THE DISH

SEPTEMBER 1976

Mars Life Search Underway

On June 19 after completing a 420-million-mile journey the Viking 1 fired a burst of her engine to put on the brakes to slow the spacecraft by 2,454 miles per hour, in order to orbit the planet Mars at 31,440 to 932 miles. At this orbit the Viking 1 takes 42.6 hours to travel around the planet.

On June 21 at 1:43 p.m. EDT an onboard Engine was fired to put Viking 1 in a 24-hour 37 minute orbit of Mars. The Viking launched August 20, 1975 is controlled by the Jet Propulsion Laboratories in Pasadena, California.

In flight to Mars a small leak of a helium value had been detected, but had stabilized by the time of orbit. Pictures coming back at first indicated enough hazard-free terrain for a safe Viking landing in the area called "Chryse". The photes were remarkable, showing channels and numerous other features carved on the surface by natural forces. Shown were craters, dry river beds and what looked like lines where scientists were at a loss to explain. One line led into a volcanic crater and continued on the other side and went on to touch two distant craters. Some cratered areas are much like regions on the moon. Photes showed an ancient Marquake that would make a dwarf of our Grand Canyon.

Seven days after going into orbit it was announced the Viking 1 would not make a July 4th landing. After looking very close at photes it was decided not enpugh hazard free terrain was available. If the second choise "Chryse Phoenicia" checked out, a July 8th landing would be scheduled. A second alterative landing site, "Tritonis Lacus" halfway around the planet was also under consideration as was a site called "Northwest". As Project Manager Jim Martin waited for photes he said he'd like to see plenty of nothing in other words a clear place to land. Mars has 12 volcanoes bigger than any on Earth, the smallest bigger than our Grand Canyon.

On July 1st a landing site was selected. The new site, 150 miles northwest of Chryse and called Northwest. It is nearly a mile lower than Chryse and photes showed a smooth surface. A few days later after the giant Arecibo Radio Observatory in Puerto Rico had a look, it was decided too ruff and had 3-ft to 15-ft diameter boulders. The new site selected was Chryse Planitia and the landing took place on July 20th, the seventh anniversary of mans first step on the Moon. Mars is 212-million miles away and it takes 19 minutes for information to travel this distance. A Martian day is 24-hr 37-minutes.

Because of the delay in landing, scientists at JPL stated the time for Viking 1 to carry out its tasks before Viking 2 arrived was very narrow. Some biologists were worried the "chicken soup" a nutrient-rich broth used to misten samples would not keep long enough for all experiments scheduled.

The 1,300-pound craft radioed landing went as scheduled on July 20th at 7:53 a.m. EDT (4:53 a.m. PDT) with the signal taking 19 minutes to reach earth. The first pictures (black & white) showed an area os soil strewn with chunks of rock of various sizes looking much like the Arizona desert. When colored pictures were taken it showed the sky as red or pink, but not as red as the surface. In probing the atmosphere it detected nitrogen (3%) and argon (1.5%) gases in sufficient abundance to make scientists more optimistic that life could flouish. The first weather report showed a nipping morning temperature of 122 degrees below zero. Light winds were detected at 15 miles per hour.

The day after landing problems were taking place, with the seismometer designed to detect marquakes note turning on properly. While in orbit this had not checked out properly and scientists had tried to free the stubborn locking device designed to protect it by holding it in place until a safe landing. A day later the soil-

scopping arm jammed. It was believed when testing the arm it was not extended far enough to let a pin fall away before retracting. A few days later the arm was extended and the pin fell out. Communications with the lander was somewhat limited by a balky transmitter and data being received was for a shorter time each day. Just as surprising as the radio transmission started acting up, it repaired its self. It had been working on one watt instead of the normal 30 watts. It was believed the trouble was caused by stray electrical signals called "glitches" reaching the transmitters command system. The power is supplied by a pair of nuclear generators expected to operate until November and probably could for a year. Communications is not direct to earth since Viking 1 is located on the side of Mars away from earth. Its signals are sent to the mother ship in orbit and then to a radio telescope in Spain and onto the Jet Propulsion Laboratory.

When nitrogen and argon were detected, this is two things needed for life as we have on earth. The atmosphere is 100 times thinner than earth's. On July 28th the first scoop of dirt was taken and the sides of the six-inch thrench didnot collapse indicating the soil was sticky. One chamber didnot receive soil and the looking for organic molecules was ruled out for the first set of tests.

As reports started to come in something in the Martian soil suggested either the possibility of life on Mars or an unexpected chemical reaction. A large amount of oxygen was found, 15 times higher than expected. The biologists are wracking their brains trying to decipher the information to determine if life excess or chemicals in the soil may be giving false readings. On one test something like a fizzing antacid table dropped into a glass of water and may be causing the high level of gases. Some scientists think peroxide crystals are present, and they would act up like antacid tables when coming in contact with the moist nutrient mix. On one test the soil is moistened with "chicken soup" and if any creatures in the soil eat the nutrients and acts like earth creatures, they would give off the tracer material in gaseous wastes. This is where the hitch came in as an abundance of the tracer material was found. Other tests indicate living systems may exist, but further tests will be needed and then it may not be known for sure unless creatures are large enough to be photographed.

When time came for the second handful of dirt, the arm once again jammed, but was corrected a few days later.

Some of those connected with the Viking/Mars and names appeared in news releases, TV and newspapers are: James Martin, Project Manager; Dr Harold Masursky, Landing Site Team Leader; Lou Kingsland, Deputy Mission Director; James Cutts, Orbiter Imaging Team; Dr Seymour Hess, Meteorology Investigation Team Leader; Dr Carl Sagan Lander Photography Team; Dr James Pollach, Scientists; Dr Thomas Mutch, Geologist Photographic Operations; Dr Bruce Murry, JPL Director; Dr Gerald Soffen, Project Scientists; Dr Klaus Biemann, Head Molecular Analysis Team; Dr Fred Brown, Viking Biologists; Dr Harold Klein, Viking Biologist; Dr Gilbert Levin, Experiment Biologists; Dr Priestly Toulmin (?); Dr Hugh Keiffer, Atmospheric; Dr Barney Farmer, Head Moisture Studing Team.

On August 7th Viking 2 went into a long elliptical orbit around Mars. In the mean time tests for life went on from Viking 1. Dr Klein stated "the possibility of biological activity in the samples being incubated." Dr Horowitz stated "I want to emphasize we have not discovered life on Mars, but the data is conceivably of biological origan."

On the following pages are some of the covers for the Viking 1 in orbit and landing on Mars. Listed after the last covers shown is the covers received or reported.

(A) from the Jet Propulsion Laboratories at the time went into orbit, cachet is green; (B) from Goddard Spaceflight Center for the landing and cachet in blue; (C) from the Mars Station at Goldstone and has a red meter cancel for landing; (D) from the Honeysuckle Creek station in Australia, for orbit and cachet in green; (E) printed cover from DSS-62 Madrid with cancel in red and for landing; (F) communications station in Spain with red cancel and landing; (G) from Goddard Spaceflight Center for soil test and cachet in blue; (H) from Kennedy Space Center with cachet in red and blue and for landing; (I) printed cover for Mariner 9 in orbit around Mars in 1971 and for Viking orbit in 1976 canceled Mars PA; (J) slogan cancel from Hampton-Newport News VA

SCIENTIFIC AMERICAN : March 1978

The Surface of Mars by Raymond E. Arvidson, Alan B. Binder and Kenneth L. Jones Page 76

Viking Lander I touched down on the western slopes of the region named Chryse Planitia (22.5 degrees north latitude, 47.8 degrees west longitude). The landing site is some 130 kilometers east of Lunae Planum, one of the most heavily cratered plains on Mars. Lunae Planum is about a kilometer higher in elevation than Chryse Planitia, and the boundary between the two regions is marked by an irregular escarpment. A number of large channels course through Lunae Planum, emerge from the escarpment and extend eastward across Chryse Planitia toward the landing site.

The channels were most likely created by ground water from ice trapped within Lunae Planum. At some time in the past volcanism and geothermal heating melted some of the underground ice and the water escaped tothe surface to create one or more torremtial floods that cut into the Lunae Planum deposits and poured onto Cryse Planitia. The flow of water from Lunae Planum breached several craters and wrinkle ridges tothe west of the landing site.

Another feature at the landing site was revealed by the landing itself. Close to the spacecraft the retrorocket exhaust blew away loose material, exposing a crust of soil fractured into a polygonal pattern. Such soil, known as duricrust, is similar in appearance to the deposits called caliche in the U.S. Southwest and Mexico. On the earth duricrust is formed when dilute solutions of salt migrate up through the soil; the water evaporates frp, tje sp;itopms, and the salts and other substances collect just below the surface. The same process probably has operated on Mars.

Direct evidence that salts are present in the Martian duricrust was obtained by sampling the soil infront of the lander and analyzing its chemistry with the X-ray-fluorescence spectrometer on the lander. Priestley Toulmin III of the U.S. Geological Survey and the members of his X-ray team found that the amount of sulfur, a likely candidate for being bound in salt minerals, was somewhat greater in clods of soil than it was in loose soil. The clods are abundant around the lander, and they probably are chunks of duricrust broken up by the landing and also by the natural wind.

THE SURFACE OF UTOPIA PLANITIA Page 86

The search for thelanding site for Viking Lander II was based partly on the desire of investigators to have the second lander in aregion distinctly different from that of Viking Lander I, but still smooth enough for a successful landing. The overriding concern was to find a location with a high water-vapor content in order to maximize the probability of finding evidence of life. The region chosen was the surface of UTOPIA PLANITIA, WHICH ISPART OF the mantle of debris on the vast plains of the northern hemisphere. The landing site (48 degrees north latitude, 225.6 degrees west longtitude) is 200 kilometers southwest of the large crater Mie, 100 kilometers across.

STAMP COLLECTORS CLUB OF TOLEDO

CHARTER 181, A.P.S.

March 6, 1978

Dear member,

Our meeting dates for March are March 9th. and March 23rd. At our March 9th. meeting will be the Slide presentation "U.S. Errors, Varieties, Freaks & Oddities. There will also be a Auction at this meeting. The business meeting will start at 8:00P.M. Sharp. The programs to follow. We will meet at the Commodore Perry Motor Inn, 3rd. Floor, French Room.

Our Meeting March 23rd. will be awards night.

Please note their will be a board meeting at 7:30P.M.

George Ball would like to thank all who made our 34th. Annual show a success.

The winners in our Exhibit:

Class A George Ball, The Flag Stamp.
Class B Wilbert Wagner, Selected pages of the Black Jack
Class C Wayne Sharp, The 1953 Coronation
Class E Tony Merickle, French Scenes
Class F George Ball, Why Collect Covers
Class H Charles Shroeder, Cards

Popular Award to: John N. Richards, Q.E. II Jubilee Covers
The Apfelbaum Award to : John N. Richards, Q.E. II Jubilee Covers.

Our Grand Award winner: George Ball,
"The Flag Stamp of 1903.

We took in quite a few new members at the show. We welcome them. We're glad to have you in our club.

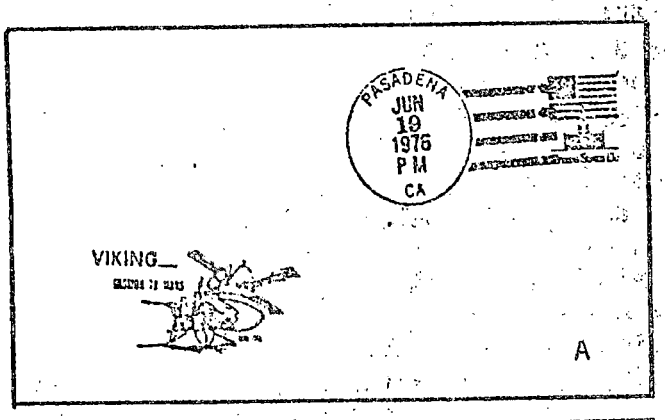
Our special thanks to Don Koster for bringing out the frames in his van.

