

## *Second TDRS Launch Scheduled For Feb. '85*

By Charles Recknagel

The second satellite of the Tracking and Data Relay Satellite System is scheduled to be launched no earlier than February 12, 1985, according to project officials at Goddard.

Known as Tracking and Data Relay Satellite B (TDRS B), the satellite, to be designated TDRS-2 after launch, will be deployed during the STS 51-E mission and will complement TDRS-1, launched in April, 1983.

Together TDRS-2 and TDRS-1 will complete the operational space segment of the Tracking and Data Relay Satellite System (TDRSS). They will be joined in orbit by a third TDRS, now scheduled for launch on July 2, 1985. Current plans call for this third TDRS to be parked in orbit between TDRS-1 and 2 as a spare.

When TDRS-2 is declared operational, it will mark the evolution of the Goddard Network from a ground-based to a spaceborne system. Goddard's network capability began with the acquisition of the Navy's Minitrack System shortly after it was used to track America's second satellite, Vanguard, in March, 1958. In the two decades since, the Goddard Network has grown to include tracking and communications stations around the world, supporting all NASA satellites in near-Earth orbit and many other free world spacecraft as well.

### **Improved Coverage**

The TDRS system moves the network's tracking eyes into the sky, where they can see vastly more than they can from Earth. The satellites, essentially giant ground stations orbiting at 22,300 statute miles altitude, will be able to view 85 to 100 percent of the Earth orbits of most user-spacecraft below them. This coverage offers a major improvement over the 15 to 20 percent of a satellite's earth orbit

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## *Beggs Focuses On Productivity Administrator Says NASA Future "Bright"*

By David W. Thomas

NASA Administrator James M. Beggs told employees here October 10 he was "very pleased" with the continuity of Goddard's productivity and said NASA's future as a whole is very bright.

Citing the first surge of public acceptance of the space program since the Apollo days when NASA placed the first men on the Moon, he said:

"For the first time since Apollo, more of the public is accepting NASA's mission. Eighty-five percent of the public thinks the program is fine."

Administrator Beggs toured various areas of the Center and received status reports on recent developments designed to improve effectiveness, efficiency and productivity. The focus of his talk afterwards centered on NASA's increasing need for excellence in managing resources as new opportunities arise in the area of the Space Station.

Speaking to the Center's supervisory

work force, Administrator Beggs equated this juncture in the space program—with NASA on the threshold of establishing a permanently manned space station—with President Kennedy's vow in the early '60s to place a man on the Moon at the end of the decade.

"President Kennedy gave us focus and helped develop our program," Beggs said. "Once again we're at a similar point," referring to President Reagan's announcement last January to establish a permanently-manned space station within the decade.

*Continued on page 2*



Joe Walters Photo

**BEGGS VISIT**—NASA Administrator James M. Beggs (1) and Goddard Associate Director Dr. George Pieper view a sample Suggestor of the Year Award plaque during the administrator's visit to Goddard October 10 for a productivity conference. The award is part of the Center's Suggestion Program, managed by the Awards Office (code 225), and seeks to foster increased productivity by citing those who've submitted "bright" ideas.

## Productivity

Continued from page 1

### New Programs

The NASA Administrator reflected on his first visit to Goddard after becoming head of NASA and how he told employees then that if they maintained their track record they would get "a lot of new programs."

According to Beggs, Goddard's record, indeed, has been impressive, and new programs have been implemented.

"It's been a good period for the agency," Beggs said of his tenure with NASA. "There are a couple of additional new programs in the '86 budget submission, and I think they'll stay in."

NASA also considered goal setting top priority at the beginning of his service, Beggs continued, and he commended Goddard for "picking up the goals and objective procedure" by publishing a goals brochure.

"You have a very nice brochure," Beggs said, ". . . which outlines, in consonance with the goals of the agency, the goals and objectives of your Center. I think that's important."

