

“... EXPENSIVE, HARD STRUGGLE.”

Council Issues '72 Scholarship Call

With two of its awardees already graduated and two more scheduled to do so in June, the NASA Exchange Council—MSC has issued its 1972 call for college scholarship applicants.

At least two four-year scholarships worth a maximum of \$2400 each will be awarded on the basis of financial need and high school scholarship to children of MSC personnel.

The first graduates of the program were Margaret Taylor and Lou Ann Wright. Lou Ann, at the completion of her undergraduate study at New Mexico State University, wrote MSC Director Dr. Gilruth and the Exchange Council “... without your financial help I might not be where I am now.”

“Higher education is a long, expensive, hard struggle and many students are discouraged or delayed in their progress because of lack of funds.”

Apparently Lou Ann was not discouraged—for the past year she has been enrolled in graduate school at NMSU, working toward a masters degree in sociology.

The two prospective June graduates are Deborah Carr and Tommy Squires. Both were awarded their scholarships in the Fall of 1968, the second year of the program.

Four others currently studying under the Council scholarships are Nancy Junek, Lee James, Debbie Langston and Sharyn Guy.

Toastmasters To Hold ‘Speechcraft’ Training Series

“Speechcraft” is coming to MSC!

A program in speech training, group dynamics and leadership developed by Toastmasters International. Speechcraft is being sponsored here by the MSC Toastmasters Club.

The program begins March 21 and will be held each Tuesday from then through May 16 at the Singing Wheel Restaurant in Webster. Meeting time is 6:15 to 8:45, and dinner can be ordered.

Half of the \$12 participation fee will be applied to Toastmaster Club membership if the participant decides to join at the end of the program.

MSC contacts for further information are Al Menchaca at extension 4751 or Al Barker at 488-1270, extension 532.

Scholarship winners may pursue any course of study leading to a recognized baccalaureate degree at any accredited college in the country.

Students eligible must be unmarried dependents of NASA employees with at least two years’ service at MSC as of this past January 1.

Additional information on eligibility, application forms, and scholarship agreement forms are available in the Flight Crew Operations Directorate, Room 814 in Building 2.

Further details also can be obtained from Marilyn Bocking, extension 6417. Deadline for submitting applications is March 15.



GRADUATES-TO-BE—The second pair of Exchange Council scholarship winners, Tommy Squires and Deborah Carr, will graduate in June—Tommy from Lamar State College of Technology in Beaumont and Deborah from North Texas State University in Denton. This is the way they looked four years ago when presented their scholarships by Jack Heberlig, then chairman of the Exchange Council.

‘Automation’ Subject of AIAA von Karman Lecture March 14

“Trends in the Field of Automatic Control in the Last Two Decades” is the theme of the von Karman Lecture being sponsored at MSC by the Houston Section of American Institute of Aeronautics and Astronautics.



MSC personnel and Center contractors can get reservations beginning March 7 on a first-come first-served basis for the March 14 program in the Building 30 auditorium. Reservations can be requested on extension 4407.

Lecturer will be Irmgard Flugge-Lotz, professor emerita in Applied Mechanics at Stanford University. She will discuss the

field of engineering in the last 20 years by automation with the associated research and development of techniques and hardware

The von Karman lecture, established in 1962 in honor of aerodynamicist Theodore von Karman, is a traveling lecture presented first at the AIAA annual meeting.

The lecturer then is asked to repeat the presentation before selected AIAA sections.

Professor Flugge-Lotz will begin her lecture at 3 p.m., but attendees are asked to pick up their admission badges in the Building 30 lobby at least 15 minutes before starting time.

Battery Blast Kills One Contractor

One contractor employee was killed and another seriously injured Tuesday when a storage battery exploded at the Water Immersion Facility in Building 5.

The dead man is Kirby C. Dupree, 31, a laboratory group supervisor. Hospitalized with serious injuries is James E. Scott, 26, a reduced gravity technician. Both are Brown & Root-Northrop employees.

Suggestions Net Nine MSC Employees \$820

Nine MSC employees have earned \$820 for seven suggestions and one invention calculated to save the government time or money or both.

Largest of the awards went to Dorothy M. Smith of Center Operations’ Management Services Division. She collected \$205 for her suggestion to simplify work in Technical Library, where she is assigned.

