simulation system for environmental testing of the Apollo spacecraft.

The system will simulate the sun's radiation intensity in outer space for a space environmental chamber at the Clear Lake installation. Scientists will then be able to observe effects of solar heating on the full-scale manned Apollo spacecraft.

The space chamber, now being designed, will be the largest environmental test facility in the U. S.

One sun intensity in outer space will be simulated by electric carbon arc lamps projecting through a system of self-contained mirrors and lenses along the top and side of two conical chambers. The

"suns" will be used to measure solar radiation effects on man, vehicle, suits, and various materials to be launched into space.

Largest of its type, the "A" chamber will measure 120 feet high and 85 feet in diameter. It will house the Apollo vehicle, consisting of command, service and lunar excursion modules. The smaller "B" chamber, measuring 85 feet high and 65 feet in diameter, will house the Apollo command module and will provide the space environment for training astronauts. Both chambers will be constructed in late

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## MSC To Help Sponsor AIAA Dallas Meet

The second annual Manned Space Flight Meeting of the joint American Rocket Society - Institute of Aerospace Sciences, now called the American Institute of Aeronautics and Astronautics, will be held in Dallas April 22-24, and will be co-sponsored by Manned Spacecraft Center.

The three-day meet, to be held at the Marriott Hotel in Dallas, will be attended by several hundred members of the organization. Many of the sessions will be classified.

The first such meeting was held last spring in St. Louis, Mo.

This year's theme is "Where have we been; what have we learned; where are we going; and what will we need?"

MSC Director Robert R. Gilruth will be chairman for the opening morning's session, with Deputy Director Walter C. Williams chairing the afternoon session on the same day. Subject for both sessions will be manned space flight programs.

Special Assistant Paul E. Purser will be co-chairman of the technical sessions. A number of MSC staff personnel will participate in various sessions, and programs are in the process of being firmed up.

Progress reports on Mercury, Gemini and Apollo design philosophy will be included in the first day's session, as will similar reports on the X-15 and X-20 (Dyna-Soar) programs.

Tuesday's meetings will include technical sessions on launch vehicles, spacecraft design, bio-technologies, guidance and control, and operations. Wednesday's session will be given over to future space systems, including the

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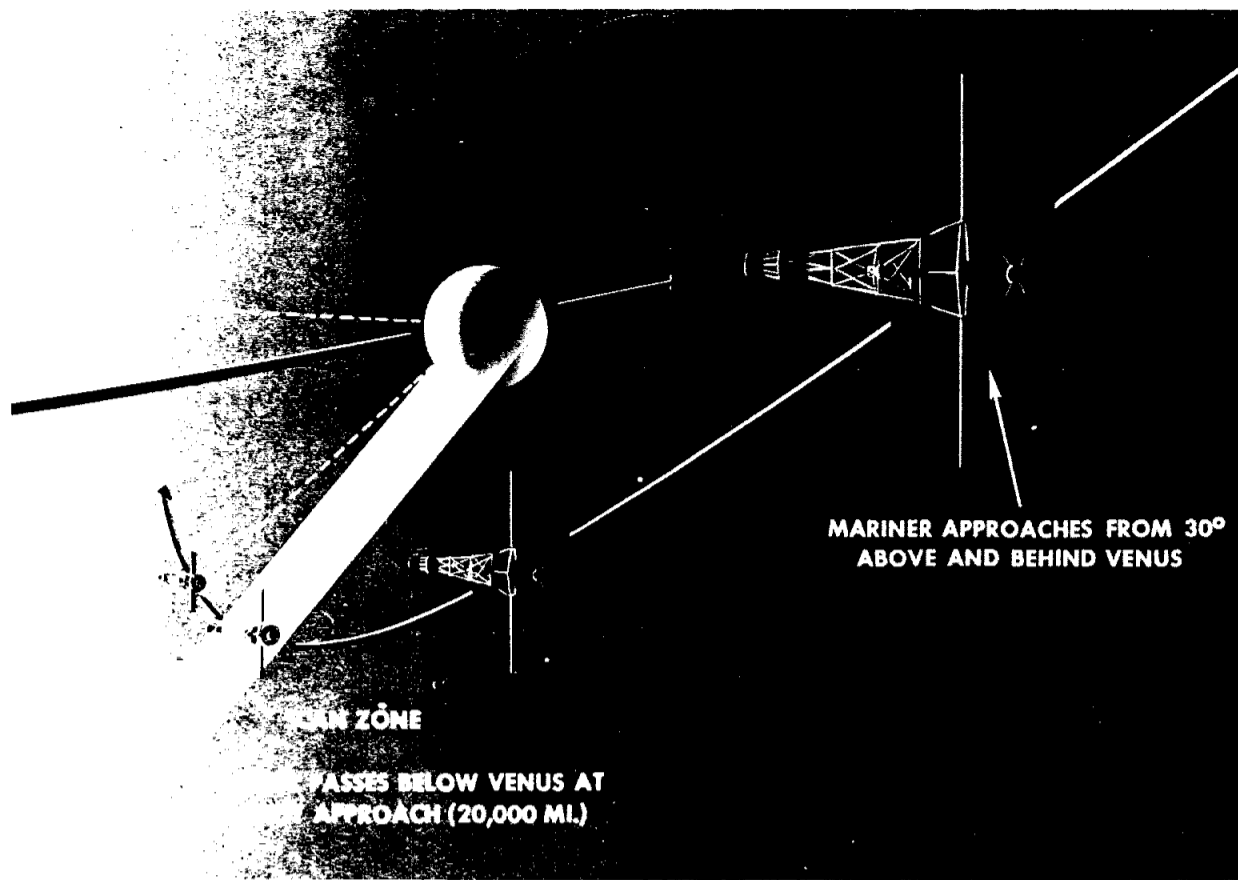
## MSC Tops Goal

Manned Spacecraft Center achieved one of the highest contribution records to United Fund in the city of Houston last month, reaching 167 per cent of its quota.

Some 1,469 persons gave a total of \$23,721—more than half again the assigned goal of \$14,214.

Of 1,933 prospective donors, 76 per cent actually participated.

The average gift was \$16.15, or \$12.27 per capita of prospective givers.



**MARINER II'S PASS NEAR VENUS** as seen from Earth would look something like this. The sophisticated satellite's closest approach was 20,000 miles, December 14, and information gathered from her scientific apparatus is bringing in new facts as it is correlated.

## MSC Officials Discuss Roads

(Continued from Page 1)

planned in the areas surrounding NASA," Byrnes said.

Discussing possible solutions to the problem, Byrnes and Lindquist made three suggestions for possible additional roads, "compatible to existing plans."

Byrnes told the group he understood that work on Highway 528 which passes to the south of the site and now ends just to the east side of the area is "almost complete."

Our original concern after that is for additional road accesses to the north and south from the site. He said, "We suggest for this purpose a highway along the northwest side of the site which will connect Highway 3 and Red Bluff Road." (See A on map.)

At the same time, there is needed a road to connect the north side of the site with the Ellington AFB area, Byrnes said, where NASA will have an operations strength of about 1,000 people through 1965. ("B" on map.)

At the present time some 25 per cent of MSC personnel live south of the Clear Lake site, and, Byrnes said, "there appears to be a firm need for additional access directly from the south of the Galveston County area." ("C" on map.)

"Our facilities people have had the opportunity to talk with our neighbors as well as with officials of both Harris and Galveston Counties regarding existing plans for road nets. We have, to our best knowledge, suggested routes which are compatible with all of these existing plans," Byrnes said.

Lindquist and Byrnes met with Galveston County officials in the morning and Harris County officials in the afternoon.

## Wheaton Is Selected To Make Time Delay

The Wheaton Engineering Division of Hurlertron Incorporated has been selected by McDonnell of St. Louis to develop and supply the required time delay for "Project Gemini." The two-man spacecraft will be the next step in the National Aeronautics and Space Administration timetable of orbital exploration and rendezvous. The devices will be used to control many vital time delay operations in launch, orbital flight control, re-entry and recovery.

