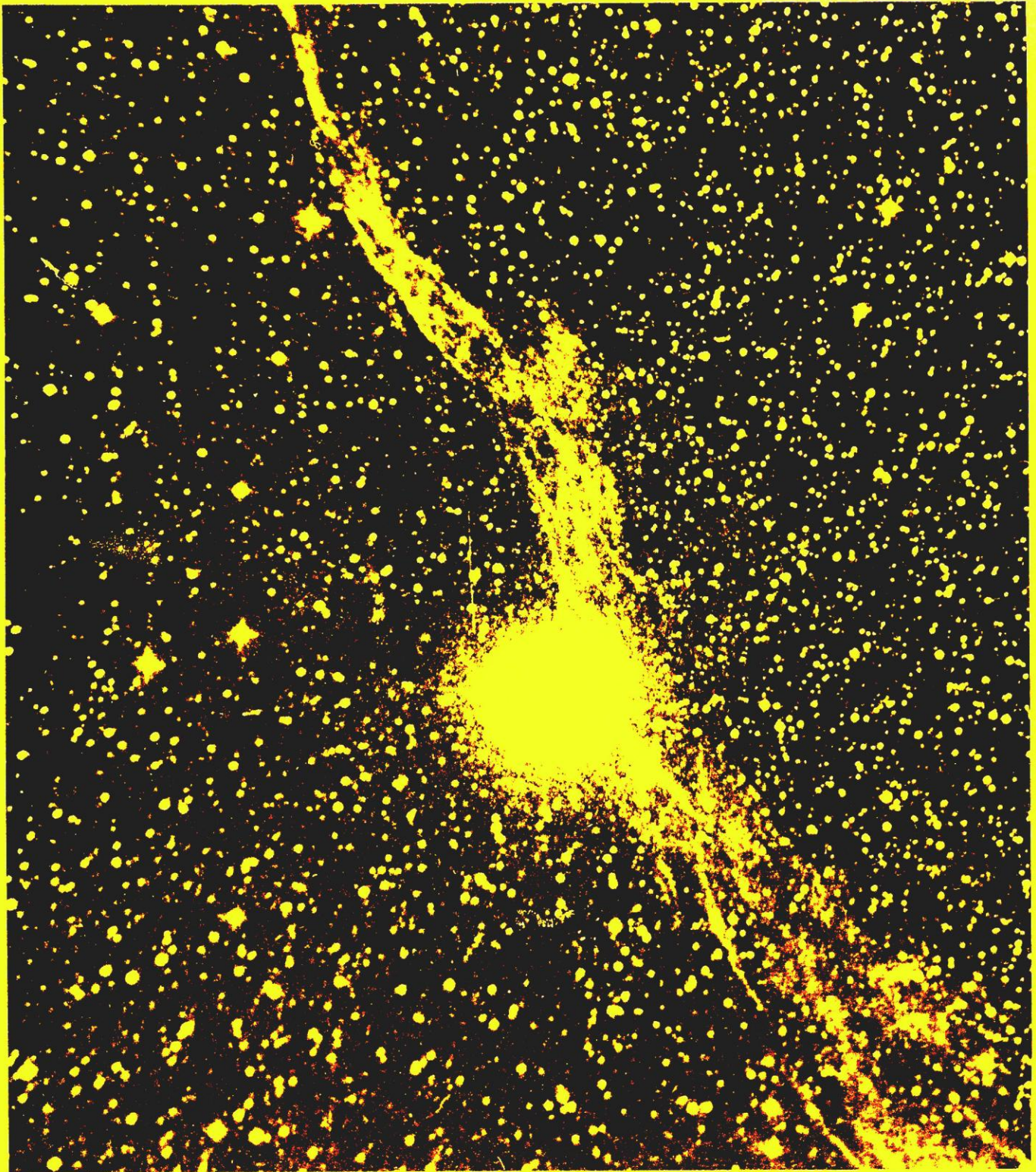




THE WASP

THE JOURNAL OF THE WARREN ASTRONOMICAL SOCIETY



NOV. 1977

The Warren Astronomical Society
P.O. Box 474
East Detroit, Michigan 48021

The Warren Astronomical Society (W.A.S.) is a local nonprofit organization of amateur astronomers. Membership is open to all interested persons. Annual dues are as follows; Student- \$9.00, College- \$11.00, Senior Citizen- \$13.50, Individual- \$16.00, Family- 21.00, the membership fees listed here include a one year subscription to Sky & Telescope Magazine.

