

Dr. James C. Fletcher New NASA Administrator

On Tuesday, April 27, Dr. James C. Fletcher, President of the University of Utah, was sworn in as NASA Administrator by President Richard Nixon in Nixon's office at the White House.

Born June 5, 1919 in Millburn, New Jersey, Dr. Fletcher received a B.A. in physics with a minor in mathematics from Columbia University in 1940. He served as a research physicist with the U.S. Navy Bureau of Ordnance, and, in 1941 became a special research associate at the Croft Laboratory of Harvard. He went to Princeton in 1942 as a teaching fellow and later was an instructor and research physicist.

At the end of World War II, he began work on a doctorate in physics at the California Institute of Technology; and after receiving his Ph.D. in 1948, Dr. Fletcher joined the Hughes Aircraft Company as director of the Theory and Analysis Laboratory in the Electronics Division.

In 1954, Dr. Fletcher joined the Ramo-Wooldridge Corporation as an Associate Director and soon became Director of Electronics in the Guided Missile Research Division. Later, the Guided Missile Division became Space Technology Laboratories, a subsidiary of Ramo-Wooldridge, with technical responsibility for all U.S. intercontinental ballistic missiles (Atlas, Titan and Minuteman), as well as the "Thor" intermediate range missile. The laboratories also initiated Pioneer 4, the nation's first space probe.

In 1958, Dr. Fletcher was the prime organizer of the Space Electronics Corporation. The firm became involved with space boosters, space probes, lunar research vehicles, space instrumentation and survivable communications for military command and control. Space

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Dr. James C. Fletcher

GODDARD NEWS

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San Marco 3 Launched From Kenya Platform

Everything is going well with Italy's San Marco 3 spacecraft. The 360-pound satellite, carrying one Italian and two Goddard experiments, was launched April 24 aboard a NASA Scout rocket from Italy's San Marco platform off the coast of Kenya. This was the third Scout mission from the platform by an Italian launch crew aided by U.S. engineers and technicians.

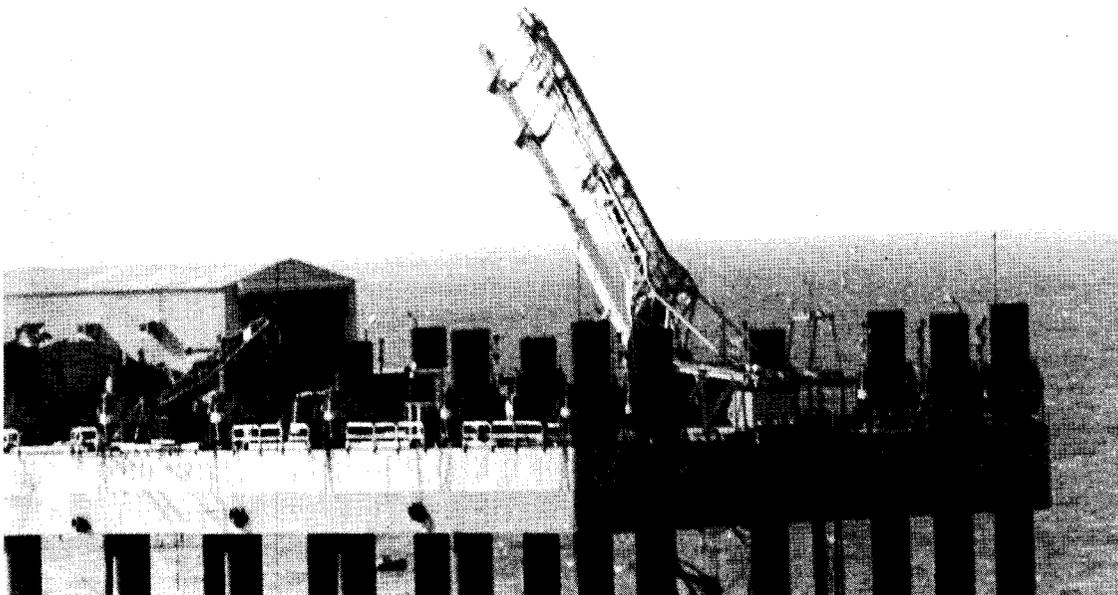
Maurice Handegard, Goddard's San Marco Project Coordinator, says, "We are quite happy with all results from the spacecraft so far. All experiments have been turned on and are doing well."

The launching was witnessed by hundreds of viewers at the San Marco base camp, including Republic of Kenya officials from Nairobi and the Malindi District, members of the Diplomatic Corps, and U.S. and Italian officials.

More than 135 Italian and U.S. space experts worked to prepare for the flight. They represent the Centro Ricerche Aerospaziali Dell'Universita Degli Studi Di Rome (Aerospace Research Center of the University of Rome); NASA's Goddard Space Flight Center, Langley Research Center and Wallops Station; the University of Michigan; and various contractors.

The Italian-built satellite, third in a joint U.S./Italian cooperative program, is designed to study the environment of the upper atmosphere in the equatorial region. The spacecraft's three experiments are a Drag Balance Experiment by Principal Investigator Professor Luigi Broglio of the Centro Ricerche Aerospaziali (Center for Aerospace Research) Rome, Italy; an Omegatron Experiment by Principal Investigator Nelson W.

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NASA'S SCOUT ROCKET is positioned for the launch of San Marco 3 from the San Marco launch platform off the coast of Kenya.

NASA ADMINISTRATOR From Page 1

Electronics developed and produced the "Able Star" stage of the "Thor-Able". In 1960, controlling interest was sold to Aerojet General Corporation. A year later, Space Electronics was merged with the spacecraft division of Aerojet to form the Space General Corporation. Dr. Fletcher was responsible for the formation of this new corporation and was its first president. He later became Chairman of the Board of Space General and Systems Vice President of Aerojet General. He served in these dual capacities until 1964, when he resigned to become the president of the University of Utah.

In 1967, Dr. Fletcher, after serving as a consultant since its inception in 1958, was appointed by President Johnson to membership on the President's Science Advisory Committee. He was a member of the President's Committee on the National Medal of Science; and on several Presidential Task Forces, the most recent being the Task Force on Higher Education. He is a member of the Defense Intelligence School's Board of Visitors, is a Fellow of the IEEE, and an Associate Fellow of the American Institute of Aeronautics and Astronautics. He received the first Distinguished Alumni Award to be given by California Institute of Technology. Dr. Fletcher serves higher education as a member of the Executive Committee of the National Association of State Universities and Land Grant Colleges.