## Dock, Channel

(Continued from Page 1)

Officials pointed out the original plans had been to provide a waterway for barging of heavy components of Apollo spacecraft, which were considered too large for air or highway transport from point of manufacture to the NASA center at Clear Lake.

However, official adoption of the lunar orbital rendezvous mode of carrying out the landing of Americans on the moon has permitted reduction of the sizes of the modules of the Apollo vehicle to dimensions which permit other means of transportation than waterway.

Eventually, the docking facility and channel will be required and the funds intended for this use will be set aside until needed, but the need is not foreseen for several years.

Another consideration, officials said, was the requirement of maintaining the channel once it is dredged. If the channel is not to be used for several years, the expense of maintaining it would not be warranted.

The credit union loan interest rate never exceeds one per cent per month on the unpaid balance.

## Credit Union

(Continued from Page 8)

there is \$29,000 in notes payable. The credit Union has a regular reserve of \$438.98 and a special reserve for delinquent loans of \$77.39. Members hold \$76,221.98 in shares.

Income (in interest on loans) during the first year of operation was \$2,959.76. Expenses in the form of salaries (\$778.53), league dues (\$2), surety bond premium (\$10) interest on borrowed money (\$219.17) and other expenses (\$371.40) totaled \$1,381.10, showing a net gain of \$1,578 of which \$315.73 went to the regular reserve and the rest to earnings.

There were 480 accounts at the end of the year and a total of \$141,982.95 has been loaned out since the organization of the credit union 10 months ago.

## Space Chamber

(Continued from Page 1)

1964 at the Clear Lake site. The carbon arc method for solar simulation is well-known for its high intensity and excellent color match with the sun. RCA has developed an automatic feed mechanism which permits continuous operation and yet is compact enough to fit in a small module. Multiple units can then be used to cover large areas.

An important advantage of the modular design being utilized is that it will permit adaptation of the system to space environmental chambers now in operation as well as to chambers in the design stage.

## AIAA Meet

(Continued from Page 1)

space station, lunar bases, shuttles and ferries, and logistics and supply; and to planetary missions and the role of the military in space.

General chairman for the session will be James J. Bingham, of General Electric in Dallas.

## Mariner Gets Results On Pass Near Venus; Facts Turning Up

Mariner II's fly-by of Venus on December 14 has produced the most accurate estimate yet of the mass of our sister planet, two scientists from the California National Aeronautics and Space Administration's Jet Propulsion Laboratory reported December 28.

This information was revealed at a meeting of the American Geophysical Union at Stanford University, in a paper by John D. Anderson and George Null, describing their preliminary analysis of the trajectory data obtained during the 109-day flight of Mariner II from Earth to Venus on August 27.

According to Anderson, who presented the paper, they find the mass of Venus a value of 0.81485 times the mass of the Earth, with a probable error of 0.015 per cent. They said that their analysis is continuing, using additional data obtained before and after the encounter with Venus, and that their final result will probably alter the quoted value slightly and still further reduce the probable error. For comparison, the mass of the Earth is known to be about 13 septillion pounds.

The data required to deduce the new more accurate mass of Venus were obtained by the Jet Propulsion Laboratory's Goldstone tracking station during two 10-hour observations of Mariner, on the day of its passage of Venus and the previous day.

The data obtained was a so-called "two-way doppler" measurement, involving a round trip by a radio signal.

Anderson also said that further analysis of the data will probably refine our knowledge of another particularly important astronomical constant, the astronomical unit—the mean distance between the Sun and the Earth.

### Magnetometer Experiment

Scientists in charge of the magnetometer experiment on board Mariner II, which sent back readings as the spacecraft flew by the planet Venus at a distance of 21,594 miles December 14, announced December 26 that they have found no evidence of a Venusian magnetic field that could be detected at any point on the Mariner trajectory.

## Speed Reading

(Continued from Page 8)

schedule of some MSC employees.

The course taught by the Reading Institute of Texas, Inc., is the Evelyn Wood Dynamic Reading Program, taught at the Air Force Academy, to the White House staff, and in various agencies of government. It has also been endorsed by members of the Senate.

Thirty students of the 180 nominated for the present course are attending. The course will be repeated at a later date if continued interest and the success of the course warrant it.

The scientists are P. J. Coleman of the University of California at Los Angeles, Professor Leverett Davis, Jr. of The California Institute of Technology, Dr. Edward J. Smith of the Jet Propulsion Laboratory and Dr. C. P. Sonett of the National Aeronautics and Space Administration's Ames Research Center.

The magnetometer data was discussed by Coleman in Philadelphia at a session of the American Association for the Advancement of Science on recent results of space research.

No rise in the average value of the magnetic field above the interplanetary value was observed, and the observed fluctuations in the field were, if anything, smaller in the vicinity of Venus than in the neighboring parts of interplanetary space.

This does not necessarily mean that Venus has no magnetic field. The solar wind, a low density ionized gas that continuously flows outward from the Sun, could confine a weak field to a limited region close in to the planet.

All that can be concluded from the observations is that the field does not extend out to the Mariner trajectory, for which the distance of closest approach from the center of Venus was approximately 25,000 miles.

The observations are consistent, however, with the possibility that Venus has no magnetic field.

### Solar Wind Measurements

The Sun is continuously "blowing its top" according to Mariner II. Streams of very hot ionized gas are being projected outward from the inner corona of the Sun and this gas appears to be the dominant feature of interplanetary space in our region of the solar system.

Some details of this new concept of presumably empty space were described December 28 at the American Geophysical Union meeting.

Dr. Conway W. Snyder, of the National Aeronautics and Space Administration's Jet Propulsion Laboratory reported on the preliminary results of an experiment conducted by him and his colleague, Mrs. Marcia Neugebauer. The experiment measures the velocity, density, and temperature of the gas.

This interplanetary gas is properly called a "plasma."

## Attention, Savers!

(Continued from Page 8)

Depositors clearing their accounts from other credit unions are urged to continue saving with the MSC Credit Union.

## Center's Own Print Shop Turns Out Reports, Supplies

Ever wonder where those little green routing slips come from? Or the pink pages for the management manuals? Or the memos to each employee? Or mission directives and pre- and post-launch reports? Contracts?

We print them ourselves . . . "We" meaning Manned Spacecraft Center, which has its own small but efficient printing and reproduction shop at Ellington AFB, Building 240.

A Harris offset press which can turn out 17 by 22 inch sheets at the rate of 7,500 an hour, and four multilith machines of various types which also using a photo offset process, constitute its equipment.

In addition to what the shop can turn out, the Printing and Publications Distribution Branch, headed by Nicholas Jakir, is also in charge of printing control and contract serv-

ices, or what printing work can be "contracted out," and the distribution of technical publications for the Center.

Of the two and a half million units per month (a unit is one 8 by 11 inch sheet printed on one side) of printing and reproduction necessary for MSC, about 1,200,000 units are done "in house" by the MSC shop. Almost all of that—about 97 per cent—is done in black and white although the shop can turn out printing in any other color and white.

The average press run is short, about 125 copies.

Items such as purchase, requests, MSC stationary and envelopes, or this newspaper, are printed by commercial firms on contract. "Our intent," says Jakir, "is not to duplicate the commercial capabilities presently existing in this area."