Meetings are held on the first Thursday of each month at Cranbrook, and the third Thursday of each month at Macomb County Comm. College, in the student union building.

The EDITOR: Roger A. Civic, 26335 Beaconsfield
 Roseville Michigan, 48066- 776-8735

Assistant
to the Editor: Mike Newberry, 623-7284

OBSERVATORY SCHEDULE

Lectures for the coming month are listed below.

Oct28/29.....Peter Kwentus.....771-3283
Nov4/5.....David Harrington879-6765
Nov11/12.....Frank McCullough.....791-8752
Nov18/19.....Don Misson1-727-9083
Nov25/26.....Diane McCullough791-8752

The lecturer may select either the Friday or Saturday, depending on the Weather and their personal schedule.

In the future, some of our younger members will be assisting the senior lecturer. These members are, Bob Dennington, Dave Locke, Doug Holmes and Joe Tocco.

•buy- sell- trade•

WANTED: Used telescopes any size or type. Lou Faix as President has been contacted by many people about such items. Give Lou A call, 781-3338

WANTED: A new or used 8" mirror blank or tool to be used as a tool- to grind my mirror with. Call, Chris Edsall at 774-0007 with offer.

FOR SALE: 10" Newtonian telescope. Factory mirror, yoke equatorial mount that is portable. 70 power eyepiece. for only \$300.00, also a 40mm Polaris finder scope-12X, \$25.00. 18mm Kellner eyepiece, \$18.00. All in good condition. Call Doug Tracy- 882-4499.

The September 15 meeting of the Warren Astronomical Society was opened at 8:25 p.m. by our president, Lou Faix. After welcoming new members, mention was made of the very inclement weather which caused many to be late.

In the absence of the Observatory Chairman, Lou disclosed that the observatory telescope is in peak condition. Messier and NGC cards are there as well as star charts, a new finder lens. Volunteers are needed for maintenance and construction. A safety roof is on the agenda. Exterior lamps and outlets will be installed. Lou proposed that we acquire a simple Schmidt Telescopic Camera, also a long focal guide scope. The cost would be between \$80 and \$200. Members were asked to consider the proposal and get back to Lou.

The Christmas Banquet will be held December 14 at the Paradise Café in Detroit. The program and time will be announced later. However, there would be awards to members who have performed extraordinarily in the field of amateur astronomy. Frank McCullough will receive all nominations.

Ray Bullock announced that October 7 is Family Night for Cranbrook members. He asked that all members assist in the program and bring their telescope.

Dave Harrington spoke briefly on what members could expect to see of the solar eclipse on October 12. Locally this would occur at 4:33 p.m. and ends at 5:39 p.m. The sun would be 18 degrees on our horizon.

There will be an Eclipse 77 Night in the offing. Local photographic projects and those taken on the cruise would be featured. Lou displayed a monthly publication edited by 15-year-old Dave Eicher. Called "Deep Sky Monthly", this endeavor would be encouraged by our society.


We will buy a membership into the Astronomical League on behalf of all members.

September 27 will mark an "Activities Day" at Macomb Community College. Pete Kwentus is in charge of coordinating displays of members. There followed a film slide show by Pete Kwentus. Lou spoke on the Perseid Showers and Larry Kalinowski pointed out an 8th Mag. Comet on the sky map. Roger Civic commented briefly on meteor photography.

After intermission, Gary Ross spoke on "What Happened to Astronomical Societies". He challenged Dave Harrington in his talk. All amateur astronomers were given encouragement to continue to contribute vital data on variable stars, meteors, the planets Jupiter and Saturn. Searching for nova and aurorae are still the sport of the amateur. Atmospheric phenomena, sun spots, comet search and discoveries are always needed.

