

WESTMINSTER ASTRONOMICAL SOCIETY
of Carroll County, Maryland

Newsletter for May 1985, Vol 2 No 5

May Meeting

WAS member Blaine Roelke will present an overview on amateur photometry at the May meeting. Blaine is active in this field and is a member of the International Amateur-Professional Photoelectric Photometry (IAPPP) organization. Blaine's plans include combining his photometer with the 17.5" Newtonian Telescope being built by Mike Potter and himself. The instrument will be conveniently located in Blaine's observatory.

The meeting starts at 7:30 p.m., Wednesday May 29. It will be held in the "small conference room" at the Main branch of the Carroll County Public Library, 50 E. Main St., in Westminster.

Westminster Star Party May 18

What does Spring bring in abundance to the amateur, besides dandelions? The answer is Galaxies! A star party will be held on Saturday May 18 at Curt Roelle's, 3481 Salem Bottom Road, where a 12.5" telescope will be busy hunting galaxies. The star party will begin about 8:00. If you do not know how to get there, call Curt at 848-6384 for directions.

ASTRONOMY DAY is June 8

WAS Astronomy Day activities will be on Saturday June 8, starting at 10:00 a.m. and ending at 4:00 p.m. The location will be the courtyard of the Carroll County Public Library in Westminster. Volunteers are needed and you will be contacted to determine if and when you will be available to help.

Exhibits and activities will include safe solar observing, Comet Halley information, and a special guest. The special guest is a piece of the moon brought back by one of the Apollo lunar exploration missions. The Lunar Sample is being loaned to WAS by the NASA Goddard Space Flight Center, in Greenbelt.

At the end of the newsletter is a sheet with some brief facts about the sun and Halley's comet. Visitors are going to be asking questions, so it pays to be a little bit prepared.

In case of poor weather, all exhibits shall be moved indoors but Astronomy Day will be held rain or shine.

Invitation to Gettysburg College Observatory

WAS has been invited to have a star party at Gettysburg College Observatory on the evening of Monday, June 10. Being a weeknight, the star party should wrap up by 11:00 p.m. Details of the meeting time and place will be forthcoming. For more information, call Curt Roelle, 848-6384.

The observatory is equipped with a 16" Ealing instrument, with clock drive built by the Sigma Company. It is used primar-

ily for photometric work.

"Tonight's Asteroids" -- Free Sample of a Free Newsletter

An interesting aspect of amateur astronomy can be the observing of asteroids. Asteroids, visible in amateur instruments, range in size from tens to hundreds of miles in diameter. Since an asteroid appears star-like in a telescope, several observations on different nights may be necessary to determine which "star" is the asteroid. The asteroid is the star that will have moved.

Tonight's Asteroids is a bimonthly newsletter offered by one Dr. J. U. Gunter, for the price of a self-addressed stamped envelope (do not send more than four at a time). The recent issue has been reduced to save space, and is included in the newsletter. Though the small size renders the finder charts useless, you can see for yourself if Dr. Gunter's newsletter would add to your observing program. The newsletter includes subscription information and the address.

Notes on Two Astronomy Displays

Two displays have been created by WAS members for May viewing. In Pennsylvania at the Hanover YMCA is a display prepared by Eugene Sterner. Featured in the display is NASA's Hubble Space Telescope and information about WAS.

At the Public Library in Westminster, a display case has been used to publicize amateur astronomy, showing steps that one can take in becoming an amateur, and photographs of telescopes belonging to club members. This display should still be there by meeting time.

April Space Telescope Lecture Summary

The Hubble Space Telescope was the subject of the talk given by Dr. Rodger Doxsey at our April meeting. Dr. Doxsey is a staff astronomer at the Space Telescope Science Institute in Baltimore.

