# NORTHERN LIGHTS

Published quarterly in September, December, March and June

NORTH CENTRAL REGION

Subscriptions
$2.50 per year

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Volume XI | September 1981 | Number 1


## ROAMING THE REGION

The annual banquet of the Peoria AS will take place on Friday, September 18, at the Lakeview Museum auditorium. Dr. Vincent Icke, Research Associate and Asst. Professor at the University of Minnesota Astronomy Dept. will be the featured speaker. His subject will be black holes, gravitational lenses and quasars. He spoke on that topic at the NCRAL convention last May. Dr. Icke is a striking individual with a knack of dealing with rather complex concepts (like black holes) in a manner undersandable to an interested layman.

The 84 people who attended the June combined meeting of the Fox Valley AS, Naperville AA and the Argonne AC were treated to a lecture by Dr. David M. Schramm from the University of Chicago. The subject of modern subatomic physics as it relates to current theories of cosmology was presented in such a way that it was interesting at any level, depending on the listener's own understanding of the subject.

Peoria AS reports that planning for the 1982 Astronomical League national convention is progressing. In addition to Dr. Michael Davis of Aricebo, confirmations have been received from two other speakers. They are Dr. J. Allen Hynek, formerly of Northwestern University, and Clyde W. Tombaugh, discoverer of the planet Pluto.

## ASTROCON 81

(by R.P. Van Zandt, Peoria AS)

Approximately 500 amateur astronomers registered at Kutztown (Pennsylvania) State College for Astrocon 81. The national convention of the Astronomical League also included the Assn. of Lunar and Planetary Observers (ALPO), the International Amateur-Professional Photoelectric Photometry (IAPPP) Assn. and the International Occultation Timing Assn. (IOTA). The meeting was hosted by the Lehigh Valley Amateur AS.

Attendees were treated to almost 40 amateur papers, addresses from six invited speakers, workshops on photometry and telescope making, planetarium shows, exhibits, telescope fair, astrophoto contest and bus tours. The photometry workshop was put on by IAPPP and underscored the availability of reliable, low cost photometers for amateurs.

The affair was a resounding success. It was spread over the 3-1/2 days of August 13-16 by an 18 member committee. Many of the committee members were veterans of the earlier outstanding convention at Kutztown in 1976.

# NEW INSIGHT INTO STAR CLUSTER FORMATION

(reprinted from SCAN, newsletter of the Des Moines AS)

How stars form and evolve to the point where they settle into the steady hydrogen "burning" phase of their lifetime (i.e., settle onto the main sequence) has been a major question facing astronomers.

Basic theoretical insights were advanced some twenty years ago, but in order to gain further understanding, astronomers have needed more effective observations of star clusters. There we find statistically useful numbers of stars of varying mass but with a nearly common birthdate.

To meet this need, Dr. Mark Adams (whose work this is) of the University of Arizona's Steward Observatory and Dr. Stephen Strom and Karen Strom of Kitt Peak, have used Kitt Peak's 4 meter, 2.1 meter and 1.3 meter telescopes as well as NASA's 3 meter infrared telescope at Mauna Kea, Hawaii, to carry out photometry of the faint, low mass stars of the young cluster known as NGC 2264. In particular, the authors examined the rate at which this cluster's stars were formed as a function of time and mass. Their work provides evidence that the stars of a cluster form over a spread of time -- almost 20 million years for NGC 2264.

Their work supports and extends previous theoretical and observational studies which suggested that when a star cluster forms, smaller, lower mas stars form before the larger, higher mass stars. The work of Adams et al further indicates that by the time the most massive stars form, the star formation period is near its end for the cluster. This work forms the basis for understanding how the birth places of stars (dusty, molecular cloud complexes) fragment to produce individual stars.

While this time spread of formation is not significant when considering older star clusters of hundreds of millions or billions of years, it is significant in the study of younger clusters like NGC 2264 or the Pleiades.

Most young pre-main sequence (before nuclear ignition begins) stars are surrounded by gas and dust. Our current understanding enables us to say that quite possibly this gas and dust are involved in the formation of planetary systems for these stars. But a critical problem in studying these stars arises from the presence of this surrounding material. It alters the starlight passing through it. Astronomers must correct the observed spectral energy distribution for the effects of the surrounding gas and dust so that the star's true luminosity and temperature can be estimated. It is necessary to do this in order to obtain a star's age from theoretical results which, given its true luminosity and temperature, offer the age of a star.

The astronomers believe their work is the first to effectively account for the effects of the gas and dust clouds surrounding pre-main sequence stars. Remaining unresolved is the problem of the relative importance of hot gas envelopes versus surrounding dust shells. The actual ages deduced for NGC 2264 are: 1) The first stars to form are somewhat over 20 million years old. 2) The majority of the youngest stars formed about 3 million years ago. These results were presented Stephen Strom at the A.A.S. meeting at Calgary, Alberta, Canada on June 30, 1091 (sic).

NGC 2264 is described in Burnham's Celestial Handbook, vol. 2, p. 1206, as a very large and scattered cluster of about 20 bright stars and over a hundred fainter members called the "Christmas Tree" because of its shape. The cluster is surrounded by a vast but faint nebulosity, the southern end of which contains the famous "Cone Nebula" thought to be a very active stellar birthplace. It would be interesting to get reports from anyone who gets a chance to observe this object, especially to hear if anyone with a large aperture can detect the nebulosity surrounding the cluster or the Cone Nebula itself.

The coordinates of this object are: 6h 38.4m, $+09^{o}$ 56' (1950).

