

GODDARD NEWS

NASA/GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

VOL. XII, NO. 9 DECEMBER 26, 1966

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Goddard's biggest Christmas party, Page 2.

Christmas Party Attracts 1100 Youngsters On December 18

The biggest Children's Christmas Party ever held at Goddard took place Sunday, December 18 to the happy sounds of nearly 1100 youngsters having the time of their lives in the auditorium of Building 8.

It was the fifth annual Christmas party for employees' children, sponsored by the Goddard Employees Welfare Association (GEWA).

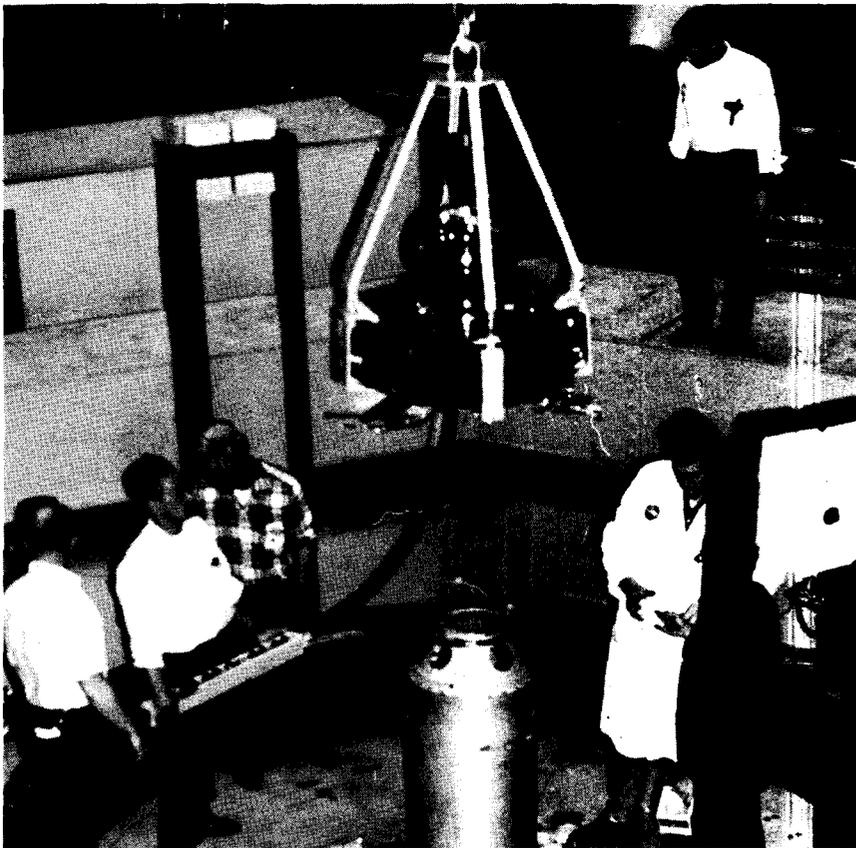
Mr. and Mrs. Santa Claus listened to breathless requests and passed out presents expressly selected for each individual child, plus his own special reindeer. Santa's Helper in his bright elf costume set a merry pace as Master of Ceremonies, backed-up by the Fairy Snow Queen and her magic wand, Goddard clowns and bunny rabbits blowing up balloons and giving away bright rubber balls.

The children did everything they like best. They ate cookies, hot dogs and drank their fill of fruit punch. They visited the cute little houses in Santa's Village and came away delighted with still more presents of lollipops and chocolates.

Closed circuit TV in the lobby of Building 8 and the Building 21 cafeteria, as well as at the auditorium entrances kept the huge throng informed of happenings on stage.

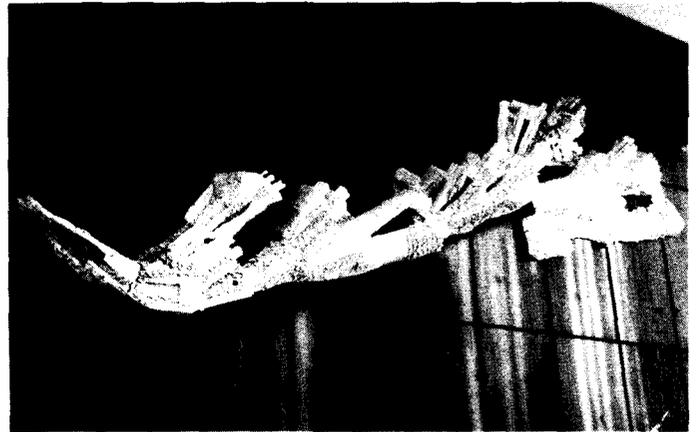
See pictures on pages 2 and 3, Inside Goddard.