The Hubble Space Telescope (or HST) is scheduled to be launched into earth orbit by the shuttle Atlantis sometime in mid August, 1986. Once operational, some three to six months after launch, HST will provide astronomers unprecedented resolution in optical and near optical wavelengths. As Dr. Doxsey pointed out, HST, with an aperture of 2.4 meters (about 94 inches), is not a particularly large telescope. It will, however, be above the constantly turbulent atmosphere which limits ground-based resolution to about 1 arcsecond (1/3600 degree). A well built six inch telescope is theoretically able to resolve (or cleanly separate) objects which are only 1 arcsecond apart in the sky. In theory, a well made 200 inch telescope could resolve objects only 1/33 arcsecond apart. In practice, however, it is the atmosphere which limits all earth-bound visual wavelength telescopic resolution to at best 1/2 arcsecond. HST, unencumbered by the atmosphere, will realize the full resolving power allowed it by the laws of physics, about 1/15 arcsecond.

Not only does the atmosphere limit visual resolution, it absorbs almost all ultraviolet radiation making earth-bound stud-

ies in these wavelengths virtually impossible. HST is expected to be particularly good at observing objects in the ultraviolet. In fact, one of the eight instruments onboard, the high resolution spectrograph (HRS), is designed solely for observations in the ultraviolet.

None of these capabilities comes easily or cheaply. The project is several years behind schedule and hundreds of millions of dollars over budget. While certainly distressing, these sorts of problems are not unusual for NASA projects which, like HST, require development of significant new technologies.

The greatest of these technological challenges is the system for pointing and guiding the telescope. HST must be able to lock onto an object and guide for up to an hour with a maximum guiding error of 0.007 arcsecond. To achieve this, the Space Telescope Science Institute is compiling a star catalogue which, when completed, will contain information on almost 30 million stars. The Guide Star Catalogue will contain 100 times more stars than the largest star catalog to date with a positional accuracy several times better than the Smithsonian Astrophysical Observatory Atlas. By itself, the Guide Star Catalog would stand as a major astronomical achievement and will certainly remain one of the most important contributions to astronomy long after HST has completed its projected 15 year mission.

The Space Telescope Science Institute, located on the edge of the Johns Hopkins campus in Baltimore, is sure to become one of the world's leading centers for astronomical research beginning with the launch and leading into the dawn of the 21st century. We are indeed fortunate to be located so near the center of all this activity.

-- Mike Potter

(ed: For more information on the HST, see the April and May issues of Sky & Telescope magazine.)

WAS Calendar

MAY 18 08:00 p.m. EDT Star Party at Curt Roelle home
19 05:41 p.m. New Moon
29 07:30 p.m. May meeting -- Library in Westminster
JUN 08 10:00 a.m. - 4:00 p.m. -- Astronomy Day at Library
10 Gettysburg College Observatory field trip

SOLAR FACTS

SIZE: diameter of 865,000 miles, or 109 times Earth's
(the sun could contain one million Earths)

DISTANCE: approx. 93 million miles from Earth

MASS: 333,000 times as massive as Earth

COMPOSITION: Almost entirely hydrogen gas

TEMPERATURE: 10,000 F at surface, at least 15 million at center

AGE: estimated at 4.5 billion years

FORECAST: Little change for 5 billion years, but then the
probability of becoming a red giant

SURFACE FEATURES: The following are visible in a small telescope:

- * SUNSPOTS - Bright spots on the sun that appear black
when viewed against the solar surface.
- * PENUMBRA - The outer (lighter) portion of some of
the larger sunspots.
- * UMBRA - The inner (darker) portion of some of the
larger sunspots.
- * FACULAE - White spots that are sometimes seen.

HALLEY FACTS

PERIOD: 76 years

FIRST OBSERVED: 239 B.C.