One of the goals, Beggs pointed out, was increased productivity and quality. He said he has thought for a long time that NASA could be a leader [in productivity and quality] and could contribute significantly to the country and to the world "because we are uniquely situated to make such contributions."

### Employee Teams

To help reach our goals, the agency has implemented, at all of its field centers, NASA Employee Teams—a small group of workers which voluntarily meet to identify, analyze and solve problems affecting various aspects of their jobs. The group presents problem solutions to management and assists in implementing recommendations that are accepted.

Regarding goal-setting, Beggs asked why it is important, then answered his own question.

As the Cheshire cat said to Alice, Beggs explained, "If you don't know where you're going any road will get you there. Indeed, that's true. But if you know where you're going, you can set a path and get there in the quickest possible way."

## Goddard Sets \$215,000 CFC Goal

### Federal Agencies Work To Build Better Community

Goddard kicked off 1985's Combined Federal Campaign (CFC) October 18. I am asking each of you to consider seriously what your pledge can do for the millions of people less fortunate than yourself. You and I have the opportunity today to make our concern for others a personal commitment. Catch the spirit of giving and contribute with the knowledge that your gift will be a hand reaching out to help someone in need.

This year's campaign asks all Federal workers to join together to pledge contributions that will support the many volunteer agencies directly serving those in need in our communities, in our Nation and in countries overseas.

The Goddard Employee Campaign Committee established a \$215,000 goal. Your gift, and the satisfaction you receive from helping others, can be spread over the year through payroll deduction. This is the easiest and most convenient way to give. Remem-

ber, your gift, whether through payroll or direct payment, is tax deductible.

The list of agencies supported by the CFC fund is contained in the CFC material that has been distributed throughout the Center. You may designate your donation to a specific agency, write in a tax-exempt, charitable health and welfare organization or make an undesignated contribution which will allow your pledge to work where needed.

Goddard always has been proud of its record for generous giving. Please remember, while we may feel the times to be difficult and uncertain, there are millions of people who are in desperately greater need of help. I hope each of you will join in upholding Goddard's fine tradition of sharing with others.

*Noel W. Hinners*

Noel W. Hinners  
Director



Debora McCallum Photo

**CFC KICKS OFF**—Goddard Combined Federal Campaign Chairman Howard K. Ottenstein (l) and Center Director Noel W. Hinners discuss this year's campaign plans. Goddard plans to raise \$215,000 in the 1985 drive. Goddard's drive began October 16 and is scheduled to end November 15. Director Hinners was the first person at Goddard to make a pledge.

# Officials Update Earth Radiation Budget Satellite Status

## Fuel Saved, Engineering Checkout Completed, Instrument Data Verified

By David W. Thomas

Goddard project officials for the Earth Radiation Budget Satellite (ERBS) said last month they had completed the engineering checkout of the spacecraft, had reached the halfway point in the instrument checkout and had saved substantial fuel by reaching operational orbit October 10, two days earlier than scheduled.

The ERBS is one of the first NASA spacecraft designed specifically for Shuttle deployment and was launched from the Orbiter Challenger—by the Shuttle's mechanical arm—October 5, during STS 41-G.

The satellite is equipped with three scientific instruments: the Stratospheric Aerosol and Gas Experiment II (SAGE II), the ERBE Non Scanner and the ERBE Scanner. Each instrument has one or more contamination doors that protect the instrument's sensitive detectors and optics from accumulating outgassing products from the ERBS' spacecraft.