Goddard's LPS Conducts Its First Test

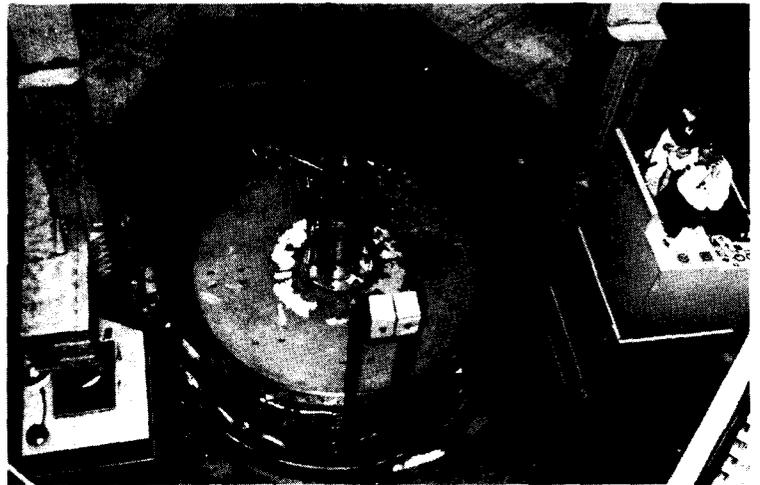


AIMP-E is lowered into place for the test. From left are George W. Newlon, of the Engineering Support Office (T&E); Jerry Rauser, Westinghouse Corp.; William H. O'Hara, of the Engineering Support Office (T&E); Howard Gardner, Westinghouse Corp.; Paul I. McConnel, of the Mechanical Systems Branch (SI&SR); Kenneth M. Carr, of the Structural Dynamics Branch (T&E); and at top is James O. Wood, of the Engineering Support Office (T&E). Below spacecraft is a simulated Delta third stage mounted on the end cap of the Launch Phase Simulator.

PIX QUIZ



GUESS where this is at Goddard. Get the answer on Page 7.

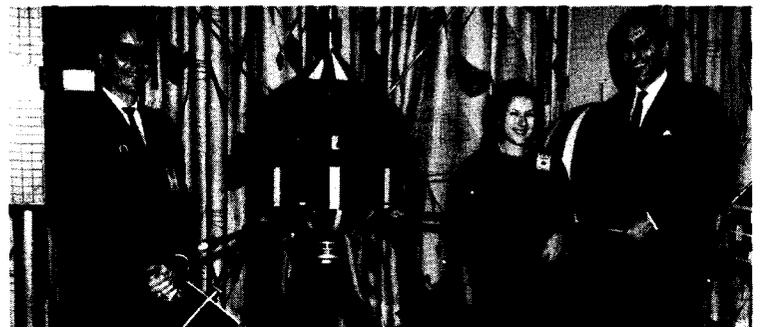


LOUIS DEMAS (back), and Charles R. Vandercook, both of the Structural Dynamics Branch (T&E) move the LPS end cap and the mounted AIMP-E into position for the test.



LAUNCH PHASE SIMULATOR (LPS). At left is the environment chamber in which the Anchored Interplanetary Monitoring Platform-E (AIMP-E) was tested during the first test of a spacecraft using the new facility, November 21, 1966. The test in Building 15 simulated the condition of acceleration that will occur during launch.

▼ THE HONORABLE Robin E. L. Johnstone (right), First Secretary of the British Embassy in Washington, and Mrs. Johnstone are shown with Leo B. McGee (left), of the Directorate Support Office (T&DS), during a tour of Goddard, December 14, 1966.



INSIDE GODDARD

December 26, 1966



KEEP A SHARP LOOKOUT
FOR COST REDUCTION
IDEAS!.....

Wyatt and Casto Save NASA \$431-Thousand in Freight Costs

Two men in Goddard's Storage and Transportation Branch (MS&SD)—Robert S. Wyatt and Charles C. Casto—did some sharp thinking, a lot of hard work, and came up with a grand total of \$431,212.14 in savings for NASA on different freight shipments, some of which were airlifts to tracking stations in Canberra, Australia, and Madagascar.

Part of this savings was made possible by a careful study of the difference in overall costs and pound-rates between the usual method of shipping by commercial air freight and the alternative of shipping by chartered aircraft.

They observed that a chartered aircraft with a capacity load offered a big reduction in pound-rate. But the big hitch was that most shipments were many thousands of pounds short of capacity. They whipped the problem by making a survey throughout Goddard for other shipments with the same destinations. By consolidating a number of shipments for delivery at the same time, they were able to use chartered aircraft at a radically reduced cost per pound rate.

The remainder of this savings represents a \$75,000 waiver in Maryland permit fees for an oversize shipment, plus \$91,254.89 savings earned by trucking the Delta second-stage vehicle from Santa Monica, California, to Cape Kennedy instead of the customary shipment by special mission airlift.

Robert C. Cowan, Head of the Storage and Transportation Branch, said: "This is a fine example of the initiative and ingenuity we consistently encourage in our all-out branch efforts to reduce costs. Robert Wyatt is credited with savings of \$301,439.38 and Charles Casto has saved us \$129,772.76."



COST REDUCTION originators (from left) Robert Wyatt and Charles Casto are congratulated by Don Hutchison, Cost Reduction Monitor; and Robert C. Cowan, Head of the Storage and Transportation Branch (MS&SD).

Our Girl Friday

Another article in the series on Goddard secretaries.



Sharon Lee Nagel

"Sharon Nagel is extremely competent in the techniques required of a division secretary in keeping ahead of the maze of administrative problems which face us each day," reports James C. Jackson, Assistant Chief of Goddard's Manned Flight Operations Division (MFOD).

"Her pleasing disposition and good-natured approach to sometimes frustrating problems is well known in these parts."

Miss Nagel came to Goddard on October 8, 1964, working first for the Project Resources Office, from which she transferred to MFOD in June 1965. Before coming to Goddard, she had acquired considerable secretarial experience, working part time for Suburban Investigators, Inc., in Cheverly, Maryland and also in the main office of the Bladensburg Senior High School, from which she graduated in June 1964, after winning the Outstanding Secretarial Award.

Her job with Mr. Jackson entails taking dictation, typing, filing, maintaining office records, preparing drafts and final copies of correspondence. She also types-up travel orders and vouchers, makes reservations, helps maintain personnel records, time cards, correspondence logs and the processing of Personnel Action Requests.

When asked what she thinks of her job, Miss Nagel said: "I enjoy working in the Manned Flight Operations Division office very much. The work is varied and interesting and sometimes a bit hectic. Our work with the manned missions is both enlightening and rewarding. The people over here in the University Building are one of the friendliest groups I have ever come across."