FIRST PREDICTED RETURN: 1759

EPHEMERIS: The following events are for the coming apparition:

September:	Visible in large backyard telescopes
October:	Visible in modest backyard telescopes
December:	Visible in binoculars and maybe naked eye
January:	Comet brightens, but sinks lower in west
February:	Invisible as it goes around sun
March:	Reappears as morning object
April:	Best views: closest to earth on 11th

Westminster Astronomical Society

3481 Salem Bottom Road
Westminster, Maryland 21157



Curt & Cheryl Roelle
3481 Salem Bottom Rd.
Westminster, MD 21157

OUR FEATURED ASTEROIDS

(Objects marked with an asterisk are at unusually favorable opposition in 1985. F. Pilcher: THE MINOR PLANET BULLETIN, 12-1, Jan-Mar 1985.)

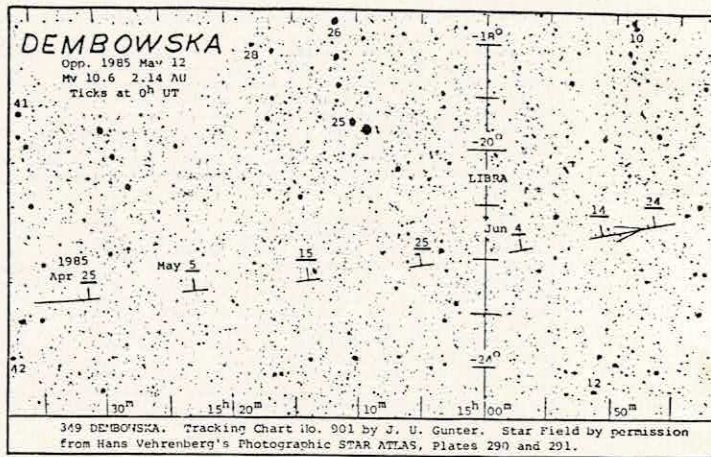
349 DEMBOWSKA: Estimated diameter (D) 145 km. Orbital period (P) 4.99714 years. Inclination to Earth's orbit (I) 8.25 degrees. Rotation period (R) 4.70 hours. Albedo (A) 27.8%. Discovered (Ds) 1892 Dec 9 at Nice by August Honoré Pierre Charlois (1864-1910). This French astronomer, memorialized by 1510 CHARLOIS, began his professional career at age 16 as an assistant to the director of Marseille Observatory. His zest for work and his exceptional mathematical skills were quickly recognized. Hence he was assigned to the task of searching for minor planets and computing their orbits. Observing at the Coude focus of the 0.38-m Gautier equatorial telescope, Charlois discovered 99 asteroids. DEMBOWSKA memorializes the Italian astronomer Baron Ercole Dembowski (1812-1881). Note that its orbital period is almost exactly five years. Its position in space with respect to Earth, Sun, and stars repeats itself almost exactly every five years. On any given date this year it is in the same telescopic field (actually within 20 arcminutes) as it was in 1980 and will be again in 1990.

113 AMALTHEA: D 47 km. P 3.66 yr. I 5.04 deg. R >10 hr. A 24.4%. Ds 1871 Mar 12 at Düsseldorf by Carl Theodor Robert Luther (1822-1900). According to Antonio Paluzie-Borrelli this planet was named by Berlin astronomers for the daughter of Melissus, mythological king of Crete. She was said to have nourished Jupiter with the milk of a goat. Incidentally, the fifth satellite of Jupiter is also named Amalthea.

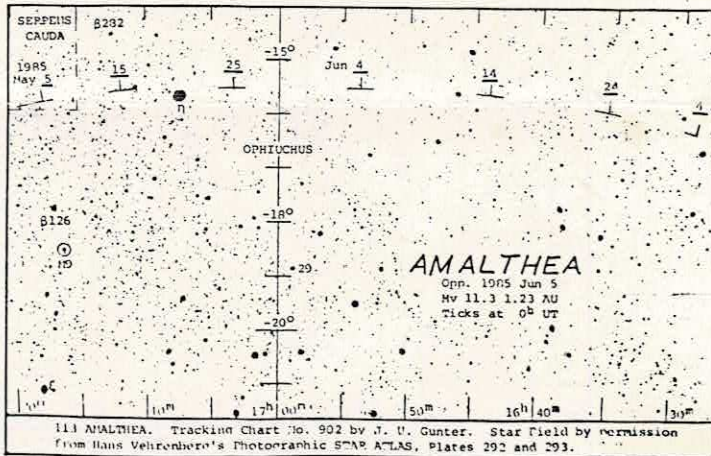
19 FORTUNA: D 221 km. P 3.82 yr. I 1.57 deg. R 7.46 hr. A 3.7%. Ds 1852 Aug 22 at London by John Russell Hind (1823-1895). Acting on a suggestion of amateur George Bishop, at whose private observatory this planet was found, Hind named it for the goddess of fortune, dispenser of riches and poverty, pleasures and misfortunes.