Right behind was the \$200 award to Carrington Stewart for his imposing-sounding invention “Apparatus and Method for Statistical Time-Series Analysis of Electrical Signals.” Stewart, naturally, works in Telemetry and Communications Systems Division of Engineering and Development.

Two employees split \$190 between them for a suggestion to use quarter-size—half-scale—reproductions rather than full-size engineering drawings in bid, proposal and contract packages.

The two are S. Harry Berlocher and Charles McQuain, both of Engineering Division, Center Operations.

Charles Shelander, another Center Operations employee—Management Services Division—took \$75 to consolidate the four contracts under which MSC is furnished clean-room clothing and general laundry services.

Use of a new type valve tool to allow soldering of leaky plumbing joints without having to wait until all the dripping stops won \$50 for I. E. Campagna of the Lunar Receiving Laboratory.

A \$40 award went to James Marsh, Space Environment Test Division, E&D, for his uniform method of initiating requests for procurement of small purchases from local sources, and other changes to the small purchase procedure.

Harold D. Siegfried was awarded. (See *Suggestions*, Page 2)

Minority Businessmen Team Up For MSC Construction Contract

For the first time in MSC’s history, two minority businesses—one Black-owned, the other Mexican-American owned—have formed a partnership for a joint contract effort.

The partnership is called RO&AS Joint Venture. It was formed by Roy Owens Interests, Inc., owned by Roy L. Owens Sr., and Advance Systems Construction, Inc., owned by Jose I. Huacuja. Both are Houston-based firms.

RO&AS was awarded a \$199,000 contract to build a trainer hardware support facilities building. The new structure will be numbered 35a.

The contract was issued through the Small Business Administration

under the Minority Business Enterprise Program.

MSC’s Contractor Equal Opportunity Programs office, headed by Carlos R. Garza, was instrumental in bringing the two companies together for the project. Both firms had performed work for MSC prior to this time, but the two had not previously worked jointly on the same effort.

The trainer hardware facility is being built for the Flight Crew Operations Directorate. The Engineering Division, Center Operations Directorate will supervise the construction, expected to be completed by August 2, 1972.

The partnership is formed for the 150-day contract period only.



TEAM EFFORT—These two men, Jose I. Huacuja and Roy L. Owens Sr., represent the two minority businesses that teamed up to win a \$199,000 contract for a new trainer hardware support facilities building at the Manned Spacecraft Center. Both men’s firms have done work for MSC before, but not in a joint effort.

NEBA NINETEEN YEARS OLD

Insurance Program Started Small

This is the first of three articles on the insurance program of the NASA Employees Benefit Association.

Nineteen years ago, a group of NACA (National Advisory Committee for Aeronautics—predecessor to NASA) Lewis Laboratory employees felt the need for low-cost life insurance coverage. At that time, there was no Federal Employees Group Life Insurance.

They found that the law permitted the head of an agency to enter into a policy for agency employees on a voluntary basis. They then solicited bids from various companies, and the Home Life Insurance Company of New York was the low bidder offering the best benefits.

It did not take too long for other NACA Centers to learn of this low-cost insurance and in 1953 the Langley Research Center asked to join the plan.

ALL JOIN IN

NACA Headquarters and Ames Laboratory, the total organization of NACA at that time, followed suit. As the Wallops Station and the High-Speed Flight Research Stations were a part of Langley, they participated as Langley employees. Later, they became autonomous, and each established its own chapter.

The MSC Chapter was established in 1962 as soon as the Manned Spacecraft Center group was formed.

The NACA Employees Benefit Association was established by Dr. Hugh L. Dryden, Director. The charter stated: "The sole purpose of the Association shall be to provide low-cost group insurance to NACA employees. The association shall be conducted for the mutual benefit of its members and their beneficiaries and not for profit."

The charter also provided for a board of governors consisting of a chairman appointed by the Administrator and a similar-appointed vice-chairman and one chapter officer from each local chapter. Only members of the Association will be appointed to the board of governors.

The officers of each local insurance chapter shall be a president, vice-president, and secretary-

treasurer, appointed by the Center Director.