Her favorite pastimes are painting, dancing, playing pool, and watching football. For two years while in high school, she belonged to the Tri-Hi-Y. She is a member of the Calvary Memorial Church in Rogers Heights, Maryland.

Miss Nagel looks back with pride on her two-years-plus at Goddard and points out that she was one of the MFOD recipients of the Gemineer Award.

Miss Nagel lives with her mother and father, Marion F. and Elwood W. Nagel, at 4901-52nd Place in Edmonston, Maryland. She has a sister, Debra Ann, 11, and a brother, Steven Patrick, 8. Not to be overlooked, Miss Nagel reminds us, is the family pet, a dog named Andy, who is quite often at the center of family activities.



GEWA Collects For Needy Till January 6

The Goddard Employees Welfare Association (GEWA), previously placed Christmas boxes throughout Goddard to receive donations of various types for the Salvation Army, Prince George's County, Christmas Bureau. The Salvation Army has expressed the need for money to meet their holiday obligations. Therefore, it has been suggested that we concentrate on money this year.

The Salvation Army will use the money to—

- Purchase meat for the holiday meals to go along with the food baskets.
- Purchase new shoes—approximately 250 or more needy school children, referred by the Board of Education.

Small toys are purchased for boys, and new dolls for the girls, which are dressed by religious organizations and women's clubs.

New toys, gift items and meat are purchased wholesale by the

Salvation Army. They are purchased on faith to be paid for from their kettle funds and cash donations. Last year, many Goddard areas eliminated sending season's greetings to their co-workers and donated that money to the Salvation Army. Remember, no gift is too small. GEWA has started this worthy cause on its way with a check for \$20.00, so let's keep it rolling.

All families assisted through the Salvation Army have been carefully investigated and screened. Help the less fortunate have a happy holiday season.

Many contributions have already been received, but the Salvation Army is badly in need of additional funds, so the date for receiving contributions has been extended.

Send money and checks (payable to the Salvation Army or Christmas Bureau) to Mrs. Marguerite A. Kates, Code 233 on or before January 6, 1967.



MARGUERITE KATES accepts donations for Salvation Army or Christmas Bureau till January 6th.

Bridge Club Winners

The Goddard Duplicate Bridge Club, affiliated with the American Contract Bridge League, awarded trophies recently to the club champions and runners-up of the past year.

The first place trophy for the Winter-Spring Series was won by Dan McHugh, Systems Division, while the second place cup

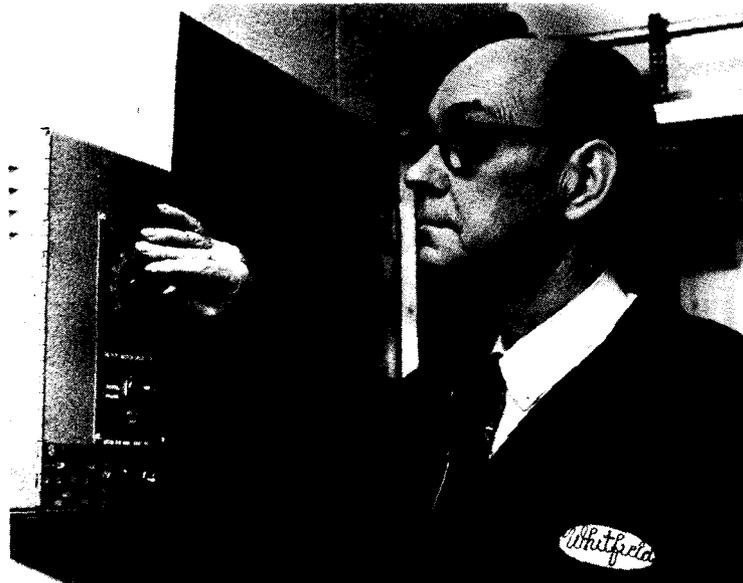
went to Bill Tallant, Spacecraft Technology Division.

The Summer Series awards went to Bill Bauer and runner-up Grady Nichols, both of the Systems Division. All bridge players are invited to participate in the Winter Series just underway, each Monday evening, Building 1 cafeteria, 7:30 p.m. to 11:00 p.m.

New WAMTC Labor Agreement Signed



DR. JOHN F. CLARK (right) congratulates Robert Fauntleroy, Chief Negotiator for the Washington Area Metal Trades Council, (WAMTC), following their signing of a new labor agreement covering Goddard wage board employees represented by the council.



CHARLES WHITFIELD, Head of the Electrochemical Processing Group, operates the improved photo resist coating machine he has developed for the Experimental Fabrication and Engineering Division. The new machine has greatly improved methods for applying the acid resistant light sensitive coating necessary for photo etching and plating of circuit boards and chemical milling.



BRIDGE CLUB WINNERS. From left are Grady Nichols, Bill Bauer, Dan McHugh, and Bill Tallant.

Meet Our People

Another biographical profile in the series on Goddard people.



James C. "Chuck" Jackson

James C. Jackson, Assistant Chief of Goddard's Manned Flight Operations Division, is an early member of the U.S. space agency, having come to NASA in 1959 from the Lockheed Aircraft Corporation where he had been Head of the Electrical and Electronic Section for aerial mapping and charting service aircraft development.

Previously he had worked for the Philco Corporation as an R&D engineer on circuit and system design for a digital PCM voice communications system. While there he received an award for outstanding work in the communications field.

He first worked for NASA at the Langley Research Center as a member of Project Mercury's Tracking and Ground Instrumentation team. Mr. Jackson transferred to Goddard on June 11, 1961 as Chief of the Mercury Network Procedures and Evaluation Branch when the Mercury network operation was reassigned to Goddard.