See you at the Commodore.

Sincerely yours,

Allan M. Cunningham

Allan M. Cunningham
Secretary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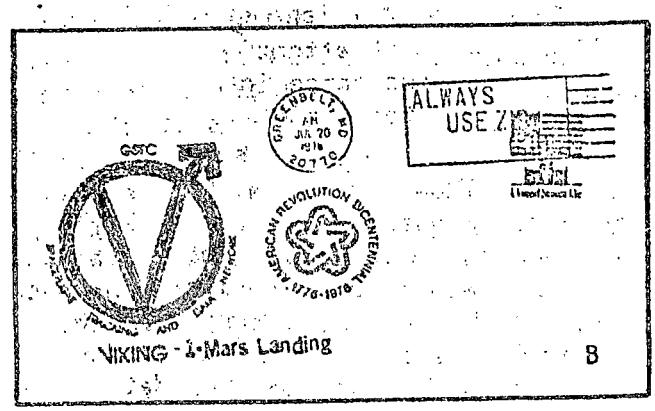
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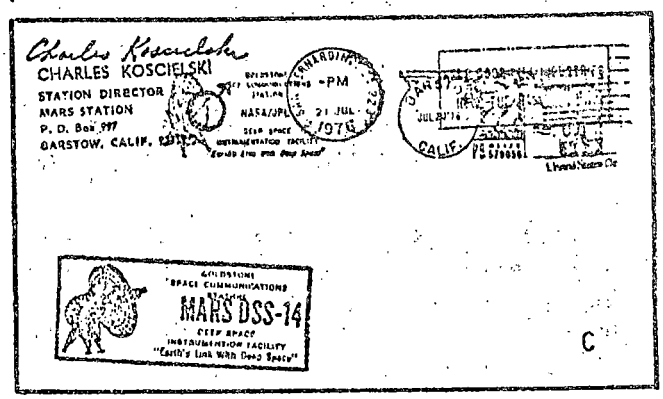
Charles Koscielski
CHARLES KOSCIELSKI
STATION DIRECTOR
MARS STATION
P. O. Box 997
BARSTOW, CALIF.
NASA/JPL
21 JUL
1976
CALIF.
GOLDSTONE
SPACE COMMUNICATIONS
MARS DSS-14
DEEP SPACE
INSTRUMENTATION FACILITY
"Earth's Link With Deep Space"
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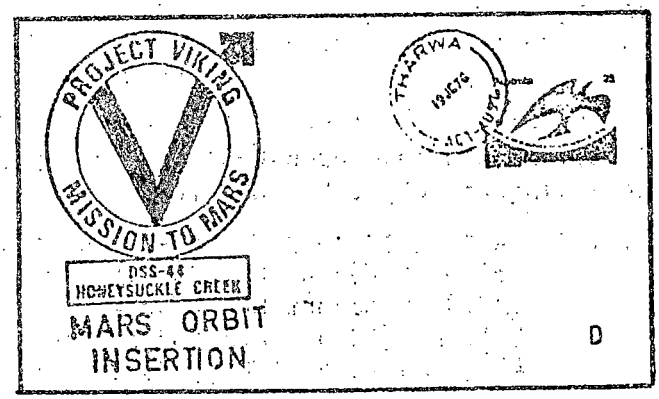
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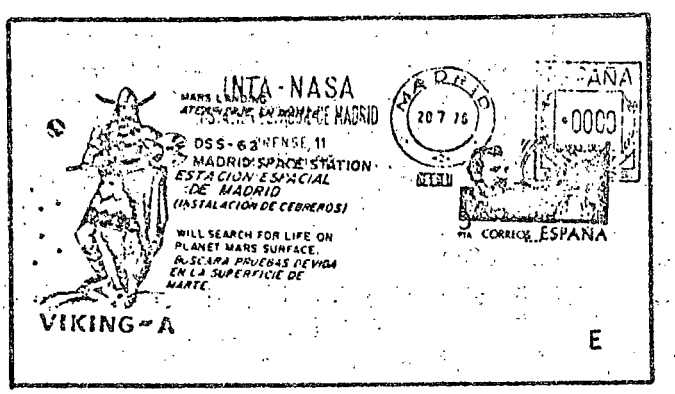
INTA-NASA
MARS LANDING
DSS-63
MADRID SPACE STATION
ESTACION ESPACIAL
DE MADRID
(INSTALACION DE CEBREROS)
WILL SEARCH FOR LIFE ON
PLANET MARS SURFACE.
BUSCARA PRUEBAS DE VIDA
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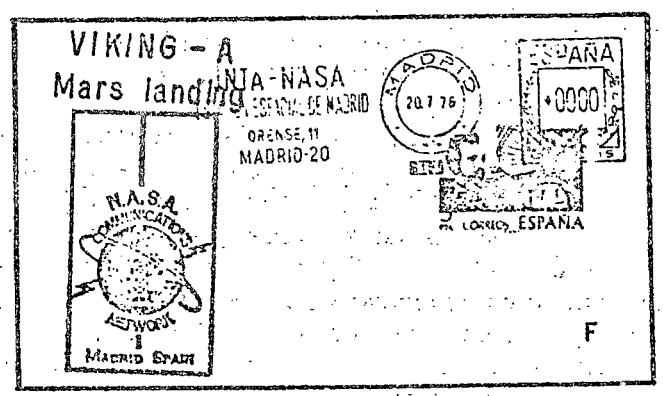
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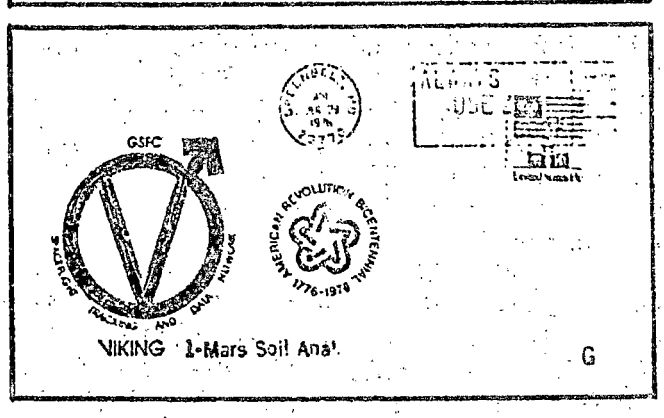
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1776-1976
VIKING 1-Mars Soil Anal.
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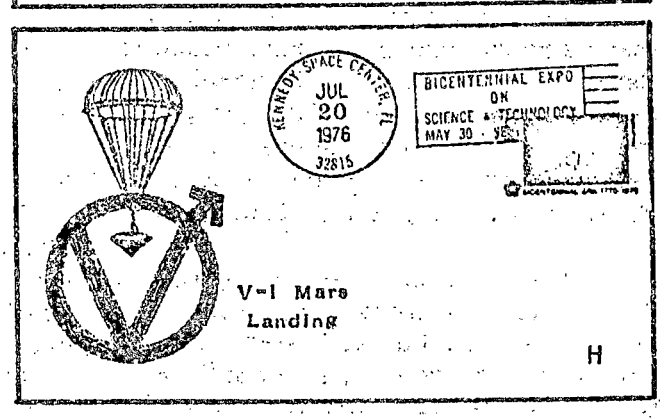
KENNEDY SPACE CENTER, FL
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1976
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V-1 Mars
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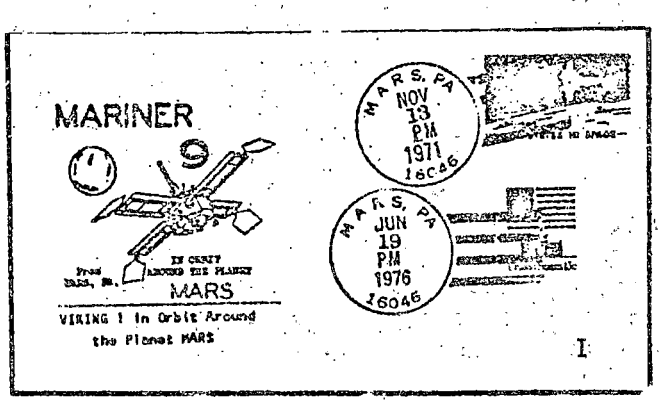
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the Planet MARS
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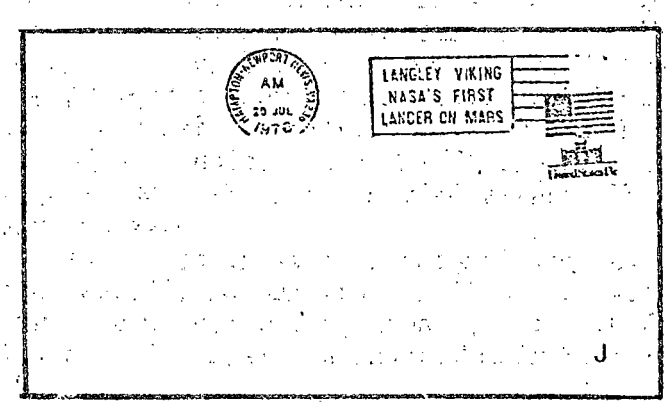
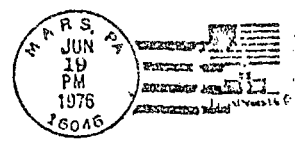
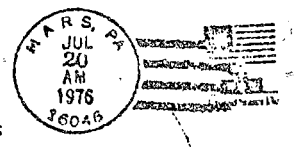

AM
20 JUL
1976
LANGLEY VIKING
NASA'S FIRST
LANDER ON MARS
J

For the Viking 1 landing on the planet Mars, the earth Mars (PA) received much attention. By 10 a.m. on July 20th 4,000 requests for Mars cancellations were received. Mail was received from distant points as Southwest Africa and countries in Europe in addition to requests from the U.S. and Canada. One request for 1200 covers was from a California philatelic society. Other requests were for a single postcard to a number of 200-lots. Many covers had special cachets in color or black and white. Each cover was given a hand-cancel since the machine cancel does not have Mars, but the USPS and zip code.





Shown here are the hand cancel for the Viking 1 into orbit around the planet Mars and the date of landing. The Postmaster of Mars PA is Chester Marburger and any time sending covers, write a little note telling Chet how much you appreciate his cooperation.

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The following covers have been received or reported for the Viking 1 events as listed. Covers have been received or reported with a combination of dates and places for Viking Launch, Orbit and Landing.

6-19-76 MARS ORBIT INSERTION/pmk Pasadena CA (JPL); Barstow CA (GDS); Tharwa Australia (HSK); Kennedy Space Center (KSC); Patrick AFB FL; St Johns Anstigua (ANT); Freeport Grand Bahama (GBI); Vandenberg AFB CA; Hampton VA; Greenbelt MD (GSC); Madrid Spain (DSS-61,DSS-62,DSS-63); Tharwa Australia (DSS-44); Waimea HI (HAW); Fairbanks AK (ULA); Rosman NC (ROS); Turk Island (ETR); Mars PA

7-20-76 MARS LANDING/pmk Pasadena CA (JPL); Barstow CA (GDS); Kennedy Space Center (KSC); Cape Canaveral FL; Patrick AFB FL; Santiago Chile (AGO); Rosman NC (ROS); Greenbelt MD (GSC); Ha,pton Newport News VA(slogan); (double pmk) San Juan PR-Arecibo PR(Arecibo Observatory); Lompac CA Vandenberg AFB; Madrid Spain (DSS-61,DSS-62,DSS-63, Communications); Tharwa Australia (DSS-44 HSK); Turk Island (ETR); St Johns Antigua (ETR); Waimea HI (HAW); Fairbanks AK (ULA); Freeport Grand Bahama(ETR); Mars PA

7-28-76 VIKING 1-MARS SOIL ANAL./pmk Greenbelt MD (GSC)

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Viking cachet will be applied to your covers FREE for returned stamped addressed envelope. State color of cachet wanted (black, red, blue or green). Bob Ekas, P.O. Box 295, Chicora, PA 16025.