27 EUTERPE: D 117 km. P 3.60 yr. I 1.59 deg. R 8.50 hr. A 16.2%. Ds 1853 Nov 8 at London by J. R. Hind. This discoverer of 10 asteroids is memorialized by 1897 HIND. An asteroid is named for each of the nine muses in classical mythology. Euterpe was the muse of music.

***137 MELIBOEA:** D 150 km. P 5.52 yr. I 13.43 deg. A 3.8%. Ds 1874 Apr 27 at Pola, Austria, by Johann Palisa (1848-1925). The town of discovery on the Adriatic Sea is now called Pula and is in Yugoslavia. As a young naval officer Palisa began his career at the small observatory attached to the naval academy at Pola. While there he found the first asteroid to be discovered in Austria and 27 more, this one being the second. By way of punishment for appearing in casual dress at an admiral's inspection, Palisa was transferred to the Vienna Observatory.



349 DEMBOWSKA. Tracking Chart No. 901 by J. U. Gunter. Star Field by permission from Hans Vehrenberg's Photographic STAR ATLAS, Plates 290 and 291.



113 AMALTHEA. Tracking Chart No. 902 by J. U. Gunter. Star Field by permission from Hans Vehrenberg's Photographic STAR ATLAS, Plates 292 and 293.

In Vienna Palisa had access to a 27-in refractor, and he worked happily with it for the rest of his life. He discovered over 120 minor planets, most of them by the slow and tedious method of visual search. He held the record for number of asteroids observed visually for more than half a century - a record recently surpassed by Frederick Pilcher. Palisa is memorialized by 914 PALISANA.

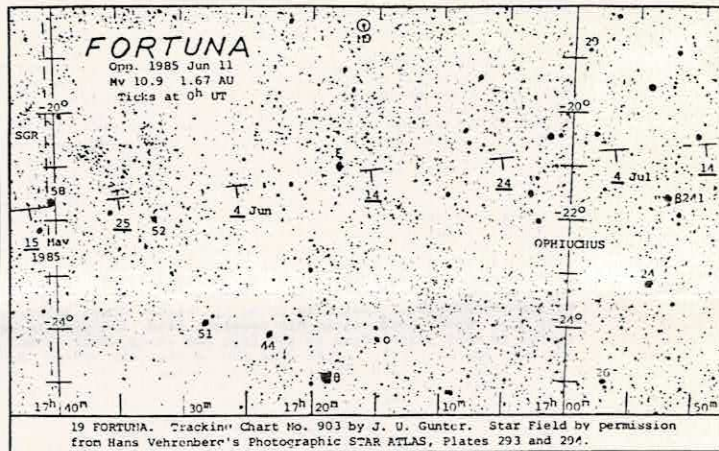
***1627 IVAR:** D 7.0 km. P 2.5427 yr. I 8.43 deg. Ds 1929 Sep 25 at Johannesburg, South Africa, by Ejnar Hertzsprung. Professor Hertzsprung, who is memorialized by 1693 HERTZSPRUNG, was director of the Leiden Observatory in The Netherlands from 1934 until 1945. A well-known authority in the field of astronomical photometry, he initiated the Leiden Variable Star Survey of the Southern Milky Way. In this project many asteroids and several comets were found. IVAR is an Earth-grazing asteroid in the AMOR group. As Professor Pilcher pointed out in TA 89, IVAR, with a period of 2.5427 years, is in 11:28 resonance with Earth (11 x 2.5427 = 28.0). Close approaches therefore occur every 28 years, this year's being one of them. For several days in mid-July it is only 0.2 AU from Earth. In Chart 906, IVAR's position in the morning sky is shown a matter of a few minutes, especially while it passes near several moderately bright stars. IVAR is at perihelion in July, nearly three months before it reaches opposition in October. It will display direct motion during the period of closest approach to Earth, rather than the more usual retrograde motion.