In his present job, Mr. Jackson assists the Division Chief in providing the coordinated operation of the Manned Space Flight Network (MSFN) including NASA, Department of Defense, and Australian land stations, aircraft, and ship tracking sites. This includes planning for the engineering, maintenance and operation of the Apollo network, along with the usual division office routines of budgetary planning, personnel hiring, and various other administrative and technical functions related to the operation of a worldwide tracking network.

His previous work at Goddard included that of Project Manager of the Solar Particle Alert Network (SPAN).

Born and raised in Lumberton, North Carolina, Mr. Jackson attended high school there and earned his BSEE degree at The Citadel in Charleston, South Carolina. He served in the U.S. Navy in 1945-1946.

Mr. Jackson is a member of the American Institute of Electrical and Electronics Engineers. His favorite pastimes are oil painting, swimming, and (especially, he says) vacationing.

He and his wife, Jo Ann, have three children: Charles Jr., 14; John, 8; and Alan, 6. They live at 7005 Dolphin Road in Lanham, Maryland.

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Jerry Stark, *Editor* Nancy Mengel, *Reporter*

DATA TOPICS

Morton D. Frank, of the Control Equipment Branch (NE&OD), is a graduate engineer with a BSEE degree from the University of Colorado. Currently, he is working on the design and implementation of command encoding equipment for STADAN. Prior to joining Goddard in June 1963, he worked on data translation equipment for RCA and the Martin Co.



STADAN Command Encoding Capability

By Morton D. Frank

A spacecraft must receive directions and be controlled from the ground in order to perform its required mission. These directions or commands may request the spacecraft to send telemetry data, change orbit, charge batteries, load a spacecraft's memory with positions and experimental operations or may instruct the spacecraft to perform any of a number of other functions.

Command messages are put into a suitable code for a particular spacecraft decoder. Intricate coding techniques are utilized to prevent other sources such as noise or transmissions to other spacecraft from compromising the reliability of the command system.

Usually a project's control center determines the specific functions to be performed by a spacecraft during a pass. Instructions to transmit commands are sent to the tracking stations by teletype messages or over a voice link. At the Goddard STADAN tracking stations, command encoders are employed to prepare command messages into a format suitable for transmission to a spacecraft. The encoder in conjunction with a Very High Frequency (VHF) transmitter and Command Antenna, provides the means for communicating with and controlling spacecraft from the ground.

The STADAN command encoders are capable of handling either a manually inserted command or of being controlled by peripheral equipment such as a paper tape reader or a computer. The encoders utilize basically three command coding systems. The three systems are: The Address-Executive Tone System, the POM Instruction Command System, and the Tone Digital Command System.

The Address-Executive Tone System is a burst-blank Pulse Frequency Modulation (PFM) scheme intended for use when only "on-off" type commands are required. Usually, a tone command sequence consists of an address tone preceding either two or three executive tones. Twenty-two discrete tones, 15 of which are designated for address functions and 7 for executive functions, are employed by this system.

The reception of the address tone by the spacecraft decoder arms the decoder for a period of time just sufficient to allow reception of the execute tones. Reception of the execute tones by the decoder initiates the command action.

The Address-Execute Tone System has successfully been used on several scientific satellites including Atmosphere Explorer Alouette, and the Beacon Explorer (BE-B).

The Tone-Digital Command System is a "four-state" pulse duration modulation (PDM) scheme designed for spacecraft requiring 70 or less "on-off" type commands. Usually a series of two address words and three executive words are sent per command.

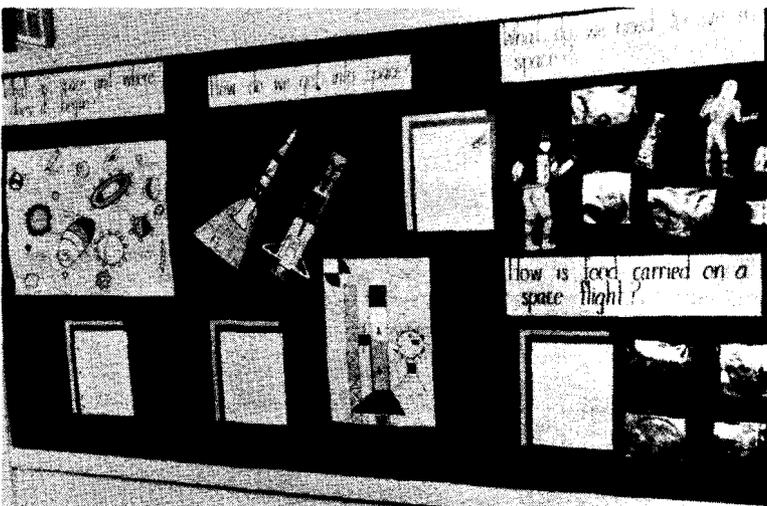
(See Page 7)



SPACEMOBILE LECTURER Lloyd Aronson (center) meets with D.C. Model School District Supervisors: (from left) Mrs. Lillian Glascoe, Mrs. Gladys Bellows, Mrs. Thelma Johnson, and Mrs. Constance Jackson to plan details for the upcoming Spacemobile visit.



BANCROFT SCHOOL students help Mr. Aronson unload Spacemobile models and demonstration equipment for the auditorium presentation.



TEACHERS had carefully prepared their elementary students for the arrival of the Spacemobile with reading materials, displays and bulletin boards.

WHAT HAPPENS SPACEMOBILE C

Excited youngsters watching a demonstration of liquid rocket propellants, teachers studying the behavior of smoke trail patterns around an airfoil, a third grader explaining her design for a space station—these were only a few of the experiences shared by the District of Columbia School System throughout the months of October, November, and early December when the NASA Spacemobile came to town.