SAN MARCO From Page 1

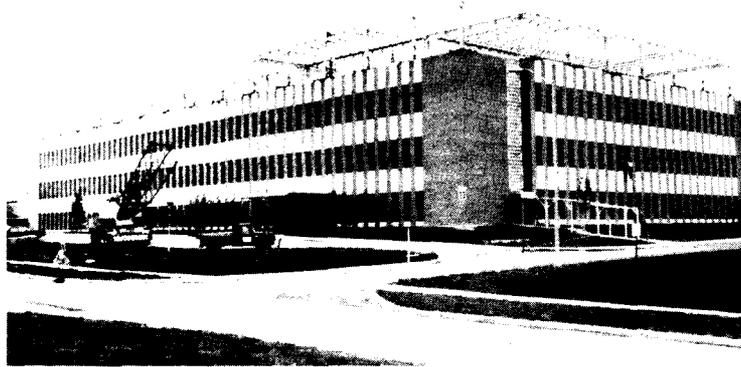
Spencer of Goddard and Principal Investigator, George Newton and Co-investigator David T. Pelz, both of Goddard.

Goddard's San Marco team is headed up by Anthony J. Caporale, Project Manager and George P. Newton, Project Scientist. Maurice D. Handegard is Project Coordinator. At the Kenya site for the launch were Mr. Caporale and Mr. Spencer, plus Henry Benton, Dave Clem, Ed Marousek, and Dave Pelz.



SAN MARCO PROJECT MANAGER
Anthony J. Caporale at work at the San Marco Base Camp in Kenya.

MALINDI, KENYA. Operations personnel for the San Marco 3 are hoisted by net from the launch to the deck level of the Santa Rita launch control platform.



MAKING WAY FOR ERTS. A new top floor is being added to Building 23 to make room for support functions for the Earth Resources Technology Satellite. At the same time construction is underway for the ERTS Control Center and Data Processing Facility on the present top floor (or second floor). The support area on top should be complete by early 1962. First occupancy of the control areas downstairs will take place later this month, with final modifications completed late this summer. The first ERTS is scheduled for launch in the spring of 1972.

Grand Tour Scientists

A team of 108 scientists from the United States and six foreign countries has been chosen to participate in the definition phase of the proposed outer planets missions in the late 1970s.

The group was chosen by NASA from some 500 scientists who submitted proposals in response to NASA's invitation last October. Funds to begin development of a spacecraft to fly the outer planets or Grand Tour missions were requested of Congress in the President's Fiscal Year 1972 budget.

The scientists are grouped into 13 science teams representing different investigation areas. Each team will be represented by the team leader on the Outer Planets Mission Steering Group which will be responsible for integrating the overall science.

Experimental and theoretical scientists on the team will intensively participate with the mission engineering team in the definition stages of the missions. The scientists will help determine spacecraft configuration, trajectory and combinations of scientific instruments that will give the greatest scientific returns from the missions.

The scientists represent 36 institutions in the United States and ten overseas. Other countries represented are Canada, Denmark, Federal Republic of Germany, France, Sweden and the United Kingdom.

Chosen from Goddard are: Dr. Frank B. McDonald, Dr. James H. Trainor, Dr. Robert Hoffman, Dr. Robert Stone, and Dr. Robert G. Roosen.

APOLLO 15 ASTRONAUTS (from left) James Irwin, David Scott and Alfred Worden display the Lunar Rover and the sub-satellite that will be part of the Apollo mission scheduled for this summer. The battery-powered Lunar Rover is equipped with a television camera which will be used when the vehicle is parked. It can be controlled from the ground while Astronauts Scott and Irwin explore the moon. Signals from the camera will be transmitted to Goddard's MSFN tracking stations via the Lunar Module. The sub-satellite is a small satellite that will be ejected from the Service Module early in the mission. It will remain in lunar orbit after the astronauts return to Earth. The satellite will contain particle detectors and a magnetometer, thus providing data to collate with the surface magnetometer, particle detectors and a S-band transponder.



An R&D Satellite Center That Acts Operational

There is an old saying that goes, "Everybody talks about the weather but nobody does anything about it." Well now, this cliché doesn't fit a group in the basement of Building 3.

Possibly no known group has worked so hard on experimental meteorology the past seven years than the Nimbus Operations team headed by a tireless, dedicated engineer named Ralph Shapiro.

The group truly has lived up to one of the statements in the original space act which said "...for the benefit of all mankind..."

Nimbus personnel routinely deal with universities, meteorologists and individuals in more than 50 countries on all seven continents with a goal leading to better weather prediction.

Ralph Shapiro, who has been Nimbus Operations Manager since Nimbus 1, says, "Much of the efficiency of this ground station is the result of a team effort by many contractors working together. We are especially proud of our ability to innovate by making design changes which improve operations and by taking on new jobs with old equipment. The team maintains high output with realtime operation, and handles user requests on a timely basis."

The heart of the facility is the Nimbus Technical Control Center (NTCC). This center is headed up by Nimbus Assistant Operations Manager Richard Ormsby, another Nimbus old-timer who helped set up the NTCC and ground equipment in the days of Nimbus 1. Staffed today by the General Electric Company (managed by Bennie Palmer), the NTCC is at the hub for all phases of Nimbus activity including evaluation of the spacecraft, spacecraft scheduling, emergency actions, communications between the project and the tracking stations and providing technical reports on the performance of the spacecraft.

The Nimbus Data Handling System (NDHS) located near the NTCC is the key point for all Nimbus network data processing — much of it in realtime. Under Goddard management by John Shawhan of the Tracking and Data Systems Directorate, the NDHS is operated around-the-clock by RCA (managed by Ray Balon), with computer maintenance support from the Control Data Corporation and the Lear Siegler Corporation.

The distribution of meteorological data from all Nimbus sensors is managed by John Lindstrom of the Nimbus Project. The NDUC, staffed by the Allied Research Corporation (managed by Arnard Oakes), operates on a non-realtime basis. Here photographs are processed and catalogued for distribution to experimenters and other users. Under Mr. Lindstrom, the NDUC has developed a high quality photographic operation that has become a standard to be envied.