***** CLEANINGS FROM THE FAN MAIL *****

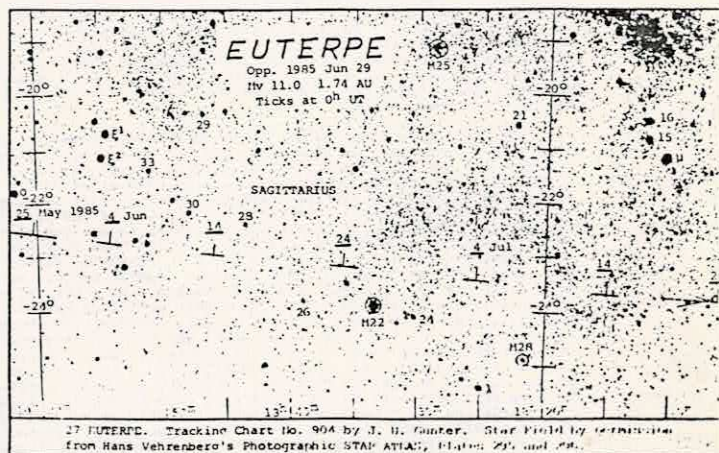
(As background for the following letter, please refer to Leif J. Robinson's editorial "Why Mount Wilson Shouldn't Be Scrapped" in SKY & TELESCOPE, March 1985, p 197, and Ben Mayer's letter, April issue, p 293.)

BEN MAYER, Los Angeles, CA: I am pursuing my earnest efforts to try and achieve a successful breakthrough with a program which is called "Halley's Comet Live from Mount Wilson". I recently visited Dr. George Preston (the director of Mt. Wilson and Las Campanas Observatories) in Pasadena and have just finished the required formal proposal to the Carnegie Institution in Washington which controls and operates both facilities. There is even a national television network interested in videocasting such images live when possible, or else taped through their L.A. facilities. Please help arrest the planned mothballing of Mt. Wilson and cross your fingers or, better yet, write a letter to the Carnegie Institution on your astronomy club stationery with every member signing your petition so we can make some productive moves and obtain live images of the comet throughout its passage, from venerable Mt. Wilson's 100-inch.

As I stated in my proposal to the Carnegie Institution, the political aspects of the "Halley's Comet Live from Mt. Wilson" program cannot be overlooked. Even now the Soviet Union and France have two separate missions underway to Comet Halley. Japan has launched two deep-space probes. A European consortium is mounting a Halley mission named "Giotto". The United States with its unparalleled expertise in space and telemetry is conspicuous by its absence from the ranks of the pioneering nations in the Halley quest. The possible "launch windows" for Halley probes have closed. The Mt. Wilson program presents us with the last real-time opportunities to shine in an area of great American expertise: live TV coverage. The 100-inch mirror becomes a launch window of last resort if dedicated to Halley's Comet for the duration. We could trade near-nucleus images with other nations through the International Halley Watch. (Quoted from PROBLICOM BULLETIN 149. Jay.)