### Data Verified

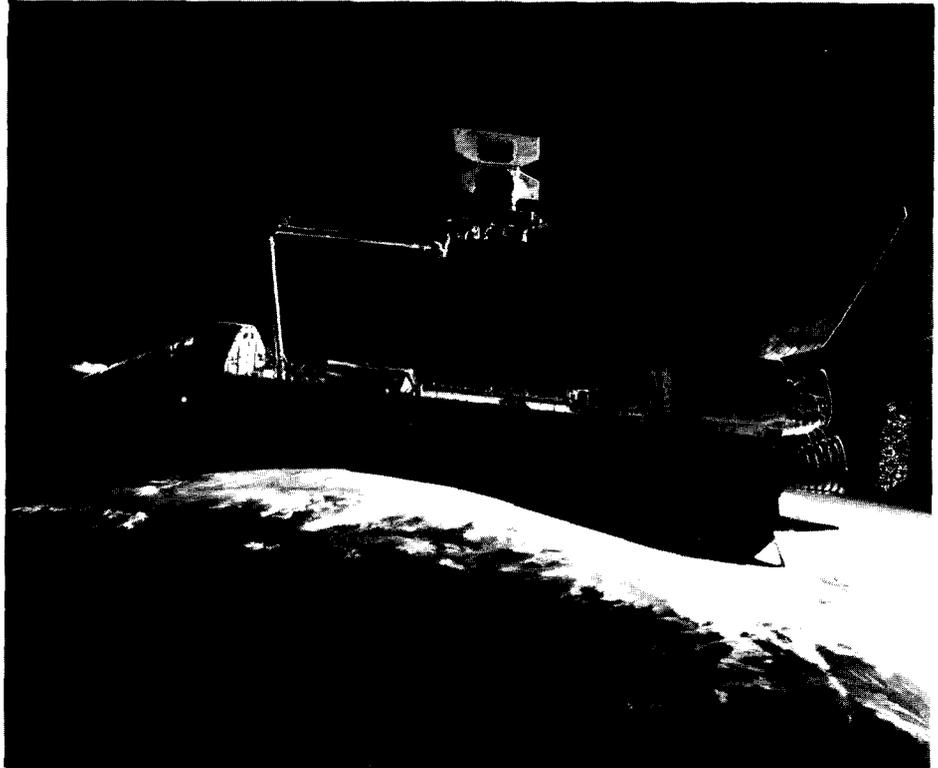
Officials here said engineers sent instructions to open SAGE II's contamination door October 15, and the instrument became operational October 23 after its data had been verified. The SAGE II monitors the distribution of aerosols, ozone, water vapor and nitrogen dioxide in the atmosphere—the region of the Earth's atmosphere that begins above most clouds, at about 12 kilometers (7.5 miles), and extends upward to about 50 kilometers (31 miles).

Carl Wagner, Goddard project manager for the ERBS, said the Non Scanner's contamination doors also were opened October 23, but engineers at the Langley Research Center, Hampton, Va., are continuing evaluations to verify that the instrument's data output is of proper magnitude. Wagner added, however, that "some of the initial data on the Non Scanner indicated the detectors were in good shape."

The Scanner was to have its contamination doors opened November 6, according to Wagner.

### Next Milestone

The next milestone is scheduled for November 20, when the ERBS will be



**ERBS DEPLOYMENT**—This illustration depicts Orbiter Challenger's launch of the Earth Radiation Budget Satellite (ERBS) October 5 during Shuttle mission 41-G. The spacecraft is one of three that collectively will provide the most complete coverage to date of the ebb and flow of the Earth's radiation cycle. (Artwork by Paul Fjeld, National Research Council of Canada.)

pitched 180° to allow all three instruments to have direct view of the Sun for solar calibration.

Langley has systems responsibility for the three instruments and science data reduction. The satellite was built by Ball Aerospace Systems Division, Boulder, Co., and is managed by Goddard.

The ERBS is one of three satellites in NASA's Earth Radiation Budget Experiment project, which will provide the most complete coverage to date for measuring accurately the amount of solar energy that is absorbed in different regions of Earth and the amount of thermal energy emitted back to space.



