

**DELTA BEGINS "SECOND CENTURY."** The fiery twilight launch of the nation's first domestic communications satellite on April 13 from Cape Kennedy marked the beginning of the second "century" of launches (number of rockets, not years) for Goddard's Delta launch vehicle. Delta 101 performed perfectly, placing Westar-1 into an orbit that nearly matched the 125 x 19,500 nautical mile transfer orbit planned by Western Union. The final synchronous orbit for the satellite will be 22,300 miles above the equator, west of the Galapagos Islands. By late this summer, it will be ready to transmit 12 color television channels or up to 14,400 one-way telephone circuits through five Earth stations located near the metropolitan areas of New York, Atlanta, Chicago, Dallas and Los Angeles. Two additional Westars will be launched, probably in June and October of this year. Western Union will reimburse NASA for all launch costs. The success of Delta 101 brings the Delta launch record up to 92 successful orbits out of 101 launch attempts.

## ATS-F

### 'Switchboard in Space' To Be Launched Soon

When the sixth Applications Technology Satellite (ATS-F, or ATS 6 in orbit) is launched late this spring, the world will have a unique communications spacecraft that, if all goes well, will beam health and educational TV programs to remote areas, test aeronautical and maritime communications, position-location and traffic control techniques; and become a tracking and data relay link. The ATS will be a true "international switchboard in space" designed to benefit many countries including the United States, India and the Soviet Union.

ATS-F is scheduled for launch from Cape Kennedy late in May or early June. From its geosynchronous orbit some 35,680 kilometers above the equator, the spacecraft will match the earth's rotational period and remain over a fixed point on the globe.

No other spacecraft similar to ATS-F has ever been placed in orbit. Weighing in at 1,402 kilograms, it consists essentially of an Earth Viewing Module connected to a deployable reflector antenna which measures nine meters in diameter when deployed. The spacecraft's most vital elements are the deployable antenna and the communications transponder. Through the use of these two systems, ground controllers will be able to relay high quality communications signals on multiple frequencies at power levels reaching 500 watts to land, sea, and air units located over a large geographical area. Because of this design, small, low-cost ground stations can be used to receive high quality signals.

For its first year of operation, ATS-F will be located at 94 degrees west longitude on the equator. At this location, a point over the Galapagos Islands, the spacecraft will be in view of all the continental U.S.

ATS-F is managed by Goddard under the direction of Project Manager John M. Thole.

#### Health and Education Broadcasts

Perhaps the most exciting ATS-F project for the U.S. will be the Health-Education Telecommunications (HET) experiment which will make possible high quality educational and health services to millions of Americans in remote areas of the Rocky Mountains, the Appalachian states and the states of Washington and Alaska. The mountainous nature of these areas makes TV reception from ground-based transmitters difficult.

The HET experiment will employ communications receiving equipment set up at selected sites. This equipment, consisting of an ordinary TV set, a special converter, and a simple antenna, will either directly service a single community-type receiver or will be tied in with public broadcasting microwave or cable systems already operating in the cooperating states. Equipment for each of approximately 300 sites will cost less than \$3,000.

For the HET experiment, ATS-F will be able to relay two separate color TV signals, each accompanied by four voice channels. Thus, programs can be broadcast in several languages simultaneously with the viewer being able to select among English, Spanish or one of several American Indian dialects. In addition, the ATS-1 and ATS-3 spacecraft will be used for two-way voice and data transmissions in support of the ATS-F during both educational and health-medical experiments.

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## ATS-F...From Page 1

A special feature of the HET will be routine and emergency tele-conferences between doctors and health workers at remote sites and the staffs of hospitals connected with the system. This program will be similar to the health experiment in Alaska which is using the ATS-1 satellite. This experiment has been credited with saving many lives by enabling native health aides to give simple treatment to patients after checking with doctors via satellite. Satellite communication is also being used to help in the evacuation of patients in emergencies.

Principal Investigator for the HET is the Department of Health, Education and Welfare (HEW). The new capabilities pioneered by HET experiments are expected to be fed into operational satellite systems established by the private sector in the future.

### SITE Experiment in India

India will begin to benefit from ATS-F about a year after launch when the spacecraft is moved to a position on the equator over the eastern edge of Lake Victoria in Africa. From this position, the ATS-F will be "visible" to the subcontinent of India. It will then be used by the Indian Government about four hours a day for one year to conduct the Satellite Instructional Television Experiment (SITE).

For this experiment, ATS-F will be used to broadcast daily television programs to 5,000 villages and cities in seven states throughout India. Programs aired will stress improved agricultural techniques, family planning and hygiene, school instruction and teacher education, and occupational skills. Because of the large number of languages and dialects spoken in India, each video channel will be accompanied by two audio channels in different languages.

The ground receiving terminals for this experiment will be simple units each costing about \$600. They will consist of a three-meter diameter antenna made of chicken wire, a converter unit and a TV receiver.