Dave Harrington said he would come up with a rebuttal. Kim Dyer mentioned a Star Party to be put on by the Detroit group on Saturday, Sept. 17. Dave Dobrzelewski displayed pictures of aurorae he had recently taken.

The meeting was closed at 10:20 p.m. by President Lou Faix.

Loyally submitted, 
Loretta D. Caulley, Secretary

THE GREAT SATURN QUANDARY

NASA officials next month must choose Pioneer 11's path by Saturn's rings, a potentially life-or-death decision — and they don't know which

BY JONATHAN EBERHART

Pioneers 10 and 11 have already done enough to live up to their name, being the first spacecraft to pass through the asteroid belt and to visit-and survive the radiation-drenched environment of Jupiter. For Pioneer 11, however, another major goal remains: the first ever encounter with the ringed planet Saturn. Yet it is those very rings, making Saturn one of the great spectacles of the heavens, that make next month's decision on the specific targeting of the "flyby" a possible life-or-death matter for the doughty probe. Contributing to the tension is the fact that, until the encounter actually takes place in early September of 1979, no one will know whether the decision was the right one.

The traditionally recognized rings of Saturn are three in number. The outer ring, or A-ring, begins a little more than 60,000 kilometers from the planet's surface, extending outward for about 16,000 km. Inside the A-ring is a gap, clearly visible in earth-based photographs, known as the Cassini division, about 2,600 km wide and believed to be due to a gravitational resonance with Mimas, one of Saturn's moons. Inside the gap is the B-ring, nearly 26,000 km wide, followed immediately by the IS,000-km C-ring. Less than 17,000 km inside the C-Ring's inner edge is Saturn itself.

The question for Pioneer 11 seems straightforward enough: Should the spacecraft be aimed to fly outside the rings, or should it be sent on the "inside option," to fly between the inside of the C-ring and the planet? Flight controllers at NASA'S Ames Research Center in California plan to fire the probe's engine late next month to set up the pass-it must be done well in advance to minimize the required propellant-so the Pioneer 11 scientists and project officials are meeting at Ames on Nov. 1 to talk it over. The scientists will pass on their opinions to project manager Charles E Hall of Ames, who will then make his own recommendation to NASAmangement, who in turn will make the choice. For scientists and all, the decision will be a tough one. So tough, in fact, that a SCIENCE NEWS poll of the 13 principal scientists (3 of the 13 were unavailable but had previously expressed opinions) was split right down the middle: 6 for the outside option, 6 for inside, and 1 neutral. And even those views were highly qualified.

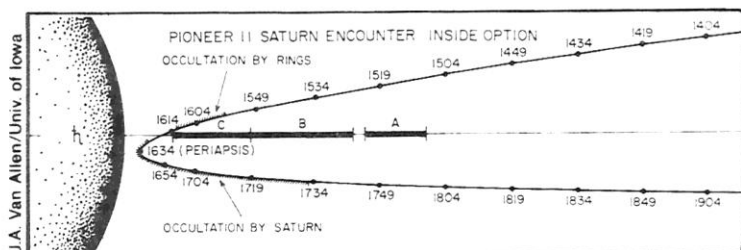
The reason is that Saturn may have not three rings, but five. In October of 1969, Pierre Guerin of the Institut d' Astrophysique in Paris took a series of photos of Saturn using the 41-inch reflecting telescope at Pic du Midi Observatory. The conventional versions of the photos, properly exposed for the brightness of the rings and the planet, show the expected ring structure. A high-contrast negative print, however, shows what appears to be a faint additional ring *inside* the C-ring. "The new ring D," wrote Guerin in the August 1970 SKY AND TELESCOPE" lies inside C and is separated from it by a dark lane that is equivalent to Cassini's division..." More recently, Bradford Smith of the

University of Arizona, using digital data from charge-coupled-device images) has found "excess light" inside the C ring. Smith is part of .Project Voyager (which follows Pioneer 11 to Saturn), some of whose participants hope Pioneer 11 will preview Voyager's outside path.