FIRST MSC OFFICERS

The first officers appointed by Dr. Gilruth for the MSC Chapter were W. Kemble Johnson, president, Stuart Clarke, vice-president and Robert Leezer, secretary-treasurer. Currently the MSC Chapter officers are Roy C. Aldridge, president, Jack R. Lister, vice-president, and Frank P. Parker, secretary-treasurer.

The first schedule of coverage provided for seven classes, ranging in coverage from \$1,000 to \$10,000. Today there are 12 classes, ranging in coverage from \$8,000 to \$35,000.

The next milestone was in October 1961 when double indemnity for accidental death was added to the plan. This was first initiated on an optional basis, and later made mandatory.

FOUR PLANS

In Nov. 1, 1963, NEBA furthered their protection services by offering a separate Travel Accident Policy. The first policy covered only "official business" travel, and provided for only two classes—one for the principal sum of \$50,000 and the other for \$100,000.

The current program offers cov-

erage under four different plans with the three classes of \$25,000; \$50,000; and \$100,000; and spouse coverage of \$10,000. There is now a plan to fit almost everyone's needs, including a new plan of round trip air insurance providing \$100,000 of coverage for \$5, for those not covered by the Travel Accident Plan.

On Aug. 16, 1969, dependent life insurance coverage was added to the life insurance plan on an optional basis for residents of the state of Texas. The original plan provided for three classes. All classes also provided \$1,000 for each child. In October 1970 the classes were reduced to two.

For those members earning less than \$12,000 the coverage for spouse is \$2,500 and for those above \$12,000 spouse coverage is \$5,000. The quarterly flat rate for the \$2,500 coverage when the provision was added was \$3.70 it has now been reduced to \$2.65.

The plan has a record of stability with a substantial reduced premium cost from that time of implementation. Continued success of the plan is dependent upon maintaining a high level of participation among all eligible employees. An enrollment drive is being conducted for this purpose during this month. You will learn more of this in future articles.



LENGTH-OF-SERVICE AWARDS—Center Operations Directorate has honored several of its personnel with a ceremony presenting 30-year service awards. The presentations were made by Jack Kinzler, left, Technical Services Division chief. Four awardees, congratulated by Center Operations Director Joseph V. Piland, right, are Frank L. Parmenter, J. Howard Allison, Ralph Herrmann, and John D. Orr, all of Technical Services.

Skylab Manager On ASQC Panel

Skylab Program Office Manager Kenneth Kleinknecht will be one of four panelists discussing reliability and quality at the March 14 Management Night meeting of the South Texas Section, American Society for Quality Control.

Kleinknecht will join Norman Higgins of Continental Carbon Co., Robert Ellis of Continental Can Co. and O. L. Weaver of Phillips Petroleum Co. Panel moderator will be Peter Winslow of Continental Carbon.

The meeting will be at the Ranch House Restaurant on Telephone Road,

Seats Available

Tickets are still available for the March 8-9 performances of "Enter Laughing" at the Dean Goss Dinner Theatre. Reservations for either of the MSC nights at \$6 per person may be made through Joanne Sanchez, extension 4303.

Suggestions—

(Continued From Page 1)

ed \$35 for designing a new type rivet set holder for use with a hand-operated rivet squeezer. The device prevents damage to parts requiring special handling. Siegfried is in Technical Services Division, Center Operations.

And Troy Williams, Information Systems Division of E&D, earned \$25 for his suggestion to use a small battery-operated paper tape winder for previously hand-wound short computer tapes.

PAO Coordinator Carl R. Hart Dead

Carl R. Hart, audio-visual coordinator in the Public Affairs Office, died of an apparent heart attack on February 18.

A native of Ohio, he came to MSC in 1964. Prior to his retirement from the Air Force in 1963, he served as a pilot during World War II and in a variety of public information posts after the war.

He is survived by his wife Mari and two daughters, Mari Lise, 18, and Lianne Darlene, 16.

'Stop the World' On at 3-C Theatre

"Stop the World, I Want to Get Off" opens tonight for a four-week Fridays-and-Saturdays run at the Clear Creek Country Theatre.

The musical that takes a young Cockney tea boy up the ladder to Parliament includes such familiar names and faces as Carolyn Dettmore, Morgan Redmond, Norma Godeke, and others. Charles Bailey is director, Pat Birshner musical director.