NASA will be responsible for the operation of ATS-F for the SITE, and India's Space Research Organization will be responsible for ground transmitting and receiving stations and all programming.

### Apollo/soyuz

The Soviet Union will get into the act during the Apollo/Soyuz mission in mid-July 1975 after ATS-F has been moved to 35° east longitude. ATS-F will be used to track and relay TV and other data from the Apollo/Soyuz spacecraft as they orbit the earth in a ten-day joint U.S./U.S.S.R. experiment to advance international cooperation in manned flight.

Because of the location of the U.S.S.R. launch site for the Soyuz, the orbits of both spacecraft will be inclined to about 52° north and south of the equator. This orbital path will swing the spacecraft beyond the scope of many U.S. ground-based tracking stations.

Use of ATS-F for tracking and data relay purposes for the Apollo/Soyuz spacecraft will provide continuous coverage during fifty percent of their orbit. Further, it will permit larger amounts of biomedical and spacecraft data to be relayed to earth in one transmission.



JOHN M. THOLE, ATS-F Project Manager

The use of ATS-F for Apollo/Soyuz will be similar to several tracking and data relay experiments (T&DRE) which are included in the first year of operation. NASA's Nimbus-F meteorological research spacecraft and its GEOS-C geodetic spacecraft, both planned for mid-1974 launch, will be tracked by ATS-F which also will relay two-way data between these spacecraft and earth.

All of the information collected during this experiment will be useful for the future transition from a totally ground-based network to the Tracking and Data Relay Satellite System (T&DRSS) planned for the late 1970's. This system would employ two geosynchronous spacecraft operated in conjunction with strategically located ground stations for tracking and data relay operations with low orbit spacecraft. Such a system would not only be less expensive to instrument and maintain, but it would provide more extensive coverage for the orbiting spacecraft.

During its initial year of operation while at 94° degrees west longitude, the ATS-F will be used to conduct another major experiment. Called the L-Band Experiment, it will evaluate several communications and position location techniques using ATS-F as a relay between ground terminals and airborne planes and ships at sea. NASA's ATS-5 will also be used in these tests.

In addition to the HET, SITE, L-Band and T&DRE experiments, ATS-F will carry over 20 other experiments, making it one of the most ambitious spacecraft yet launched. These experiments include radio frequency interference, propagation at the millimeter wave frequencies, cloud mapping, spacecraft thermal and attitude control, and radiation measurements at the synchronous orbit altitude.

### LAUNCH NOTES

As the *Goddard News* goes to press, the first Synchronous Meteorological Satellite (SMS-A) is scheduled for launch aboard Delta 102 from the Kennedy Space Center on May 16.

SMS-A is the first of two spacecraft, funded by NASA, which will serve as prototypes to initiate new methods of weather observation. Unlike the Tiros, Nimbus, and other Earth orbital satellites which fly relatively near the Earth, SMS-A will be positioned in synchronous orbit 22,300 miles above the equator. It will be located at 45 degrees west longitude, to take part in an experimental weather forecasting program called GATE (Global Atlantic Tropical Experiment).

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## Systems Reliability Tops in Safety



**THREE IN A ROW FOR LAGOW AND COMPANY.** Herman E. LaGow (right), Director of Systems Reliability accepts a Zero-In On Safety award from Dr. Michael J. Vaccaro, Associate Deputy Director for Management, in behalf of all employees in his directorate. The award presented for achievement in 1973, marked the third year in a row that Systems Reliability has maintained the best safety record of all Goddard directorates.

Systems Reliability lead in the Zero-In-On Safety program in 1974, making last year the third year the directorate had the best safety record at Goddard. Networks and Projects had the second and third best safety records of all directorates on Center.

The OSO Project and the SMS Project top the list of divisions—both completing the year with perfect safety records. Other top divisions with outstanding safety records were the Information Processing Division, the Quality Assurance Division and the Program Support Division.

The Health and Safety Engineering Office computes the Zero-In On Safety standings on the basis of injuries and the frequency of dangerous housekeeping discrepancies such as extension cords placed so that they can fray and short out, boxes and other objects blocking exits and halls, or the improper storage of flammable or caustic materials. An organization's safety index is figured to equal the number of injuries per 100 employees x 2.30 (a constant) + the number of housekeeping discrepancies per 100 employees.

Using this formula, Systems Reliability achieved a 12.40 safety index. The index for all of Goddard is 31.89 for 1973.

NOTE: Some of the divisions listed above have been reorganized and no longer exist under the name given.