During this period of time, the Goddard Spacemobile lecturer assigned to the District of Columbia, Lloyd Aronson, presented 60 space-science lecture demonstrations in 45 schools to more than 16,000 students. In addition, Mr. Aronson and other members of Goddard's Education Office conducted six two-day Aerospace Education Workshops for elementary school teachers. Not only did the lecturer stimulate student interest with the auditorium presentation, but in addition, through careful planning with the elementary school supervisors, the Goddard representative visited numerous classes for in-depth discussions of the problems of space exploration. This schedule is representative of the recent trend in Goddard's Spacemobile Programs.

To further reinforce the visit, the teachers received additional instruction in activity oriented workshops. The theme of the first workshop series was aeronautics. This choice was made by the



STUDENTS are led to a bro programs during a fifty mi strations and carefully deve

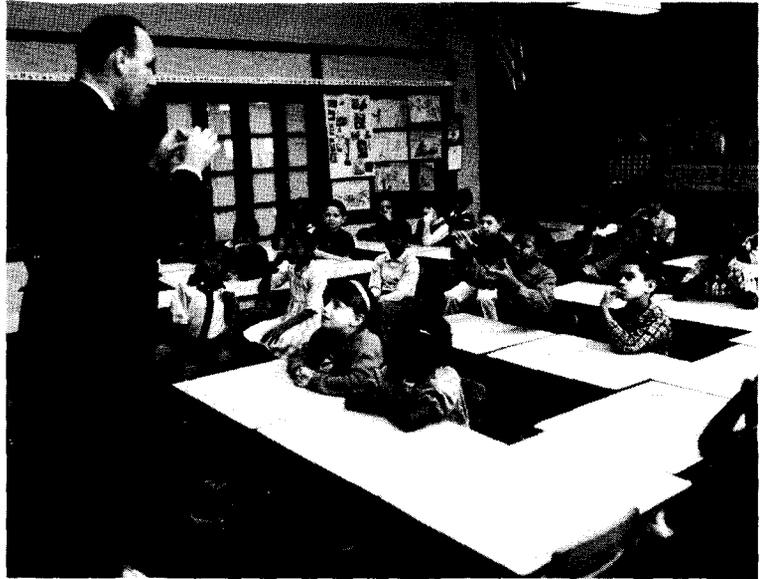
WHEN GODDARD'S COMES TO TOWN?

supervisors after a conference in our Education Office last spring. The areas of astronomy and meteorology are being considered as topics for next school year.

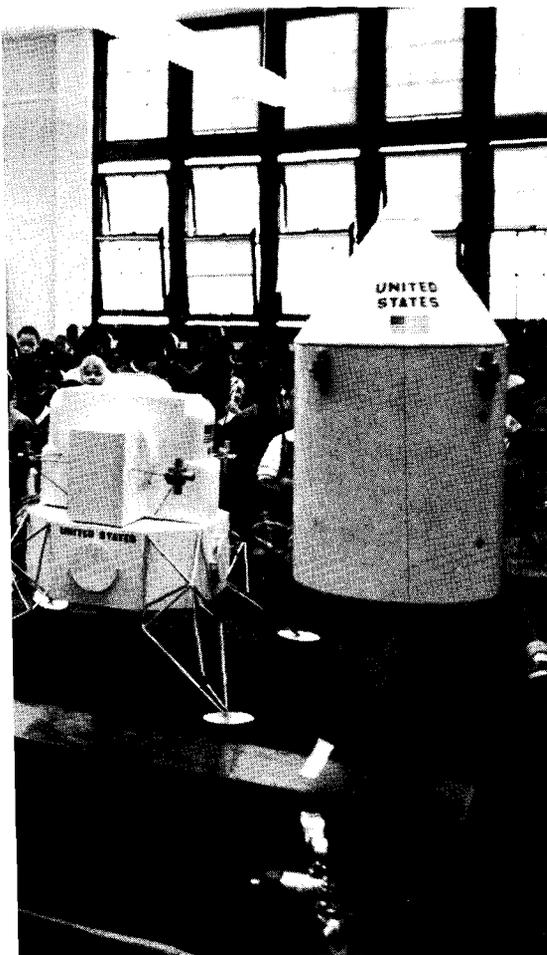
The workshops employed the discovery method in introducing teachers to space science topics suitable for use in elementary school classrooms. During each workshop, the teachers were also taken on a one-half day field trip to Dulles International Airport. At the airport, they were guided through the terminal facilities, the control tower, the airlines kitchens and fire fighting station. A highlight of the visit for the teachers was the use of the airport mobile lounges as a tour bus.

Mr. Aronson was selected to conduct the aeronautics workshops because of his vast and comprehensive experience in this field. He has been a pilot for more than twenty-five years and has varied experience in teaching aeronautics in workshops at the elementary, secondary and university level.

Mr. Aronson operates one of the three Goddard Spacemobiles. These units during the past three years have presented programs to more than one million students. The remainder of the five-million elementary and secondary students in the five-state Goddard area of educational responsibility are eagerly waiting for the Spacemobile to visit their town.



THE INTEREST sparked by the auditorium presentation leads to lively discussions when the Spacemobile lecturer visits the classroom.



Understanding of NASA's space program filled with demonstrated explanations.



A VISIT to Dulles International Airport was just one of the activities provided the participants in each of the aeronautics workshops.