EAA Puts Rollers Under Next Party

A roller skating party at the new Skate Ranch on Alameda-Genoa from 8 to 10 p.m. Wednesday, March 15, is the next order of business for the Employees Activities Association. Tickets—\$1 per person for children and adults—will be available from EAA representatives.



APOLLO 16 BIO-STACK—Microbiologist Dr. Marlis Schwager of the University of Frankfurt, Germany, visited MSC to discuss a biomedical experiment scheduled to fly on Apollo 16. Dr. Schwager is working with Dr. Horst Bucker, principal investigator on the Bio-stack experiment. Dr. Schwager met with MSC Drs. Gerald Taylor and Richard Benson, the cognizant scientists on Bio-stack.

Lions Lawn Food Sale Set Saturday

MSC grass-growers can get a jump on the season with the Bay Area and League City Evening Lions clubs annual lawn food sale tomorrow.

The 50-pound bags will be on sale at the Nassau Bay Bank and the League City Bank parking lots as well as from canvassing Lions throughout the MSC area.

Proceeds from the sale will go to charities such as the Texas Lions Camp for Crippled Children.

ROUNDUP

NASA MANNED SPACECRAFT CENTER

HOUSTON, TEXAS



The **Roundup** is an official publication of the National Aeronautics and Space Administration Manned Spacecraft Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for MSC employees.

Photographer: A. "Pat" Patnesky



LUCKY WINNERS—Roy F. Sitze and his family won the grand prize Honda minibike at the MSC Credit Union Annual Meeting in late January. Roy, who works in the Reliability and Quality Assurance Office, is pictured here with his wife and three of their five youngsters. He said last week that the family was enjoying the bike and that it was being shared equally by all members of the family.

Six Hundred Have Fun and Games At Credit Union's Annual Meeting

Over 600 members crowded into the Building I Auditorium for the MSC Federal Credit Union's annual meeting on January 28.

There was entertainment gauged to please all age groups, and thirty lucky people won door prizes. One of the entertainment highlights was a dramatic performance by Alley Theatre actress Jeannette Clift.

The Board of Directors for this year includes the following: Harold Ferrese, President; William Milam, Vice-president; Ed Cam-

pagna, Treasurer; Jerry Hapton-stall, Secretary; and Directors Odell Crow, Burney Goodwin, James DeMuth, Paul Sturtevant, and James Moody.

The Credit Union will be closed Friday, March 17, so personnel can attend training seminars at the 38th annual meeting of the Texas Credit Union League.

MSC Opera Fans: Correction Please To Roundup Story

Two issues ago, the *Roundup* featured photographer-turned-singer Terry Slezak, pointing out that Houston Grand Opera Previews—in which Terry takes part—are free.

Not so! says Houston Grand Opera Guild member and MSC employee Elaine Stemerick. Guild members, she says, can attend four previews and one dress rehearsal for their \$8 annual membership fee but must pay \$2 to take a guest.

She further says she is willing to sponsor anyone interested in becoming a Guild member, and she lists several convincing advantages in being a member. For those who would know more, Elaine's extension is 2441.

Roundup Swap-Shop

(Deadline for Swap-Shop classified ads is Thursday of the week preceding **Roundup** publication date. Ads are limited to MSC civil service employees and assigned military personnel. Maximum length is 20 words, including name, office code and home telephone number. Send ads, typed or legibly written, to **Roundup** Editor, AP3)

MISCELLANEOUS

Diamond dinner ring, 33 brilliant full cut diamonds, 2 1/2 carats, best offer. Suler, 941-1929.
Fur coat, sheared racoon, look like sheared beaver, xln cndn. Perfect for northern college girl. Make offer. 488-4043.
Five Volkswagen wheels and tires, wheels good; tires poor to fair. Buyer must take all for \$10. Gattlin, 932-3969.
Llama .22 automatic pistol, \$45. Price. 471-3314.
Pool table, reg. size, polyslate top, 1 yr old, like new, was \$369, now \$300. Tays, 932-5182.
24" Sears Spycer bicycle, xln cndn. \$30. Vogt, 488-4059.
Rear bumper from 68 GMC pickup. \$30. Portable camping pantry 18x18x36 in.. \$30. Rysavy, 481-3787.
12,000 BTU auto air conditioner, 8 mo. old, \$100. Two C78-14 snow tires, \$5 ea. Rydgren, 488-1497.