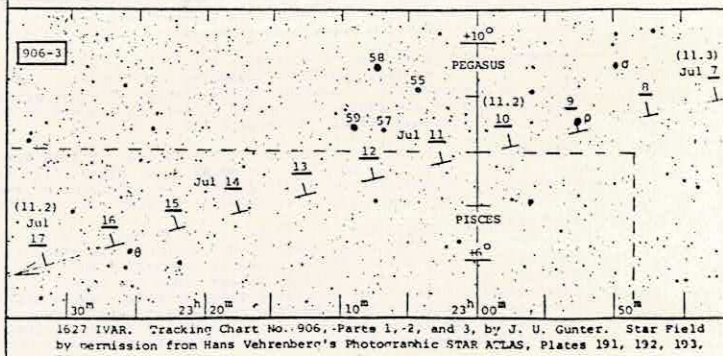
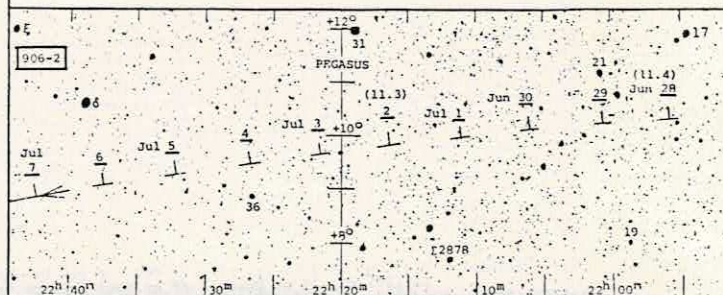
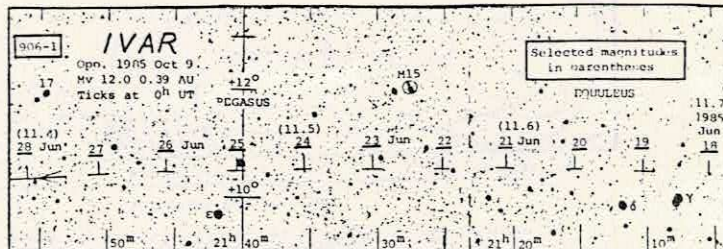
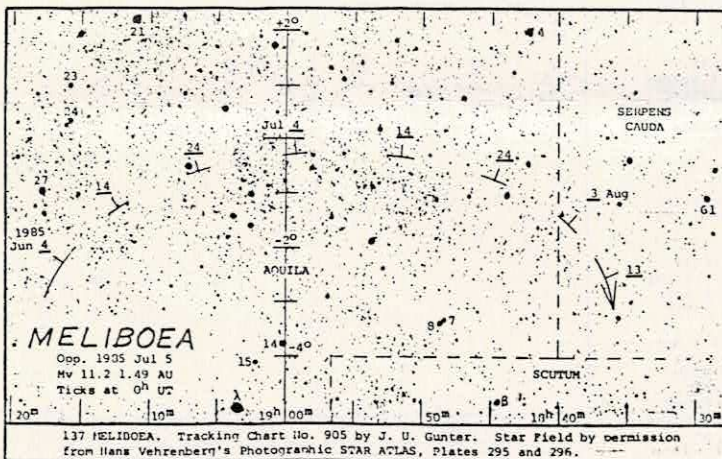
19 FORTUNA. Tracking Chart No. 903 by J. U. Gunter. Star Field by permission from Hans Vehrenberg's Photographic STAR ATLAS, Plates 293 and 294.



27 EUTERPE. Tracking Chart No. 904 by J. U. Gunter. Star Field by permission from Hans Vehrenberg's Photographic STAR ATLAS, Plates 295 and 296.

STÉPHANE LOPEZ, Paris, France: I was very pleased to receive the extra issue of TA in mid-December. I spotted Comet Levy-Rudenko as soon as the 15th, and that's the first time that I have seen a comet. I was very excited when I saw my name in your publication. I was proud to show this to my parents who don't understand my passion for astronomy, and don't appreciate my opening the window when the thermometer is near freezing. You will understand I can't observe anything through the window when it's closed. Now I've seen 10 asteroids - CERES, IRIS, PALLAS, VESTA, KLOTHO, VIBILIA, HYGIEA, THALIA, FLORA, and HEBE - only some 3200 to go. (Hang in there! After all, amateur Hermann Goldschmidt discovered 14 asteroids observing through an open window of his home in Paris! Jay.)