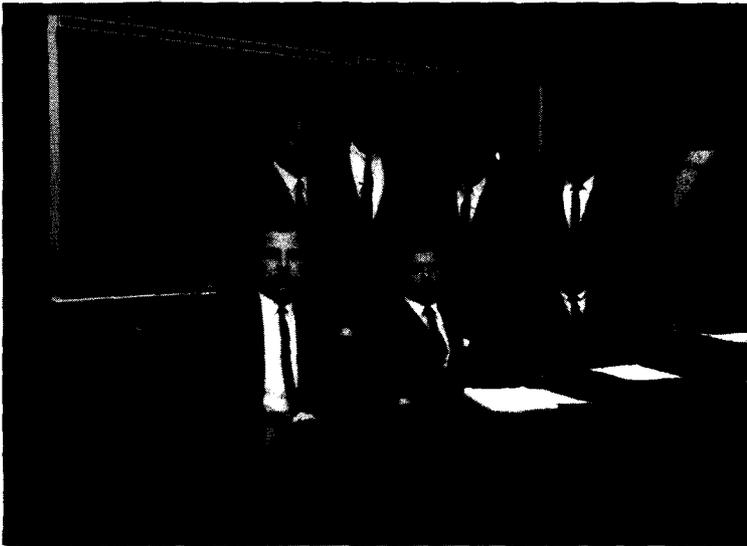
ELEMENTARY school teachers investigate the principles of flight during one of the six aeronautics workshops conducted by Mr. Aronson and other Education Office personnel.

STOC PROGRAM TO BRING NEW AUTOMATION TO STADAN

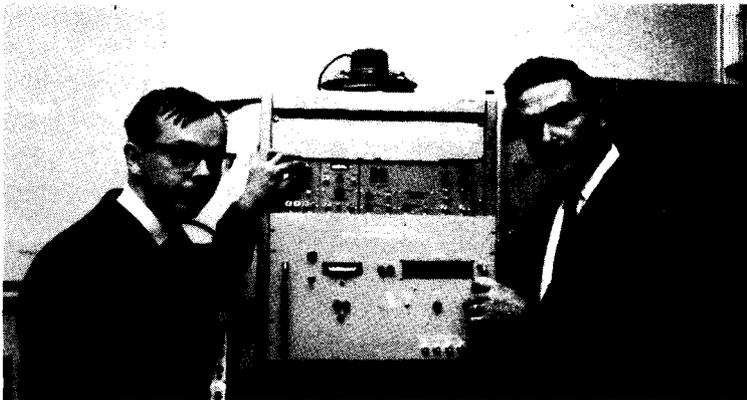
A new program designed to increase the automation of STADAN to an exceptionally high degree is now being developed by the Network Engineering and Operations Division (NEOD). Called STOC for Station Operations Control, the new program will be installed at Rosman, North Carolina, early in 1968.

Paul F. McCaul, STOC Program Manager, says, "The first phase of the STOC program involves the design, procurement, and installation of six 'STOC unique' systems into the STADAN stations. These systems will permit (1) operators to rapidly check a telemetry system prior to a satellite pass, (2) the switching of any receiver to any antenna, (3) the automatic generation of satellite scheduling information for the station operators, (4) the transmission of data to Goddard on high speed lines on a real-time basis, (5) the automatic reporting of equipment status to Goddard, and (6) a central indication by the station of the performance of equipment during a pass."

NEOD personnel working on the program include William M. Hocking, Head of the Control Equipment Branch; Howard W. Shaffer, Chief Engineer; Paul F. McCaul, STOC Program Manager; Eugene C. Humphrey, Network Engineering Branch; Carl E. Gustafson, Integration and Maintenance Branch; and Donald P. Eckel, Ronald R. Felice, Raymond L. Curry, Straton Laios, and Allen K. Berndt, all of the Control Equipment Branch.



STOC Specifications Working Group are (seated from left) Raymond L. Curry, Schedule Display System; Carl E. Gustafson, Operations Monitor Console; Straton Laios, Equipment Status Reporting System; (standing) Ronald R. Felice, Link Reading and Verification System; Paul F. McCaul, STOC Program Manager; Donald P. Eckel, Data Transmission System; and Eugene C. Humphrey, R.F. Switching System.



DONALD P. ECKEL (left) and William M. Hocking, Head of the Control Equipment Branch (NEOD) show a prototype unit of the STOC data transmission system.

Goddard Scientific Colloquium

January 6, 1967

4:00 p.m.*

Bldg. 3 Aud.

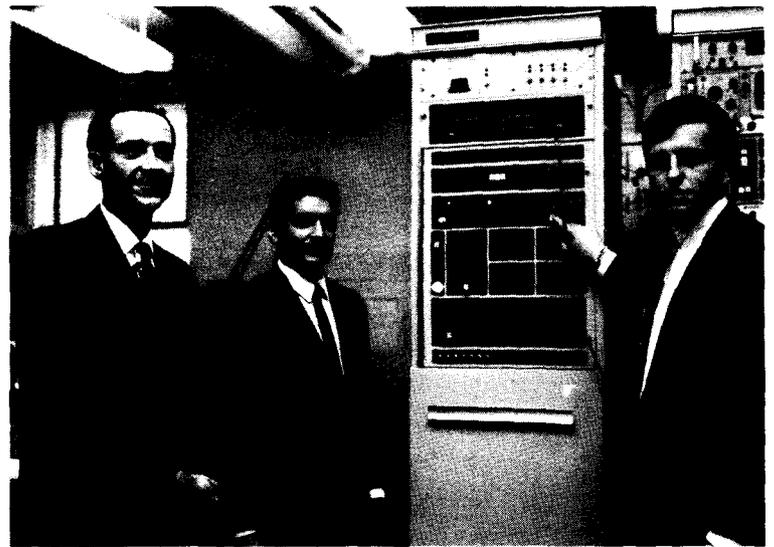


Professor J. Allen Hynek
*Chairman, Department of Astronomy
Northwestern University*

UNUSUAL AERIAL PHENOMENA

Sightings of unusual aerial phenomena have been reported over a number of years; many have never been fully explained. Results of past and continuing scientific investigations of these sightings will be discussed.