VEHICLES

70 Triumph Spitfire, loaded, tape deck, sell or trade for good ski boat or sail boat. Alford, 877-4789.
67 Buick Wildcat, 2 door sports coupe hardtop, A/C, all power, one owner, very clean. \$775. Barker, 333-2869.
68 VW Beetle, deluxe trim, A/C & radio, \$1000 firm. French, 474-2457.
69 Chevelle SS396, 4-speed, bucket seats, factory air, power steering, power disc brakes, low mileage, xln cndn, \$1795. Tarkington, GR3-2709.
64 Ford Galaxie, automatic, air, power steering, radio, runs good, looks fair, four extra wheels and tires. Bailey, 877-4898.
64 Dodge Dart, manual transmission, radio, heater, runs good, clean, good paint. \$325. Willis, 944-2647 after 5 p.m.
71 Chevy chassis mounted open road camper, full power, dual air, self-contained, shower, sleeps 6-8. Bliss, 488-5755.
63 Dart, 2-dr, slant 6, standard shift, good tires, new battery \$175. Cox, 481-3805.
65 Chev. carry-all, 4-wheel drive lots of

extras. Day, 664-9472 or 781-2013

68 Chevy Impala, 4 dr., auto power, air, good cndn, \$1145. Meyer, 747-7045
65 Chrysler Imperial w all the goodies, leather interior, dual air, 59,000 miles \$459. St. Leger, 473-2004.
70 BSA 441 Victor, 2000 miles. \$750. Cockrell, 488-2767.
68 Datsun, 510 series, 4-door sedan, automatic, air, radio, Klotzman, 782-4282 after 6 p.m.
66 MGB, hard soft tops, tonneau cover, wire wheels, radio, one-owner, xln cndn, 44,000 miles. Huntoon, 488-0331 after 5 p.m.
64 1/2 ton Chevrolet, 6 cyl, std, camper cover, new engine, A-1 cndn, \$700. Hill, 932-4072.
65 Buick Skylark V-8, one owner, \$650. Bird, 487-0942.
Datsun 1300 convertible sports car, economical to operate and fun to drive, \$895. Stephens, 481-0095.
Rupp Roadster, 4 h.p., 12-inch wheels, front rear brakes, 4 mo. old, new cndn, cost \$300, sell \$195. Briggs, 946-5849.
70 1/2 Honda CL 450, 7000 mi., xln cndn, red, \$800. Ardoin, 877-4960.
69 Mustang, pwr steering, automatic, factory air, radio, 38 V8, exceptionally nice, make offer. Teasdale, 482-7801.
64 Olds Cutlass, 2-dr hardtop, 300 V8, air, floor shift, buckets, tach, wire wheels, radio, low mileage, xln cndn, one owner, \$800. Brizzolara, 333-2509.
67 Mercury Montclair 4-dr., air, power steering, disc brakes, AM-FM, good tires, new brakes, extra clean. Embry, 946-7283.
69 Wildcat 4-dr., vinyl hardtop, electric windows, vinyl seats, xln cndn, \$2275. Wright, 643-8944.
71 Honda mini-bike, 3 speed, just like new, save one third. Vetter, 488-0275.
67 Ford Ranger truck, V8, LWB, air, radio, new tires, std., clean, \$1375. Clowdis, 471-2447.
67 Buick Spcl 2-dr coupe, AT, PS, vinyl top, new shocks, good tires, xtra clean, \$975. White, 488-3409.

65 Fury II 9-passngr wagon, power, A/C, FM radio, new battery, tires front end good shane \$559. Kranz, 534-4125
67 Karmann Ghia, AM FM radio, rebuilt engine with 4000 mi in warranty, xln cndn. Keyes, 333-2132 after 5 p.m.

MUSICAL INSTRUMENTS

Coronet, case and music book, \$35. Thompson, 932-3653.

CAMERAS

Soligor auto, wide-angle lens, 28 mm f/2.8, almost new with Pentax-type screw-in threads, \$45. Also 2X focal length doubler, \$15. Erickson, 488-1901.