**Happy Thanksgiving**  
November 22

### Upcoming Launches

NATO III-D .....	Nov. 13
STS 51-A .....	Nov. 7
NOAA-F .....	Nov. 8
SPACENET .....	Nov. 9
Nike-Black Brant .....	Nov. 13
Balloon Series, Texas .....	TBD
Balloon Series, Australia .....	TBD
STS 51-C DOD .....	TBD
TBD — To Be Determined	

# Frank Cepollina Awarded Distinguished Service Medal Cited For Ten Years Management Ingenuity, Solar Observatory Repair

For a decade of technical and managerial ingenuity and resourcefulness — highlighted by the historic on-orbit shuttle repair of a satellite—Frank J. Cepollina of Goddard was presented with NASA's Distinguished Service Medal (DSM) at NASA Headquarters by Administrator James M. Beggs October 16.

Cepollina was cited in the DSM's narrative for ushering in a new era of satellite servicing in space by designing a multimission modular spacecraft (MMS) system, including logistics support modules for communications, power and attitude control.

This innovative modular system proved its worth during STS 41-C in April, 1984

when the MMS-equipped Solar Maximum Mission (Solar Max) observatory was repaired by the Space Shuttle Challenger astronauts and ground support specialists—the world's first on-orbit repair of a satellite.

The Goddard satellite, launched by NASA in February 1980 to collect and transmit detailed data about the Sun, lost its ability for precision pointing at the Sun nine months later after a highly successful period of operation.



**DISTINGUISHED SERVICE MEDAL**—Frank Cepollina, project manager, Satellite Servicing Project, is shown here with his wife, Ann, after receiving NASA's Distinguished Service Medal at a ceremony at NASA Headquarters October 16.

After rendezvousing with Solar Max at an altitude of 502 kilometers (312 statute miles), during STS 41-C last April, the Challenger astronauts grappled the satellite with the orbiter's 50-foot-long robot arm and berthed the Solar Max in the MMS's flight support system in the rear of the Shuttle's cargo bay. Then, astronauts replaced Solar Max's attitude control system, installed such components as a new coronagraph/polarimeter main electronics box, deployed a high-gain antenna

system and redeployed the spacecraft in orbit with the robot arm.

The Solar Max now leads a rejuvenated, extended life in space as it observes the processes of energy build-up and release from the Sun's activities.

The narrative associated with Cepollina's DSM notes that "The economic benefits and future use of these techniques (satellite servicing) to provide not only repair in space but production of materials such as critically needed pharmaceuticals and other products on a routine basis open a whole new horizon in space exploration and application."

Orbiting Satellites, in addition to the Solar Max, which incorporate this modular spacecraft design are the Landsat 4 and 5 satellites. Others, yet to be launched, with the unique design include Goddard's Gamma Ray Observatory and the Upper Atmosphere Research Satellite.

NASA STS 51-A astronauts hope to recover two commercial communications satellites, WESTAR VI and PALAPA-2 this month. Due to failures in the booster rockets, they failed to reach proper orbit after being launched from the Shuttle in February '84.

## TDRS-B Slated For '85 Launch

*Continued from page 1*

which can be viewed through Goddard's worldwide network of ground stations.

TDRS-1 already has proved the value of the new orbiting network concept. The satellite has expanded significantly the Earth-communications window with a variety of NASA spacecraft, including the Space Shuttle. Positioned over the Atlantic at 41° West Longitude, TDRS-1 provides the Shuttle with uninterrupted coverage for about 45 minutes of an orbit. TDRS-2, once it is positioned at 171° West Longitude over the Pacific, essentially will complete global coverage. Only a small zone of exclusion over the Indian Ocean will be unobservable due to the satellites' viewing angles for users below 1200 kilometers (745 miles).

The launch of TDRS-B, originally scheduled to follow six months behind TDRS-A, has been delayed until the present while NASA, Air Force and industry engineers investigated anomalies that plagued the first satellite's deployment into orbit. Following release from the Shuttle, the satellite's booster rocket (the Air Force-managed Inertial Upper Stage) went into an uncontrolled tumble and failed to deliver the satellite to operational altitude.

### Orbit Corrected

A team of Goddard, Spacecom and TRW engineers boosted the satellite into geosynchronous orbit after 58 days of delicate maneuvering during which time they were able to use only six one-pound thrusters. They boosted it 8,662 miles.