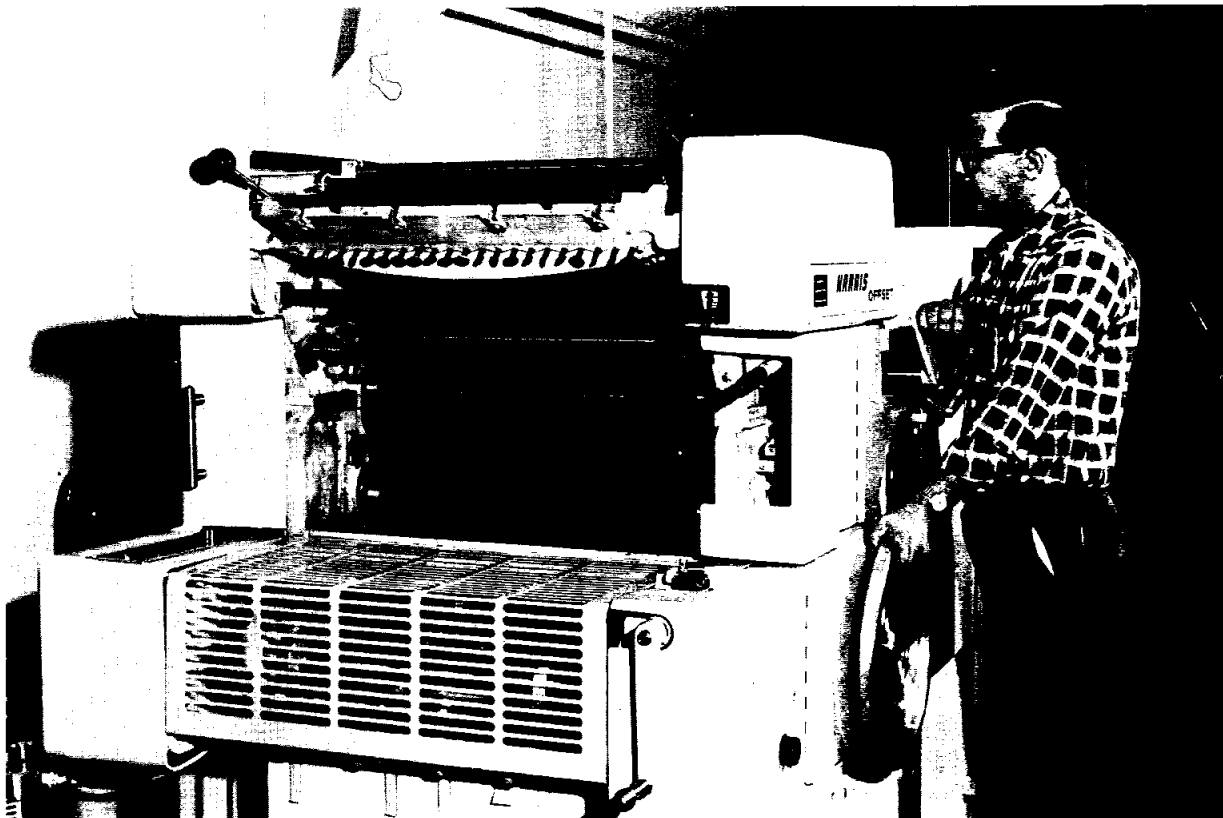
In addition, the branch is in charge of purchasing, stocking and issuing such standard forms as travel requests, time and attendance cards, Government bills of lading, leave and earnings statement cards, and so forth.

The branch is in the process of establishing a microfilm plant which will be operated by contractor personnel and will be able to microfilm all records, engineering drawings, and other documents. This technique is coming into increasing use as a means of reducing the size of the storage problem for such materials, and can cut a room full of filing cabinets down to a desk drawer full of microfilm.

A planetary camera using 35 mm film has been purchased and a number of readers, or scanners, the device used to read the microfilm, will be acquired.

Production control of printing requirements for the center includes that of the work contracted out as well as in-house publications. They are reviewed and passed on so as to conform to the regulations of the Federal Government's Joint Committee on Printing, Printing Control Officer for the Center and final authority on such matters is Administrative Services Chief Roy C. Aldridge.

What are future plans of the branch? Programmed requirements by the time MSC moves to its new site at Clear Lake are about seven and a half millions units a month. "Our in-house capability, intended for short-run, mission-oriented publications, will be about 25 to 35 per cent of that," Jakir said. "We will have two 17 by 22 Harris presses, like the one we have now, and from 12 to 15 duplicating machines."



**LARGEST PRESS** in the MSC print shop is this 17 by 22 Harris Offset which can print four of typing-paper-sized sheets at a lick and turn out 7,500 an hour—although so far it has never been necessary to run it at top speed. Here, Harry M. Porter makes an adjustment.



**FOUR MULTILITH MACHINES**, here manned (from left) by Stan Richards, Paul Armstrong, Robert Adams, and Erwin Wright, take care of smaller printing and reproduction chores. There will be three times this many multiliths when the Center moves to the new site.



**PROCESSING CAMERA** is used for photo offset work, here operated by Peggy Carlisle. The shop does not have letterpress capability. It is presently turning out about 1.2 million units a month, printing, cutting and often binding or stapling material together in booklet form.

## NASA, Smithsonian To Set Up Network

A network of sixteen stations to photograph bright meteors will be established in seven midwestern states by the Smithsonian Astrophysical Observatory under a \$240,000 grant from NASA.

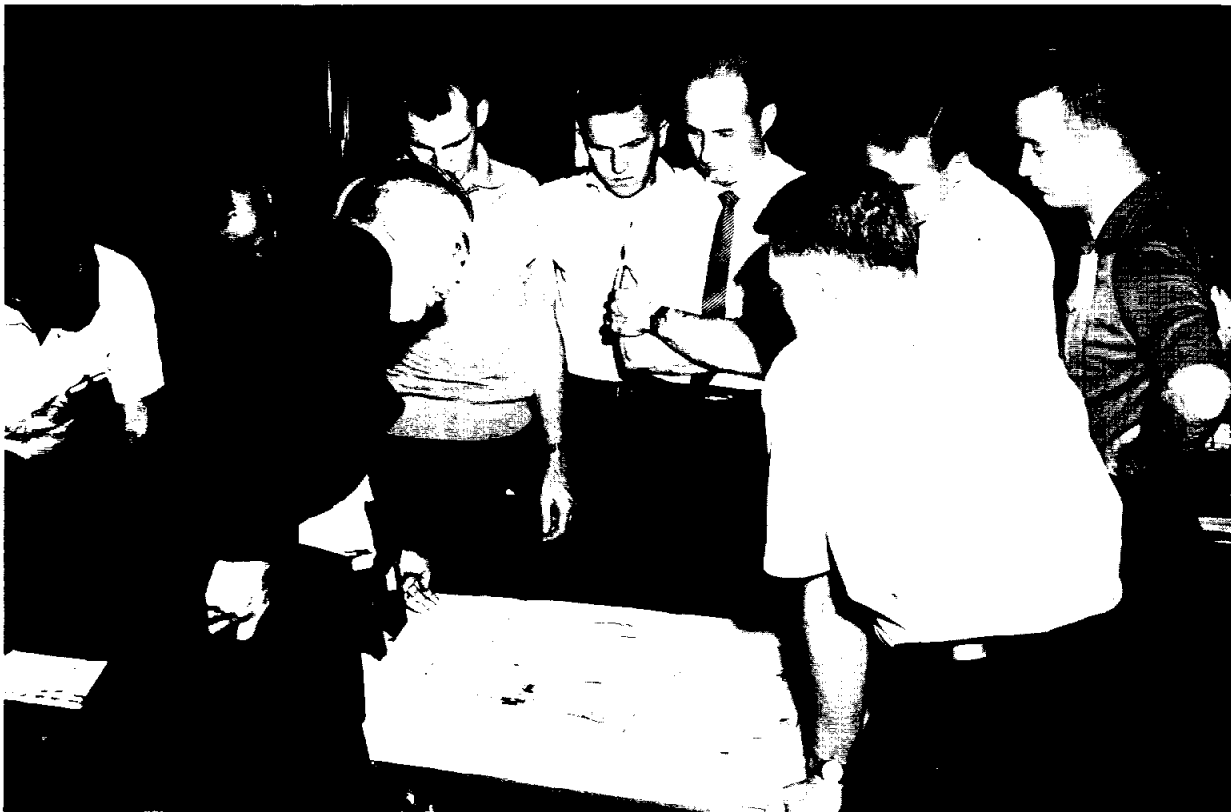
Called the "Prairie Network," it will concentrate on photographing bright meteors and recovering meteorites soon after they fall. Prompt recovery will then permit other scientists to study the chemical and organic structure of the meteorites and the effects of radiation on them.