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Man's next giant leap forward in space - to Mars and Venus - has been blocked by a major obstacle scientists never anticipated. It has been found that six months or more in the weightlessness of space will sap the body of bone calcium, making astronauts' arm and leg bones so weak they'd easily break. Mars and Venus, the two closest planets, would take about six months to reach, plus six months for return.

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Millions of miles deep in space, a strange something nicknamed "The Great Galactic Ghoul" keeps interfering with man's attempts to glean more knowledge about the mysterious planet Mars. Scientists are puzzled by the occurrences, 35 million miles from earth, where seven spacecraft have encountered some force that left them badly damaged. The latest victum is the Viking One, damaged as it passed Laye in January the Viking One last one of its three soil-sampling units. Mariner Seven ran into trouble about 35 million miles from earth, one battery got dented, pressure built up in the craft and electrical circuits began to arc. A lot of the ship's batteries and antennas were wrecked. The Russian Mars probes, Zond Two and Mars One, got fouled up, and didn't finish the mission. Further checks showed two more suffered damage in the Ghoul's lair, and the Mariner Nine, in 1971, had radio failure there.

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U.S. intelligence officials are concerned that Russia may be trying to develope devices to blind American satellites guarding against a surprise missile attack. A U.S. early warning satellite was illuminated by a strong infrared radiation source beamed from Western Russia on five occasions since last October 18th.

Here & There in Tracking by Seymour Rodman

Carsten Fuchs, 8500 Nuernberg, Karolinenst-38, P.O. Box 9433, West Germany reports the following prices realized on tracking station covers in his auction of 3/13/76. Glenn, 2/20/62, Barstow, Calif. $18.00, Guyamas, Mexico, $19.00. Carpenter, 5/24/62, Point Arguello, Calif., $20.00, Canton Island, $18.00. Schirra, 10/3/62, Point Arguello, Calif., $22.00, MSFN Bermuda, $13.00.

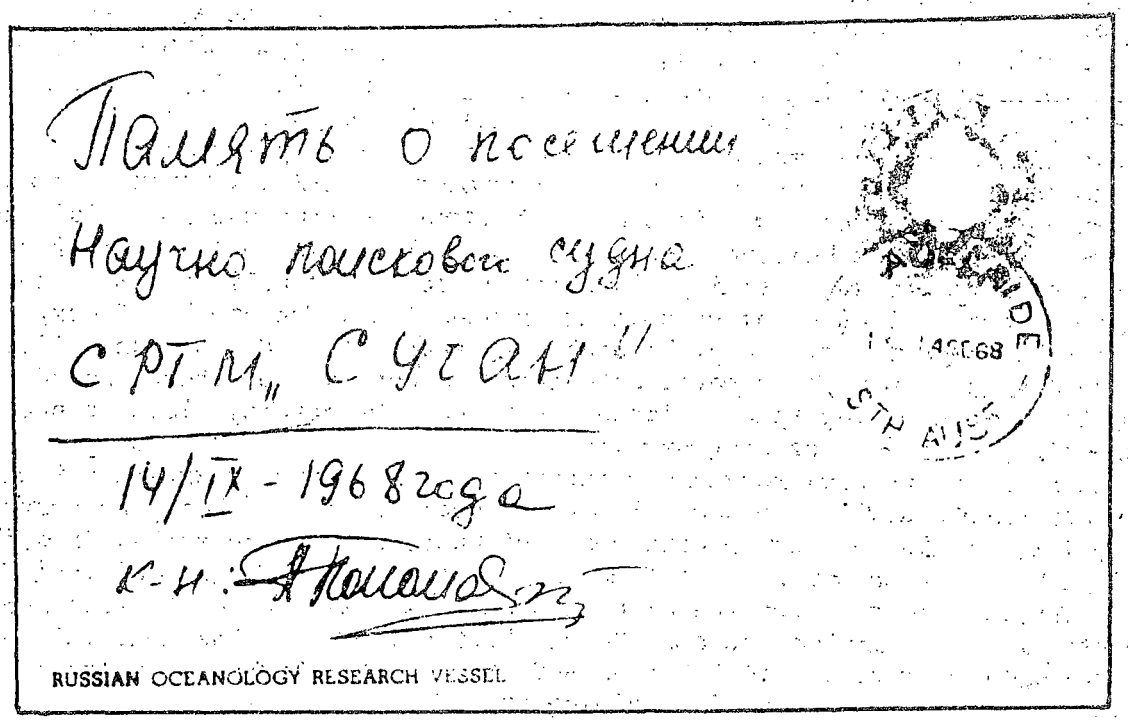
The ASTP produced a few interesting tracking covers from the satellite countries of the U.S.S.R., particularly from the astronomical observatories. Some collectors wrote me that by sending out covers to every possible source in the Soviet Union, that a few were returned that were meaningful. The Russian tracking ships, on the other hand, are about the most elusive. One collector sent me, several properly dated ASTP Russian envelopes with a pictorial post mark of a ship on it. This turned out to be not a Russian tracking ship cover, but a steamship line in the Soviet Union.

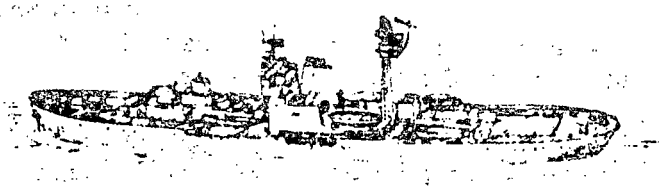
The Russian tracking & missile ships are probably used for other purposes than tracking and their whereabouts are kept secret from the average Soviet collector. Back in 1968, before the ASTP, (cover below), a guest boarded a Russian Missile ship as a visitor while it was in Port Adelade, Australia. An officer on board signed the cover as a souvenier which translates to read (To remember about a vist to scientific research vessel Suchan 9/14/68) and signed by the ships officer. The envelope itself is a souvenier type apparently used for just such visits.

The Suchan is a military missile tracking ship converted bulk ore carrier and employed as a missile ship in the Pacific.

This is about as close a cover Philatellically speaking that I have seen from a Russian missile tracking ship.

It always amazes me as to the material that is sitting in our collections if we will take the time to search it.





At the right is the Chuhotka similar to the Sutchan, a Sibir class ship. The Sutchan is equipped with a helicopter flight deck. Displacement (tons) 4,000 standard, 5,000 with full load; dimension 354 x 49.2 x 20 feet; guns - 6-45 mm AA & 2 MG; main engines - triple expansion, 2 shafts, 3,300 ihp; speed - 15 knots; range (miles) - 3,300 at 12 knots.

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ETHICS IN SPACE PHILATELY

by Lester E. Winick (President Space Topics ATA-APS)

At one time, a standard of ethics existed in our hobby by collectors, dealers and countries around the world. We were able to buy, sell and trade with complete faith that we were getting a genuine article and that we were helping each other's collection. In the last few years, questionable conduct and policies has invaded space philately, as it seams to have permeated all of our major governmental and corporate institutions.

Foreign countries have our topic high on their list of sucker bait with unnecessary issues, souvenir sheets, high values, long sets and other miscellaneous printings. In the United States, first day cover organization flood us with expensive mailings featuring "limited edition" space first day covers, commemorative medals and various memorabilia. The only limitation seems to be how many can be sold. Many shenanigans of dealers and collectors in our topic have been documented in the pages of our publication, Unfortunately, all of this is true of other topics as well.

The Space Topics Study Group, an affliate of the APS and ATA has established a Board of Review for any controversy in the space philatelic field. A Code of Ethics drafted under the initiative of member Dave Chudwin has been adopted as a guide by the Board of Review.

Members of the Board are Barbara Baker, Jim Cattani, Dave Chudwin, Leo Malz, Ted Parge, Seymour Rodman and Lee Saegesser. These space philatelists consist of an attorney, a NASA employee, a professional journalist, a physician, an auctioneer, a rocket mail specialist and a corporation executive. It is expected that any controversy can be reveiwed and passed upon by this group. Their report will be forwarded to the President of the Space Topics Study Group who will act on their decision and recommendation.

All inquiries and complaints should be forwarded to Seymour Rodman, 91 Eastern Parkway, Hillside, New Jersey 07205 with $2.00 to cover costs for distribution to members of the Board. A SAE must be included if a reply is expected. Copies of the Code are available from Mr. Rodman for $1.00 plus a legal size SAE with 24¢ postage.

Expertizing of covers will not be handled by the Board. The APS, P.O. Box 800, State College, Penna. has a Committee set up for this purpose.

The Golden Rule has been around for a long time, let's try living by it.

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Anyone wanting to go across the big pond to the country down under to visit the tracking stations? Don't believe anyone will make this trip to Australia for just this purpose, here are the visiting times for those in Australia and with their summer coming before long maybe on a vacation near them. Honeysuckle Creek, opan Mondays and Tuesdays 2 p.m. sharp. Tidbinbilla, 3:30 p.m. Wednesday and Friday. Orroral Valley, 2:00 p.m. Thursdays, Saturdays and Sunday. No latecomers admitted/ (Subject to closure during space flights and probes, therefore, visitors are advised to check before visiting tracking stations).

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To train astronauts to fly the Space Shuttle a modified jet is being reconstructed to handle like the Space Shuttle with a set of Space Shuttle controls. This modified jet will be flown by the astronauts over White Sands Missile Range and landed using the Space Shuttle controls for training purposes. This will help the astronauts to get a better feel in landing the real Space Shuttle later on. The modified jet will be serviced between missions at Holloman AFB and the astronauts are supposed to be housed at Holloman AFB until their training is over.

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The approach and landing tests for the Space Shuttle will begin in March 1977 at Dryden Flight Research Center.

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A new type of giant telescope expected to revolutionize the construction of big reflectors will go into operations next year on 8600-foot Mt. Hopkins. The telescope is a multiple-mirror telescope, known as the MMT. Instead of using one large mirror the MMT employs an assembly of six smaller mirrors set on the circumference of a circle so that the images formed by them are merged in a common image. Each of the mirrors is 72 inches in diameter and the telescope will be the equivalent of a 176-inch telescope.

