☆ STAR DUST

Volume XXIX March 1973 Number 7

SOUTH WITH KERR — TO THE MAGELLANIC CLOUDS

DR. FRANK J. KERR

Dr. Frank J. Kerr will address the National Capital Astronomers March 3, 1973 on the Magellanic Clouds, and their relation to the Galaxy. The Clouds are clearly visible to the unaided eye, appearing like detached patches of the Milky Way, or weather clouds. They are close to the south celestial pole, and so cannot be seen north of the equator; hence, they are a prized possession of southern astronomers, and a favorite subject at all wavelengths.

The Clouds are irregular galaxies, about 170,000 light years distant, and 80,000 light years across. Only one-tenth as far from us as the Andromeda Galaxy, the Clouds are useful as a "laboratory" for studying star birth and ageing. The Clouds are very young in an evolutionary sense, containing many young stars and much hydrogen gas, clearly visible at 21 cm.

Dr. Kerr was among the first to study the Clouds at 21 cm. These and other studies show tidal effects in our galaxy due to the Clouds, a vast turbulent hydrogen envelope about each cloud, and a hydrogen bridge between the Clouds. The large Cloud shows a rudimentary core, and a rotation which is not quite around the core.

Dr. Kerr received his M. A. from Harvard University in 1951 and his D. Sc. from the University of Melbourne. He is presently a professor at the University of Maryland. During 1971-72 he was chairman of the National Science Foundation Advisory Panel on Astronomy, and is a member of a variety of professional organizations, including the International Astronomical Union and the American Astronomical Society. He is listed in *Who's Who in Australia*.

MARCH CALENDAR

Friday, March 2, 9, 16, 23, 30, 7:30 PM — Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnall, 362-8872.

Saturday, March 3, 6:15 PM — Dinner with the speaker at Bassin's Restaurant, 14th Street and Pennsylvania Avenue, NW. No reservations necessary.

Saturday, March 3, 8:15 PM — NCA monthly meeting at the Department of Commerce Auditorium, 14th Street and Constitution Avenue, NW. Dr. Frank Kerr will speak. Constitutional question ballots will be counted.

Monday, March 5, 12, 19, 26, 7:30 PM — Telescope-making classes at the Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872.

Saturday, March 17, Sunday, March 18 — Southeast Fairfax and East Prince William Counties Science Fair, Robert E. Lee High School, 6540 Franconia, Springfield, Virginia.

CALENDAR continued on page 26

CALENDAR - continued

Saturday, March 17, 10:00 AM - 5:00 PM — Exhibit of the best 40 entries in the 1973 National Westinghouse Science Talent Search, Empire Room of the Shoreham Hotel, Connecticut Avenue and Calvert Street, NW. One entrant is from Gaithersburg, Maryland, and another is from Vienna, Virginia.

Saturday, March 24, and sunday, March 25 — Northwest Fairfax and West Prince William Counties Science Fair, George E. Marshall High School, Route 7 east of the Beltway, Fairfax, Virginia.

Goddard Space Flight Center Scientific Colloquia — Fridays at 4:00 PM in the auditorium of Building 3.

March 2 — Mariner 9 Ultraviolet Measurements of Mars
March 9 — Remote Sensing of the Earth's Atmosphere
March 16 — Ages of the Elements and of the Milky Way
March 23 — Mechanisms of Solar Flares
March 30 — Stellar Evolution

FEBRUARY LECTURE

Dr. Elske v. P. Smith drew on her extensive experience in solar flare observation to discuss current research on this most energetic of all solar phenomena, on February 3. A large flare emits energy of 10^{32} ergs summed over the entire electromagnetic spectrum — about 100 million hydregen bombs.

Flares begin in the complex transition zone between chromosphere and corona and derive their energy from annihilation of vast magnetic fields that may have strengths of 3,000 Gauss in sunspots and 300 Gauss in plages. Spectra and spectroheliograms from Orbiting Solar Observatory 7 show important flare emission lines of magnesium atoms with 7 and 8 electrons missing, and iron atoms lacking 10 and 14 electrons. Of those prominences seen at the limb, loops and sprays are closely associated with flares. Unlike other prominences, these appear bright on the rare occasions they are seen in projection against the solar disc in H_α.

Flare energy proceeds both upward and downward from the transition zone origin and sometimes penetrates to the photosphere, where on rare occasions a white-light flare is observed. Bob McCracken had the good fortune to see one of these, even using the projection viewing method, during IGY.

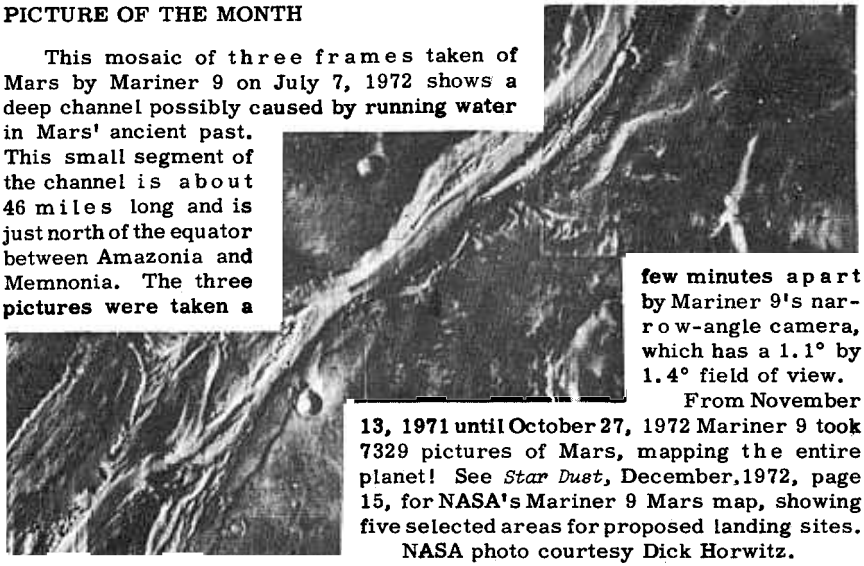
In solar flare photography, the tremendous brightness range hampers photography as a physical-data gathering tool. The extended-range films developed in the past few years may help. A fine time-lapse movie of flares in H_α light was shown by Dr. Smith. It was taken at Big Bear, the solar observatory located in the middle of a lake (*Star Dust*, September 1972, page 4).