Snyder explained, because it is completely ionized, and consists of an electrically neutral mixture of electrons, hydrogen nuclei, helium nuclei, and heavier atomic nuclei, listed in the order of decreasing abundance.

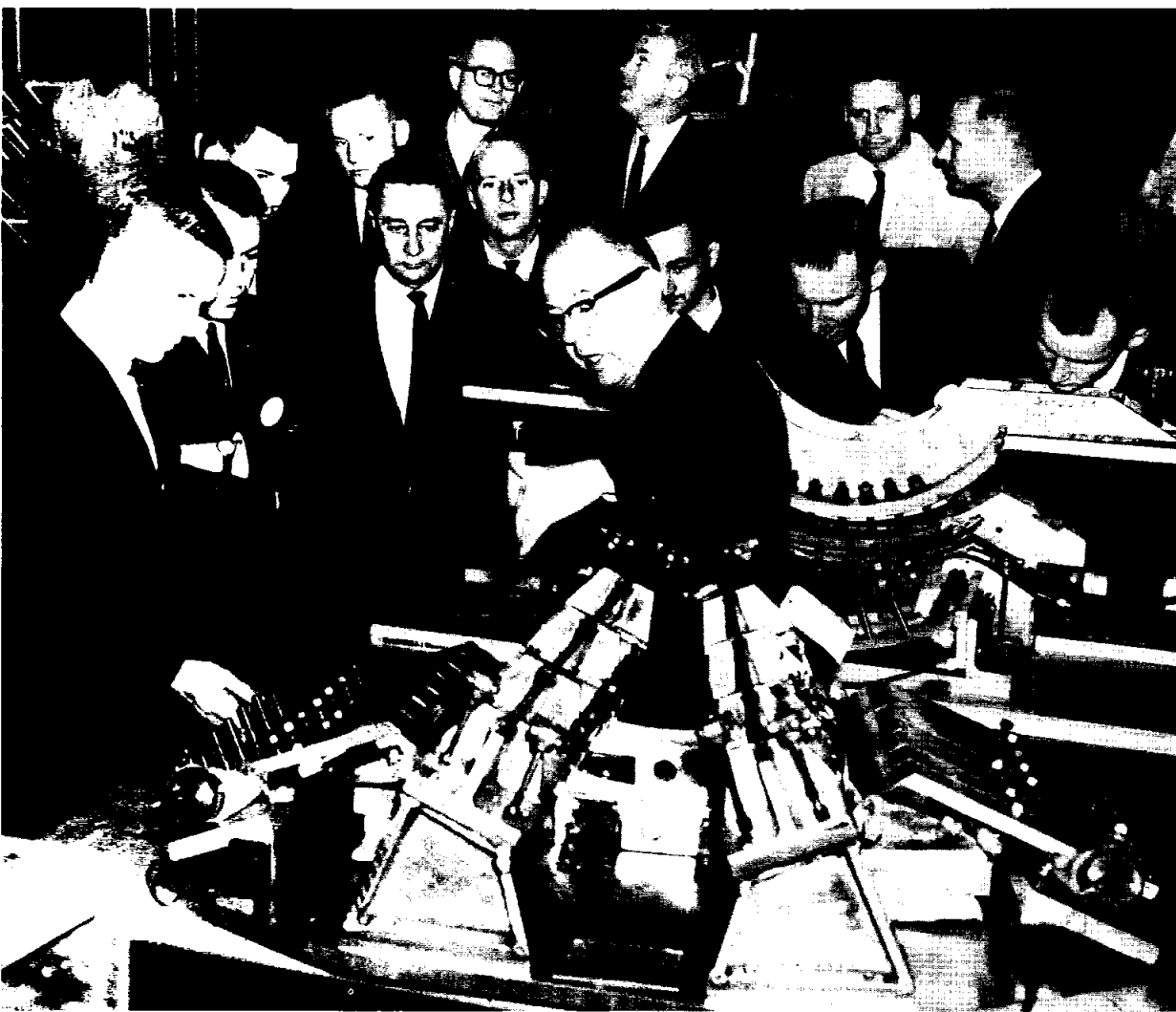
When the surface of the sun is relatively quiet, Mariner finds, the velocity of the solar wind tends to be a little less than 250 miles per second, its particle density is around 10 to 20 per cubic inch, and its temperature is a few hundred thousand degrees.

Disturbances on the sun, called solar flares, eject clouds of plasma which may have higher velocity, density, and temperature than the undisturbed solar wind, so that when flares are frequent, the solar wind may appear to be blowing much harder than normal for days at a time. Numerous examples of the sudden arrival of a dense, high-velocity plasma cloud have been observed by Mariner, and in some cases these clouds appear to be attributable to a particular solar flare.

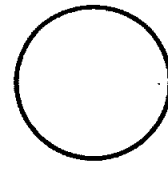
Some such clouds have produced noticeable magnetic storms when they reached the earth a few hours after passing Mariner. From continued observations of this kind, it is hoped that the detailed explanation of how the sun produces these clouds of plasma and how the clouds produce geomagnetic storms may eventually be obtained.



DUGALD O. BLACK briefs, clockwise, astronaut trainees Neil Armstrong, Charles Conrad, Edward White, Frank Borman, Thomas Stafford, James Lovell, James McDivitt, and Elliot See on future plans for the Preflight Operations Division. Below, McDivitt, Armstrong, Lovell, Astronaut Walter Schirra and Dr. Wehrner von Braun, far right, are briefed on the potential of new computer equipment at Marshall Space Flight Center.



MCDONNELL VICE PRESIDENT Walter Burke briefs the group which visited the St. Louis plant.



WHITE, LOVELL AND CONRAD are pictured at the Cape as they watched the Titan II (in circle) seconds after its successful launch from Pad 19.

# Astronaut Trainees ' During Heavy O

As a part of their training and orientation, Manned Spacecraft Center's nine astronaut trainees visited eight contractor plants and two other NASA installations as a group during the last two and a half months of 1962. In addition, they have made other individual trips to contractors, in order to be fully integrated into the program as rapidly as possible.

During most of these trips they were accompanied by as many of the Project Mercury astronauts as possible in order that they, too, might be brought up to date on the latest developments in the many programs.

Places visited were Cape Canaveral, the Pratt & Whitney plant at West Palm Beach; Martin Company's Middle River, Maryland, and Denver, Colorado plants; Aerojet-General at Sacramento, California; Lockheed's plant at Sunnyvale, California; Marshall Space Flight Center at Huntsville, Alabama; the McDonnell Aircraft Corporation's plant at St. Louis, Missouri; North American Aviation's Downey, California facility; and Douglas Aircraft's plant at Santa Monica, California.

Although the shortness of

the visits precluded the trainees' receiving more than a general briefing on the status of the various programs and the hardware being developed, they were afforded the opportunity of becoming acquainted with the locations of the various activities.

Their first trip was to Cape Canaveral where they were briefed and toured that facility for several days. In addition to touring Hangar S, Mercury Control Center and other NASA activities there, they had a chance to get a close look at the Saturn 3 and to visit the blockhouse at Launch Complex 34. They visited the blockhouse at Launch Complex 19 and watched a successful launching of the Titan II, the launch vehicle which is scheduled to be used in the Gemini program.

Other highlights of the various trips included watching the static firing of an engine at Pratt & Whitney's test site and three firings, two of them full duration, at Aerojet-General test stands.