FOR THE AUTOGRAPH COLLECTOR by John J. Macco

Gravity Probe-A launched June 16, 1976 Scout launch vehicle
NASA Headquarters Washington DC 20546
Hubert Calahan-Program Manager; Dr Nancy Roman-Program Scientist
Marshall Space Flight Center Huntsville Ala 35801
Frederick Vreuls-Project Manager;Dr Rudolph Decher-Project Scientist
Wallops Flight Center Wallops Island VA 23337
William T. Burns-Project Engineer;William L. Lord-Test Director
Goddard Space Flight Center Greenbelt MD 20770
Kermit Blaney-Project Engineer

Palapa-A launched July 8, 1976 Delta 125 launch vehicle
Goddard Space Flight Center Greenbelt MD 20770
Robert Goss-Project Manager

MARISAT-B launched June 9, 1976 Delta 124 launch vehicle
NASA Headquarters Washington DC 20546
Peter Eaton-Manager Delta Program
Goddard Space Flight Center Greenbelt MD 20770
Charles Gunn-Delta Project Manager
Kennedy Space Center Fla 32899
Hugh Weston,Jr-Chief Delta Operations;Bert Grenville-Compex 17 Operations Manager;
Ed Chaffin-Spacecraft Coordinator

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One of the country's leading astronomers disclosed scientific evidence of life in outer space. Prof. Frank Drake, director of the National Astronomy and Ionosphere Center at Cornell University said he is working with a group of eminent U.S. and Soviet scientists to build a giant radio telescope to contact these other civilizations. He added: "In very easy-to-understand terms, we have evidence that other civilizations exist on other planets. We have been able to create the exact conditions of the Earth as it was four billion years ago. We have created atmospherically and chemically a replica of what it was like as life was starting to form. Now from our searching of outer space where stars are being born all the time we have discovered exactly the conditions we have created. In other words, there are stars with atmospheres identical to the Earth's four billion years ago. There are many stars and planets that are much older than Earth, so these have had the same atmosphere as Earth's and have even developed civilizations beyond ours. Frankly, I don't know many scientists who don't fully agree that there is life in outer space. It's not wild imaginative theory. We base these theories on very cold facts. If a certain atmosphere produced life on Earth, then that identifical atmosphere on other planets has also produced life. " Drake,along with his duties at Cornell, is also director of the world's largest radio telescope in Arecibo, Puerto Rico.

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For publications the Philadelphia office is now closed. Send to either the Public Documents Distribution Center, Pueblo, Colorado 81009 or Superintendent od Documents, U.S. Government Printing Office, Washington, DC 20402.

Apollo 13 "Houston, We've Got a Problem" NAS 1.19:76, S/N 033-000-00165-7 $1.25 25 p
On The Moon With Apollo 17 NAS 1.19:101 S/N 033-000-00470-2 $1.45 117 p. il
Why Survey From Space NAS 1.20:NF 57 S/N 033-000-00619-5 45¢ 10 p. il.
The Space Telescope NASA SP-392 $2.30 244 p
NASA Historical Data Book, 1958-68 Vol 1 NASA SP-4012 $12.50 460 p.

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Dr Alan M Lovelace, 46, is the new Deputy Administrator of NASA succeeding Dr. George M. Low, new President of Rensselaer Polytechnic Institute. Dr Lovelace has worked in government posts since 1954. A native of St. Petersburg, Fla., Lovelace holds a B.S. an M.S. and a Ph.D in chemistry from the University of Florida.

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Because of money cutbacks things have been quiet at Poker Flat Rocket Range.

Space Covers Reported & Received

WHITE SANDS MISSILE RANGE, NM

5-27-76 NAVY SM-2 SURFACE TO AIR/MISSILE FTR-14 FROM USS/DESERT SHIP VS MQM 34D
6-2-76 PERSHING P1A ARTILLERY MISSILE/A/O 168 FIRED FROM MCGREGOR/RANGE
6-2-76 PERSHING P1A ARTILLERY MISSILE/A/O 169 FIRED FROM MCGREGOR/RANGE
6-5-76 NAVY TOMAHAWK CRUISE MISSILE/LAUNCHED FROM NAVY A6 JET
6-10-76 USAF SRAM MISSILE 72-0958/LAUNCHED FROM B52
6-10-76 USAF SRAM MISSILE 72-0943/LAUNCHED FROM B52
6-22-76 NAVY SM-2 SURFACE-TO-AIR/MISSILE FTR-17 VS. MQM34D
6-22-76 AIR LAUNCHED CRUISE MISSILE/FTM 2. LAUNCHED FROM B52
6-29-76 PERSHING P1A ARTILLERY MISSILE/A/O 170 FIRED FROM FT WINGATE/TO IMPACT
6-29-76 PERSHING P1A ARTILLERY MISSILE/A/O 171 FIRED FROM FT WINGATE/TO IMPACT
6-30-76 AEROBEE 170 NASA 13.130 SOLAR EXPERIMENT/TO OBTAIN TOTAL IRRADIANCE MEA.
7-13-76 AEROBEE 170 NASA 12.032/FLIGHT TEST TO PROVE REUSABLE/SUSTAINER CONCEPT.
7-14-76 USAF SRAM #104/LAUNCHED FROM B-52
7-14-76 USAF SRAM #106/LAUNCHED FROM B-52
7-16-76 NAVY TOMAHAWK CRUISE MISSILE/CMPS2. LAUNCHED FROM NAVY A6
7-27-76 AEROBEE 170. NASA 12.033. SECOND/FLIGHT OF FIRST REUSABLE SUSTAINER
7-28-76 NAVY ANTI-SHIP MISSILE DEFENSE/FTV-1 vs MGM-34D
7-30-76 NAVY TOMAHAWK CRUISE MISSILE/CMPS3. LAUNCHED FROM NAVY A6
8-3-76 AEROBEE 350 USAF A35.191.MEASURE/NATURAL RADIATION AT EARTH'S LIMB
8-4-76 AEROBEE 200; NASA 26.043. OBTAIN/HIGH RESOLUTION SPECTRA
8-11-76 ASTROBEE D. NASA 23.007/MEASURE NITROUS OXIDE
8-12-76 SRAM MISSILE NO. PL-26/FROM B52 AT 10K ALTITUDE

WALLOPS ISLAND, VA (Wallops Flight Center)

6-9-76 NIKE/G1-8283/2 00PM
6-11-76 NIKE-JAVELIN/T2-7036/2 58PM
6-18-76 RELATIVITY SCOUT GP-a P4-8280/7 41AM/pmk Greenbelt MD(GSC);St George Bermuda
7-19-76 JAVELIN/G4-8281/9 23PM
8-4-76 NIKE-HERCULES/G1-8366/2 31PM
8-11-76 TERRIER MALEMUTE/G2-8344/3 12PM
8-12-76 NIKE TOMAHAWK/T2-8078/11 54AM

CHATANIKA, AK (Poker Flat Rocket Site)
None Reported

VANDENBERG AFB, CA (Western Test Range)

5-22-76 USAF/RESEARCH AND/DEVELOPMENT/SPACE PROBE/SCOUT BOOSTER
6-2-76 DEFENSE SURVEY SATELLITE/USAF TITAN 3 BOOSTER
6-3-76 BOMARC TARGET/MISSILE DESTROYED BY AIR TO AIT/OR GROUND TO AIR MISSILE
6-9-76 RELIABILITY LAUNCH/SAC/MINUTEMAN 2
6-21-76 MINUTEMAN-3/GUIDANCE SYSTEM/VERIFICATION
6-22-76 MINUTEMAN 2/WEAPON SYSTEM/DESTROYED IN FLIGHT
6-27-76 US AIR FORCE/TITAN 2/SUPER ICBM/VERSATILITY TEST
6-30-76 MINUTEMAN/INSTANT ICBM
7-8-76 LAUNCH/SECRET/TITAN 3/POLAR ORBITING/RESEARCH SATELLITE
7-13-76 BOMARC TARGET/MISSILE DESTROYED BY AIR TO AIR/OR GROUND TO AIR MISSILE
7-29-76 ITOS-E2-H/pmk Lompac CA Vandenberg AFB(Vandy(green),A-3(red);Greenbelt MD(GSC)

8-5-76 SAFEGUARD/ACCURACY REFINEMENT/TEST/MINUTEMAN/TARGET
8-6-76 DEFENSE/SECRET/SATELLITE/TITAN 3/BOOSTER

PALESTINE, TX (Balloon Site)

5-18-76 TO DETECT TRACE MOLECULAR SPECIES/PRESENT IN THE STRATOSPHERE/3:59 PM
5-20-76 THIRD FLIGHT/LARGE SUPERCONDUCTING MAGET TO/DETECT RARE COSMIC RAYS/7:30 PM
8-4-76 16 in. TELESCOPE FOR FAR-INFRARED/SURVEYING OF THE MILKY WAY

EDWARDS, CA (Dryden Research Center)

2-27-76 YC-15/FLIGHT 1-46/LANDING PERFOR-/MANCE EVALUATION
3-2-76 YC-15/FLIGHT 1-47/STRUCTURAL AERO-/DYNAMIC DAMPING
3-3-76 YC-15/FLIGHT 1-48/STRUCTURAL AERO-/DYNAMIC DAMPING
3-3-76 B-1/FLIGHT 1-26/AFCS ACTIVATED AND PERFORMANCE TESTS
3-4-76 YC-15/FLIGHT 1-49/STRUCTURAL AERO-/DYNAMIC DAMPING
3-5-76 YC-15/FLIGHT 1-50/STRUCTURAL AERO-/DYNAMIC DAMPING
3-16-76 YC-15/FLIGHT 1-57/STRUCTURAL AERO-/DYNAMIC DAMPING
3-17-76 YC-15/FLIGHT 1-58/LEVEL FLIGHT/RANGE FACTORS
3-18-76 YC-15/FLIGHT 1-59/LEVEL FLIGHT/RANGE FACTORS
5-13-76 YF-12 TEST FLIGHT
5-20-76 YF-12 TEST FLIGHT
7-15-76 YF-16 TEST FLIGHT
7-23-76 YF-16 TEST FLIGHT

KENNEDY SPACE CENTER, FL (Eastern Test Range)

3-14-76 P74-1 TITAN 3C/AIR FORCE LAUNCH/pmk Cape Canaveral FL (Secret Launch)
6-9-76 MARISAT-B/pmk Kennedy Space Center FL (KSC,MIL);Astronaut Trial Station Titusville FL;Greenbelt MD(GSC);Agana GU(GWM);St David Bermuda(BDA);Madrid Spain(MAD Comm,MAD STDN);Santa Pauka CA(COMSAT)
6-25-76 Launch/TITAN 3-C/SECRET/pmk KSC;Astronaut Trail Sta Titusville FL;Patrick AFB FL
7-8-76 PALAPA-A/pmk Kennedy Space Center(KSC,MIL,A-3),Patrick AFB FL;Waimea HI(HAW); Agana GU(GWM);Greenbelt MD(GSC);St David Bermuda(BDA),US NAVY FPO 09560(BDA); Jakarta Indinesio(Directorate General of Posts & Telecommunications)
7-22-76 COMSAT D-2/pmk Kennedy Space Center(KSC,MIL),Astronaut Trail Sta Titusville Patrick AFB FL;Greenbelt MD(GSC);San Rafael CA(AT&T Petaluma);Bridgeport CT(Comsat Southbury);Oxnard CA(Comsat Santa Paula)

KOUROU, FRENCH GUYANE (CNES)

1-21-76 SUPER ARCAS/35/85
1-28-76 SUPER ARCAS/35-86
2-18-76 SUPER ARCAS/35-87
3-17-76 SUPER ARCAS/35-88
4-1-76 EXAMETNET/SUPER-ARCAS/35-89/LE DDO
4-14-76 EXAMETNET/SUPER-ARCAS/35-90/LE DDO
4-21-76 SUPER ARCAS/35-91
4-22-76 INSTALLATION OF ESA AT KOUROU
4-29-76 EXAMETNET/SUPER-ARCAS/35-91/LE DDO
6-2-76 SUPER ARCAS/35-93
6-9-76 SUPER ARCAS/35-94