* Coffee served from 3:30 p.m.



HOWARD W. SHAFFER, (from left) Chief Engineer (NEOD), Ronald R. Felice, Paul F. McCaul and a simulator for use in the STOC program.

University Registration Schedules

With the spring semester approaching, Goddard supervisors should begin to determine what academic courses their employees will be taking.

To obtain Goddard support, organizations desiring to use local courses for employee development must submit the completed GSFC form 17-15, "Request for Approval of Training," dated August 1965, to the Employee Development Branch no later than ten working days prior to registration.

Registration dates for local colleges and universities are as follows:

SCHOOL	REGISTRATION DATES	CLASSES BEGIN
American University	Jan 26 - 30	Feb 1
Dept. of Agriculture Graduate School	Jan 21 - 28	Jan 30 - Feb 3
Catholic University	Jan 25 - 28	Feb 1
Georgetown University	Jan 26 - 27	Jan 31
George Washington University	Jan 26 - 28	Jan 30
Howard University	Jan 30 - 31	Feb 1
University of Maryland	Jan 31 - Feb 3	Feb 6
Johns Hopkins University	Feb 4 - 7	Feb 8

Employees taking courses during the Spring Semester 1967 must send a copy of their grades to the Employee Development Branch as soon as they are available.

Details concerning employee participation in academic courses may be found in Goddard Instruction 17-5-2.

DATA TOPICS . . . from Page 3

Constant bit ratio word coding is used. The address word consists of either 2 "zeros" and 6 "ones" or 6 "zeros" and 2 "ones". The execute word always consists of various combinations of four "ones" and four "zeros". This fixed 4-out-of-8 coding provides a means of detecting all odd bit errors and approximately half of all two bit errors.

The Tone Digital System is presently being used by the OSO, BIOS, and Pegasus programs.

The PCM Instruction Command System is a high capacity binary scheme utilizing Frequency Shift Key (FSK) techniques. A sinusoidal bit rate synchronization signal is amplitude modulated on the data subcarriers.

Command word partitioning is used to designate various functions such as addressing, event timing, error checking, subsystem control, and synchronization.

Presently, the word length is fixed at 64 bits of which the maximum number of data bits is limited to 46.

New equipment, presently under design and study will provide greater flexibility in bit rate selection, subcarrier frequencies, word length, coding, error checking, command verification from telemetry and command decoding techniques.

Official Opening Of Goddard's NTTF

The formal opening of Goddard's Network Test and Training Facility (NTTF) held Friday, December 16, 1966, was attended by top tracking officials of Goddard and NASA Headquarters.

Among those present at the ribbon-cutting ceremony were Edmond C. Buckley, Associate Administrator for Tracking and Data Acquisition, NASA Headquarters; Eugene W. Wasielewski, Goddard Associate Director; John T. Mengel, Assistant Director for Tracking and Data Systems (T&DS) and Ozro M. Covington, Deputy Assistant Director for T&DS.

NTTF has the same tracking and data acquisition equipment used by both the Manned Space Flight Network (MSFN), and the Space Tracking and Data Acquisition Network (STADAN). The new facility is being used for training of tracking station personnel, testing station equipment, and conducting spacecraft compatibility tests. It is located in Building 25 in the new area opposite Goddard's East Gate.



EUGENE W. WASIELEWSKI, Goddard Associate Director, cuts the ribbon to officially open the new Network Test and Training Facility. Watching are (from left) John T. Mengel, Assistant Director for Tracking and Data Systems (T&DS); Ozro M. Covington, Deputy Assistant Director for T&DS; and Edmond C. Buckley, NASA's Associate Administrator for Tracking and Data Acquisition.

Earth's Tail Extends Beyond Moon's Orbit

Experiment results from Explorer XXXIII have shown for the first time that the tail of the earth's magnetosphere extends beyond the orbit of the moon to at least 316,000 miles from earth, Goddard's Dr. Norman F. Ness reported November 30.

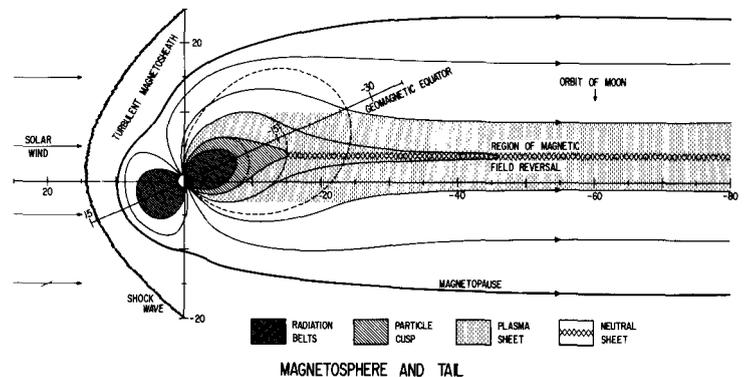
In a paper presented to the 3rd Annual meeting of the American Institute of Aeronautics and Astronautics in Boston, Dr. Ness said that it is now clearly established from magnetic field studies conducted by Explorer XXXIII that the magnetosphere tail "extends more than 75,000 miles beyond the orbit of the moon." Just how far is still unknown. This means that during four days each month the moon passes through the extended tail of the magnetosphere. These results were obtained in collaboration with Goddard colleagues Kenneth Behannon, Clell S. Scearce and Sergio C. Cantarano, now at the University of Rome.

The experiment results reported by Dr. Ness are contrary to those announced by Soviet scientists from data obtained by Luna 10 between April 3 and May 4, 1966. The Soviet scientist Dolginov and his colleagues reported earlier this year in the proceedings of the USSR Academy of Sciences that they were unable to detect the magnetosphere tail at lunar distances. The reason for this, Dr. Ness suggests, is that the Luna 10 data was probably obtained while the spacecraft was located near or possibly within the neutral sheet region of the magnetosphere where very low magnetic fields should be expected.