An extensive question period followed, and it was still going strong when curtailed by the late hour. Vice President Leidecker concluded the February meeting with a showing of a film giving a concrete example of the meaning of orders of magnitude in distance. In steps, the movie proceeds from a man on a golf course to beyond the farthest quasar and back, then from the man's hand to inside the nucleus of an atom.

JANUARY DISCUSSION GROUP

Amateur motion pictures taken on solar eclipse expeditions were featured at the January 27 informal meeting. Bernard Goetz of the National Bureau of Standards showed a fine 16-mm film and slides of the July 10, 1972 event, taken from the deck of the TSS *Olympia* at 40 N, 54 W in the Gulfstream. Here, the eclipse lasted 1 min 55 sec and Goetz saw no Bailey's Beads. During totality, the speaker photographed prominences at 1/125 sec, the inner corona at 1/15 sec,

PICTURE OF THE MONTH



This mosaic of three frames taken of Mars by Mariner 9 on July 7, 1972 shows a deep channel possibly caused by running water in Mars' ancient past. This small segment of the channel is about 46 miles long and is just north of the equator between Amazonia and Memnonia. The three pictures were taken a few minutes apart by Mariner 9's narrow-angle camera, which has a 1.1° by 1.4° field of view.

From November 13, 1971 until October 27, 1972 Mariner 9 took 7329 pictures of Mars, mapping the entire planet! See *Star Dust*, December, 1972, page 15, for NASA's Mariner 9 Mars map, showing five selected areas for proposed landing sites.

NASA photo courtesy Dick Horwitz.

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and the outer corona at 1/2 sec on Kodachrome-X using an f/6.3 telephoto lens.

Bob Wright showed a 1945 16-mm film made by the Milwaukee Astronomical Society on their trip to the summer solar eclipse in Canada. The film gave us many amusing moments.

Dick Horwitz concluded the meeting with spectacular slides copied directly from the 70-mm films the Apollo 17 astronauts took on their lunar mission in December. About 35 members and guests attended this discussion group, of which eight will watch this summer's total eclipse on the *Canberra* off Africa.

NOTES FROM MEMBERS

President John Eisele has appointed Larry Torrance, 1224 Adams Road, Waldorf, Maryland, to fill the remainder of Dick Horwitz' term as treasurer. Larry has been NCA sergeant-at-arms.

Dr. Eisele has 60 adults and 40 juniors in the astronomy classes he is teaching at the Smithsonian Institution on Wednesdays and Saturdays this winter.

June LoGuirato notes that Father Frances Heyden's new address is Manilla Observatory, Phillapines, c/o American Embassy, APO, San Francisco, California 96528. He continues to monitor the sun at optical and radio wavelengths. June also points out that six asteroids were discovered visually at the U. S. Naval Observatory in Washington: 31 Euphrosyne (1854), 50 Virginia (1857), 60 Echo (1860), 536 Merapi (1904), 886 Washingtonia (1917), and 980 Anacostia (1921). Of these, five were discovered in the autumn and one in the spring. Does this fact tell us anything about the Washington observing weather?

Rene Lamadrid is teaching photographic processing techniques to four students on Mondays and another four on Wednesdays at the Chevy Chase, D. C. Community Center.

Wolfgang Schubert has built a H_{α} monochromator and demonstrated it on a 4-in refractor to Dr. Gant, Bob McCracken, and Bill Winkler, who will enthusiastically attest to its performance on solar prominences. More on this later!

ABSTRACTS FROM THE IAU CIRCULARS

1. January 11 — C. Kowal discovered a 17-magnitude supernova in NGC 3656 at the California Institute of Technology.

2. January 12 — C. Kowal discovered a 1f. 5-magnitude supernova in an uncataloged galaxy in Serpens Caput, at Cal Tech.

3. January 18 — Leslie Peltier reported that nova GK Persei (1901) had brightened to magnitude 12.0. Its normal minimum is 14.0.

4. A highly variable X-ray source close to the galactic equator in Ara was discovered by a group at MIT using Orbiting Solar Observatory 7.

5. February 8 — T. Gehrels discovered Comet Gehrels (1973d), magnitude 19, in Cancer. The University of Arizona astronomer used the 48-inch Schmidt on Palomar Mountain.

IAU Circulars give a picture of ongoing astronomical discovery. They are available from Central Bureau for Astronomical Telegrams, Smithsonian Astrophysical Observatory, Cambridge, Massachusetts 02138, at the following subscription rates: 100 announcements $14.50 (airmail, $15.50), 50 announcements $8.00 (air, $8.50). Publication is timely, therefore irregular. This listing courtesy Bob Bolster.

TELESCOPES FOR SALE

1. Refractor, Edmund 3-in f/15, equatorial mount, wooden tripod, setting circles, dew cap, 2 oculars, and a Barlow; $120 delivered. Call Eric Broody at 299-4261.

2. Reflector, Criterion Dynascope RV-6, 6-in f/8, several oculars, drive, slow motions, 10x40 finder, and end rings. Call Bob Johnston, 451-5666 (home) or 451-2375 (office).

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