KIRURA, SWEDEN (ESRO)
None Reported

ANDOYA, NORWAY (Andoya Rocket Range)
None Reported

CHURCHILL RESEARCH RANGE
None Reported

WOOMERA AUSTRALIA LAUNCHES
None Reported

HOLLOMAN AFB, NM

5-6-76 TEST/LASER ATTITUDE REFERENCE SYSTEM (LARS)
5-7-76 TEST/F-5E/F ESCAPE SYSTEM
5-12-76 TEST/F-5E/F ESCAPE SYSTEM
5-12-76 TEST/LANCE ARMA GYRO
5-14-76 TEST/ARMY PLUME STUDY
5-17-76 TEST/F-100 ESCAPE SYSTEM
5-19-76 TEST/LASER ATTITUDE REFERENCE SYSTEM
5-20-76 TEST/ARMY PLUME STUDY
5-21-76 TEST/SMALL HARDENED INERTIAL PLATFORM
5-26-76 TEST/F-100 ESCAPE SYSTEM
6-11-76 TEST/ARMY PLUME STUDY
6-17-76 TEST/ARMY PLUME STUDY
6-25-76 TEST/SMALL HARDENED INERTIAL PLATFORM
7-1-76 TEST/F-5E/F ESCAPE SYSTEM
7-16-76 TEST/F-5E/F ESCAPE SYSTEM
7-20-76 TEST/F-5E/F ESCAPE SYSTEM
7-23-76 TEST/SMALL HARDENED INTERTIAL PLATFORM

SPECIAL EVENTS/POSTMARKS/CACHETS

4-30-76 ESPA AT ESPEC, NETHERLANDS/pmk United Nations Geneva
5-5-76 SMITHSONIAN NASM/MILESTONE OF FLIGHT #38/pmk Washington, DC
5-5-76 SMITHSONIAN NASM/MILESTONE OF FLIGHT #39/pmk Kennedy Space Center, FL
5-15-76 13th ANNIVERSARY/FAITH 7/pmk Titusville FL Astronaut Trail Sta., FL
5-18-76 7th ANNIVERSARY/APOLLO 10/LAUNCH/pmk Kennedy Space Center, FL
5-24-76 PIONEER JUPITER SCIENCE SYMPOSIUM/omk Moffett Field, CA
5-24-76 ANNIVERSARY 14th/AURORA 7/pmk Kennedy Space Center, FL
5-25-76 LAUNCH/POSEIDON/USS JOHN ADAMS/pmk Kennedy Space Center, FL
5-25-76 3rd ANNIVERSARY/SKYLAB II/LAUNCH/pmk Kennedy Space Center, FL
5-26-76 7th ANNIVERSARY/APOLLO 10/RECOVERY/pmk Titusville Astronaut Trail Sta., FL
5-30-76 OPENING DAY/KSC/BICENTENNISAL/pmk Slogan Cancel Kennedy Space Center, FL
6-2-76 10th ANNIVERSARY OF 1st LUNAR SURVEYOR LANDING/MILESTONE OF FLIGHT #40/ pmk Washington DC
6-3-76 TENTH ANNIVERSARY/GEMINI 9/FMF/pmk Houston TX
6-3-76 11th ANNIVERSARY/GEMINI 4/LAUNCH/pmk Kennedy Space Center, FL
6-4-76 Slogan Cancel of Machine and Hand/BICENTENNIAL EXPO/ON SCIENCE & TECHNOLOGY/ MAY 30-SEPT 6 1976/pmk Kennedy Space Center, FL
6-6-76 10th ANNIVERSARY/GEMINI 9/RECOVERY/pmk Kennedy Space Center FL
6-7-76 11th ANNIVERSARY/GEMINI 4/RECOVERY/pmk Titusville Astronaut Trail Sta, FL
6-14-76 EXPO OFFICIAL/OPENING-KSC/pmk Kennedy Space Center, FL
6-22-76 3rd ANNIVERSARY/SKYLAB II/RECOVERY/pmk Titusville Astronaut Trail Sta., FL
7-1-76 NAT'L AIR & SPACE MUSEUM OPENS/pmk Washington DC Smithsonian Sta.
7-1-76 MILESTONE OF FLIGHT #$!/DEDICATION OF NASA/pmk Washington DC
7-18-76 10th ANNIVERSARY/GEMINI 10/FMF LOCAL POST/pmk Kennedy Space Center, FL
7-21-76 15th ANNIVERSARY/LIBERTY BELL 7/pmk Kennedy Space Center, FL
7-20-76 7th ANNIVERSARY APOLLO 11 MOONLANDING/pmk Patrick AFB, FL

MISCELLANOUS

Received Late or Reported Late
5-4-76 LAGEOS/pmk St George Bermuda(BDA); Quito Ecuador (QUI)
7-17-76 APOLLO/SOYUZ/USAF SATELLITE TRACKING STATION (E-105/pmk Lamisere Seychelles

SPACE SHUTTLE TESTS

5-6-76 MAIN ENGINE TEST 008 ENGINE 002/pmk Bay St Louis MS
5-13-76 MAIN ENGINE TEST 056 ENGINE 001/pmk Bay St Louis MS
5-20-76 MAIN ENGINE TEST 010 ENGINE 002/pmk Bay St Louis MS
5-21-76 RUNWAY FLIGHT TEST/LANDING SYSTEM/pmk Orlando FL KSC
5-24-76 MAIN ENGINE TEST 011 ENGINE))@/pmk Bay St Louis MS
5-25-76 MAIN ENGINE TEST 056 ENGINE 001/pmk Bay St Louis MS
5-26-76 MAIN ENGINE TEST 012 ENGINE 002/pmk Bay St Louis MS
6-1-76 MAIN ENGINE TEST 057 ENGINE 001/pmk Bay St Louis MS
6-7-76 MAIN ENGINE TEST 058 ENGINE 001/pmk Bay St Louis MS
6-8-76 MAIN ENGINE TEST 013 ENGINE 002/pmk Bay St Louis MS
6-10-76 MAIN ENGINE TEST 014 ENGINE 002/pmk Bay St Louis MS
6-10-76 MAIN ENGINE TEST 059 ENGINE 001/pmk Bay St Louis MS
6-11-76 MAIN ENGINE TEST 060 ENGINE 001/pmk Bay St Louis MS
6-14-76 MAIN ENGINE TEST 061 ENGINE 001/pmk Bay St Louis MS
6-15-76 MAIN ENGINE TEST 015 ENGINE 002/pmk Bay St Louis MS
6-15-76 WIND TUNNEL TEST/pmk Moffett Field CA
6-16-76 WIND TUNNEL TEST/pmk Moffett Field CA
6-17-76 MAIN ENGINE TEST 016 ENGINE 002/pmk Bay St Louis MS
6-18-76 MAIN ENGINE TEST 062 ENGINE 001/pmk Bay St Louis MS
6-21-76 MAIN ENGINE TEST 063 ENGINE 001/FIRST 1 MIN TEST/pmk Bay St Louis MS
6-24-76 MAIN ENGINE TEST 064 ENGINE 001/pmk Bay St Louis MS
7-1-76 WIND TUNNEL TEST/pmk Moffett Field CA
7-2-76 WIND TUNNEL TEST/pmk Moffett Field CA
7-6-76 ENGINE 003 ARRIVES/pmk Bay St Louis MS
7-8-76 MAIN ENGINE TEST 065 ENGINE 001/pmk Bay St Louis MS
7-12-76 MAIN ENGINE TEST 017 ENGINE 002/pmk Bay St Louis MS
7-12-76 MAIN ENGINE TEST 066 ENGINE 001/pmk Bay St Louis MS
7-16-76 MAIN ENGINE TEST 018 ENGINE 002/pmk Bay St Louis MS
7-26-76 MAIN ENGINE TEST 019 ENGINE 002/pmk Bay St Louis MS
7-28-76 MAIN ENGINE TEST 029 ENGINE 002/pmk Bay St Louis MS
7-29-76 MAIN ENGINE TEST 067 ENGINE 001/pmk Bay St Louis MS
8-5-76 ENGINE 001 REMOVED/ENGINE 003 INSTALLED/pmk Bay St Louis MS
8-12-76 MAIN ENGINE TEST 021 ENGINE 002/pmk Bay St Louis MS
8-13-76 NASA GULFSTREAM II SHUTTLE TRAINING/CRAFT ARRIVES WSMR/pmk White Sands Missile
8-16-76 MAIN ENGINE TEST 022 ENGINE 002/pmk Bay St Louis MS
8-18-76 MAIN ENGINE TEST 023 ENGINE 002/pmk Bay St Louis MS
8-19-76 MAIN ENGINE TEST 024 ENGINE 002/pmk Bay St Louis MS
8-23-76 MAIN ENGINE TEST 025 ENGINE 002/pmk Bay St Louis MS
8-24-76 MAIN ENGINE TEST 026 ENGINE 002/pmk Bay St Louis MS
8-25-76 MAIN ENGINE TEST 027 ENGINE 002/pmk Bay St Louis MS

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It is my sad duty to annouce the death of one of our great and dear space cover collectors, Karl von der Wiede of Bochum West Germany. Karl died at home on June 11th after a sudden heart attack.

Karl was born May 27, 1925 in Bochum Germany. He had served in the German Navy from 1943 to 1947, stationed in France. Karl was a mining engineer, working in the coal mines. He was in a mining accident a few years ago and confined to a wheel chair. Operations were performed many times without success. Karl is survived by a wife and three children.

Tragedy had struck Karl many times in his life time. His father was killed in World War II and his mother died in 1974. His wife had been in and out of the hospital many times and had several operations.

Karl was the printer and distributor of a German space publication called INPORCOS (International Nonprofit Space Collector Society). In 1974 after a merger it was called RAUMFAHRT UND PHILATELIE (Spaceflight and Philately). At this time Karl became a dealer in space covers. He was also the publisher of a publication ACTUELLE RAUMFAHRT INFORMATIONEN (Actual Spaceflight Information) and a contributer to the IKARUS REPORTER a publication of the Society IKARUS Spaceflight and Philately.

I had known Karl for better than ten years and in this time had become very good friends. From time to time an ordinary letter would be received and inside would be amounts of United States dollars up to $250, Karl trusted everyone. At the time of Karl's death, I know he owed people money for covers and this could have been working on him. The last letter received from Karl after the Apollo/Soyuz, stated he was having a hard time getting covers from Russia, people had ordered. Karl was not good at English and had his letter translated from German into English. The past few years most letters went to a friend in New York and he would translate messages from German into English.

Karl will be missed but not forgotten.

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TRADING & SELLING CORNER

JET PROPULSION LAB STAMP CLUB First Day and Commenative covers. FREE list. Mike Gauthier, 9550 Gallatin Rd., Downey, CA 90240.

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Send for list of FMF Local Post cover. Available at this time is the Gemini 10 FMF Local post cover at 50¢ plus a SASE. Joseph J. Frasketi, Jr., P.O. Box 2114, Ft. Myers, FL 33902.

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Rollout of the Space Shuttle Orbiter, OV-101 Rockwell International send $.00 and an address label to E.J. Rusinek, 11291 Wembley Road, Rossmoor, CA 90720. (Editor: This is to take place in mid-September and would suggest a SASE if sent later than this)

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SPACE-NUCLEAR SUBMARINES-NAVAL-POLAR COVERS-2632 lots, many rare covers. Send a #10 with 24¢ postage to Lincoln Land Enterprises, 305 Northgate, Lincoln, IL 62656

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The Space Shuttle Main Engine cover test service from G.C. Marshall Space Flight Center is no longer being handled by Julie Buchanan. Send your stamped addressed covers with a 15¢ per cover fee to Carol Noble, P.O. Box 128, Pearlington, MS 39572.

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Fifty-nine popular topical subjects, each adapted from actual stamp designs of 20 co ntries appear in vivid multi-color on sheets of philatelic seals produced by the American Topical Association. The 5x8 inch sheet contains 40 seals of various subjects, one is space(rocket, astronomy, communications). Sheets are $1.00 each, 6 for $5.00, 15 for $10.00, 25 for $15.00 mailed flat and postpaid from ATA, 5014-C West Center Street, Milwaukee, WI., 53210.