R&D Satellite Operations

The output of these three areas includes sending large quantities of photographs and digital tapes as well as transmitting digital data in near realtime to Nimbus experimenters. The facility is presently sending temperature sounding data on an operational basis to Oxford, Great Britain and to the National Oceanic and Atmospheric Administration (NOAA) in Suitland, Maryland. The Nimbus 4 spacecraft covers major parts of the world for which there is no data from normal sources.

Special operational efforts have ranged from protecting ships to collecting weather data in support of Apollo recovery efforts. There have been no ship and ice collisions this year thanks in part to Nimbus support of the U.S. Naval Weather Facility resupply effort in the Antarctic and their summer Arctic ice breakup

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GODDARD MANAGERS for the Nimbus Ground Station are (from left) Ralph Shapiro, Nimbus Operations Manager; Richard Ormsby, Assistant Operation Manager; and John Lindstrom, Nimbus Data Utilization Center Manager.



NTCC staff members are (from left) Karl Sorg, Chester Eddington, Ed Rutkowski, Joe McNaney, Richard Ormsby, Jim Owen, Dong Han, Lynn Walton, Jack Efner, Jo Aldirch, Tom Winchester, Richard Stephenson, Bob Rossin, Ed Foote, Ben Palmer, Ralph Shapiro, Pete Tricoff, and Bill Seechuk.



NIMBUS DATA UTILIZATION CENTER. From left (seated) are W. Abbott, J. Sissala and W. Sinclair. Standing are John Lindstrom, NDUC Manager; A. Oakes, NDUC Supervisor, K. Dry, M. Criss, C. Thompson, D. Simmes, R. Farquhar, R. Ackermann, B. Jones, V. Mazza and C. Eltringham.



NIMBUS T&DS CADRE. From left are Robert Martin, Willis Holmes, A. Gerald Johnson, Robert Fry, Roger Tetric, Tracking and Data Systems Manager; Terry Young, Charles Schoppet and Donald Eckel.

CONTROL CENTER From Page 3

determinations. The Project also assists NOAA in the realtime study of tornado development and in support of special NOAA rocket launches.

In addition to conducting Nimbus operations, the control center has an outstanding record for taking on tasks for other projects. In the past, the Nimbus facility has processed ATS spin scan IDCS data, taken part in the ATS WEFAX transmission experiment, and handled quality photographic reproduction for many areas at Goddard. In the near future, the facility will absorb the task of data processing for the TOS Control Center and may participate in ERTS simulation efforts by rescanning aircraft data.

Much of this work is done with equipment developed some ten years ago and up-dated to fit the changing needs of the Nimbus Project. The same infra-red facsimile equipment has been used on all Nimbus spacecraft, and the original Nimbus computers are still being used for processing Nimbus telemetry data, gridding video reception and formatting digital sensor data.

Trouble-Shooting Part of the Game

When spacecraft problems occur, the ground station teams are ready. When the Nimbus 4 gyroscope malfunctioned on April 8, a year-to-the-day after the 1970 launch date, their first task was to determine how serious the problem was. They then worked closely with technical support personnel throughout Goddard to find ways to live with the problem.

Checks of the spacecraft found Nimbus operating reasonably well, but facing backwards in orbit. Says Mr. Shapiro, "We used ground commands and got the spacecraft turned around a couple of times, but it kept slipping around into its backwards mode. The computer programs have been modified to compensate for the 'backwards' data, and the spacecraft is again supporting 'operational' users."

It is all part of the game for "Nimbus Control," Goddard's operational ground station for a research and development spacecraft.

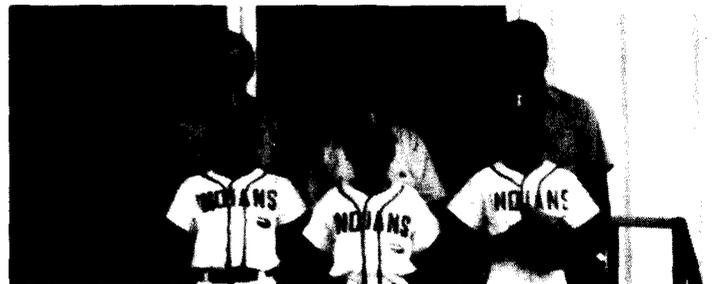


NIMBUS DATA HANDLING SYSTEM. From left are Ray Balon, Joe Purcell, Warner Robertson, Dave Faust, Gene Lampkin, John Shawhan, Doris Schachte, Larry Brent, John Speer, Al Hoskins, Horace Reid, Charles Freeman, and Ed Sزتetter.

THE SEABROOK Nimbus Photographic Facility. W. Ahlin (left, in back, facing camera) is manager.



GUAM (MSFN). During a recent visit to the NASA Guam Station, Charles A. Taylor, Director of Operations, Communications and ADP in the Office of Tracking and Data Acquisition at NASA Headquarters presented Apollo Participation Awards to several station employees. Shown here are (from left) Station Director Charles Force, Mr. Taylor, Fred San Nicolas, Facilities Section; and T. M. White, M&O Supervisor.



FORT MYERS, FLORIDA (STADAN). Personnel at the Fort Myers station have voluntarily contributed to sponsor three Little Leaguers in Fort Myers. Ballplayers in the front row are (from left) J. Gilmore, catcher; T. Lymon, third base; and K. Gilmore, short stop. In back, representing the station sponsors, are J. R. Sullivan, BFED Manager of STADAN Network Stations; Chester A. Matthes, NASA Station Director; and J. Nash, equipment operator.

Goddard Scientific Colloquia

All colloquia will be held at 4:00 p.m. in the Building 3 Auditorium. Coffee will be served in the Lobby from 3:30 p.m.