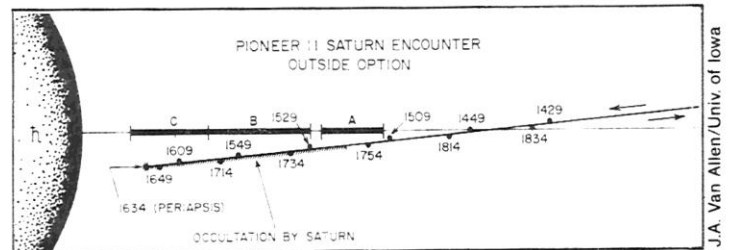
It is Guerin's ring that has caused most of the uncertainty, causing the project scientists to weigh the drawbacks of "half a mission"-getting wiped out by a chunk orbiting in the ring plane and losing the data from the outbound leg against the advantages of getting 90,000 km closer to the planet. Trapped radiation belts and charged particles, for example, may exist both outside and inside the rings, but be "swept" out of circulation over the span of the rings' radius, leaving a strange, charged-particle-free gap in the shape of a thick, spherical shell. Mario Acuna of NASA'S Goddard Space Flight Center says that he would rather get half a fly-by close to the planet for his magnetic-fields study than a whole one outside the rings. Other researchers opt for "the survival route." But is there one? Since the 19th century there have been sporadic reports of brightness observed *outside* the A-ring as well. In late 1966, W.A. Feibelman of Allegheny Observatory in Pennsylvania took microdensitometer scans of the rings as seen edge-on (NATURE, 214:793), and reported "a very thin extension of the ... ring system [that] extends to more than twice the known ring diameter "

Pioneer project scientist John Wolfe of Ames thus maintains that so little is certain about the survival chances by either route that it would be better to assume survival and go for the best science.

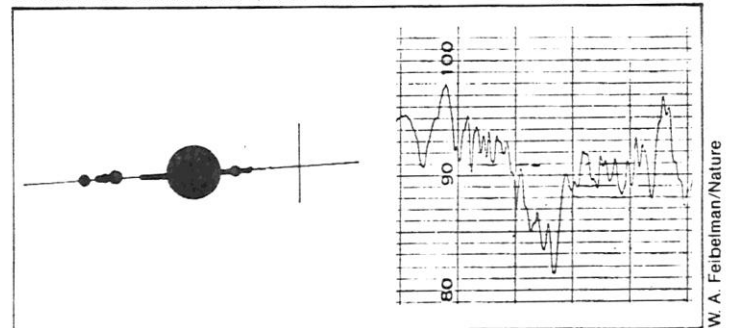
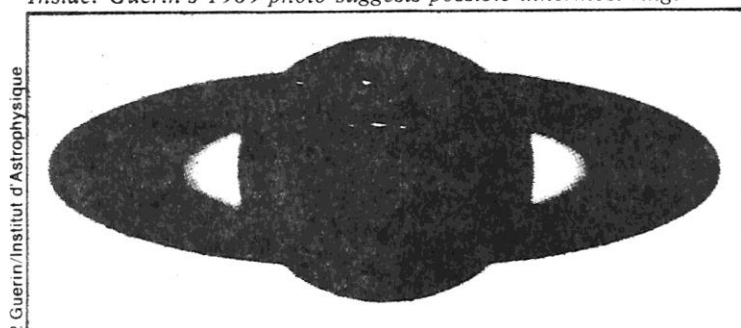
The day of decision looms. □



Inside: Guerin's 1969 photo suggests possible innermost ring.



Outside: Densitometer trace hints at wide outer ring as well.