In addition, they had an opportunity to spend a brief period in the Gemini mock-up at McDonnell and in the Apollo mock-up at North



PICTURED AT MARTIN'S Middle River plant with a late scale model of the Titan-Gemini are counter-clockwise Elliot See, Frank Borman, John Young, Walter Schirra, James McDivitt, John Glenn, James Lovell, Thomas Stafford and Charles Conrad. Standing by model are Edward White (left) and Neil Armstrong.



THE GROUP OBSERVES a static firing at the Aerojet-General facility near Sacramento.

## our Plants, Centers entation Schedule

American.

In a two-day session at Marshall Space Flight Center, the group was thoroughly briefed on the status, schedules and mission profiles of the C-1 and C-1B launch vehicles; the design concepts, program and mission profiles of the C-5 launch vehicle; guidance and control of those three vehicles; NOVA concepts; the RIFT program; advanced space transportation systems, and the use of electrical propulsion for manned interplanetary flights, among other items.

Members of the group spoke to five employee gatherings at contractor facilities during the period. John Glenn spoke to several thousand Martin Company employees at the Middle River plant; Frank Borman spoke to another large gathering of Martin employees at Denver; and James Lovell, Neil Armstrong, and James McDivitt spoke to three separate employee gatherings at Aerojet-General. In addition the individual members of the group took the opportunity to speak to individuals on the assembly lines and at testing sites at every stop on the tour.

The astronaut trainees ex-

pressed great satisfaction with the visits, despite the fact that the heavy travel schedule required them to spend an extended period of time with a minimum of rest. They have voiced opinions that the tour was most informative, that they were impressed with the progress being made on the various programs, that the opportunity to be briefed by and to query the engineers at the various contractor plants was invaluable, and that they were especially impressed by the competence of the line employees they talked to as well as by their obvious dedication to the task at hand.

During this same time period, the astronaut trainees have, on an average of several days a week, been subjected to a rigid schedule of classroom work on such subjects as flight mechanics, communications, astronomy, computer theory, physics of the upper atmosphere and space, guidance and navigation, and aerodynamics.

It is expected that their formal training will be completed about the end of January and they will then be assigned to follow specialized training on specific systems and hardware.



THOMAS STAFFORD takes a close look at the interior of a Saturn S-IV bulkhead during the tour of the Douglas plant at Santa Monica.



FRANK BORMAN emerges from the interior of the Apollo mockup at North American after a short period of familiarization with the interior of the spacecraft model.

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## Editorial

Eighty years ago the outraged people of the United States demanded and got civil service reform to put an end to "spoils" staffing of the Federal service. Public indignation reached its zenith when a disgruntled office-seeker assassinated President Garfield. The instrument of reform was the Civil Service Act of January 16, 1883, which established a merit system of employment in the Government that has served America well in the years since.

The heritage of the career civil service is rich with progressive improvement of administration and service to all citizens. The responsibility of the Federal work force has grown from essentially clerical support to highly technical support, management, and execution of imaginative, complicated, and vital programs of public service.

These are tasks which call for a constantly rising emphasis on talent, judgment, productivity, and efficiency on the part of individuals who comprise the Federal work force.

As America celebrates the 80th anniversary of the Civil Service Act, we commend the members of the career civil service for their commitment to their important work and their efforts to increase efficiency and productivity. And we wish them that measure of public respect and esteem which their dedication to their calling deserves.

— John W. Macy, Jr., *Chairman*  
 Frederick J. Lawton, *Commissioner*  
 Robert E. Hampton, *Commissioner*  
 U. S. Civil Service Commission

## On The Lighter Side

When the lunch whistle blows and the rest of the guys break out the pinochle deck, Ed Van Gombos foregoes the pleasures of such human competition—preferring to test his wits against a machine.

Placing checkers and board in front of his "electronic brain" adversary in the Computer Sciences Division at Aerojet-General Corporation in Azusa, Calif. Ed makes the first move.

When he punches the button to notify the machine of his move, it whirls and flickers, decides upon its own cunning strategy, then notifies him by light code of the counter-move it wants to make.

Right now, Ed and his mechanical checkermate are pretty evenly pitted. But it's a losing game—eventually—for Ed.

"It never makes the same mistake twice," Ed points out. "It remembers any losing moves and just won't make them a second time. It's only a matter of time before it'll be unbeatable."

When that time comes, Ed plans to break the machine in on the game of chess. But that, too, will eventually become a losing game for Ed, once the computer "learns" the game.

And worst fate of all, Ed is denied that last desperate refuge of chronic losers: cheating! "If you make a wrong move, it won't let you get away with it," he confesses. "It comes right back and tells you the move is illegal."

Does it cheat? Never! It is a machine of impeccable honor.

## EDITORIAL EXCERPTS

Spaceport News  
 Dec. 13 and 20, 1962

### VAB DESIGN CONTRACT LET FOR \$3 MILLION

The Corps of Engineers, acting for NASA, let a contract for \$3,332,000 to four New York architect-engineer firms last week to design the vertical building for the 350-foot advanced Saturn C-5 space vehicle to be launched from Cape Launch Complex 39.

The building will be the dominant feature of the new mobile concept in launch complexes. Standing 48 stories high and approximately two blocks long, it is expected to cost \$100 million.

Checkout and vertical assembly of the Saturn stages will be done inside the building on a combination launcher-umbilical tower. The assembled space vehicle and Apollo spacecraft with umbilical connections intact will then be transported by a tracked crawler to the launch site.

The four firms that will collaborate on the building design are Max O. Urbahn; Robert and Schaefer Co., Inc.; Seelye, Stevenson, Value and Knecht; and Moran, Proctor, Mueser and Rutledge.

### BIDDERS MEET TO DISCUSS 39 CRAWLER

NASA's Launch Operations Center has asked for proposals on a huge machine called a crawler-transporter which will be used to move the Advanced Saturn rocket and a major part of its ground support equipment in a package to the launch site.

M. E. Haworth, Jr., chief of the Contracts Branch of P&C, said, "A definite contract will be executed on or before March 1, 1963."

The transporter-crawler will look something like a huge square platform supported at each corner by a military tank. It measures 131 feet long and 114 feet wide.

## MSC PERSONALITY Phil Whitbeck Is Deputy Asst. Director For Administration

"I think it was while I was in the Army that I decided definitely I wanted to make a career of government work . . . I had been interested in public administration all along."

The speaker was Philip H. Whitbeck, who since he graduated from the University of Minnesota in the spring of 1948 has been successively a public administration intern, management intern, position classifier, personnel officer, job evaluation specialist, organization and management analyst, chief of Management Services Division for Space Task Group and since April 29, 1962, deputy assistant director for administration for Manned Spacecraft Center.

Born in Stillwater, Minn. Feb. 26, 1923, he grew up in that city and entered the University of Minnesota in 1941. A war and two-and-a-half years in service spent mostly in Japan, China and Korea interrupted his education. Receiving his B. A. in political science in 1947, he did another year of graduate work on an administrative fellowship before being selected as a public administration intern in New York State, one of five out-of-state men selected. He received rotating work assignments throughout the Civil Service Commission, ending in five months as personnel officer for the Department of Insurance.

In July of 1949 he went into the Navy Department as a management intern in the administrative office of the fiscal and management division, one of eight selected for first Navy intern training program. From there he went into the job of position classifier in the Navy's administrative office, servicing half of the Office of the Secretary on all matters relating to position and salary classification.

In June of 1951, Whitbeck began eight years with the AEC's Division of Organization and Personnel.

He was successively a personnel officer, job evaluation

specialist, and organization and management analyst. In the final position he was senior staff member in the branch and was responsible for conducting studies and surveys of ing studies of complex management problems.

In March of 1959, he joined the headquarters staff of NASA as a management analyst, participating in many of the studies and organization planning for NASA.