May 14 — Dr. Gary V. Latham
Lamont-Doherty Geological Observatory
Columbia University
Palisades, New York

RESULTS FROM THE APOLLO SEISMIC
EXPERIMENTS—IMPLICATIONS ON
LUNAR STRUCTURE AND DYNAMICS

May 21 — Dr. Wilmot N. Hess
Director, Environmental Research Laboratories
National Oceanic and Atmospheric Administration
Boulder, Colorado

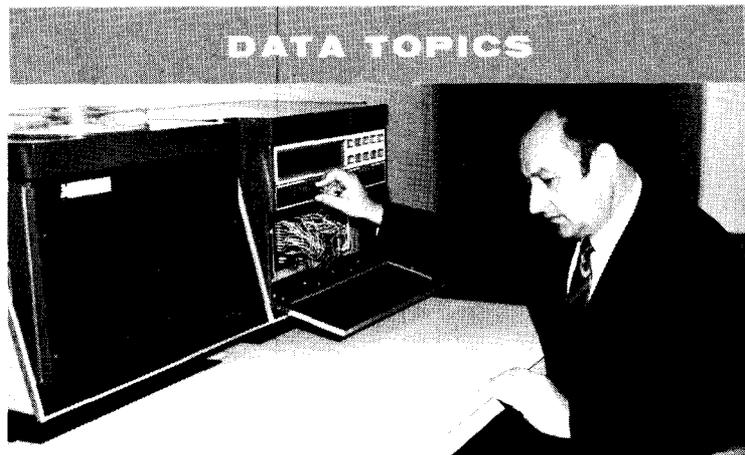
WEATHER MODIFICATION

May 28 — Professor Richard M. Goody
Division of Engineering and Applied Physics
Harvard University
Cambridge, Massachusetts

THE LOWER ATMOSPHERE OF VENUS

June 4 — The John C. Lindsay Memorial Lecture
Professor Leo Goldberg
Director, Harvard College Observatory
Harvard University
Cambridge, Massachusetts

SPACE ASTRONOMY



PETER KRUL, shown here with IPD's Computer Monitor device which is used to measure computer activity and performance, joined the Telemetry Computation Branch in 1969. He is responsible for the maintenance and performance evaluation of IPD's large scale digital computers. Mr. Krul received a B.S. degree in philosophy and theology in the Netherlands in 1950, and a Master of Cannon Law degree from the Catholic University of America in 1954. He holds a B.S. in electronics (1964) and a M.S. in computer science (1971) from George Washington University.

Computer Monitor

By Peter Krul
IPD Telemetry Computation Branch

In the Computer Data Processing Facility, Building 23, the Information Processing Division provides an integrated capability for operational data processing and analysis, as well as the coordinated development and evaluation of aerospace telemetry and control equipment systems.

Among the equipment systems is a UNIVAC 1108 Multiprocessor system, which is an integration of hardware and programming technology. The internal operating environment allows for simultaneous operation of many programs, permitting control and coordination while presenting a relatively simple interface to the computer user.

It is difficult, however, to judge the efficiency with which the computer system utilizes the various components of the machine. Computer complexity has increased rapidly over the past several years, resulting in the need to consider ways of more effectively utilizing expanded processing capability. Many computer control functions have been assigned to the peripherals I/O controller equipment. While the automating of routine operations has reduced operator workload to a marked degree, it has also reduced the ability of management to closely monitor those functions which affect computer efficiency. This, in turn, may allow an imbalance to occur and remain undetected for long periods of time.

To correct this problem, a special device called a Computer Monitor has been installed in Building 23 to provide detailed facts concerning usage under various conditions from which analysis can be performed for more efficient use. The Computer Monitor measures the duration of events and the number of occurrences by sensing the presence or absence of electronic signals, carrying meaningful computer functions without loading or degrading computer system performance.

The Monitor is providing an economical way of identifying system imbalance and system utilization by means of measuring all Computer Processor Units' activity in the system, channel utilization, partition timing, wait state, multipath efficiency, drum latency, operator overhead, and others. Analysis of the Central Processor Units' activity compared with their respective input-output channels, with its loading and overlapping will give the user an excellent idea of the computer configurations required by his workload.

The interface with the computing systems is made with special sensors that provide complete isolation from the host system. Signals are routed from the sensors into the Monitor via a removable plug-board, which in turn provides the capability to program the operations (by means of logic functions) to be performed on the monitored signals. Output from the Monitor is written on the magnetic tape, which after the processing by the computer provides the results in tabular and graphic forms, giving statistical information to the users.

In other words, data obtained from the application of the Computer Monitor will provide useful information for data processing management. Based upon the factual data, an intelligent action can be taken, whether an optimization of existing hardware and software systems, selection of future systems, or standardization of overall system operation. Time histogram and the statistical data of CPU and I/O channel activity will lead to improved job scheduling in a multi-programmed environment.



TECHNOLOGY UTILIZATION. Shown with models of the brushless motor and illustrations showing how it might be used are (from left) Harold Evans, RTOP Manager; Phil Studer and Casey deKramer, Aerospace Engineers; Dean Elliott, Lead Technician; and Dick Blumenthal, Engineering Technician.

Unique 'Brushless' Motor Now NASA Tech Brief

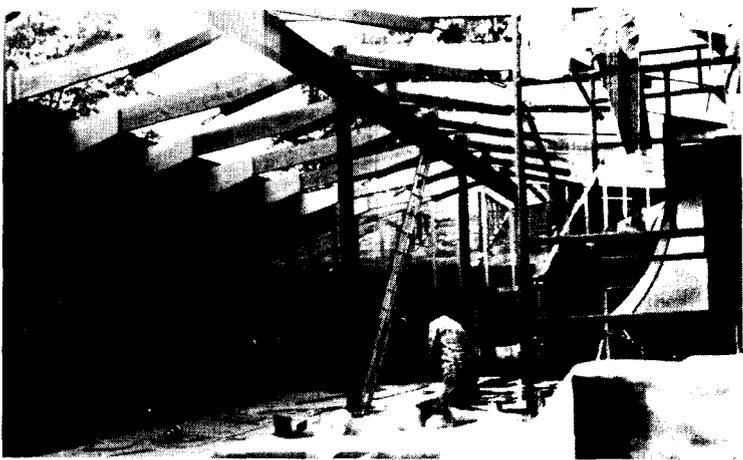
Philip A. Studer and a team from the Mechanical Division have developed a new type of "brushless" DC motor that has many potential uses outside the space program. The motor is described in NASA Tech Brief 70-10691.