## Bauer and Obler Honored



**TECH BRIEF AWARDS.** Hugh Bauer (second from left) and Henry D. Obler recently received cash awards for the publication of Tech Brief 72-10490 "Automatic Air Flow Control in Air Conditioning Ducts." Presenting the award are James F. Mills (left), Chief of the Facilities Engineering Division, and Samuel W. Keller (right), Director of Administration and Management. Mr. Bauer, head of the Mechanical Engineering Section, has been Goddard's chief facilities mechanical engineer for over six years. He has worked on the design and building of mechanical systems that include systems for chilled and portable water distribution, steam distribution, and natural gas distribution. Mr. Obler came to Goddard in 1966 and has been the mechanical design engineer for many of the facilities constructed on Center. He is presently a member of a Utility Conservation Task Group and has submitted many suggestions in the hope of reducing operating costs as well as conserving energy.

## Top Blood Donors



**BLOODMOBILE NEWS.** Joseph Purcell, Director of Engineering, presents certificates of recognition from the American Red Cross to Clarence B. House (top, second from right) and Robert M. Porter (below) for their support of the Bloodmobile program. Mr. House and Mr. Porter are Goddard's top blood donors. Watching the presentation are Shirley Kammerer, of the Personnel Services Branch, and Roland Van Allen (right), Head of the Instrument Data Branch. Mr. House has donated a total of 14 gallons of blood, beginning back in 1942 in Washington, D.C. While at Goddard, he has given 12½ gallons. Mr. Porter, a "13 gallon man," began giving blood in D.C. in 1960, but had made most of his donations at Goddard. Both men came here from the Naval Research Laboratory, and both made their first Goddard donation in April of 1961.

The next Bloodmobile will be at Goddard on May 22 from 9:00 to 2:45 in the Building 8 Auditorium. We are just breaking even and need a good turn-out of at least 175 people to meet our quota for the year. The May 22 visit will be the last Bloodmobile here for Fiscal Year 1974. For more information call Gertrude Law on ext. 4757.

## Design for First HEAO Flight Experiments Approved

Goddard's Dr. Elihu Boldt is among the science experimenters and contractors who are proceeding with the design and fabrication of experiment hardware for the first flight of the High Energy Astronomy Observatory (HEAO).

Dr. Boldt, of the Cosmic Radiations Branch, is principal investigator for the HEAO Cosmic X-ray Experiment. Purpose of this experiment is to measure the spatial and spectral structure of the X-ray sky over a broad bandwidth and correlate results with observations in other bands, such as visible light and radio, with particular emphasis on emission and absorption features of diffuse background radiation.

Other experiments that have been approved for HEAO are: the Large Area X-ray Survey Experiment by principal investigator Dr. Herbert Friedman of the Naval Research Laboratory; the Scanning Modulation Collimator Experiment by Dr. Herbert Gursky of the Smithsonian Astrophysical Observatory and Dr. Hale Brandt of the Massachusetts Institute of Technology; and the Hard X-ray and Low Energy Gamma Ray Experiment by Dr. Lawrence Peterson, University of California at San Diego, and Dr. Walter Lewis, Massachusetts Institute of Technology.

The first HEAO calls for an X-ray survey of the sky, from a satellite in low circular Earth orbit. From this survey scientists hope to obtain information about some of the newest and most mysterious phenomena of the universe—pulsars, black holes, neutron stars and supernovas.

The program is managed for NASA's Office of Space Science by the Marshall Space Flight Center in Huntsville, Alabama. Initially approved in 1972 as a series of large unmanned observatories, the program has been restructured into a series of smaller scale missions, the later ones being planned as payloads aboard NASA's Space Shuttle. A total of three flights are now projected in the initial series, to be launched by Atlas Centaur vehicles. It is the first of these flights, called HEAO-A, for which experiment contracts have been completed. Total value of the contracts is \$23,349,266.

The HEAO-A observatory will weigh about 3,175 kilograms (7,000 pounds), and will carry four major experiments.

The instruments and hardware for these experiments are to be delivered to the spacecraft contractor, TRW Inc., Redondo Beach, Calif., for integration into the spacecraft. HEAO-A launch is scheduled for 1977.

## Three Firms Selected for EOS Studies

NASA has announced the selection of three firms for contract negotiations to perform parallel systems definition studies for the Earth Observatory Satellite (EOS) mission. The firms are General Electric Company, Valley Forge, Pennsylvania; Grumman Aerospace Cooperation, Bethpage, New York; and TRW systems Group, Redondo Beach, California.

The EOS studies are to provide a low-cost modularized spacecraft capable of supporting a variety of research and development applications missions. EOS will provide a space platform for testing sensors and collecting remotely sensed data for a number of applications studies. The EOS spacecraft will be designed for launch by conventional launch vehicles and by the Space Shuttle in the launch resupply and retrieval modes.

The first application mission being studied for EOS is a land and water use mission.

Under terms of the fixed price contracts, the studies, managed by the Goddard Space Flight Center, are to be completed in six months at a cost of approximately \$600,000 each.