BOATS

71 Wellcraft "Airsport 16" boat, 80hp Mercury OB, trailer, \$2500. Simmonds, 877-1188.
18' Larson, 75hp Evinrude, built-in 18-gal. gas tank, big wheel trailer, extra prop, skis, etc., good clean boat, \$1250. Lyon, 474-2788.
Sailboat, Lone Star, 16 (Chrysler), galvanized trailer, many extras, good cndn, reasonable, 488-4043.
19' cabin Cris-Craft, 100hp Mercury, Big Wheel trl, new CB, vinyl top, swivel chairs, every accessory, perfect, \$1250. Fancher, 877-1851.
16' Lone Star sailboat (LS-16), xln cndn, fiberglas, alum. mast & boom, canvas cover, nylon sails, sailbag; brand new galv. trailer, all extras, \$1200. Griffin, 333-3512.
Lido 14 sailboats, information on prices and cndn used Lidos for sale by owners. Hoover, 877-3366.
15' Ouachita canoe with paddle, like new, \$125. Green, 333-3001.
71 Hydrodyne tournament skier with trailer, cover, 165 h.p., ski accessories, best ski rig made, \$3000. Osburn, 877-3012.

PETS

Retriever pups, beautiful solid colors, cross between AKC golden and AKC black Labrador, xln fall hunting prospects. Lyon, 471-2696 after 4 p.m.
Dalmation pups, male, purebred, no papers, born Jan. 17, \$30. Stanley, 488-5506.
Quarterhorse, 5 years, saddle and bridle, \$225. Green, 331-3001.

WANTED

Reliable outboard motor for small boat, under 3.5hp. Egleston, 877-1261.
Ride: El Camino and Buoy to Bldg. 2, 8:30-5:00. Goldstein, 488-1953.
Darkroom setup, specifically a good enlarger for 35mm. Walker, 877-2676.
Like-new dining room suite. Bouillion, 482-7642.
Hide-a-bed, good cndn. Green, 331-3001.
66 Mustang shop manual. Embrey, 946-7283.
WANTED: Surf Board, reasonable. Call Jay 946-0704.

SOUND EQUIPMENT

Ward's airline B/W TV, AM-FM radio, stereo record player combination console, 6 speakers, mahogany cabinet, \$60. St. Leger, 473-2004.
Swan 500, speaker, A.C. and mobile power supplies, xln cndn, \$350. Lindsey, 488-0517.
Heathkit HW-12 75 meter transceiver, \$65; HP 13A mobile supply, \$40, mint cndn. Lindsey, 488-0517.
Stereo and stereo AM-FM radio in attractive cocktail table, compact, beautiful tone. Simon, 488-4043.
H.H. Scott 344 stereo receiver, solid state, xln cndn, \$85. With Realist bookcase speakers \$100. Fisher, 331-3954.

HOUSEHOLD ARTICLES

36 x 72 walnut desk, \$125. Alldredge, 471-2523.
27" Aztec calendar, \$70. Alldredge, 471-2523.
30" drop-in electric stove, \$50; gold fibreglass draperies, various sizes, cheap. Alldredge, 471-2523.
6 x 9 area rug with pad, dark green, \$25. Also several living room chairs, best offers. Leverich, 488-1186.
Coldspot refrigerator, white, apt. size, \$95. Tadlock, 482-3163.
German Grandfather clock, 19418 Old Galveston Rd. Coward, 932-2065.
Easy spin-dry washer, used very little, A-1, great water saver, \$75. Vetter, 488-0275.
18" color TV, \$150. Magnavox stereo and B/W TV, no picture tube, traditional cabinet, \$100. Green/blue brocade chair, hi-back, Italian finish, like new, \$35. Cunningham, 488-3512 after 5 p.m.

REAL ESTATE & RENTALS

RENT: two new townhouses, Clear Lake City, all electric, 2 bedrooms, 2 baths. Miller, 488-0621 after 4 p.m.
Wooded lot, Timber Cove, 80' x 180'. Wolhart, 649-6843 after 6 p.m.
3-2-2 in Oakbrook section, Clear Lake City, electric built-ins, shag carpeting, oversized lot on cul-de-sac, fenced; bike ride to schools, pools, tennis courts, shopping. Shollenberger, 488-5372.
For lease: CLC townhouse, 3 bdrm, 2 1/2 bath; large landscaped patio w/fountain; washer dryer connections; store room and carport; all builtins; TV antenna. \$250 mo. Call Mrs. Deans, 488-4009 after 5 p.m.