The failure was identified as a collapsed second-stage nozzle Techroll Seal, a flexible ring which allows the nozzle to move and provide directional control. Design changes now have been incorporated and full-scale motor verifications tests conducted. An Inertial Upper Stage is scheduled to launch a Department of Defense payload from the Shuttle in December as well as the TDRS-B in February.

The TDRSS is operated through NASA's Network Operations Control Center at Goddard. The satellites and ground facility are owned by Spacecom, under contract to NASA to provide TDRSS telecommunications services. The ground facility for TDRSS is located at White Sands, N.M. The spacecraft are built by TRW, Redondo Beach, California.

## Goddard School Honors Namesake

Officials from Goddard Space Flight Center, from Robert H. Goddard Middle School and from the Prince George's County School System, Md., participated in a symbolic cherry tree planting ceremony October 18 at the school. The ceremony commemorated the day that the late Dr. Goddard climbed a cherry tree and changed the rest of his life.

On October 19, 1899, the then 17-year-old Goddard climbed high in a cherry tree in Massachusetts to trim branches and dreamed of rocket flight to distant planets. Dr. Goddard wrote in his diary later that climbing the tree had a profound influence on the rest of his life, and he called the event his second "birthday."

The ceremony marked the 85th anniversary of Dr. Goddard's second "birthday." Dr. Goddard (1882 - 1945) is credited with being the "Father of American Rocketry," and even today, rocket designers find themselves frequently referring to concepts and patents he originated.

Robert H. Goddard Middle School is the Center's "special partner" in education. The Center and the Prince George's County School System are planning several educational activities in the commu-



Debora McCallum Photo

**CHERRY TREE PLANTED**—From left to right: Elva Bailey, Goddard Educational Programs officer; Gordon Wells, vice-president, Citizens Bank and Trust Company; Lesley Kreimer, Prince George's (PG) County School Board member; Dr. George Pieper, Goddard associate director; Dr. Louis Waynant, assistant superintendent for Instruction and Pupil Services; Richard Crone, Goddard Educational Programs officer; Dr. Nancy H. McClland, principal, Robert H. Goddard Middle School; Janet K. Wolfe, deputy director, Goddard Public Affairs; and Catherine Burch, P.G. School Board member.

ity to promote and encourage science, mathematics and technology programs in areas schools.

## Goddard Sponsors Business Conference

A conference designed to increase the profits of small business organizations and enhance the economic status of the community will be held at the University of Maryland Center of Adult Education on November 20, according to Technology Utilization Officer Donald S. Friedman of Goddard Space Flight Center.

Sponsored by the Goddard Space Flight Center, the University of Maryland, and the Maryland Department of Economic and Community Development, the "Profitable Partnerships: Small Business and Technology" conference will include sessions on procedures for selling to NASA and its prime contractors and for obtaining licenses for NASA patents and NASA-developed technology.

Keynote speaker for the one-day event will be the Honorable Harry Hughes, Governor of Maryland. Dr. Noel W. Hinners, Director of Goddard Space Flight Center, and University of Maryland President Dr. John S. Toll will welcome the conferees.

For additional information call Mary Ann Elliott, Office of Public Service, University of Maryland at (301)454-3000.



**PUBLIC AFFAIRS CONFERENCE**—Goddard's Joe Rothenberg, operations manager, Space Telescope Operations Control Center, explains details of a Space Telescope model to NASA public affairs officials. Nearly 30 public affairs representatives from NASA headquarters (HQ) and field centers met at Goddard October 15 - 17. From left to right: Hal Stall, director, Public Affairs, Johnson Space Center, Houston, Tx.; John Taylor, director, Public Affairs, Marshall Space Center, Huntsville, Ala.; Charles Hollinshead, director, Public Affairs, Kennedy Space Center, Fla.; Jim McCulla, deputy director, Media Services, NASA HQ; Rothenberg; and Frank Johnson, director, Public Affairs, NASA HQ. Space Telescope is scheduled to be launched in 1986. Joe Walters photo.