Mr. Studer's "Brushless Direct Current Motor with Stationary Armature and Field" is a series type motor that operates at high efficiency over a wide range of speed and load conditions. It is unique in that the windings for the magnetic field and for the armature are stationary while a third element made of iron carries the magnetic field and rotates. Electrical connections can easily be made to the stationary coils and no sliding contacts are required. The device is easily controlled and, as is characteristic of most brushless motors, excessive wear of moving parts is eliminated.

Practical applications of the motor include use in hazardous, potentially explosive atmospheres such as in mine shafts since no arcing occurs and all the heat generated by the current in the windings occurs in the housing, not in the rotor. These features may also make it useful in hospital operating rooms.

Other uses for a motor of this type may be found wherever the maintenance of brushes and slip rings is difficult or uneconomical. A particular need for the series motor characteristic is found in traction applications ranging from golf carts to high speed rail systems.

For further information contact the Goddard Technology Utilization Office on ext. 6242, or Mr. Studer on ext. 4907.



RECREATION CENTER GROWING PAINS. During the expansion of the Rec Center, workmen (above) enlarge the main hall. The rear wall has been moved back to make room for a new section of roof at center. Below is the expanded hall after the building was enlarged and winterized. At left (in back) are the barbeque pits which have been enclosed and are now a part of the main area.



MEMBERS of the GEWA Executive Council are (from left) Richard King, Council President; John Libby, Chairman of the Clubs Committee; Alberta Mora Mead, Second Vice President; and Robert Rados, First Vice President.

GEWA: Employee

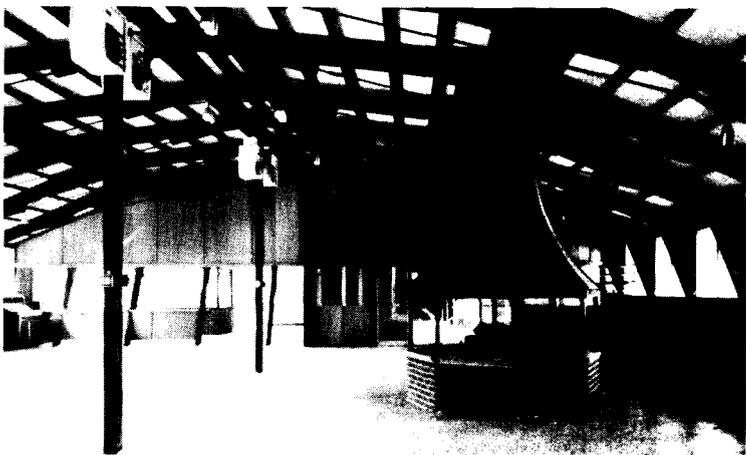
A revised constitution, a new slate of Executive Council officers, and an expanded recreation center all are part of a new look for the Goddard Employees Welfare Association (GEWA). Since it was first conceived in 1960, GEWA has come a long way towards promoting "the social, athletic, educational, cultural and welfare interests" of all Goddard employees.

The current officers were elected this March following approval by Center Director Dr. Clark of a newly elected Executive Council. At that time Merton Greene took over as Council President from Allen Franta who had served as president for the past ten years. Other new Council officers are: Robert Rados, First Vice President; Gilbert Mead, Second Vice President; and incumbents Sydney Bradley, Treasurer and Alberta Moran, Executive Secretary. New Chairmen of the three GEWA standing committees are: John Libby, Clubs Committee; Tom Karras, Foods Committee; and Richard King, Facilities Committee.

For most of the Goddard employees, however, the first big GEWA event of the year was the grand re-opening of the Goddard Recreation Center on February 5. Since March 1, the Rec Center has been in almost constant use during its open hours. Twenty-seven official functions have been held in the expanded hall including the 10th Anniversary Symposium Dinner.

Improvements to the Center following last winter's construction include expanding and winterizing the main hall, enclosing the barbeque pits to make them a part of the main area, and adding restrooms to the main building. The Rec Center can now handle 200 to 500 people in winter and over 500 in summer.

The Goddard Employees Welfare Association began in October of 1960 with a small income from a canteen and the sale of



FROM THE BACK, the recreation area shows play equipment for the kiddies and the enclosure for the barbeque pits. Only the pavillion remains open to the weather. The expanded center can now accommodate 200 to 500 people in winter and over 500 in summer.

SHARPSHOOTERS. Members of the Archery Club take aim at one of 28 targets in their range near the recreation center. From left are John Emler, Dave Sampson, Range Officer; Charles Dunfee, Ed Yates and Bill Howe. The club has maintained the natural setting of the range wherever possible. Their first tournament is scheduled for June 5 and will include a novelty shoot - which means the best archer does not always win. If you would rather use guns for target practice, the Gun Club also has a range near the rec center. Because of the safety hazard involved with shooting, both ranges are open to club members only.



GEWA Sports

CLUB	PRESIDENT	EXTENSION
Archery	Wilson Bedwell	2345
Art	Rita Mills	4172
Astronomy	Robert Watson	6343
Basketball	Roger Werking	5994
Bowling:		
<i>Ten Pin Leagues</i>		
Tues. Nite Mixed	William Anonsen	6153
Thurs. Nite Mixed	Francis Federline	6686
Wed. Nite Men's	Dick Hakes	4011
Thurs. Nite Men's	Walter Flourney	6710
<i>Duck Pin Leagues</i>		
Tues. Nite Mixed	Jack Williams	5095
Thurs. Nite Mixed	Donald Williams	6194
Youth Bowling League	David Neill	5568
Bridge	Dan McHugh	4327



Chairman of the Facilities Committee; Sydney Bradley, Treasurer; Merton Greene, Executive Secretary; Tom Karras, Chairman of the Foods Committee; Gilbert

Benefits Since 1960

Pepsi and Coca Cola. In December of 1961, Goddard Director Dr. Harry Goett, and GEWA President Allen Franta signed the first constitution and by-laws that made the association official on January 1, 1962.