30-YEAR AWARDS—Center Operations Director Joseph V. Piland (at right in both photos) has been busy giving 30-year service awards to Operations Directorate personnel. Above it's Pauline R. Kline of Management Services Division along with her immediate supervisor, Communications Branch Chief Theodore Paulos, and Division Deputy Chief Earl Rubenstein, left. Below is William Kutalek Jr. in the center—he's from Engineering Division—and Division Chief Wilbur Gray.



SKY-HIGH EYE ON RESOURCES

View From Space to Benefit Earth

The following is the final in a series of excerpts from a new MSC Fact Sheet, soon to be published, on Space Benefits.

EARTH APPLICATIONS

Potentially, the most useful of all the applications of space flight is to observe and measure the resources of Earth, to help manage them properly and to deal with the problems of the environment. As with weather satellites and communications satellites, the value of space to Earth resources study is the ability it gives man to view his planet from a perspective other than standing on its surface or looking down on it from only a few thousand feet in the air.

Every object on Earth, its subsurface strata, its atmosphere and its oceans reflect distinctive electromagnetic characteristics which can be detected from a distance by specialized sensors.

Vegetation has a different and recognizable reflective "signature" from water or bare earth. And a diseased crop will appear different from a healthy crop.

Coupling this knowledge with the synoptic view of Earth which space provides will allow us to capitalize on our previous investments in space in a practical and immediate way.

As an example of how this new space tool can be used, it is possible to detect, measure, and map water pollution; detect and determine the size of oil slicks at sea, and monitor worldwide air pollution.

Off the coast of Iceland, airborne infrared sensors located the Gulf Stream, which meanders a considerable distance. This could enable fishermen to continue hauling in good catches.

POLLUTION CONTROL

It is significant that a sudden worldwide interest in controlling pollution and protecting Earth's environment has appeared just as we are developing the means to assess and monitor Earth's ecology on a global scale. For ecologists agree that only by dealing with the problem on a worldwide basis will we be able to save our oceans and atmosphere from being destroyed by pollution.

Infrared scanners, for example, can detect thermal pollution in water—both day and night. Conventional photographs from space can show discoloration and patterns in bodies of water for tracking and controlling pollutants. Other sensors can monitor the atmosphere to get the information on large regional distributions and cross-country movements of polluted air to help determine the sources of pollution and its extent.

By providing improved cropland surveys, space sensing could aid both the farmer and the ecology. Crop diseases and insect infestations often begin in a localized area, perhaps within a single field, and then spread to the rest of the crop.

It is common practice today for farmers to protect crops through large-scale preventive application

of pesticides, which all too often are washed off the fields by rainfall and into streams, lakes and oceans where they endanger wildlife and eventually work back in the food chain to man himself.

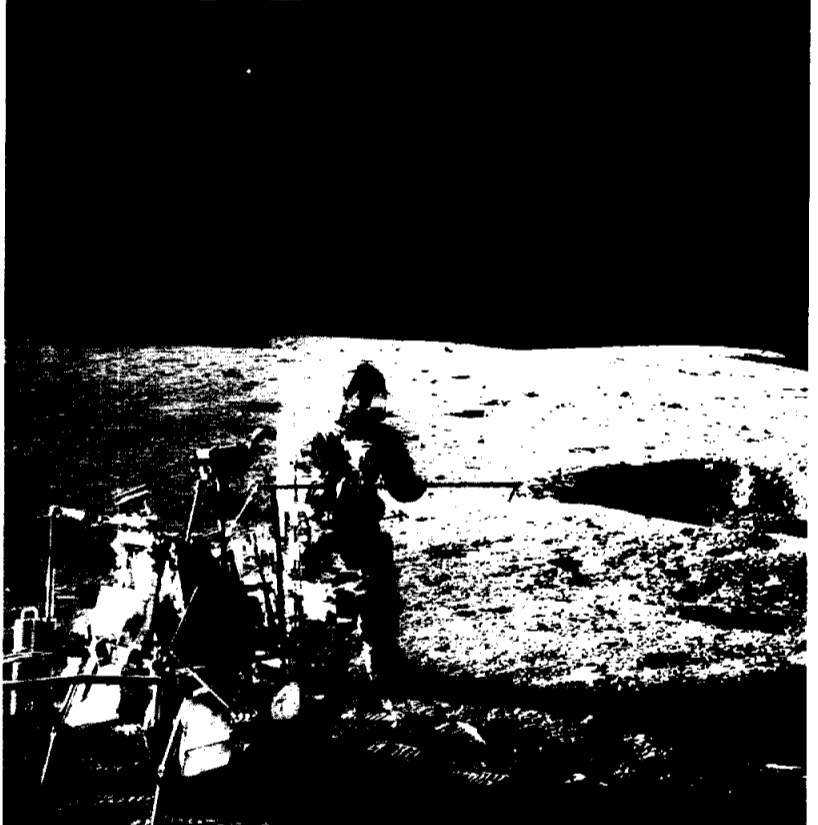
But, if crop diseases could be detected early, before it had spread to an entire field or crop, the farmer could apply only that pesticide needed to control the specific disease or infestation and only at the location where it was required. And both the farmer and the ecology would benefit.