# The Many Moves Of Maestro Shermon Urquheart



By David W. Thomas

From afar, he appears to be a regular "Joe Blow" doing a hum-drum job. But upon reaching the intersection where he "performs," you realize you've happened upon a phenomenon, a unique show. This man has pizzazz—he's different.

He jerks his arm here and points a finger there. He twists and turns and shuffles a bit. From the whistle plugged into his Marine-drill-instructor-like-face, he blows an originally-coded "tweet," and often, upon making eye contact, he salutes, which means good morning and have a nice day—all these characteristics describe Goddard's "Traffic Director Jig."

Goddard Security Guard Shermon Urquheart, who joined the Center in 1972 after more than 30 years service in the U.S. Army, is not your ordinary traffic director.

## Retired Sergeant

He retired as a First Sergeant from the 109th Military Intelligence Group, Ft. Meade, Md., 12 years ago, but he didn't leave his strict, disciplinary, military training behind, which is the underlying reason for the provocative and effective way he directs traffic.

"Everything I do is based on military factors. I'll say 0830 rather than 8:30 a.m.," Urquheart said. "It's easier for me to do it that way."

He said he retired reluctantly from the military. He wishes he could have served longer. But he's extremely happy with his work here because, he says, "in so many ways, it relates to his formal military duties."



"My primary mission here is to safeguard the property and to protect people on these grounds," Urquheart explained. "In the Army, I was safeguarding my country and protecting the lives of those endangered."

An ex-military policeman and a veteran of three wars—WWII, Korea and Vietnam—Urquheart's traffic-directing antics have captured the imagination of employees Center-wide.

But, actually, his style is a no-frills routine.

"If I have a style of directing traffic that everyone notices and likes . . . I'm happy because I developed it myself," he said. "But I created it because I wanted to be different from and better than any-



Debra McCallum Photos

**TRAFFIC DIRECTOR JIG**—Security guard Shermon Urquheart shows moves part of original style that has made him one of the most memorable Center traffic directors of all times.

one else . . . virtually every movement I make is designed for smoother traffic and for pedestrian safety."

He said he could direct people to their destination even faster if "they'd just signal and let me know which way they're headed."

## Pedestrian Mentality

Regarding pedestrians, he said some have a "monkey see, monkey do" mentality.

"I do all I can to protect the pedestrians," he said. "But sometimes they're pitiful, just like the birds in the pond on the center," referring to the fowl usually seen near the man-made pond on the grounds.

"One bird crosses the street and the rest follow," he lamented, "despite a steady stream of vehicles that might be making a speedy approach."

Urquheart has received more than 50 awards for his work here. Among them, the Contractor Safety Award, presented to him by Center Director Noel W. Hinnners. This award is the highest safety recognition that the Center can bestow on its contractor employees.

Urquheart is married to the former Helen L. Long, Charlotte, N.C., and they and their family reside in Odenton, Maryland. He is a contractor employee for City Wide Security Services.

# Flying In . . . At Goddard Space Flight Center

## Model Aircraft Club Member Tries Breaking Records

By David W. Thomas

Goddard rarely is recognized for aeronautical achievements, but the Center has set national and world records here. The records came not from outdoor endurance flights, from barnstormers performing dramatic stunts or from planes zooming at supersonic speeds. Nor were they set in some remote "no-man's-land" in the desert.

"The records were set indoors," said Tom Vallee, a member of the Goddard Model Aircraft Club (GMAC). "They were made right here in Goddard's building 8 auditorium . . . I've broken nine national and one world endurance records in the auditorium."

Vallee said currently he holds three national records, all set here in the auditorium: the World Championship Class, 23:14; the American Class, 23:49; and the paper covered models, 16:04. Maximum weight for lightweight, indoor models is .065 ounce.

