☆ STAR DUST

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MARS-ORB TING SPECTROSCOPE TELLS MUCH

RUDOLPH A. HANEL

Mariner 9 continues orbiting the planet Mars, and NCA will hear about early results from the satellite's infrared spectroscopy experiment at the April 1 meeting. Mariner 9 has now observed Mars for about 4 months; first under conditions of a severe dust storm and then under gradually clearing conditions. Results obtained so far already change many previously held concepts about Mars. The infrared spectroscopy experiment has obtained spectra between wavelengths of 5 and 50μm of many areas on Mars. These spectra permitted the derivation of surface pressure, topography, and temperature, atmospheric temperature profiles, atmospheric water vapor content, atmospheric dust composition, surface mineral composition, and information on the polar caps. The talk will primarily concern the infrared spectroscopy experiment, but some results from the other experiments on Mariner 9 will be shown, including television pictures.

Dr. Rudolph A. Hanel is Chief Scientist of the Laboratory for Planetary Atmospheres at the Goddard Space Flight Center in Greenbelt, Maryland. He received much of his physics education at the Vienna Institute of Technology, Austria, and came to the United States in 1953. He is Principal Investigator on the Mariner 9 infrared spectroscopy experiment.

APRIL CALENDAR

Saturday, April 1, 6:15 PM — Dinner with Dr. R. A. Hanel at Bassin's Restaurant, 14th Street and Pennsylvania Avenue, NW. No reservations needed.

Saturday, April 1, 8:15 PM — NCA monthly meeting at the Department of Commerce Auditorium, 14th and E Streets, NW. Dr. Hanel will discuss Mariner 9 infrared spectroscopy.

Monday, April 3, 10, 17, 24, 7:30 PM — Telescope-making classes at the Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872.

Thursday, April 6, 20, 8:30 PM — Neighborhood Astronomy on the observing deck of the Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Rene Lamadrid, 585-5569.

Friday, April 7, 14, 21, 28, 7:30 PM — Telescope-making classes at American University, McKinley Hall Basement. Information: Jerry Schnall, 362-8872.

Saturday, April 15, 8:15 PM — Discussion Group meets at the Department of Commerce, 14th and E Streets, NW., Room 2062. Larry White and others will present illustrated talks on the design and construction of their backyard observatories for telescopes with objectives larger than 8 inches. Larry will also discuss his detailed studies of a much older backyard observatory in England: Stonehenge.

NCA NEWS NOTES

John Lohman, Fred Cornelius, Wolfgang Schubert, Richard Muniz, Ken Short, Bill Winkler, James Stephens, and James Kurkowski have been judging the area County Science Fairs during March for possible NCA awards in astronomy. The exhibitors the judges select will receive one-year memberships in the Society, including *Sky and Telescope*. These awards will be presented at the June 3 meeting.

We thank the judges for their efforts.

The Nominating Committee that will select a slate of officers for the 1972-73 fiscal year is composed of Richard Horwitz, chairman; Robert Bolster, Jerome Schnall, Rene Lamadrid, and Robert McCracken. Members wishing to run for offices on the slate are urged to request consideration by the Committee; contact the chairman. Candidates may also be on the ballot at the May-meeting elections by presenting a petition signed by members representing at least 10 full votes.

Gathered around Al Vreeland's 10-inch reflector are (left to right): John Legowik, Al, Bob McCracken, Diane Wooden, Russell Thomas, Stephen Legowik, Jean Radoane, Wilbur Lund, Bill Winkler, Clarissa Burt, and Jerry Hudson. Photo by Dick Horwitz.

Jerry and Nancy Hudson hosted another fine star party for NCA at their home in rural Knoxville, Maryland, on March 18. The sky was clear much of the time. Looking through Al Vreeland's 10-inch Cave reflector at galaxies M81 and M82 in Ursa Major was a real treat. Galaxies M65 and M66 in Leo were fairly prominent in a 3-inch refractor that night.

The President would like to meet briefly with all science fair judges right after the April meeting. Please be present so that we can evaluate results in terms of NCA education programs.

NCA MARCH LECTURE

Dr. James D. Kurfess of the U. S. Naval Research Laboratory, Space Sciences Division, spoke about his studies of celestial gamma rays at the March 4 meeting.

The 10-kev to 100-Mev energy range encompassed by low-energy gamma rays includes the energies involved in intranuclear reactions, nuclear astrophysics, and the systhesis of elements. A major difficulty in designing directional instruments to detect low-energy gamma rays is their contamination by X-rays, which even 3 inches of lead won't completely stop. One solution is omnidirectional, large-crystal detectors, using costly blocks of NaCl 6x13x13 inches. High-altitude balloons for carrying these instruments can be 10 million cubic feet in volume, and be visible at a distance of 70 miles.