### ANNOUNCEMENT

## Small Business EXPO

Goddard will hold its Small Business EXPO 74 on Tuesday, May 21 between the hours of 9:00 a.m. and 4:00 p.m. in the Building 8 Auditorium. Everyone is invited.

During the affair, you will have the opportunity to observe demonstrations and exhibits by representatives of small businesses engaged in the manufacture of electronic devices and components, navigational aids, machining services and products, communications devices, etc.

Representatives of several large companies and the Small Business Administration will provide counseling and subcontracting aid throughout the day. There will also be representatives of the National Association of Accountants on hand to provide counseling to anyone thinking of starting a small business.

The Small Business EXPO is being organized by Goddard's Industry Assistance Office. For further information, call ext. 5416 or 6871.

## Delta Contract Goes to McDonnell Douglas

McDonnell Douglas Corporation, Huntington Beach, California, has been awarded a NASA contract for a Delta Space Vehicle Two-Year Launch Capability through September 30, 1975.

The fixed-price incentive contract is estimated at \$64,620,000 with additional options totalling approximately \$2,500,000.

To date, NASA has launched 101 Delta vehicles and has achieved 92 successful flights. Deltas have launched weather, communications, and scientific satellites plus deep space probes.

Work on the new contract will be performed at the McDonnell Douglas Astronautics Co. facilities at Santa Monica, Huntington Beach, Vandenberg Air Force Base and Cape Kennedy.

Technical direction of the Delta Program is performed by the NASA Goddard Space Flight Center, under the overall direction of NASA's Office of Space Science.

### NOTICE

## Library Loan Policy

Effective May 1, 1974 and thereafter library book borrowing privileges will be rescinded for those library users who are in violation of loan period due dates. Normal book loan periods are either two or four weeks, depending on the book. Overdue notices will be sent to individual borrowers as follows:

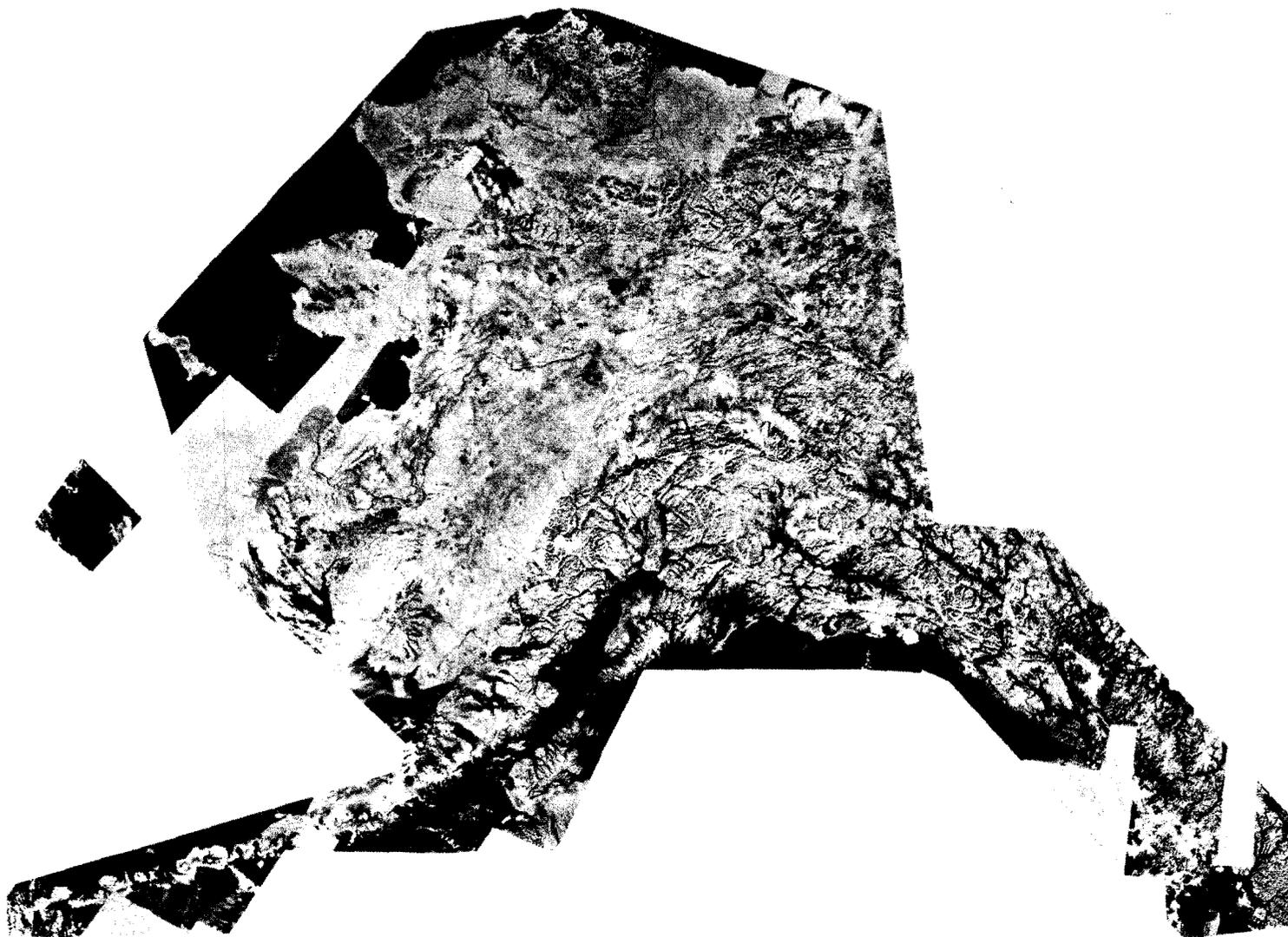
- Due date + 1 week = 1st notice
- Due date + 2 weeks = 2nd notice
- Due date + 3 weeks = 3rd notice