Explorer XXXIII Results

The magnetosphere is a huge, invisible tear-drop-shaped envelope surrounding the earth which contains the Van Allen radiation belts. It is formed by the earth's magnetic field. Action of the solar wind tends to compress the sun side of the magnetosphere while the portion behind the earth, away from the sun, is distended and trails off far behind the earth much like a comet tail. Although practically nothing was known about the magnetosphere until 1964, much of the front side has been mapped and the tail and neutral sheet were discovered by Explorer XVIII (Interplanetary Monitoring Platform I), launched November 27, 1964.

Explorer XXXIII, launched July 1 from Cape Kennedy, Fla., was intended to be placed into orbit around the moon. However, a slightly higher than planned thrust from the launch rocket resulted in an alternate highly elliptical earth orbit carrying the 130-pound Goddard-built satellite out to 316,000 miles into an unexplored region of space, the highest apogee of any earth satellite. It has operated continuously since launch.



MAGNETOSPHERE and tail.

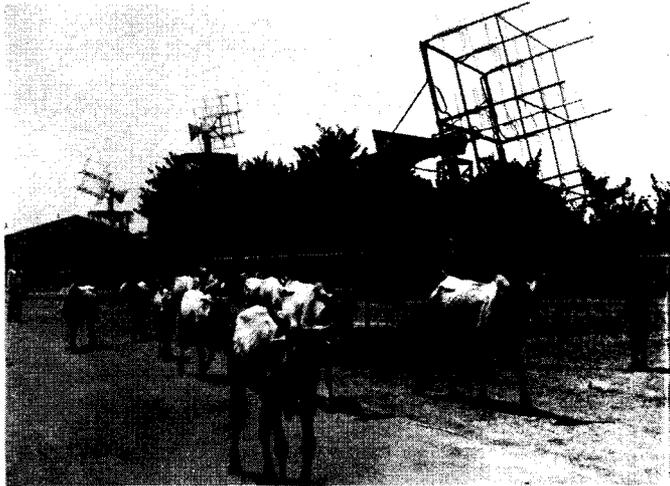
PIX QUIZ

ANSWER to Pix Quiz: Sculpture by the noted Glen Michaels on the wall of the Goddard library in Building 21, created of fiberglass, Roman tesserae, marble pieces, bits of aluminum, white Japanese tile, and piano ivory; depicting "an orbital view of a city." Photo by Ted Hopkins, PIO staff photographer.

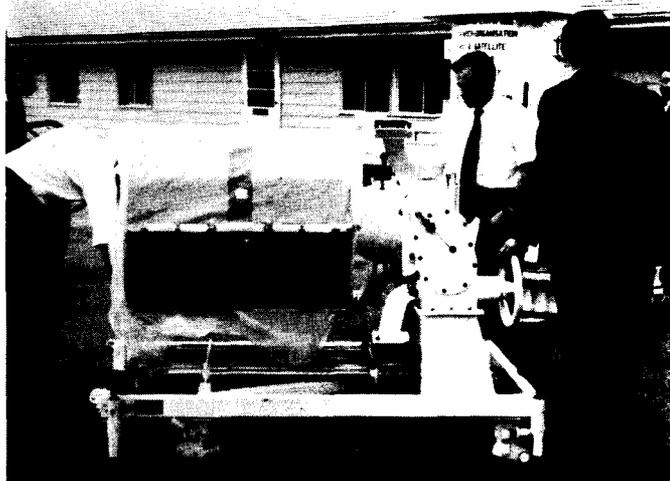


GODDARD AROUND THE WORLD

—News of NASA's Worldwide Tracking Stations—



GRAND CANARY ISLAND (MSFN). Natives of the local farm community go about their daily routines in front of the tracking site. The Station Director is Charles A. Rouiller.



WINKFIELD, ENGLAND, (STADAN). ESRO II is unloaded in front of the station's Minitrack Building while Roger Kenyon, Telemetry Supervisor, looks on. The European Space Research Organization's (ESRO) satellite was brought to the station in October for STADAN compatibility checks.



LIMA, PERU (STADAN). Arturo Evans, Operations Engineer, inspects equipment the day after the October 17, 1966, earthquake. The quake moved telemetry racks by several inches, but did very little actual damage at the station. The Station Director is Richard M. Waetjen.

New Goddard Warehouse Opens



Herbert J. Fivehouse (center), Chief of Goddard's Management Services and Supply Division, accepts the key to our new warehouse, located a half-mile from the center, at Glendale and Telegraph Roads in the Aerospace Science-Research Center, being developed by (from left) Alfred H. Smith, Thomas B. Ricker, and Meyer Shapiro, at far right. Prince Georges County Commissioner Francis J. Aluisi is second from right.

The new warehouse, with 52,500 sq. ft. of space leased by GSA, replaces the last of the Lawrence Street warehouses, located six miles away, which have been used by Goddard since 1960.



MADRID, SPAIN (MSFN). Otto Womick, Jr., (left), Station Director; and Victor M. Figueroa, of the Communications Engineering Branch (NASCOM); stands in front of the NASCOM Switching Center at Robledo de Chavela near Madrid. Mr. Figueroa is manager of the Switching Center.



BERMUDA (MSFN). 200 pounds of game fish were caught in one day by Bermuda personnel in competition with Guam. From left (standing) are Ralph Thomas, Ray Manderville, Michael Reilly, Fred A. Healey, Assistant Station Director; and Bill Reilly. In the front row (from left) are Les Johnson, Ron Harris, Howard Hoge, and Captain Edric Pearman.