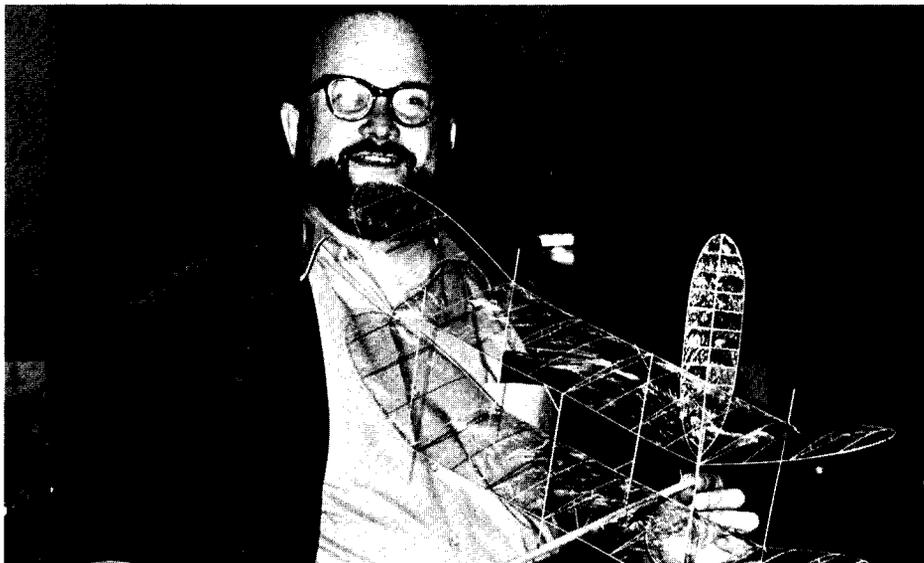
"My best unofficial time for contests under eight meter ceilings is 25 minutes and three seconds," Vallee said. "I'm just 21 seconds away from equalling the world record in this class." He said the maximum weight allowed for the championship model is one gram (.035 ounce) with a maximum wing span of 65 cm (25.61 inches).

### Major Competition

The fourth major indoor competition class is the Cabin Model, considered the classic indoor event with competition dating back to the 1930s, according to Vallee. These models weigh about .050 gram (about half the weight of a penny) and like all but one other class of model aircraft, and are covered with microfilm, a plastic film so thin "you can see colors in it, like in a soap bubble."

Vallee added that Cabin Model competition is limited because building these requires "a high degree of craftsmanship."

In 1975, Vallee broke the Federation Aeronautique Internationale world eight-meter (26-foot) ceiling record for flying indoor model aircraft with a time of 22 minutes and 45 seconds. His record stood for six years before Hideyo Ene-



**MODEL AIRCRAFT**—Goddard Model Aircraft Club member Tom Vallee holds one of his model airplanes. He used this Cabin Class Model to break an indoor record several years ago.

moto, a Japanese hobbyist, broke it with a time of 25 minutes and 24 seconds.

In addition to the four major lightweight events, indoor modelers also compete for records in several other classes. These include tiny stick models (limited to 30 inches of wing area); ornithopters, (flap wings); autogyros and helicopters.

All competition is for duration and, for record purposes, there are four ceiling categories: eight meters (26 feet); 15 meters (49 feet); 30 meters (98 feet) and 30 meters and over. The models are powered by rubber bands, Vallee said, and the flight is slow and majestic with propeller speed as low as 33 rpm.

According to Vallee, the first thing a budding indoor modeler builds is not the plane but the carrying case. Vallee said the models are "very fragile," and they have to survive the trips to the contest in order to compete.