At the end of the fourth week a book is overdue, a special notice will be sent to the borrower and his division chief or office head indicating rescission of the user's borrowing privileges.

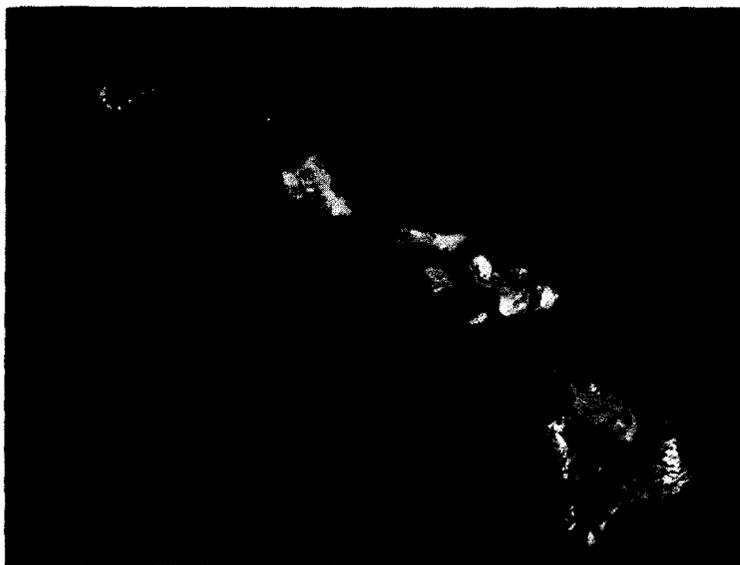
Borrowing privileges will be restored following return of ALL items in an overdue status, whether it be one week or four.

Overdue notice statistics are being maintained by individual. Even though a borrower may never receive a fourth notice rescinding his book borrowing privileges, if overdue notice statistics reflect general non-observance of loan periods, a user's book borrowing privileges may also be rescinded for that reason.

NOTE: Unless a book is in reserve status, its loan can be renewed, thus avoiding receipt of overdue notices.