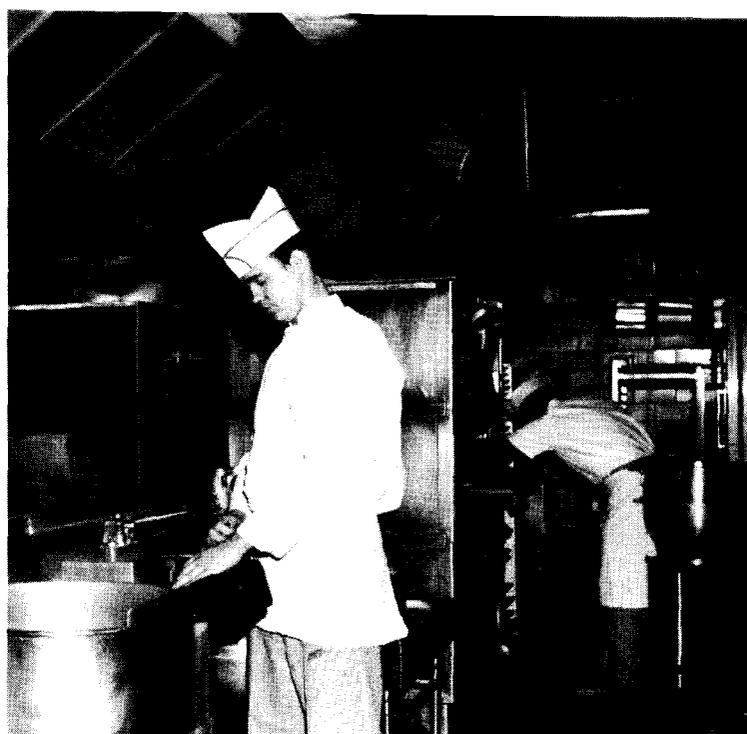
By 1962, however, GEWA had already established a reputation for giving Goddard people the support they needed for getting things started.

In that first "unofficial" year, GEWA funds paid for the serum used in Goddard's first flu and polio inoculation campaigns. On the social front, GEWA sponsored basketball and softball games, dances, and a boat ride down the Potomac.

Today over 2600 Goddard people take part in club activities alone. In the past ten years, the association has been responsible for such activities as the Director's Fund, the Goddard Queen dances, sale of baseball and football tickets, building and maintaining the recreation center, the Children's Christmas Parties, the sale of spring bulbs, candy, poinsettias, books and Christmas Cards.

Food service throughout the center is managed by the Szabo Food Services Inc. under contract to GEWA. This includes operation of the cafeterias in Buildings 1 and 21, the vending areas in all buildings, the lunch-time chuckwagon and providing occasional catering for special events.

Other GEWA support has been for the yearly picnic held for members of the Center's Youth Opportunity Campaign, providing coffee for the Friday Scientific Colloquium series, refreshments for the Youth Science Congress each spring, employee award ceremonies, occasional loans without interest to employees in times of emergency, and the purchase of special clocks to be presented to retiring Goddard employees.



FOOD SERVICES. Szabo chef Dave Spitzer and Pastry Chef Frank Walker, help prepare lunch for the Goddard cafeterias. The Szabo staff of about 34 employees feeds, on the average, 2,000 Goddard people lunch and breakfast each work day.



ART AND PHOTOGRAPHY. Newly elected officers of the Goddard Art Club discuss paintings they might enter in a future art show. From left are Mary Hammersley, Vice President; Dottie Mills, Secretary-Treasurer; and Rita Mills, President. For those who prefer to create their pictures with a camera, the Goddard Photo Club sponsors instruction in camera techniques, film developing and enlarging.

SELF-DEFENSE AND PHYSICAL FITNESS. Karate Club President Bob Morrissey (left) and instructor Soo Young Cha stage a demonstration of "Tae Kwon Do" or Korean karate in the Building 8 Auditorium where the Karate Club holds classes every Monday and Wednesday after work. Mr. Cha is one of three eighth degree Tae Kwon Do blackbelts in the world. The club boasts over 35 members who find the course a good physical fitness program as well as a means for learning self-defense. The Goddard Judo Club offers similar courses every Monday and Thursday at the Army Reserve Training Center in Riverdale. Their instructor, Ed Takemori, is a fourth degree blackbelt.



Isored Clubs

CLUB	PRESIDENT	EXTENSION
Chess	John Price	5412
Fishing	David Nava	5483
Football	Carrol Tapper	5222
Gun	Larry Pratt	4414
Ice Skating	Shuford Schuhmann	5123
Judo	Earl Gernert	5274
Karate	Robert Morrissey	6802
Mad Productions	Richard Finnblade	5179
Photo	Marvin Maxwell	4036
Radio	Teodoro Jaramillo	4900
Softball:		
Slo-Pitch	Dale Fahnestock	4946
Fast-Pitch	John Scheifele	5441
Girls	Pat King	5194
Tennis	Nick Raumann	5626

MAD Presents Pajama Game

Tickets are now on sale for the Music and Drama Production (MAD) presentation of Pajama Game. Performances will be May 14, 15, 21, 22, 28, and 29 beginning at 8:30 p.m. in the Building 8 Auditorium. Tickets at \$2.00 for general admission and \$2.50 for reserved seats may be purchased at the door or in advance from the people listed below.

The play stars Lou Walter and Jaylee Mead with able support from Sylvester Gilliard, Arlene Golden, Bill Cruickshank, Sandy Sadowsky, Lloyd Carpenter, Sandy Cascio, Clare Matelis, Gene Smith, Edd Downes, Barbara Lowrey, Fred Byrd and Tom Saunders. On the production end is William Woodyear, Director; Dr. Gilbert Mead, Music Director; Tom Cherrix, Orchestra Director; Wes Blakeslee, Stage Manager; and Dick Finnblade, Producer.

Pajama Game is a musical comedy by George Abbott and Richard Bissell based on Bissell's novel *7½¢*. It concerns labor-management problems at the Sleep-Tite Pajama Factory which create a rift between Sid (Lou Walter), the new superintendent, and Babe (Jaylee Mead) of the Union Grievance Committee. The union demands a 7½¢ per hour pay raise. The plant owner (Lloyd Carpenter) is opposed to this, and the union responds with a slowdown and threatened strike. Sid gains access to the firm's books by taking the bookkeeper (Arlene Golden) out for an evening at Hernando's Hideaway. He discovers that the boss has been upping prices by the pay increase demanded, but not giving the raise. Confronting the boss, Sid brings about the pay raise and his love life. Pajama Game songs include "Hey There," "There Once Was a Man," "Steam Heat," "Once a Year Day," and "I'll Never be Jealous Again."