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Printed covers for space events from the Madrid stations. These covers have been shown in The Dish and they are in two or three colors. Send postage of Spain or two IRC's for list. Jose M. Grandela, Madrid Space Station (NASA-INTA), American Embassy, Spain, APO New York, NY 09285.

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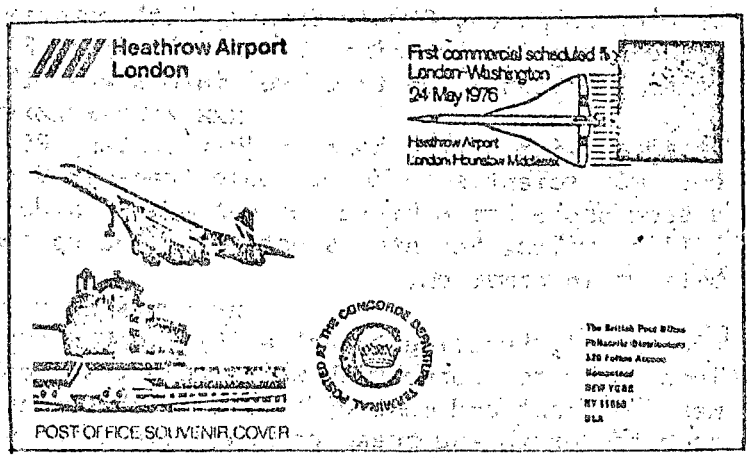
Official British Government Heathrow Airport Post Office Souvenir Cover of the first commercial flight of The Concorde, London to Washington, D.C. Limited amount, one per person. Postpaid $2.25.



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DIRECTORY-Space Addresses-Tracking-Installations, available in Regular issue at 60¢ (printed on both sides and mailed folded), Deluxe issue at $1.40 (printed on one side in a binder and mailed flat), postpaid.

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MARINER 9 in orbit around the planet MARS, hand cancelled November 13, 1971, postmarked MARS, PA, 25¢ plus a SSAE.

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List of rubber stamps and foreign stamps for postage for a stamped addressed envelope.

Bob Ekas P.O. Box 295 Chicora, PA 16025

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Soviet Union Vol. I lists, illustrates, and describes all Russian Space and Space-related stamps, official space pictorial cancels, and Space postal stationary 1951 to date. Also included is a complete chronology of all Russian space launches. 132 pages.

Soviet Union Vol. II lists, illustrates, and describes all known Russian "club cachet" space covers. Features include issue dates, existing quantities, and breakdown

of different colors used for the cachets. 206 pages.

Published by H.R. Ffau in Germany and written in German, but easy to read and follow as every item is sharply illustrated. These two catalagues have become the standard reference books for all aspects of Russian Space philately.

Price: Volume I - $6.00 Volume II - $9.00 shipped postpaid via 3rd class

LEO MALZ P.O. BOX 566 FOREST HILLS, NY 11375

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List #16 - Summer '76: 10 pages of covers: ASTP, Arctic, ship, oceanography, inauguration, and many others. Send 25¢ to: Art Silhan, 536 Willow Ave., Piscataway, NJ 08854

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If your FREE ad does not appear on these pages, word was not received to reprint from last issue or not received for this issue.

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Sorry to report our good friend and cover servicer of the Kourou Launch Facility will no longer be giving us a helping hand. In July Bernard Rasle returned to France after 6 years at Kourou, heres hoping someone will continue the job. THANK Bernard

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After 49 days the Salyut 5 cosmonauts Boris Volynov and Vitaly Zhlobov came back to earth landing about 125 miles southwest of Kohchetav, Kazakhstan, in western Asia. They were reported in satisfactory condition.

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At the present the state of Alaska has 20 satellite ground stations for communications to many areas of the vast brush country. Another 80 earth stations, 15-feet in diameter, are to be erected at various villages by late 1977 under a $3,500,000 construction program.

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SEASAT-A will be built by Lockheed Missile and Space Company of Sunnyvale, Calif. The 4,000-pound satellite will cost $20,000,000 and is scheduled to be put into near polar orbit in the spring of 1978. It will circle the earth 14 times a day and cover 95 per cent of the oceans each 36 hours. The unit will provide radar images of waves, ice fields, tides, and currents, and will measure wave heights.

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Dr Mary Johnston, Caroly Griner, both material engineers, and Ann Whitaker, physicists are under going training at Marshall Space Flight Center, in hopes of becoming the first American women to travel into space, they are training for Spacelab.

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Designed with a life span of just months, Pioneer 6 has lasted 10 years in space and NASA scientists say it could transmit data for another decade. The 35-inch, drum shaped probe has orbited the sun almost a dozen times in journeying more than six billion miles. Scientists estimated the spacecraft has sent back about 50 billion bits of information.

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Pioneer 11, hurtling toward a 1979 rendezvous with Saturn, has successfully completed a course correction which scientists called a scary maneuver. The correction was the first and most difficult of the maneuvers, the craft had to be turned away from the earth and break communications for several hours.

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NASA spent $70,000 to change the style of its initials. Congressional critics of the change have charged that the $70,000 price tag is unjustified. One critic noted: "At least the old emblem had real letters in it."

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Some 30 U.S. cities will have the opportunity to view a large exhibit of objects, tools, photographes and films related to national accomplishments in space. The traveling exhibit, called the Mobile Space Museum, was prepared and is being sent around the country by High Flight Foundation, a non-profit religious organization founded by Col. James B. Irwin, Apollo 15 astronaut. With Col. Irwin on the executive roster are fellow astronauts Col William R. Pogue (Skylab 3) and Col Afred M. Worden (Apollo 15). It is free to the public.

Tracking Station Report

In March issue was listed the addresses of the COMSAT tracking stations, but incomplete. Listed is the correct and complete address of each. Omitted is the Station Manager of Director of each since they may change from time to time.

AT&T Corporation
Route #1 Box 170D
Black Jack Road
Hanover, IL 61041

GSAT Corporation
PO Box 158A
Homosassa, FL 32647

AT&T Corporation
Route #1 Box 189A
Hawley, PA 18428

GSAT Corporation
PO Box 828
Neuberry Park, CA 91320
(This is Deluz Sta. L.A.)

AT&T Corporation
PO Box 307
Cove Road
Woodbury, GA 30293

GSAT Corporation
PO Box 276
Haleiwa, HI 96712

AT&T Corporation (Three Peaks
PO Box 870
Petaluma CA 94952 S.F.)

COMSAT General Corp
PO Box 150
Santa Paula, CA 93060

COMSAT General Corp
PO Box 331
Southbury, CN 06488

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These are new addresses and if letter appears before each this is the category.

T Bischoffsheim Observatory
at Mont Gros
Nice, France

T Mullard Observatory
Cambridge, England

T Mount Stromlo Observatory
Canberra, Australia

T Arecibo Ionospheric Observatory
Arecibo, Puerto Rico

T Ozark Astronomical Observatory
North Little Rock Ark.

T Ohio State University Observatory
Columbus, Ohio

C Padukka Satellite Earth Station
Colomba, Sri Lanka (Ceylon)

W National Center for Atmospheric Research
Boulder, Colo
(Upper Atmos. Research on Ozone Layer)

What has happened to A-2 645 Radar Sqd. Has it been transferred or discontinued.

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In the March, June and December 1975 issues and the March and June 1976 issue appeared the name of the city of the Satellite Tracking Stations the world over. As this list continues from A-Z help is needed with the addresses. With this the list is complete. Listed are OPTICAL and RADIO TRACKING STATIONS. (1) Visual Tracking Stations (2) Photographic Tracking Stations (3) Lasor Tracking Stations (4) Lunar Laser (5) Doppler Tracking Stations (6) Radar Tracking Stations (7) Interometers (8) Tracking Antennas

Sacramento, CA USA 1
San Antonia, TX USA 1
Silver City, NM USA 1
Silver Springs, MD USA 1
State College, PA USA 1
St. Paul, Minn USA 1
St. Peterburg, FL USA 1
Sunnyvale, CA USA 1
Van Nuys, CA USA 1
West Palm Beach, FL USA 1
Wichita, KN USA 1
Woodbridge, CN USA 1
Fort Myers, FL USA 2 7
Rosamund, CA USA 2
Bedford, MA USA 3
Agassiz, MA USA 4
Anchorage, AK USA 5
Howard County, MD USA 5
Las Cruces, NM USA 5
Cape Kennedy, FL USA 6

Point Arguello, CA USA 6
Merritt Island, FL USA 6
Wallops Island, VA USA 6
Gilmore Creek, AK USA 7 8
O-1 USA 1
C-1 USA 1 3 5 8
S-13 USA 2 6
S-12 USA 2 5 7 8
S-14 USA 2 5 8
O-2 USA 2 3
S-15 Guam USA 3
T-18 USA 4
E-10 USA 5
D-2 USA 5
D-3 USA 5
D-5 USA 5
A-1 USA 6
A-2 USA 6
A-3 USA 6

US Naval Weapon Laboratories
Dahlgren, VA 22448 USA 5

National Oceanic & Atmospheric Admin.
National Ocean Survey
Rockville, MD 20852 USA 5

USAF
Western Test Range, CA USA 5

NASA
Wallops Is, VA USA 5

USAF
Air Proving Grounds Center
USA 5

Wake, Wake Island USA 5

D-1 USA 5

Astronomical Council
U.S.S.R. Academy of Sciences
Ul. Vavilova 34
Moscow V-312 USSR 1

Crimea Astrophysical Observatory
U.S.S.R. Academy of Sciences
Crimea, USSR 1 5 8

Commission on Exploration and Use
of Outer Space
Vavilova Street 32
Moscow V-312 USSR 5

Arkhangelsk USSR 1
Enisseisk USSR 1
Erevan USSR 1
Irkutsk USSR 1
Kharkov USSR 1
Kiev USSR 1
Kirov USSR 1
Kishinev USSR 1
Krasnodar USSR 1
Novosibirsk USSR 1
Odessa USSR 1
Omsk USSR 1
Riazan USSR 1
Rostov-Don USSR 1
Saratov USSR 1
Sverdlovsk USSR 1
Tartu USSR 1
Tashkent USSR 1
Vologda USSR 1
Yuzhno-Sakhalinsk USSR 1 2
Riga USSR 2
Uzhgorod USSR 2 3
Zvenigorod USSR 2
Simeis, Crimea USSR 4

Helwan, UAR 2
Hanoi, North Vietnam 1

E-102 Antigua West Indies 6
Trinidad, West Indies 6
Montserrat, West Indies 1

Hvar, Yugoslavia 2
Lusaka, Zambia 1
Bouzareah, Algeria 1

Miry, Antarctica 2
McMurdo, Antarctica 5

E-103 Ascension 6
S-101 Bermuda 6
E-100 Bahama Islands 6
E-101 Grand Turk 6

Fort Lamy, Chad 2

S-102 Chile 2 7 8 5
O-104 Ethiopia 2
Debre Zeit, Ethiopia 3
S-103 Ecuador 2 7 8

Suva, Fiji Islands 1

FS-117 French Guyana 2 5 8
Montabo, French Guyana 7

Kulusuk, Greenland 2
Thule, Greenland (N-4) 5

Kerguelen Kerguelen Island 2

Ouagadougou, Upper Volta (FS-115 2 5

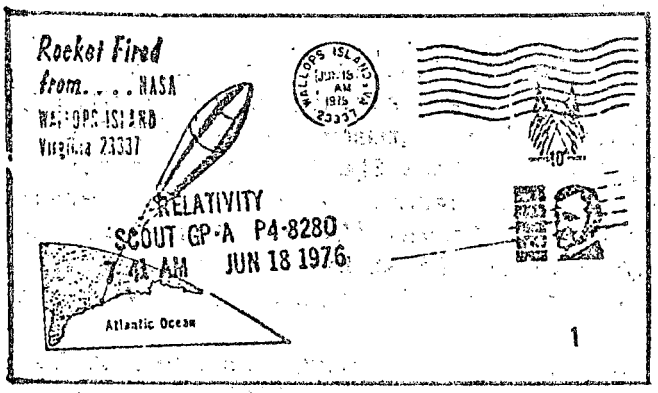
Brazzaville, Republic of Zaire (Congo)
FS-116 5