## 660mm TELESCOPE PROGRESS REPORT

(by William Tuerck, Milwaukee AS)

The design and construction of the 660mm telescope is progressing at a rapid rate, and we hope to have it completed by mid 1982. When completed, this instrument will provide the capability for visual, photographic, photometric and spectroscopic research, giving Society members an unparalleled opportunity to contribute to the astronomical and scientific community. The telescope will include access to the prime focus at f/3, Cassegrain foci at f/10 and f/20, and Coude focus at f/40.

We are also incorporating manual and automatic tracking, digital read-out in RA and DE through the visual optical train, read-out external to the telescope and, eventually, a computer console which will also have the capability for automatic telecope and dome control as well as processing photometric data.

Objectives for 1981 include finishing the observatory building including the dome which we decided to build ourselves to save a great deal of money. With the completion of the building and dome, we will be able to continue work on the telescope itself through the winter months.

The building, interior framework and roof have been completed. We are now concentrating on building the dome and some of the material has been obtained. The fork has been completed and visitors who see it get an excellent appreciation of the size telescope we are building, the design we have obtained and the precision we are expecting. We have several options to obtain a base at reasonable cost and fabrication of the polar axis is being negotiated. Plans for the telescope itself are in the final stages and fabrication of some of the parts is underway.

## ALL-IOWA STAR PARTY

(from SCAN, newsletter of the Des Moines AS)

The Des Moines AS held an all-Iowa star party on Friday, July 31st, at Fick Observatory. The clouds were still lurking about for most of the night, but there were plenty of holes in them that allowed reasonably prolonged periods of observing.

Seven members of the Cedar Amateur Astronomers from Cedar Rapids were in attendance. Among them was Basil Tilley who brought along his recently completed 17.5" f/4.5 Dobsonian made from the Coulter Optics set. The views through it were quite spectacular. It was very easy to use and very well constructed.

Two members from the Ames group were present. Eight members of the Des Moines AS attended including Mark Alberts who brought the society 16" along.

Plans are to try to hold all-Iowa star parties at least once a year in the future. The intent is to have as many Iowa groups represented as possible.

## SARA ON THE AIR

(reprinted from the Newsletter of Rockford AA)

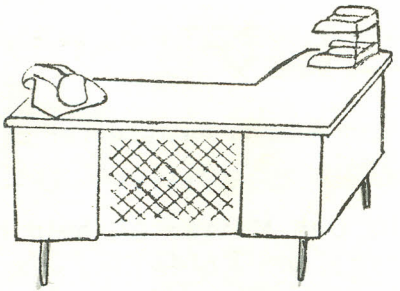
SARA, Society of Amateur Radio Astronomers, is a new member of the Astronomical League. If you have an interest in radio astronomy, this group may be just what you have been looking for.

Membership is open to all. Interest is the essential ingredient needed to become a member.

SARA has its roots in the earlier Radio Astronomy Network (RAN) which was a part of the Radio Astronomy Commission. Persons interested in more information about SARA and radio astronomy are encouraged to contact Jack Chancellor, W9SON, 3305 Searles Av., Rockford IL 61103. Please include a business size SASE.

NO LUNCH 5PM buffet Repellant

## EDITOR'S CORNER



6PM FRI. 9AM

OBS 878-9979

The Council of the Astronomical League announced several exciting new programs at the Kutztown convention this year. Among them are the "National Amateur Astronomy Observatory" program, an astronomical Computer Users Group and a concentrated effort to expand the League Trust Fund. Details of these and other programs will be forthcoming in future issues of the REFLECTOR.

It has been five years, now, since the League began a concerted effort to get its finances under control. Perhaps significantly, that effort began at the 1976 national convention, also at Kutztown. All of the League officers are to be congratulated on accomplishing this difficult task. Care must be taken by future administrations to ascertain that the League remains fiscally responsible while meeting its commitment to the member societies and individuals.

Now that it has demonstrated fiscal responsibility in its operating budget, it is only fitting that the League direct its efforts to expanding the Trust Fund. Originally established to provide income (via interest only, the principal is inviolate) for special projects, the Fund's balance of $3000 - $4000 has proven inadequate as a funding source.

The Council's announced short term goal is to boost the Trust Fund to at least $25,000 in the next four years. Since the League, via its member societies, represents over 8000 amateur astronomers, a rather modest (tax deductable) donation by each member would allow rapid achievement of the short term goal. I urge all members to support the Trust Fund to the extent they are able.

Turning briefly to another topic, you will notice yet another change in printing fonts for this issue of NORTHERN LIGHTS.

This proportional font allows me to expand the content of an issue by about 20% while still printing only four pages. Accordingly, I again request your assistance to help me fill the issues. If I have insufficient material, you will see a lot of "white space."

I am particularly looking for brief articles of general interest. They may range up to six double spaced, typed pages. Remember, this is **YOUR** newsletter. It can be whatever **YOU** make it.

## STAR STRUCK STUDENTS

(reprinted from the Fox Valley Observer, newsletter of the Fox Valley AS)

Having all witnessed the the immensity and incomparable beauty of the our universe, a small group of interested students is now a strong organization of three high school astronomy clubs. They look forward to working closely with the Fox Valley AS in spreading the enthusiasm that is amateur astronomy.

The clubs have set realistic goals such as: to publicly promote astronomy through all forms of educational activities; to set up a library and newsletter; to conduct useful research projects; to participate and communicate with other astronomy organizations. They also hope to start other astronomy clubs at schools in surrounding towns.

Aside from these general goals, the clubs will be working on more specific short term projects. They will refurbish a library and an observatory housing a 4" refractor. Mirror grinding facilities and a coelostat solar telescope are being completed. Students will form research groups in various areas including solar astronomy, astrophotography, telescope making and computer applications. Astronomy study courses are being prepared by their sponsor in order to insure that members can increase their knowledge.

**DEADLINE FOR DECEMBER ISSUE IS NOVEMBER 29**