## ERTS Looks at the United States

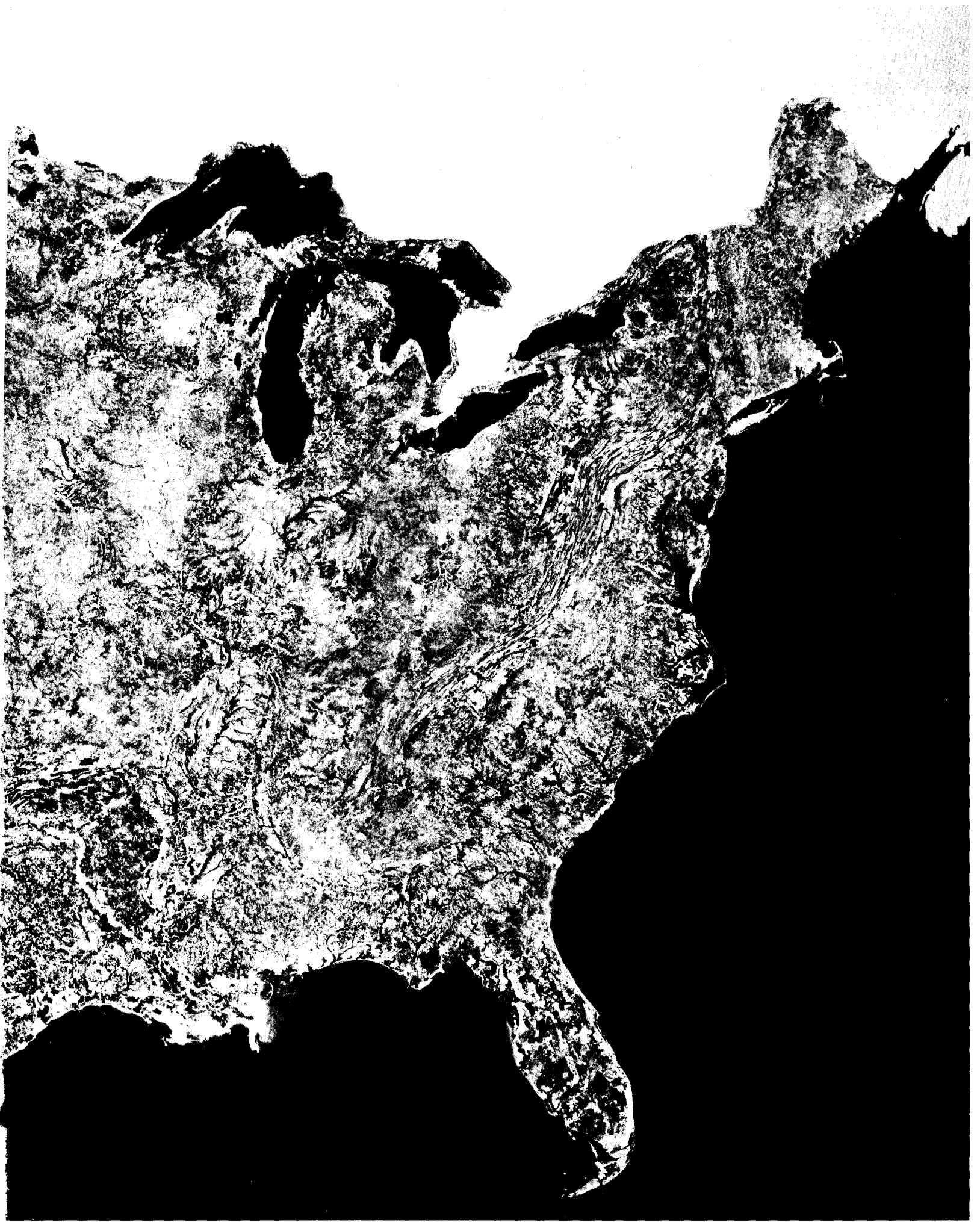


**ALASKA.** The first photo image controlled mosaic of Alaska (above) was prepared by the Department of Agriculture's Soil Conservation Service (SCS). It consists of 257 of the most cloud-free images returned from the Earth Resources Technology Satellite (ERTS) from July 25 to November 3, 1972. Mt. McKinley, the highest peak in North America, is in the south central section. Anchorage (at the end of Cook Inlet in lower center), Fairbanks (east central area), and Juneau (center of the eastern extension) can be faintly seen. Because of the limited seasonal coverage of Alaskan imagery, small areas reflect cloud cover. Some planimetric mapping data used in the preparation of the mosaic may also be seen. This type of mosaic of an entire area is proving useful to geologists, hydrologists, planners and others. The original mosaics of Alaska and the contiguous states on the next pages were made to the same scale. On this page, Alaska's relative size has been reduced by about 20%.

**HAWAII.** The best images from five ERTS passes went into this mosaic of the Hawaiian Islands. Clouds prevail over some portions—including Mt. Waialeale, the rainiest spot in the world. Islands from east to west are Hawaii, Maui, Kahoolawe, Molokai, Lanai, Oahu, Kauai, and Niihau. At the world's largest active volcano, Mauna Loa on Hawaii, can be seen the darker volcanic flows spreading down from the central cone. This map was prepared from an uncontrolled mosaic.

**THE 48 CONTIGUOUS STATES.** On the following two pages is the first complete controlled mosaic of the lower 48 United States. The map, consisting of 595 cloud-free images from ERTS, was compiled by the SCS Cartographic Division. The images were produced by the spacecraft's Multispectral Scanner System on Band 5 or the red portion of the visible spectrum during the period of July 25 to October 31, 1972.







**NEW VIEW OF JUPITER.** Jupiter seen in blue light from a distance of 2,100,000 kilometers shows never-before-seen details of the giant planet's cloud tops. Taken by Pioneer 10 last December, details of the picture have now been greatly improved by data analysis and computer processing at the University of Arizona Optical Sciences Center. According to Dr. Tom Gehrels, University of Arizona, the picture's most striking feature is the 75,000-mile-wide Great Red Spot showing some detail. In the bright "South Tropical Zone" are features suggesting a flow pattern which bulges to the north about the Spot. North of the equator are S-shaped flow patterns and intrusions upon the bright North Tropical Zone.