Philip H. Whitbeck

He was on the task force responsible for the transfer of the Von Braun group from the Army to NASA and was detailed to the Space Task Group in July of 1961 as chief of the Management Services Office. He received his present title last April.

Whitbeck and his wife, the former Elizabeth Reed of New Jersey, who was also a public administration graduate and was in the New York State internship program, have two children, Ann, 8 and Bill, 6. Both are in public school in La Porte, where the Whitbecks have bought a home. Whitbeck is a golfer, when he has the time. The children, at present, are more interested in their horseback riding lessons than in the space race.

## WELCOME ABOARD

Manned Spacecraft Center acquired 47 new employees between December 4 and December 31, 1962.

*Gemini Project Office:* Carl G. Estler and Londell D. Tharp.

*Apollo Project Office:* William L. Baldwin, and Charlotte Tranford.

*Apollo Project Office, White Sands, N. M.:* Charles H. Provine.

*Spacecraft Technology Division:* Donnie Patton.

*Crew Systems Division:* Virgie J. Shillings, Garland B. Barkley, and Paul W. Schlottman, Jr.

*Systems Eval. and Devel. Division:* Patricia W. Martin, Fred J. Gentile, James A. Bonner, and Pat B. McLaughlan.

*Flight Operations Division:*

Janice E. Contella, James E. Bodmer, and Margaret C. Appel.

*AMR Operations Office, Cape:* Louise Maillet.

*Ground Systems Project Office:* Margaret L. Hopkins, and Edgar P. Odenwalder.

*Computation and Data Reduction Division:* Carole Montgomery, and Claude P. Malone.

*Instrumentation and Electronic Systems Division:* Gareth H. Nason, Robert L. Hymer, Robert L. Giesecke, Arthur D. Travis, and Edward A. Schultz.

*Personnel Division:* Charlotte McKinzie, and Rodney T. McSwiney.

*Financial Management Division:* William V. Grayburn.

*Procurements and Contracts Division:* Billye J. High, May-

nard E. Weidmann, and Sylvia T. Williams.

*Safety Office:* Geraldine H. Newman.

*Administrative Services Division:* John P. Fallon, Charles T. Ritchie, and Lella C. Harding.

*Facilities Division:* Patrick M. Gill and Winnie R. Howell.

*Technical Services Division:* James H. O'Neill.

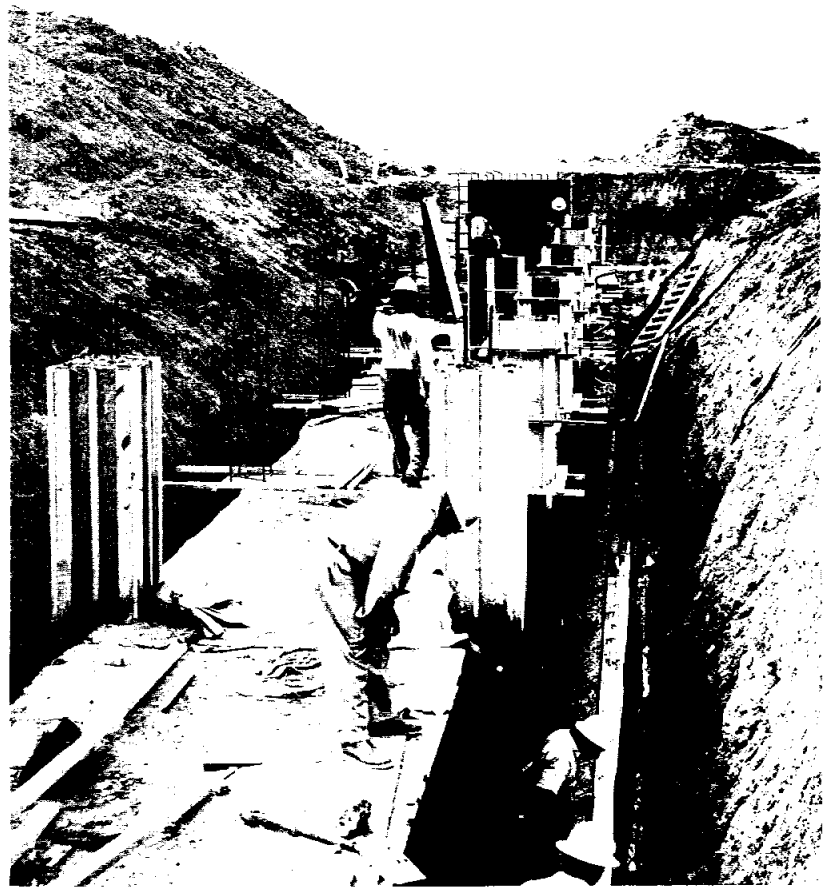
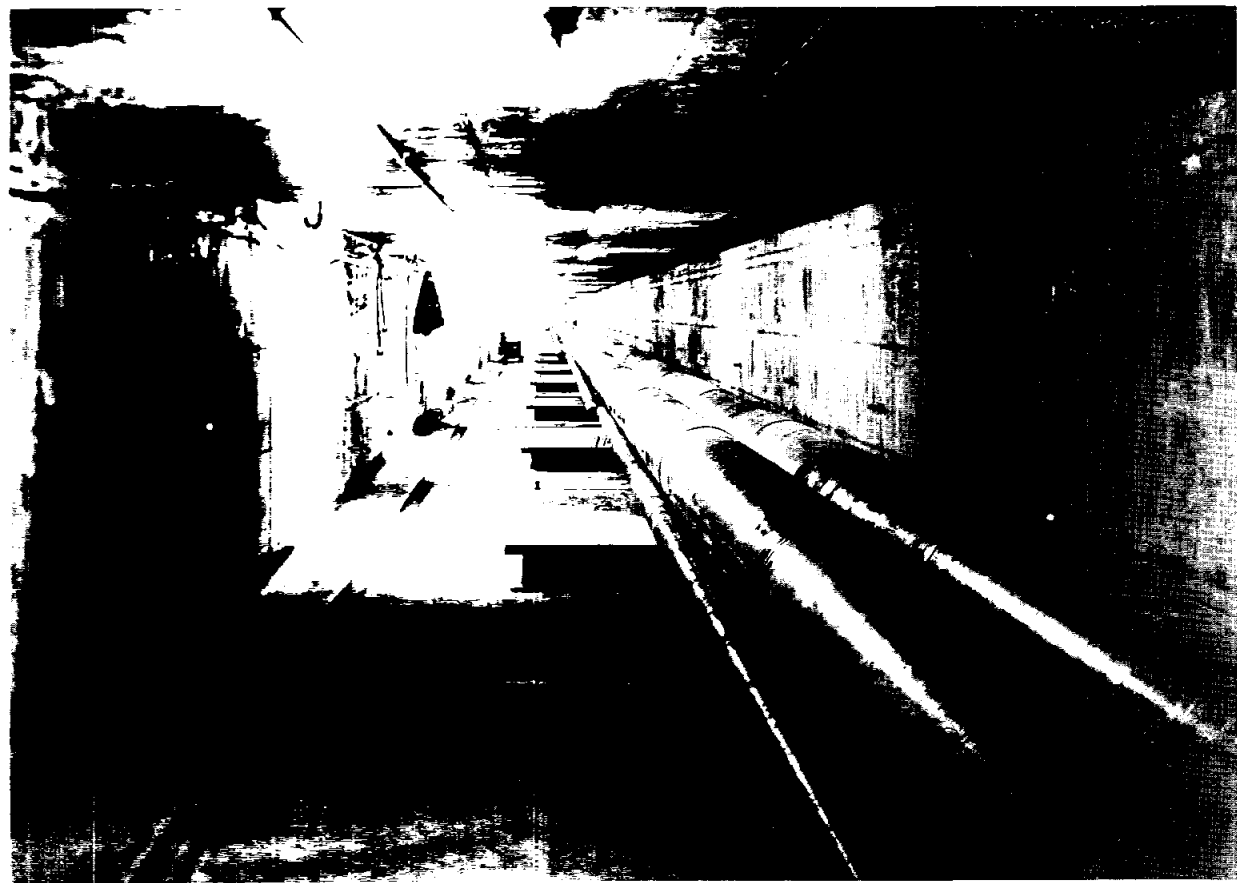
*Technical Info. Division:* Kent M. Johnston.