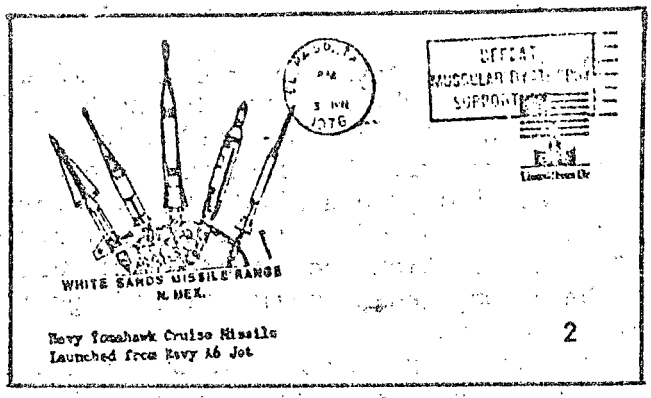
Cachets

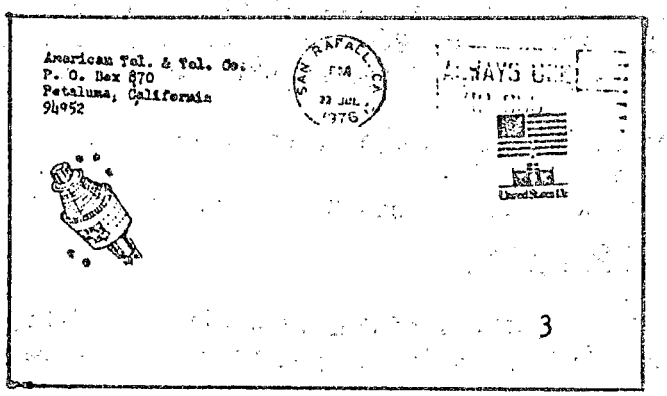
On this and the following pages are covers with cachets. If not stated the cachets and postmarks are in black. Listed is person or servicer of cover if not supplied by station or facility.

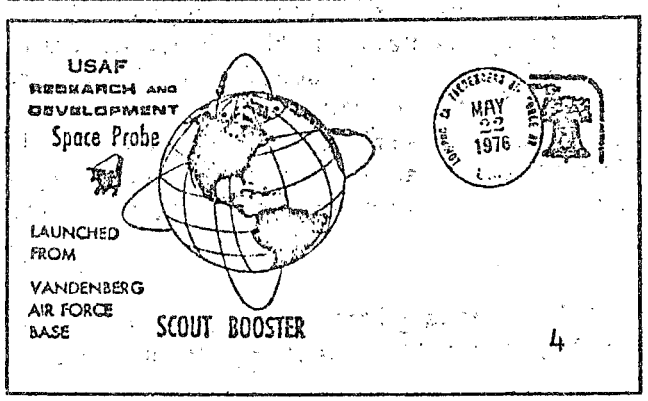
(1) for the GP-A launch from Wallops Island Flight Center with wine and green cachet by Hudsin. (2) for the Navy Tomahawk Cruise Missile with cachet in blue by Lovelady, this is postmarked in El Paso instead of White Sands Missile Range. (3) from the AT&T Petaluma station for the Comstar D-2. (4) for the USAF Research and Development Space Probe from the Western Missile Range, cachet is in blue with postmark in red and cover is serviced by Vandy Covers. (5) a printed cover for the Lageos, with cachet in dark blue and postmark in red meter, cover is by Grandela. (6) for the launch of the MARISAT-B from Kennedy Space Center with a hand cancel of the Bicentennial Expo on Science & Technology, cachet is in blue and red and cover is serviced by Havekotte.

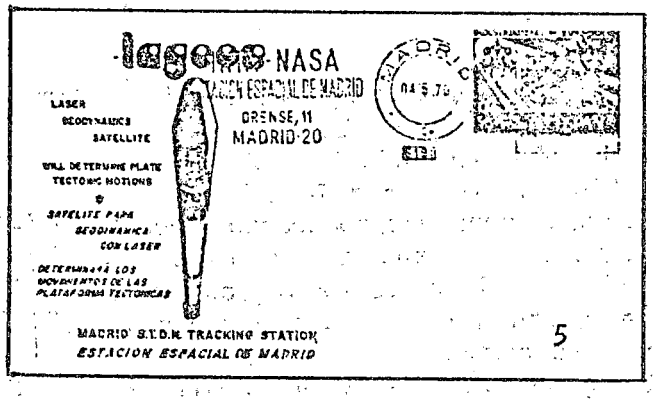
Those people servicing covers have been listed many times and if address or information is needed, please send inquiry to the Editor with a SASE for information needed.

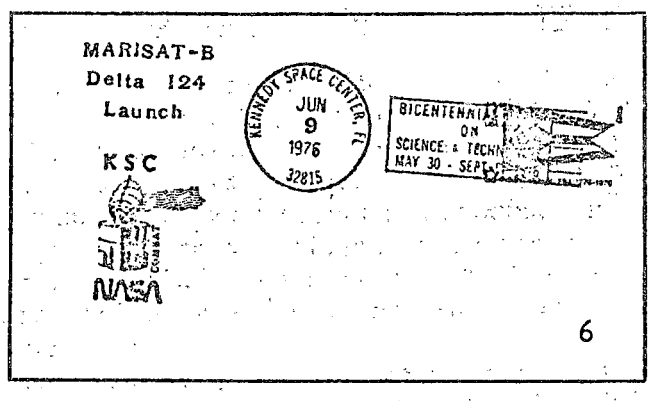


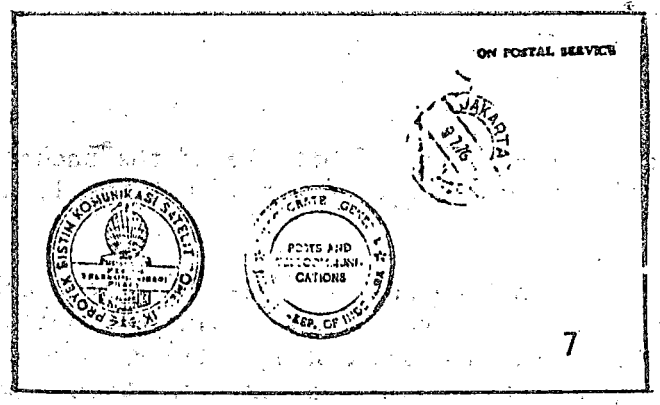


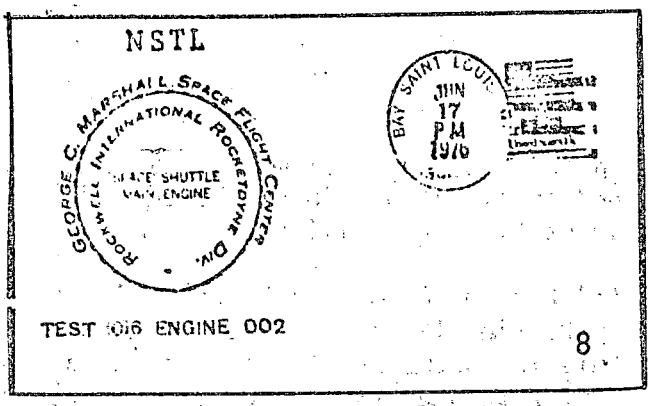


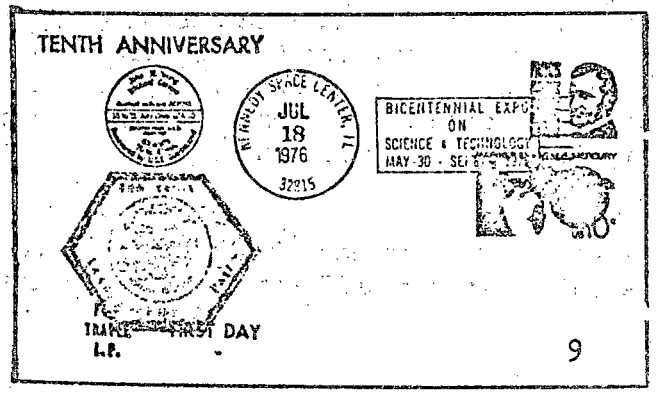


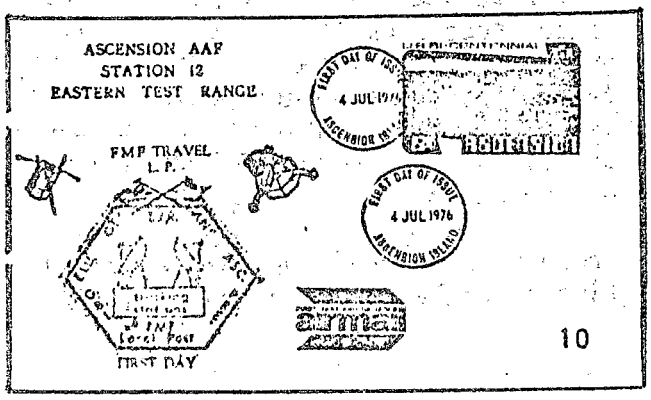












(7) this is a cover for the PALAPA-A and was sent to Indonesia station, but didnot come back as shown. Cover coming back didnot have stamp applied and no postmark, only a cachet. This was inside large envelope with a postmark and the results of the two covers, the above was made up. (8) for the Space Shuttle engine tests at G.C. Marshall Space Flight Center, Bay Saint Louis, cachet in wine and is serviced by Noble. (9) FMF Local Post for Tenth Anniversary Gemini 10, with black and purple cachet and stick Local Post. (10) Local FMF Post for First Day 20th Anniversary of Bahama Long Range Proving Ground Agreenment stamp. The FMF Local Post covers are from Frasketi.

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Two space cancels will be applied to covers in September. For MIDAPHIL '76 an Apollo Spacecraft on the dates of September 24, 25 1nd 26th. Any number of covers can be sent to Bob Schuft, 1311 E. 83rd Apt 5, Kansas City, MO 64131 and a service fee of 2¢ per cover.

On September 11th a Viking cachet will be applied to those covers sent to the Cachet Chairman at Goddard Space Flight Center.

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LAUNCH SCHEDULE

The dates given are not firm, schedules do change. Listed are flights, date, vehicle, range and stations. When something omitted, it is not known at this time.

FLIGHT	DATE	VEHICLE	RANGE	STATIONS
MARISAT-C	Oct 14	Delta	ETR	ACN BDA GWN HAW MIL ORR ARIA ETR GSC
NATO IIIB	Dec 2	Delta	ETR	ACN BDA GWM HAW MIL ARIA ETR GSC
INTELSAT IVA-C	Dec	Atlas Cent	ETR	ACN BDA MIL ARIA ETR GSC
COMSAT F3	Dec	Atlas Cent	ETR	ACN BDA MIL ORR ARIA ETR GSC

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American soace satellites are helping to save some of the world's rarest marine mammals from extinction. They're being used to moniter the eating and living habits of the endangered species so scientists can learn how to preserve their life styles.

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Astronaut Stuart A. Roosa, a member of the Apollo 14 missile crew, will reture from the Air Force and leave the space agency. He did not announce his future plans.