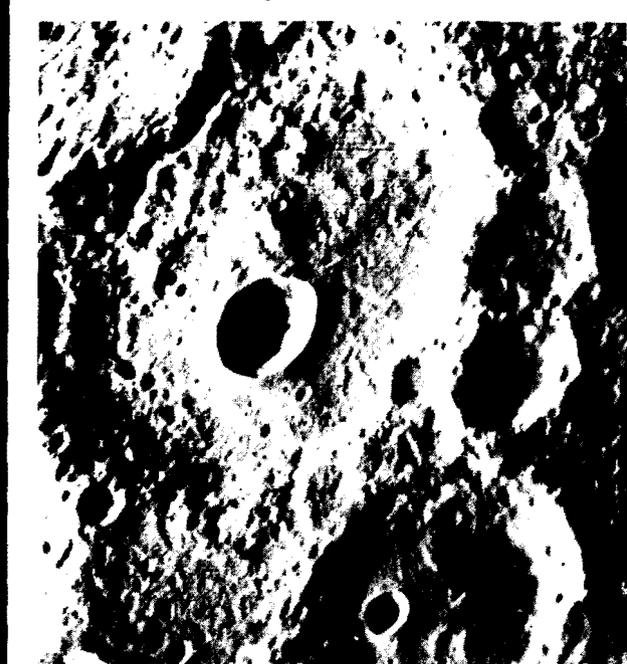
**VENUS IN UV.** Mariner 10 took this photograph of an 85% illuminated Venus on February 9. The morning terminator is at right. Taken through a UV filter from a distance of 1,725,000 miles, the picture shows a large dark belt near the equator that is suggestive of the classic "Y" feature often photographed from Earth through ultraviolet cameras. South of this feature are markings, also seen only in ultraviolet light, which appear to originate in the equatorial regions and spiral toward the pole. The Pattern of black dots is used for geometric calibration of the Mariner TV Cameras. The photo has been computer enhanced by the Image Processing Laboratory at JPL.

## Portraits of Three Planets

**MERCURY'S CRATERED FACE.** Eighteen pictures, taken at 42-second intervals by Mariner 10's two TV cameras, were computer-enhanced at the Jet Propulsion Laboratory and fashioned into this photomosaic of Mercury. The pictures were taken during a 13-minute period when Mariner was 200,000 kilometers and six hours away from Mercury on its approach to the planet on March 29. About two-thirds of the portion of Mercury seen in this mosaic is in the southern hemisphere. The cratered surface is somewhat similar to the cratered highlands of the Moon. Largest of the craters are about 200 kilometers in diameter.



**CRATERED** terrain very similar to that on the Moon is shown in this TV photo of Mercury taken by Mariner 10 on March 29 from a range of 31,000 kilometers. The large flat-floored crater at right is about 100 kilometers in diameter—about the same size as the lunar crater Copernicus.



## Leatherwood's Son Basketball Champ



Maceo Leatherwood, Jr., is quite a basketball player. The 18-year-old senior at West Nottingham Academy in Colora, Maryland, has been named the Cecil County (Md.) scholastic basketball player of the year and is a member of the All-Cecil basketball team.

His father, Maceo Leatherwood, Sr., is an artist in Goddard's Presentation Section.

Maceo Jr.'s career as Cecil County's top scoring basketball player began last fall when he transferred to Nottingham from Woodrow Wilson High in Washington, D.C., where his fast action on the court had won him a place in the D.C. Coaches' All-Star Game. At Nottingham, he has maintained a 21.0 scoring average and once scored 53 points in one game. He lead his team to a 19-3 season, a county record.

A good student, Maceo says his future includes college and a possible degree in accounting—and, of course, basketball. Several college scouts have already contacted him.

He is seen in action at left in a sketch by his dad.

## Tom Vallee Wins Chess Club Tourney



**CHESS CLUB NEWS.** The Goddard Winter Chess Tournament was held from January 29 through February 26, 1974. The victor was Thomas Vallee (above). Runner-up was James McCarvey who had tied Tom Vallee in the six-round Swiss tournament and then lost in the play-off. Ten players took part in the tournament which was held on Tuesday evenings in the Building 1 cafeteria. Sid Robertson was Tournament Director.

## Dembrow's Son Wins Dual Gymnastics Honors

Donald Dembrow, son of Daniel Dembrow of the Delta Project, has won two of the Maryland State highest awards for gymnasts.

His first victory came on March 22 when he was awarded the first place All-Around Championship award in the Maryland State, High School Age, Gymnastics Competition. Competing against boys from throughout Maryland, Donald won the first place award by a display of strength, coordination and gymnastics ability on a total of six separate events—high bar, still rings, parallel bars, floor exercises, side horse, and vaulting.

The following day, he won the first prize All-Around championship in the intermediate division of the Maryland Open Gymnastics Meet. This meet, unlike the previous day's competition, was open to all gymnasts without age restriction.

Donald is the second member of the Dembrow family to win a first place All-Around Gymnastics championship. His brother, Dale, won the Montgomery County Championship in 1972.