### Surviving Competition

But sometimes, even after making the trip to competition, models don't survive. He explains:

"It's standard practice to use a helium balloon to steer a model to safety or to dislodge and retrieve it if it climbs too high and becomes stuck in the rafters. In one contest, while flying in a large hangar, my best model landed atop a girder. I sent a balloon up to retrieve the plane

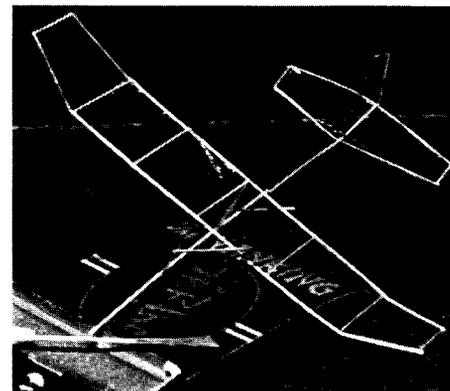
and just as the model was nudged free, BOOM!"

The balloon had exploded, completely disintegrating the model. Vallee said parts of his "fragile creation" rained down for almost a minute.

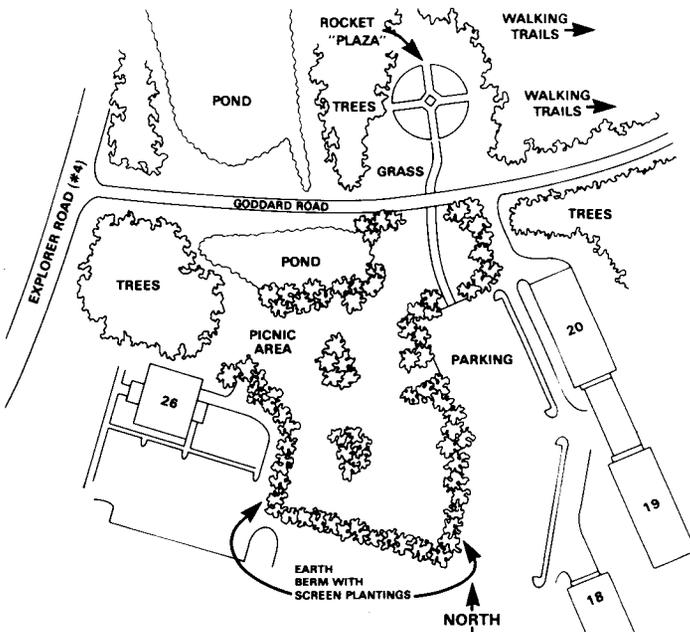
"It's terrible seeing a grown man cry when his toy airplane gets broken!" he mused.

He explained, however, that the models should not be considered toys.

"Part of the fascination of indoor modeling can be found in the way in which it combines the aspects of scientific method, craftsmanship, artform and competitive sport into one activity," he said.



**MATCHBOX-PLANE**—This model plane, small enough to fit on top of a book of matches, was built by one of Tom Vallee's airplane modeler friends. The model actually was used in competition and, according to Vallee, is the "world's smallest flying model airplane."



**PARK CONCEPT DESIGN**—Plans for development of a picnic and recreational area for Goddard employees are under construction by Center management. The proposed park would be located south of Goddard Road in an area between buildings 26 and 20, immediately west of the “bubble.” A rocket plaza would be located on the north side of Goddard Road. Development of the park and rocket plaza would not begin until the “bubble” is removed in the near future. No completion date has been set for the two areas, as work will be accomplished on an “as funds become available” basis, according to James F. Mills, associate director for Institutional Management, code 200.

Today is  
the first day  
of the rest  
of your life.  
**Give  
blood,**  
so it can  
be the  
first day  
of somebody  
else's, too.



**BLOODMOBILE**

The next blood drive is December 5. Donations can be given in the building 8 auditorium beginning at 8:30 a.m.

**ASTRONAUT CANDIDATES** - Ken Rosette, (code 408) simulations and training manager for the Flight System of the Solar Maximum Repair Mission, STS 41-C, shows the 17 astronaut candidates tools developed for the mission (April 6-13, 1984). The class of '84 represents the tenth group of NASA astronaut trainees since 1959. The group visited Goddard October 9.



**Mail your story to  
the Goddard  
News, or call the  
Editor at  
344-8102**

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# Goddard News

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Editor: David W. Thomas