Am wondering if covers were serviced for the passing of Comet West, one of the most spectacular celestial objects seen in many years, visable during the first half of March near the eastern horizon. One of the brightest comets ever-five times as luminous as scientists had predicted- it was only the fourth one in the 20th century that was visable to the unaided eye, even in daylight. Comet West, discovered by Richard M. West of the European Southern Observatory (Geneva Switzerland) in November 1975, reached its perihelion (closest point to the Sun) on Feb. 25, passing within 30 million km (18.6 million mi.). Sunlight shining on Comet West's very long tail-stretching 30 degrees from tip of the tail to the head of the comet-made the comet highly visable to Earth inhabitants. Comet West provided scientists with the first opportunity for extensive cometary study since Comet Kohoutek appeared in 1973. Taking advantage of the opportunity were, among others: the Goddard Space Flight Center's Astrochemistry Branch in conjunction with the New Mexico Joint Observatory of Cometary Research; the Ames Research Center, which sent an airborne observatory aloft as well as support aircraft; the University of Colorado, using a spectrometer to study the ultraviolet spectrum of the comet; and the U.S. Naval Research Laboratory, which used a spectrometer and an electrographic camera to record images. Scientists are now studing the large quantities of data obtained from the investigation. One of the features of special interest to the researchers is the high brightness of the comet even after perihelion, which apparently was caused by the splitting of the nucleus, perhaps into as many as four parts. Observers point out that such an event probably has no drastic effect on the main body of the comet-only that little fragments split off, which caused the lenger-than-usual visibility.

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A new type of nuclear reactor that contains its fissionable fuel in the gaseous phase is under investigation at the Los Alamos Scientific Laboratory, under a NASA-sponsored research program. Because gaseous fuel reactors have the potential of operating at temperatures at which solid fuel rods would melt, they are more efficient than conventional reactors. In addition, the gaseous phase of the fuel provides advantages of continous reprocessing of the fuel and improved fuel utilixation. In space power applications, these translate into economy and reduced specific mass. The present reactor experiments involve hardware salvaged from an earlier NASA/AEC nuclear rocket Program. The work at Los Alamos is supplemented by theoretical and experimental research under NASA grants by five universities and an industrial laboratory.

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When the Space Shuttle Orbiter main engines and two Solid Rocket Boosters are fired simultaneously at launch, they will produce a sea-level thrust of 28,134,865 Newtons, or 6,325,000 pounds, at liftoff.

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Pioneer 10 sensors indicate that the planet Jupiter has an enormous magnetic tail almost half a billion miles long, completely spanning the distance between the orbits of Jupiter and Saturn. Magnetic tails are the magnetic envelopes around the planets, stretched out by the force of the million-mile-an-hour solar wind that "blows" constantly outward from the Sun. Data collected by Pioneer instruments show that Pioneer 10 crossed Saturn's orbit in early February; in mid-March Pioneer was solidly in Jupiter's tail for at least 24 hours. The discovery suggests to program scientists that Saturn itself should enter Jupiter's tail once every 20 years. If so, the next such event should happen in April 1981.

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NASA announced the names of the initial crew of the 747 Shuttle carrier aircraft that will carry and launch the Space Shuttle Orbiter for its approach and landing tests. They are: Fitzhugh L. Fulton, Jr., and Thomas C. McMurtry, pilots; Victor W. Horton and Louis E. Guidry, Jr., flight test engineers. The first three are from the Dryden Flight Research Center and Guidry is from the Johnson Space Center. All are civilians.

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Four men have been selected by NASA to become the members of two teams assigned to the initial flight testing of the Shuttle program, called the Space Shuttle Approach and Landing Test. The ALT tests will begin in mid-1977 at NASA's Dryden Flight

Research Center. Selected for the first team were: Commander Fred W. Haise, Jr. and pilot Charles G. Fullerton; for the second team Commander Joe H. Engle and pilot Richard H. Truly. Part of their training will take place aboard a NASA T-38 aircraft with special speed brake and on a Shuttle training plane (a twin jet Gulfstream II with modifications), as well as in a Shuttle procedures simulator and an Orbiter aeroflight simulator.

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The Tomahawk Cruise Missile from White Sands Missile Range of July 16th was airborne for one hour and 25 minutes and navigated it elf on a race track pattern over the desert for 574 miles. On July 27th the 1000 Aerobee flight was made from the same range.

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The Russian intelligence gap is reported being filled with photo information from the two-man Salyut satellite. A new type of reconnaissance broke up three days after it was sent aloft, the satellite is Cosmos 844.

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The Soviet Union will no longer train women to become astronauts, or "cosmonauts" as they are know in Russia. The job is too dangerous and demanding. Gen Andrian Nikolayev, himself an ex-cosmonaut and the husband of Valentina Tereshkova, the only woman to have orbited the earth, explained in a recent interview: "A cosmonaut has to be a pilot, a commander, an engineer and a scientist. In the future, however, they will surely work in space stations but as specialists.

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Two Soviet cosmonauts orbiting earth have been raising guppies and growing plants in their spaceship. Col. Boris Volynov and Lt-Col. Vitaly Zholobov are studing the effects ot outer space on living organisms.

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NASA said in Hpuston that it is looking for astrounts for its space-shuttle program. It said it is encouraging applications from women and minority groups. NASA said requirements include a college degree in engineering, physical science, or mathematics; at least 1,000 hours of flight time; time in a high-performance jet aircraft, and, preferably, flight-testing experience.

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(This had been mentioned earlier in The Dish) Project Sanguine, a mind-bending U.S. Navy scheme to bury a monster antenna under 20,000 square miles of land for communications with deeply submerged submarines ar sea was born in 1958. The hangup: not just any 20,000 square miles of desert or unused land would do. The subsoil had to lie on granite of the pre-Cambrian age, a geological period extending back 500-million to 600-million years. This bedrock would provide low conductivity so the signals would bounce up into the ionosphere and then down to below the surface of the sea thousands of miles away. Ideal sites were located in Texas, but the Texans didn't want the giant aerial. Other possibilities were Nevada, Mexico, northern Wisconsin and Michigan's upper peninsula, where the Navy is now concentrating its efforts because it would be cheaper to build there. Project Sanguine has been scaled down to Operation Seafarer, with a more modest requirement of about 3,500 square miles for burying the cable and erecting transmitters.

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Russian Venus landers found rocks that resembled the basalts on the moon and Earth from ancient lava flows. The Venera 9 spacecraft landed near a heap of stones which apparently resulted from a rockslide that may have been caused by volcanic of seismic activity. Venera 10 took pictures showing a smoother surface with fewer rocks, covered by a thin layer of dark soil. The two probes found very little wind at the surface. Temperatures were recorded at 860 degrees and the pressure of the carbon dioxide atmosphere was 90 times that of Earth at sea level. The cloud layers that hide the surface were found to be at least 12 miles think.

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The orbits of 60 comets indicate they originated from the explosion of a giant planet that once existed between Mars and Jupiter. Dr Thomas C. Van Flandern said that computer plotting of the comet orbits seemed to confirm that long-held theory that the giant planet existed up to about six million years ago.

TAKE AN INTEREST-JOIN-BE A PART by Bob Ekas (Editor)

At this time am in need of someone to reduce the size of regular size covers down to the size you see in The Dish. I believe this is done on a Xerno. Harry Suffron who has been doing this is retiring in October. I may get some for December reduced from Harry, but others will have to be shown in regular size, if no one can help. For December Dish would like to receive articles and if clippings are mailed, do not send anything copywrited.

Am wondering if any reader of The Dish would like to take the publication over. If someone is interested would appreciate hearing from you and details will be sent. If more than one inquiry received, details will be numbered as to the earliest postmark.

For the past several years I have belonged to two great space organizations and believe they are the top two; ATA-APS Space Unit and the International Association of Space Philatelists (IASP). Membership in the IASP is $5.00 per year and membership applications can be obtained by writing: IASP, P.O. Box 302, Yonkers, NY 10710, or send $5.00 and state what is wanted. For the Space Unit, the dues are $5.00 per year plus $1.00 initiation fee, if a member of the ATA or APS, dues are $3.00 per year plus $1.00 initiation fee. Your fee can be mailed to, Thomas E. Range, Treasure Space Unit, Box 542, Church Street Station, New York, NY 10008.

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A Laser Geodynamic Satellite was launched May 4th from the Western Test Range and will remain in orbit for more than eight million years, scientists estimate, though its useful life is only 50 years. Should future generations sight Lageos in Earth orbit, or puzzle over the satellite when it returns to Earth millions of years hence, a message sealed within will attempt to explain the situation.

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The parachute system for the Space Shuttle solid rocket booster will be evaluated in a test program to be undertaken by NASA's Marshall Space Flight Center and the Dryden Flight Research Center. The parachutes, some 120 feet in diameter, are the largest ever used in the space program. The test series, to begin in early 1977, will consist of drogue parachute tests and main parachute tests, most of which will use only one main parachute. The drops will be made from a B-52 aircraft over the National Parachute Test Range, one hour's flight from Edwards Air Force Base.

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Ronald E. Evans (Captain USN) recently retired from the U.S. Navy after 21 years of service, but will remain with the space agency. He works at the Johnson Space Center on the operational aspects of the launch phase of the first orbital flight of the Space Shuttle.

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Isaac T. Gillam IV assumed duties in late May as director of Space Shuttle Operations at NASA's Dryden Flight Research Center.

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Astronaut Paul J. Weitz retired from military service in June after 22years in the U.S. Navy. He will remain with NASA in his present job at the Johnson Space Center, working on payloads and flight crew documentation for the Space Shuttle program.

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Donald K. (Deke) Slayton, Docking Module Pilot on the ASTP, has been appointed to the newly-created position of Deputy Director of Flight Operations for the Approach and Landing Test at the Johnson Space Center. He will be responsible for planning and implementing the Approach and Landing Test Project for the Space Shuttle.

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A clock-carrying space probe was launched June 18 on a suborbital mission to test a fundamental aspect of Einstein's general theory of relativity. The scientific payload was launched by a four-stage Scout rocket from NASA's Wallops Flight Center into an elliptical flight trajectory of one hour and 55 minutes before falling into the Atlantic Ocean. Maximum altitude was 10,000 kilometers (6,200 miles). According to the Einstein theorym the frequency of the clock in the probe, as observed by telemetry, should always appear faster than that of the ground-based clock. All payload systems seemed to have functioned properly. Several months of data evaluation will be required to assess the accuracy of the test.

A scientist at the University of Arizona has warned NASA that the Pioneer 11 space probe almost certainly will be destroyed if it flies inside the spinning rings of the planet Saturn. A region between the distant planet and its shimmering rings, previously thought to be empty space, seems to contain particles that could slam the small probe with 1,000 times the force of a blow from a 10-pound sledge hammer.

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Dr George McCauley, who designed the 200-inch Corning glass works mirror for the Hale Observatory telescope at Mount Palomar in California died April 19th at a rest home at 93. The mirror designed in 1934 was for many years the largest in the world.

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The following can be purchased from Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402; The New Mars. 1974 196p. il, NAS 1.21:337 S/N 033-000-00577-6 $8.75; Apollo Expedition to the Moon 313 p il, NAS 1.21:350 S/N 033-000-00630-6; Viking to Mars, 6p il, NAS 1.20:NF-76 S/N 033-000-00618-7 50¢

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THE DISH

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If a figure appears beside or on address label, this is the amount due for balance of 1976. Please send this amount only to insure the December issue be mailed.
THANK YOU

THE DISH
P.O. Box 295
Chicora, PA
16025 USA

MAILED

September 1, 1976

THIRD CLASS



TO--

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156 Bacon Street 3
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