UNLIMITED POTENTIAL

Seldom has a national investment yielded quicker or more substantial returns, offered clearer potential benefits for the future or stimulated more effective and creative use of human and natural resources than has the space program.

Speaking in Vienna to the United Nations Conference on the Exploration and Peaceful Use of Outer Space recently, an Italian delegate noted that, "very often, the expenditures born by the most advanced countries for space activity are criticized as luxury in the face of the pressing needs of large sectors of mankind.

"But satellite educational transmissions would almost magically close a circuit through which money spent for the most sophisticated technology returns manifold benefits to a large number of less privileged peoples."



WHAT DO THEY HAVE IN COMMON?

10,000 Year-old Man and Apollo

A 10,000-year-old prehistoric American—the celebrated "Marmes Man"—the celebrated "Marmes Man"—has inadvertently contributed to the Apollo Program.

Techniques developed originally to preserve sediments surrounding the bones of the earliest well-documented human remains in the Western Hemisphere have been applied to the delicate core samples returned by Apollo astronauts. The result is the first permanent record of layering in dust which covers the surface of the moon.

Formal announcement of action to preserve a lunar core intact came in NASA technical memorandum entitled "Description, Dissection and Subsampling of Apollo 14 Core Sample 14230" by Drs. Roald Fryxell, Laboratory of Anthropology, Washington State University, and Grant Heiken, Manned Spacecraft Center.

Core 14230 was collected by Astronauts Shepard and Mitchell at Triplet Crater near the Fra Mauro landing site, and is 7.5 centimeters—about 3 inches—

long.

Using what Fryxell described as "micro-archaeological techniques," the scientists first removed 55 tiny subsamples, millimeter by millimeter, from the length of the core, using tiny stainless steel spatulas and forceps, working through rubber gloves in sealed cabinets of nitrogen to protect the samples from earth atmosphere.

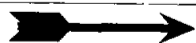
Next, three successive thin strips of the lunar core, with all layers intact and grains undisturbed, were gently impregnated with resin to bind them together.

The stabilized deposits then were mounted on Plexiglas as the first permanent record of deposits beneath the surface of the moon.

The Marmes discovery was made by Fryxell in April 1968 at a tiny cave or rockshelter in the remote Palouse River Canyon country of southeastern Washington. The president of the American Society for Archaeology hailed the discovery of the ancient human remains and artifacts as "the most significant single development in American archaeology in the past 25 years."

When the project was terminated in early summer of 1969, Fryxell flew to Houston to join NASA's Lunar Sample Preliminary Examination Team for participation in analysis of the first Apollo samples. The transition from archaeology to lunar study included use of volcanic ash of a type found at Marmes Rockshelter to simulate lunar materials in preparation for handling samples to be collected by the Apollo 11 crew.

Fryxell and Heiken since have been responsible for preliminary dissection and description of all lunar cores opened thus far, and their continuing research is expected to provide guidelines for handling cores throughout the remainder of the Apollo program.



These photographs help show the similarity between efforts to preserve "Marmes Man" and an Apollo 14 lunar core sample. In the top picture, the Marmes skull is being treated by Dr. Roald Fryxell. Meanwhile, back at the moon, Alan Shepard assembles a double core tube to save the Fra Mauro site. That sample, bottom photo, is treated by Dr. Fryxell in the same way and with the same preservative used on the 10,000-year-old man.