THE APPRENTICE ASTRONOMERS NOTEBOOK

LOUIS FAIX

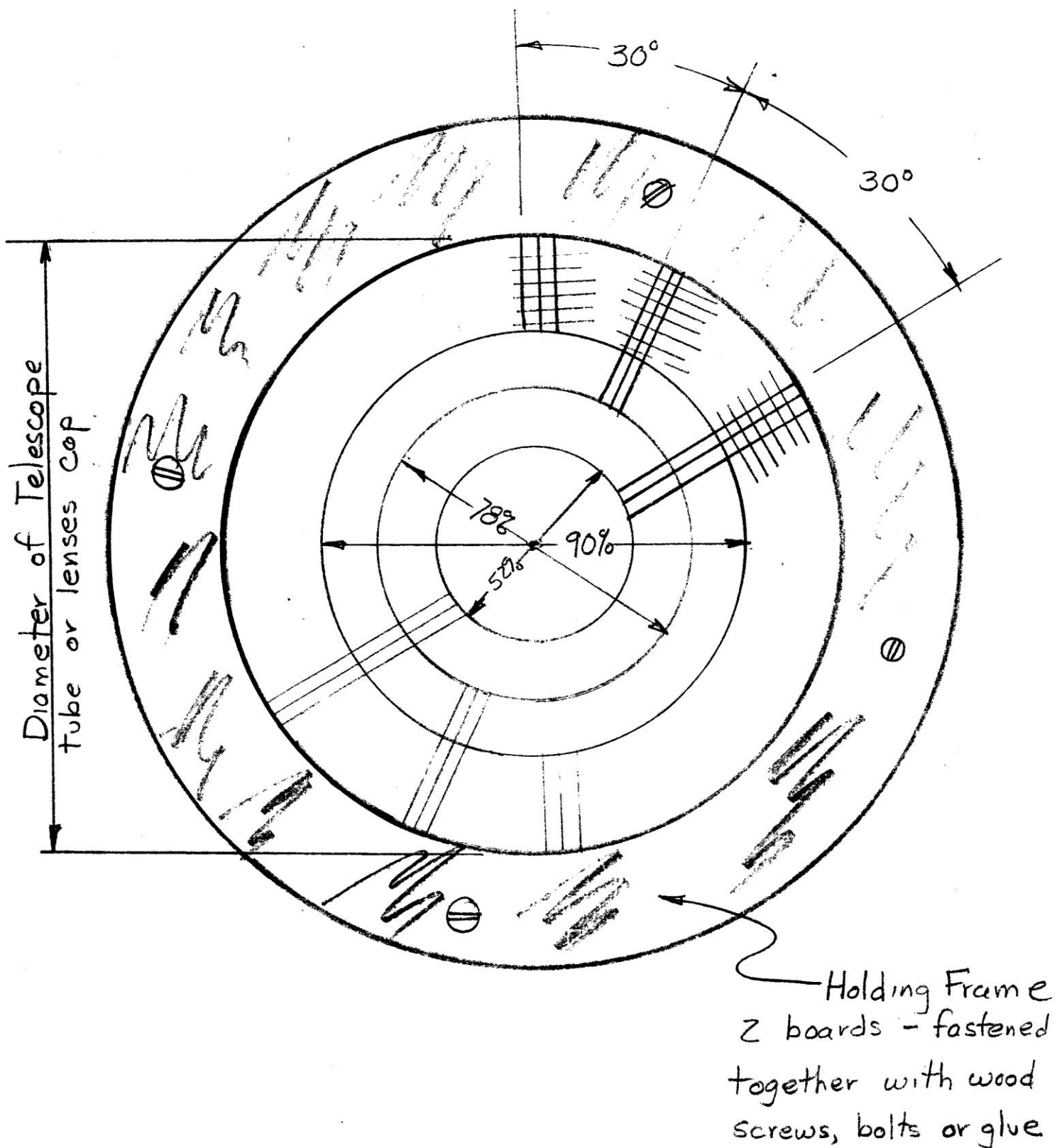
Last month, in the Notebook's comments on close double stars, I indicated I'd share with you some information about how to significantly improve the resolution of details with your current telescope. I was first introduced to this gadget by our good buddy and faithful editor Roger Civic. I'll have to admit I was more than just skeptical. Such a simple gizmo, that could be made in an hour for less than a dollar, couldn't possibly work. But it does! With my 10" reflector, the minimum separation of double stars on typical yucky Michigan nights improved from 1.2 to 0.8 seconds of arc. Details on the surface of Jupiter, Saturn and Mars literally jumped up into bold contrast. The improvements in resolution seem greatest on nights when seeing is minimal. Even in light polluted skies, dark black lines cleanly divide close double stars.