*Logistics Division:* Roy L. Whire, Amelia L. Moody, and Mary L. Sparke.

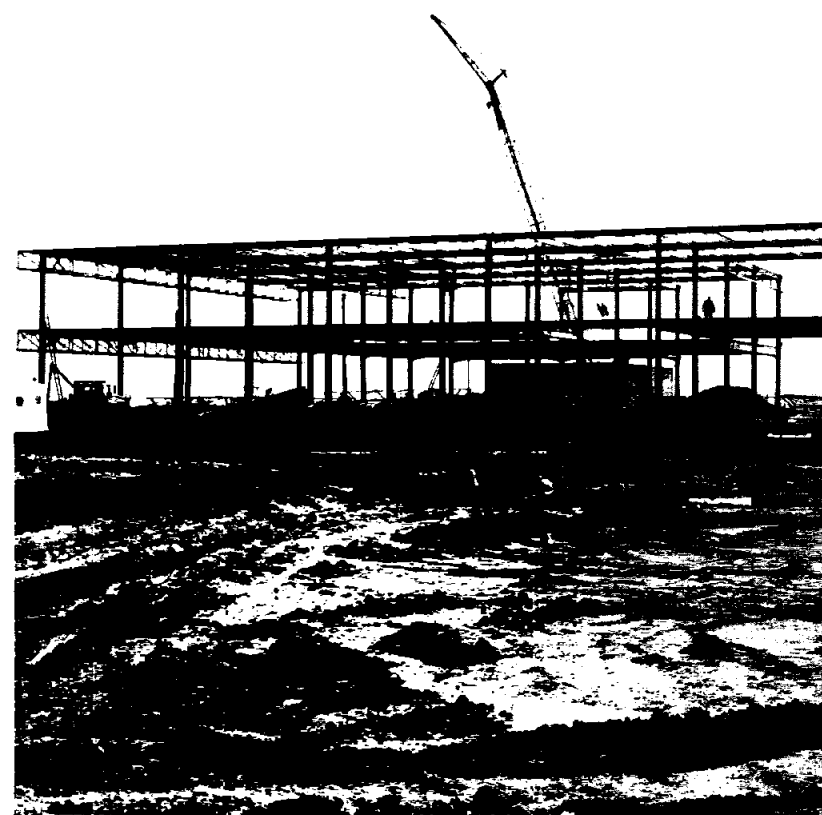
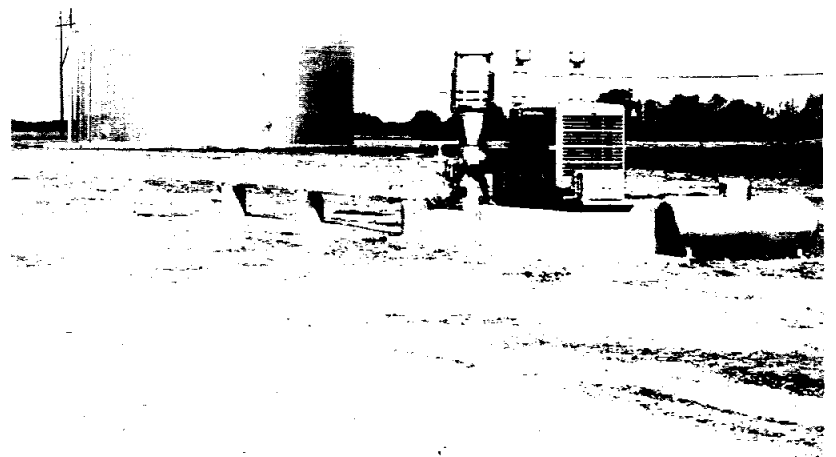
*Public Affairs Office:* Genevieve B. Mercer.

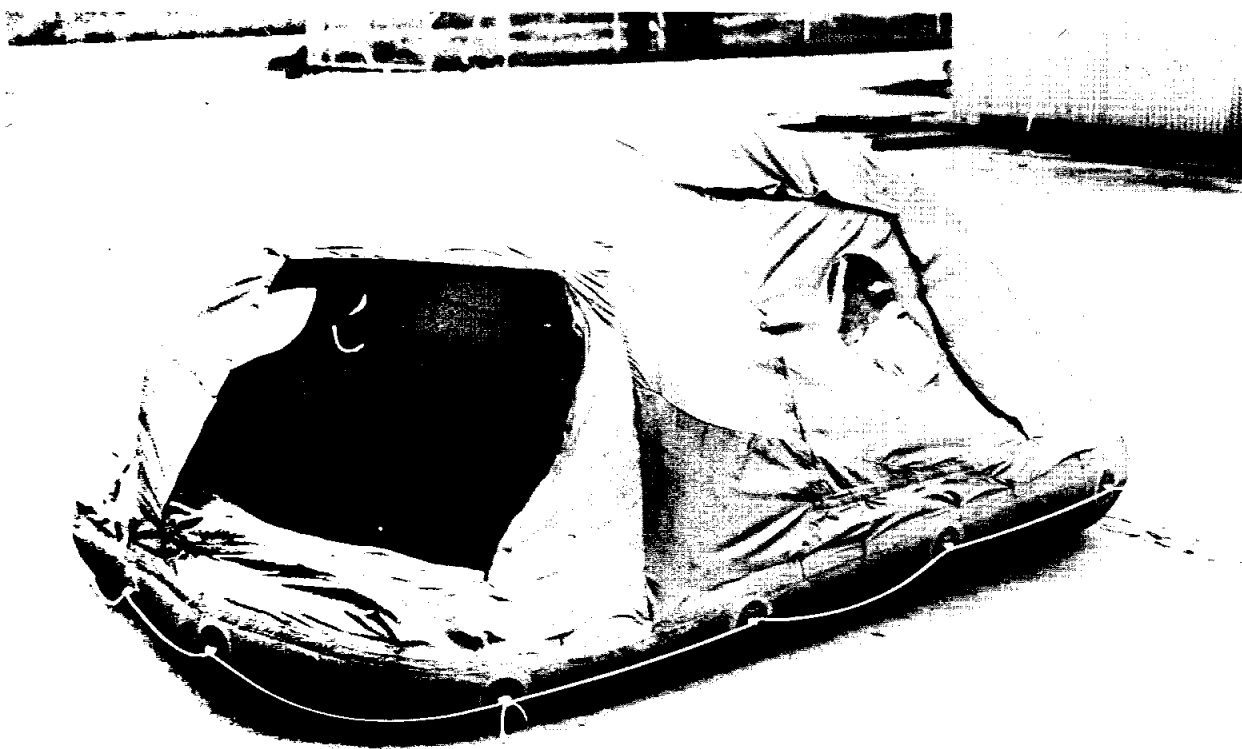
*Astronaut Activities Office:* Edwin M. Logan.

*Program Analysis and Evaluation Office:* Robert M. Purdie, and Edwin W. Berry.



**CONSTRUCTION PROGRESS** at Manned Spacecraft Center's future location near Clear Lake is shown in this latest group of photos taken last Wednesday on the site. An artistic shot which might be titled "Infinity" is actually the inside of the "Utilidor" (above left), the underground utility corridor which will carry electric, telephone, gas and other wiring and pipelines. The outside of the tunnel is nearing completion (above, right) after which it will be completely buried when the trench is filled in. At left, sporting new curbstones, is a portion of Second Street looking south. It is presently being paved. At right is the pumping equipment for well number 1 and its new one-million-gallon capacity water storage tank. Bottom photos show the Center's first two buildings rising at last above the ground. At left is the future home of the Central Data Office, and at right the Center's fire station. That sea of mud will one day be covered by grass and trees.