MAD DIRECTOR Woody Woodyear (center) coaches his stars Jaylee Mead and Lou Walter for their roles in the up-coming production of Pajama Game. The musical comedy will open in the Building 8 Auditorium on Friday evening May 14.

MAD Tickets

General admission tickets may be purchased from Barbara Walter, ext. 5077, Bldg. 23; Marge Reynolds, ext. 2362, Bldg. 18; Sandy Morey, ext. 4641, Bldg. 8; Dorothy Irwin, ext. 5050, Bldg. 7; or Sandy Sadowsky, ext. 6773, Bldg. 14. Reserved seats are available through Dixie Hardin, exts. 2282 or 2283, Bldg. 20. On May 7 and 21, tickets may be purchased in the Bank or Credit Union. They will be on sale in Bldg. 8 next to the eggman on Mondays, in the cafeterias May 10 through May 28, and in the Building 3 Auditorium every Friday at 3:30 through May 28.

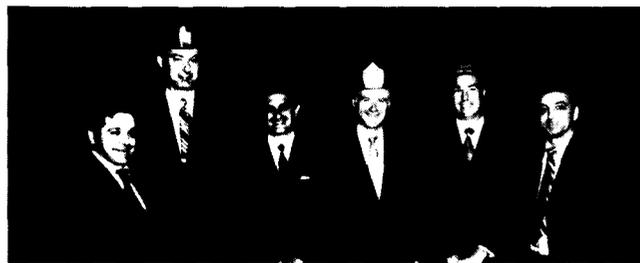
THE CAST OF THE MUSICAL COMEDY PAJAMA GAME



A&M Awards Presentation

The Administration and Management Directorate held an Awards Presentation on April 7, 1971, complete with music by the Cardozo High School Band. Dr. Michael J. Vaccaro, A&M Director, presented the awards which included 27 Fifteen and 57 Ten Year Career Service Awards.

Among the special awards presented during the ceremony were A&M Gold Star Awards that went to Karen Cooke, Maceo Leatherwood, Don Menard, Nancy Mengel, Dorothy Mills, George Morgan and Homer Newton. Other special award presentations are shown below.



CHIEF FIREMAN BRIGADE. During the April 7 ceremony, Dr. Michael J. Vaccaro (left) presented an A&M Fireman's Hat to Kenneth F. Jacobs (right) for his work on the MARS Project. Former winners of the award are (from second left) Samuel W. Keller for the 188 Project, William A. Mecca for the 246 Project, Charles P. Boyle for the 90-90 Project, and David W. Walden for Project Bootstrap.



SPECIAL ACHIEVEMENT AWARDS went to D. Wiley Jenkins (left), head Fabrication's Welding Shop and Maurice Levinsohn, Chief of the Experimental Fabrication and Engineering Division.

BLOODMOBILE VISIT MAY 12

Give a Gift—Save a Life

The Red Cross Bloodmobile will be here on Wednesday, May 12, and everyone is urged to give. Place for this visit will be the Building 8 Auditorium. The time will be from 9:00 a.m. to 2:45 p.m.

Through the cooperation of the American Red Cross, Goddard has arranged to have blood replaced free for employees, including contract employees, and their immediate families based upon meeting established blood quotas. To accomplish this, twenty percent of our employees must donate blood annually. Each of us must support this program as a protection for Goddard families.

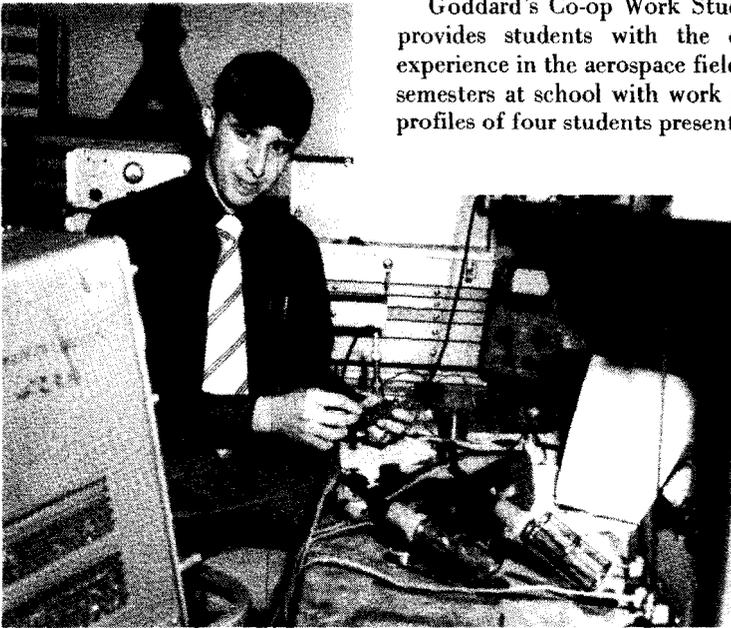
To date in 1971, Goddard employees have donated 391 pints of blood. Our quota is 900 pints, leaving 609 to go.

Any healthy person between age 18 and 66 can donate every eight weeks with a maximum of five pints a year. The simple and easy process of giving blood is always under the supervision of a physician. It takes about 45 minutes, including the medical check, the actual donation, and a few minutes of relaxation and refreshments.

During the May 12 visit of the Bloodmobile, the Red Cross will have an adequate staff on hand to receive in excess of 200 pints of blood. If you have not signed up to give call extension 4757 for an appointment. Let's have a good turn-out on May 12 to help meet the Goddard quota.

Meet Goddard's Co-op Students

Goddard's Co-op Work Study Program, in progress since 1961, provides students with the opportunity to gain valuable work experience in the aerospace field, while they alternate their academic semesters at school with work periods at Goddard. On this page are profiles of four students presently at Goddard.