The gadget was first discussed by the old amateur astrophotographer, George T. Keene, in his book "Star Gazing with Telescope and Camera" (American Photographic Book Publishing Co., 1967; Library of Congress Catalog No. 67-25847). Technically known as an apodizing screen, this main aperture filter puts less light into the shimmering diffraction rings and accentuates the brightness of central disk.

To make a filter, cut two disks of plywood, corrugated cardboard or other firm material with an inside hole equal to the outside of your telescope tube and an outside diameter two inches larger than the tube. Now cut three pieces of ordinary window screen into circles just as large as the outside diameter of the rings. Cut a hole into the center of each screen disk equal to 55%, 78% and 90% of the diameter of your reflector telescope's objective mirror. For refractors make the holes slightly smaller at 52%, 76% and 88% of the full aperture diameter. Arrange the screens between the two rings so that screen wires axes are offset 30° to each other. Secure the two rings together with screws, small bolts or large cardboard staples. Devise a means to secure the apodizing filter to the front of the telescope tube. A little experimentation rotating the screen may show that there is one position where resolution is optimized. The anti diffraction screen is not a cure-all for poor optics or a bad mirror edge, but it will definitely eliminate some of the affects of bad air turbulence. It will be of no value in observing the moon. The screen also acts as a diffraction grating, throwing a pattern of colorful spectra out into the edges of the field of view. Coupled with prime focus color photography, this is an interesting way to obtain a coarse spectral classification of stars.

Try it - you'll like it.

Arrange screen wires
30° off set to each other



CLUB NEWS

The top interest in Astronomy of late was the total Solar Eclipse that occurred on Wed. October 12, 1977, about a week ago.

The path of totality crossed mostly over water, the best viewing site for the Eclipse was 1500 miles, South-West of Los Angeles in the near mid Pacific Ocean. Two Luxury Cruise ships, SS Fairsea and SS Fairwind, of the Sitmar Lines, meet at the mid totality point in the Pacific which would allow the passengers aboard to view a 2½ minute spectacular. Aboard one of these ships, the SS Fairsea, were members of the W.A.S., to wit- Lou & Lois Faix, Frank & Diane McCullough, Dave & Linda Harrington, Peter & Ginger Kwentus, their son Ronald Kwentus, Gary Boyd Esq., Mrs. Jean Baldwin, Donald Misson, Jerry Persha, John Searles, Tim Skonieczny and Mr. Paul Strong. Along with these adventurous members were more than 800 other Eclipse Chasers.

As of this writing, Oct. 18th, there has been no word of the success or failure of this gallant troop to achieve their intended goal, but I am sure they all met with complete success.

In the months to come you all will probably be able to see and hear more about the Eclipse of 1977 than you will be able to stand.

Therefore do not, I say do not miss the Jan. 1978 General meeting, because I understand this is the nite of the BIG EVENT, all the color and excitement, in slides, movies and sound will be exposed to all.

The Warren Astronomical Society Newsletter, Vespa has reached another plateau of evolution, by executive decision the name WASP has been reinstated as the official name. Welcome back Wasp...

The Christmas Banquet will be held at the Paradiso Cafe, on the 14th of December, 1977. There will be NO December general meeting. Details will be announced at the next two general meetings.

There will be a presentation ceremony for the Annual Merit Award to a most deserving member of the Warren Astronomy Society.

Frank McCullough is at it again. Another Christmas slide Show? NO! But he does have plans for a Messier Contest sometime in November. Frank will give us a decision at the Oct. meeting as to the time and place. Of course there will be certificates and prizes for those with the fastest telescopes.

The Editor... *R. Civi*