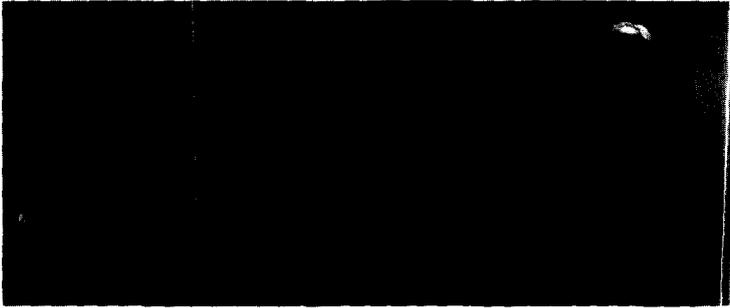
Donald, who is a member of the Springbrook High School Gymnastics Team, has been competing for several years in Montgomery County before achieving these awards. To Donald these prizes were the result of many years of exhaustive gymnastics training. His workouts generally require from 25 to 30 hours a week repeatedly practicing Olympic style gymnastic routines. As for the future, Donald is perfecting his gymnastics form and technique while keeping an eye on the 1976 and 1980 Olympics.



## Outputs *by Maceo Leatherwood*



## INTERESTING PEOPLE



### Our Man 'Bones'

By David G. Lewoc  
Assistant Chief, POMD

Woodgraining artisans are becoming more and more scarce, and it may well be that woodgraining as an art and skill may someday become a thing of the past.

Ed "Bones" Fortman is the Plant Operations and Maintenance Division's woodgrainer. He not only paints and stains, but also woodgrains metal and plywood cabinets and equipment.

Briefly, the woodgraining process involves a number of steps, beginning with a base coat of paint which is usually light in color. Following the base coat, a stain is applied and by using the fingers (as in finger painting), combs, brushes, and other various woodgraining tools, the desired grain pattern is created. After this process has dried, a shading stain is applied in order to achieve the proper shading contrasts. Finally, the unit is sprayed with a protective finish.

By the way, in case you're wondering how Bones got his nickname, there's a little history behind it. Ed used to participate in minstrel shows as an end man addressed as Mr. Bones. Later, Mr. Bones began performing magic shows professionally as well as for hospitals, orphanages, and charity campaigns. He called himself "Mr. Bones, the Magic Tramp."

#### CLIP AND SAVE

This is the eighth of a series of articles by Earl D. Ellis on plating, protective coatings and electrochemical processes available from Goddard's Engineering Services Division. For further information, Mr. Ellis can be reached on extension 4870.

### Coatings for Optical Uses

There are numerous non-reflective finishes available in the Plating Section of the Engineering Services Division that find application in the fabrication of optical components because of their environmental resistance and high light absorption.

Black nickel, black chrome, black oxide and black anodize coatings are available, but black nickel and black chrome are most frequently used for space flight applications. Both coatings are electrically conductive, do not out-gas in a vacuum environment and can be applied to almost any base material which can be copper plated.

Black chrome, which is covered by military specification Mil-P-14538, is a hard corrosion resistant finish that will withstand elevated temperatures without any color change.

Black nickel, which is covered by military specification Mil-P-18317, is not as wear resistant and does not offer as much corrosion protection as black chrome. However, black nickel has higher conductivity and better solderability.

Black anodize and black oxide finishes are not generally used for flight applications, however they have many functional uses in laboratory and ground support equipment.

## Goddard Sailing Association



GODDARD SAILING ASSOCIATION members and guests enjoy a recent Sailing Open House at the Rec Center. In the background is the association's boat, a 19-foot "Flying Scott" sloop which is available for use by club members.

The Goddard Sailing Association was founded to foster and sponsor sailing activities; promote sailing education; and conduct social activities for its members.

Initially the association had no boat of its own, but this did not discourage anyone. Basic sailing courses were sponsored by the club, with members providing the instruction. On-the-water training was given in boats owned by club members. Boating picnics were held at sites by the water where members could bring their boats for an afternoon of fun.

Last year, the association purchased its own boat, a 19-foot "Flying Scot" class sloop. The boat is available for charter on a half day basis for all qualified association members. To qualify, a member must demonstrate that he can safely and properly handle the boat, but in no way need he be a "highly polished" sailor. The boat is kept on Back Creek in Annapolis.

The Sailing Association is continuing to teach a course in basic sailing, using its own boat for on-the-water sessions. The first course this year is currently underway. A second course is planned for September. In addition, plans are underway to provide a tutoring program where the more experienced sailors in the club will assist beginning sailors in improving their skills.

Monthly meetings provide films and/or discussions of general interest to all sailors. Information about the Goddard Sailing Association can be obtained from any of the officers. They are Commodore David Mengers, ext. 6058; Vice Commodore Bob Estes, ext. 2571; Rear Commodore Harvey Safren, ext. 6753; Secretary Frank Dooley, ext. 4448; Treasurer Harvey Walden, ext. 2698; and Fleet Captain Roger Ratliff, ext. 6611.

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