**LOOKING SOMETHING LIKE a giant cocoon, this is an early experimental model of the Project Apollo life raft. It has already been subjected to its first water tests by Crew Systems Division and holds three men comfortably and with remarkable stability. The cover comes off, and when in place is held up by air-filled cross-pieces which inflate just as the raft does.**

## Dorsett To Build Training Equipment For Gemini Work

Dorsett Electronics, Inc., Tulsa, Oklahoma, has received orders in excess of \$250,000 from McDonnell Aircraft Corporation to build training equipment for the Gemini two-man spacecraft. The product is under the technical direction of NASA's Manned Spacecraft Center.

To be built at the company's subsidiary, Burtek, Inc. in Tulsa, the equipment will be used to train astronauts, launch personnel and others in operation of four of the Gemini spacecraft's systems—electrical attitude and maneuver control, environmental control, and ejection seat systems.

Equipment to be supplied consists basically of animated, backlighted panels which pictorialize operations of the various systems built to use the company's patented modular cell construction.

## Fairchild To Make Cooling Systems

Fairchild Stratos Corporation, Bayshore, New York, has been awarded subcontracts to design and manufacture specialized ground refrigeration equipment for the Gemini two-man spacecraft. The work will be accomplished at the firm's Stratos Division at Bayshore.

The McDonnell Aircraft Corporation of St. Louis, Missouri, prime contractor on the Gemini spacecraft for NASA, awarded the subcontracts to Fairchild Stratos. The equipment will be utilized for cooling of spacecraft's electronic system and environmental system coolant loop during pre-launch tests. Included in the items to be furnished are liquid chiller units which will be used on the ground at the launch complex, lines to conduct the coolant to and from the spacecraft and heat exchanger cold plated which will be installed in the spacecraft itself.

## RCA Gets Contract For Data Recorder

RCA's Surface Communications Division of Defense Electronic Products announced the receipt of a subcontract from Electro Mechanical Research, (EMR) Inc., Sarasota, Florida, for approximately \$1,000,000 to design, develop and build a miniature magnetic tape data recorder or the multi-orbit GEMINI two-man spacecraft.

The unit will record approximately 74,000,000 bits of telemetry data at a rate of 5,120 bits per second. The data can be recorded continuously for a period of 4 hours and on command the unit will playback the information in 11 minutes.

The primary features of the 400 cubic inch recorder are high reliability, low power drain (10 watts), and light weight (12 lbs.).

## Crew Systems Men Co-Author Papers

Four members of Crew Systems Division co-authored two papers presented at the American Association for the Advancement of Science meeting in Philadelphia November 30.

Assistant Division Chief Richard S. Johnston and Edward Michel wrote a paper entitled "Spacecraft Life Support Environment." Crew Equipment Branch Chief James V. Correale and Walter W. Guy co-authored a paper on "Space Suits."

Both papers were delivered by Matthew I. Radnofsky.

## General Precision Gets \$1 Million Letter Contract

General Precision, Inc., Binghamton, New York, has announced the receipt of a letter contract for more than one million dollars from McDonnell Aircraft Corporation for two computers to be used on two Gemini space-mission trainers.

The trainers are being built to train astronauts for two-man orbital flights.

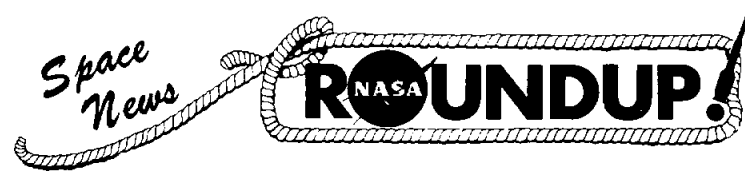
The contract also calls for the development of computer programs which will accurately and completely simulate the various phases of space flight. The specially designed Link Mark I digital computers will provide real-time simulation computations for all phases of a normal mission including pre-launch, launch insertion into orbit, rendezvous and docking, retro-fire and re-entry, and letdown. Computations will also be provided for abort and emergency conditions, and for signals for crew and instructor panel displays, window displays and other simulator sub-systems.

The Link Mark I computer is the only digital computer conceived, designed, and built for the sole purpose of dynamic simulation for complex aerospace training applications.

## 'Speed Reading' Course Beginning

A 12-to-15 week course in speed reading began Monday in the East End State Bank Building classroom with 30 students, under the auspices of the Training Branch of Personnel Division.

The course will include one two-hour session a week with make-up classes held weekly to accommodate the heavy travel  
(Continued on Page 2)



SECOND FRONT PAGE

## First Annual Credit Union Meeting Set January 22

The first annual membership meeting of the MSC Federal Credit Union will be held Tuesday, Jan. 29 in the Farnsworth and Chambers cafeteria, at 7:30 p.m.

Reports from all committees will be heard. The election of an entire new slate of officers and a new Board of Directors will be held, and committees appointed or reappointed by the new board.

In addition to the election of nine new directors, five members for the Credit Committee, which passes on all loans, will be held.

A nominating committee is presently drawing up a slate of candidates.

Following elections, there will be a speaker. The meeting is not to be a dinner meeting.

The MSC Credit Union now has more than 500 members. Quarterly statements are being mailed out showing dividends for last year. These should be included in income tax statements for the past year, according to manager Joseph Murray.

A partial excerpt from the year's end financial report follows:

Total loans outstanding are 196, in cash \$104,453.62. Total cash on hand and in banks, including savings accounts, is \$2,554.38. Total assets are \$107,113.41. Under liabilities

(Continued on Page 2)

## Attention, Savers!

Those employees of MSC who belonged to credit unions at places of former employment will be receiving dividend checks during the present month.

In cases where the by-laws of such credit unions specify, the member's savings will also be forwarded to him and his account closed since he has left the field of membership.

Those depositors who wish to transfer their accounts intact to the MSC Federal Credit Union may do so immediately at a cost of only 25 cents, the standard membership fee. The MSC Credit Union, one of the fastest growing in the country, has achieved assets of more than \$100,000 and is already paying dividends in less than 10 months of operation.

Share withdrawal applications are available in the MSC Credit Union office, room 138, Farnsworth and Chambers Building.

All money on deposit on or before the fifth of each month will draw dividends for that month.

(Continued on Page 2)

## NASA Announces Predoctoral Training Grants To 88 Schools

The National Aeronautics and Space Administration has announced the selection of 88 colleges and universities to receive graduate training grants for the academic year 1963-64. Notification to the colleges and universities was made December 21.

Included in the list are the University of Houston, Rice University, Texas A and M, Texas Technological College at Lubbock, and the University of Texas at Austin.

The grants will go to predoctoral trainees who have chosen a graduate study research program that is space oriented. It is anticipated that approximately 800 graduate students will participate in the program.

The purpose of the grants is to help achieve the long range objectives of the national space program and meet the nation's future needs for highly trained scientists and engineers. These skills are in short supply today and will be needed in increasing numbers over the next decade.

The institutions were selected not only because they have doctoral programs in space related science and engineering but also because of their willingness to undertake a strengthening of their programs in these areas.

Candidates for graduate degrees participating in the program will be selected by the universities and will enter the program in September 1963. The number at each university will vary from two to 15, depending on the number and quality of doctoral programs available in the space-related areas, adequacy of facilities and extent of participation in other NASA programs.

Each graduate student chosen for the training program will receive a stipend of \$2,400 for 12 months of training. There is also an additional allowance for dependents of up to \$1,000 per year to be paid according to the policy of the individual university administering the funds. The recipient is assured three years of graduate study providing he maintains a satisfactory record.

Administration of the predoctoral training program is under the Office of Grants and Research Contracts, NASA Headquarters.