Low-energy gamma rays are valuable tools for studying pulsars, which mostly radiate at and below such wavelengths; the very large mean free path permits extra-galactic and early solar-system studies. A major question they help to research is the manner in which heavy elements are built up from light ones. One model of supernovae has them developing Ni_{56} in 7 days, Co_{56} by 70 days, and Fe_{56} with gamma-ray emission at discrete energies within 1 year after explosion.

USE THE CLARK REFRACTOR — YOU OWN IT!

Any member wishing to use the NCA's own 5-inch Alvin Clark refractor at the U. S. Naval Observatory need only contact Larry White for instruction and addition to the admission list. It's a wonderful privelege to have this protected facility in Washington under the security of the Navy; enjoy it freely any time of day or night. It represents a treasured confidence built over many years. Carefully preserve our good relations in order to continue our privelege. Call Larry at 461-9681.

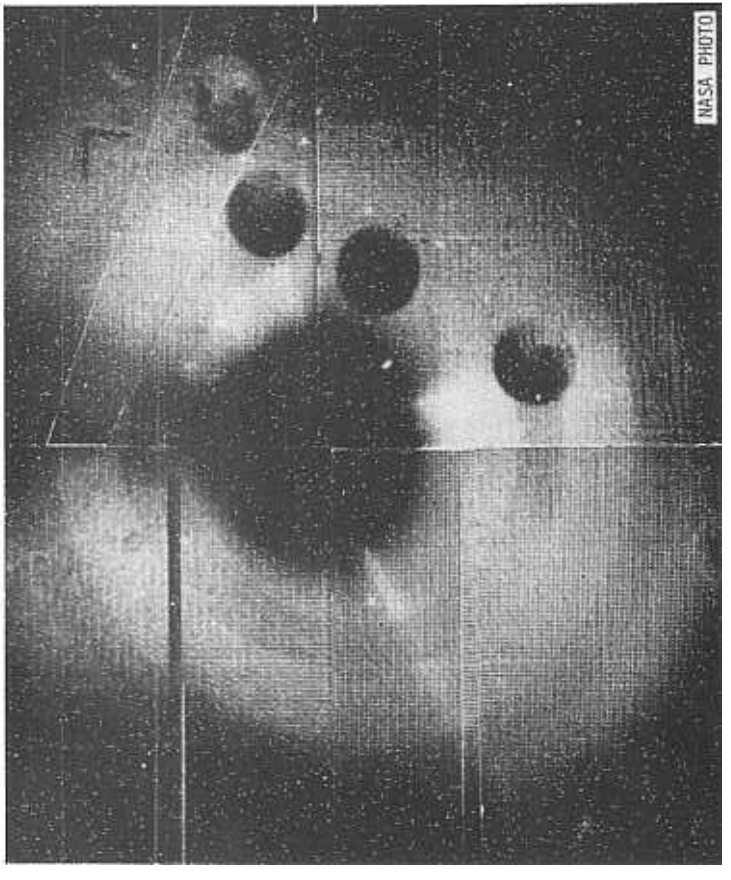
NOTES ON CURRENT RESEARCH

George Carruthers of NRL, who spoke to NCA last year, has an excellent survey article, "Electronic Imaging Devices In Astronomy," in the 1971 volume 14 of *Astrophysics and Space Science*, pp. 332-377.

Quasars: Giant Pulsars? — It is believed that pulsars convert their energy of rapid rotation into radiation and high-energy particles with very great efficiencies. Thus, the 1969 suggestion by Morrison in *Astrophysical Journal Letters*, (p. 157) that quasars are giant pulsars is an attractive possibility for explaining the vast energies of quasars. Based on accumulated observations, however, a theoretical investigation by P. A. Sturrock, Stanford University, finds this comparison inappropriate: "There seems to be a much stronger similarity between quasars and the X-ray source Sco X-1 than between quasars and pulsars." *Astrophysical Journal*, November 15, 1971, pp. 85-92.

PICTURE OF THE MONTH (Page 32)

A recent artificial eclipse observation by NASA's Orbiting Solar Observatory (OSO 7) almost became real when the moon drifted through the narrow field of the instrument, which used an occulting disc to facilitate observation of the corona. According to NASA, the observation was "almost interrupted" by the intruding moon, which produced an eclipse in Antarctica.... and to think, we travel thousands of miles to observe real ones! Photo courtesy Dick Horwitz.



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