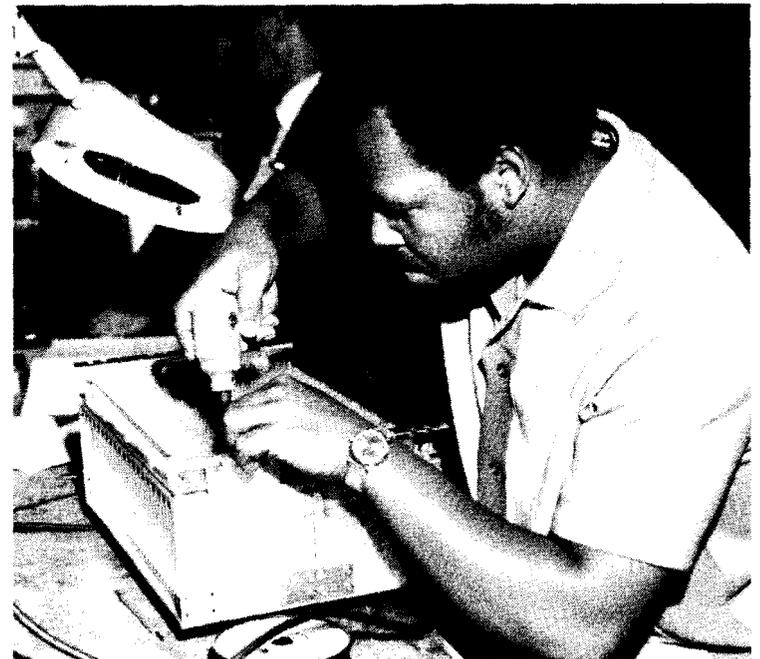
PHIL SALAS, an electronics engineering student from the Virginia Polytechnic Institute, is presently in his seventh, and last, work session at Goddard. His first assignment was with the T&DS Project Operations Branch. During his next five work sessions he worked in the RF Techniques Section of the Electronic Development Branch where his assignments included the design and construction of portions of RF circuitry for spacecraft equipment in the VHF and UHF bands. He is presently in the Antenna Systems Branch. Phil's home is at Highland, Maryland, where, with his parents and four brothers, he pursues interests in ham radio, scuba diving, musical instruments, a family fleet of Volkswagens, and numerous other activities. Thus far, two of his brothers have followed his lead by enrolling as students at VPI.



KATHY KOENIG, a programmer in the Laboratory for High Energy Astrophysics Branch, is a junior math major at New Mexico State University. She has recently been selected for Mortor Board, the National Woman's Honorary Society. She enjoys animals, traveling and meeting new people, and playing all types of sports. Her hobbies range from designing and making her own clothes to arts and crafts and cooking.



ROSE SEPANIK is a junior math major at the University of South Florida. She has one quarter of FORTRAN to her credit which, she says, "gave me the basics I needed for the first few hours here at Goddard." She is working as a programmer in the Trajectory and Analysis Branch. Her duties will include writing subroutines to implement the orbit determination programs of the Goddard Trajectory Determination System. She adds, "Since this is my first training session at Goddard, my work has been mainly introduction—learning FORTRAN and experimenting with various writing computer resources (translation, keypunch). So far, I've discovered many of the 'don't do's' which is somewhat frustrating, but all part of the Goddard experience. The professional attitude (which I had anticipated as being stifling) is certainly present, but more innovative than some of my cut and dried college courses. I'm never stymied for lack of something to do."



LLOYD TILGMAN, a Junior in Electrical Engineering at the University of Maryland, is now working in the Manned Flight Engineering Division. He recently built a piece of test equipment, a data simulator for a teletype formatter that he is also helping to build in the MFED lab. He says, "One of the best features of co-oping at Goddard is that I have been exposed to many types of engineering such as contract negotiating, testing a transmitter in a temperature and humidity chamber, working with test equipment in the lab, and some 'paperwork engineering.' I am quite impressed with the work here, and I would like to return after graduation." In addition to his regular assignments, Lloyd is taking a course in Digital Computer Fundamentals at the Network Test and Training Facility.



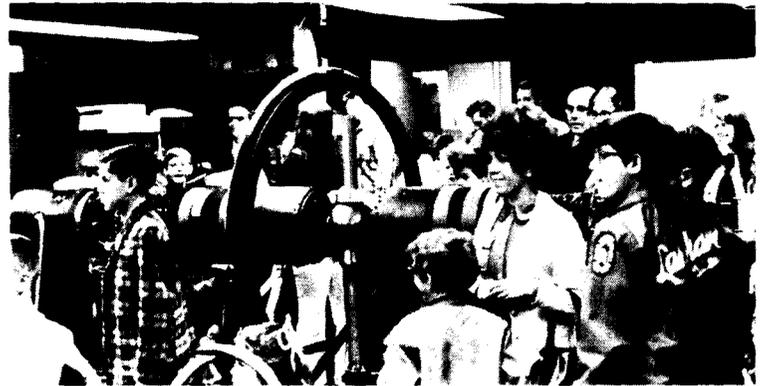
SOUNDING ROCKETS and model rockets were the prime attraction for guests at Goddard on Easter Monday.

Second Sounding Rocket Open House

Rockets of all sizes and kids of all ages made a happy mix during the Sounding Rocket Division's second annual open house held in the Glen Dale Building on Easter Monday. It was a day when SR employees brought their families to work to see what they do all week, and members of area model rocket clubs had a chance to see how the professionals operate.

The open house began at 8:30 a.m. and ended at 4:00 p.m. with time out for lunch in a Goddard cafeteria. Guests were able to view a telemetry ground station, laboratories for payload integration, research and development, vehicle preparation, engineering and sounding rocket attitude and control systems. There was an antenna and radio frequency laboratory, sounding rocket displays and the Division's computer room. Outside, the main attractions were actual size sounding rockets and the launching of model rockets.

Sounding Rocket personnel who acted as guides, receptionists and lecturers for the day include: Doris Waldorf, Maureen Bowie, Larry Thomas, Fred Witten, Charles Miller, James O'Brien, Claude Edwards, Irven Errera, Richard Ceresa, Paul Hinds, Jack Pownell, William MacAllister, Lee Kalinowski, Booty Crouch, Gary Comstock and Len Arnowitz. UNIVAC employees who helped with the computer demonstration were: Lee Meninger, Dennis Lieb, Robert Shardt, Kenneth Bromand and Ronald Heumiller. Joe Cimmino was lecturer for the model rocket shoot, and William Elliot gave a Spacemobile presentation during the lunch period at Goddard.



A SOUNDING ROCKET air bearing demonstration in the Glen Dale Building.



OPEN HOUSE guests take part in a computer demonstration.

Outputts *by* Maceo Leatherwood



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