C. JOHANNINK, Denekamp, The Netherlands: After a delay of some month my number of asteroid observations is growing again. Using your charts in October I could find PERAGA, FIDES, KLOTHO, and VIBILIA. The last week in December I was in Haute Provence in southern France, and did some asteroid observing with Patrick Poitevin from Belgium who was there too. Using Atlas Stellarum and some ephemerides from Jean Meus, we found HERA, FAUNA, HARMONIA, and THALIA. This region in southern France is very good for astronomy. During two weeks of meteor observing last July only two nights were cloudy. In December six of eight nights were very good, but very cold too. The "mistral" (a northern wind) blew for five days continuously. This causes very bad seeing. Even in a 16-inch Newtonian, Albireo was difficult to separate. Finally in February I could observe all the objects you included in the January issue of TA. With ILMATAR my total number of asteroids personally observed reached 51.



A COUPLE OF RECENT PUBLICATIONS BY AMATEURS

A DECADE OF COMETS by Don Machholz. California amateur Machholz has made an interesting study of the 33 comets discovered by amateur astronomers during the decade just ended (1975-1984 inclusive). Don has been a comet observer for years, and many of his observations have been published in IAU CIRCULARS and in INTERNATIONAL COMET QUARTERLY. Since 1978 he has written a regular monthly column entitled "Comet Comments" which is published in several astronomy club newsletters. He has spent hours searching for comets, an effort which rewarded him on Sep 12, 1978 (after 1700 hours at the eyepiece) with Comet Machholz (1978A). Don has gleaned the information for this study from a wide variety of sources, including personal correspondence with many of the discoverers. Following are a few samples of what he found. Comet Boethin (1975a), discovered in the Philippines by Rev. Leo Boethin, was almost lost because the letter reporting it was not received in Cambridge, MA, until 10 days later. There were at least 50 independent discoverers of Comet Kobayashi-Berger-Milon (1975h), including one a few hours before Doug Berger's find, and three more before Dennis Wilson's find. William Bradfield of Australia found his sixth, Comet Bradfield (1976d), only nine search hours after his previous find, and with it he had found six comets in four years, five in the last two years, four in the last year, three in the last four months, and two in the last month! Merlin Kohler, a electronics technician who found Comet Kohler (1977m), was the first winner of the Roger Tuthill Award of \$250 given to any American amateur who officially discovers a comet by visual means. Rolf Meier of Canada, the first to search with a large telescope (16-inch reflector), found four of the 33 comets. Roy Panther of England found Comet Panther (1980u) on Christmas night 33 years after he first started sweeping for comets. Comet Levy-Rudenko (1984t), the last comet in the study, was the first to be discovered by American amateurs in over six years, the most recent previous one in 1971 being Comet Machholz! Everyone will find much of interest in this book, and comet enthusiasts will especially benefit from the vast information on when, where, and how to search for comets. (A DECADE OF COMETS, 111 neatly typed single-spaced pages, 8" x 11", ring-bound in soft cover. Order from Don Machholz, 5234 Camden Ave., San Jose, CA 95124. Price \$8.00 postpaid; by air mail overseas \$12.00.)

THE UPSILON PEGASID METEOR SHOWER by Harold Povenmire. Florida amateur Harold Povenmire has been doing serious meteor work since 1948, and has observed the Perseids for 36 consecutive years. He has observed over 40,000 meteors, and has photographed 600 of them along with several fireballs. He founded the Florida Fireball Patrol in 1972 shortly after observing a brilliant fireball, and it has become one of the most successful in the world. Povenmire is the author of several books, one of the best known being FIREBALLS, METEORS, AND METEORITES, which last year was translated into Japanese. On the night of Aug 8, 1975, Povenmire discovered the Upsilon Pegasus Meteor Shower when he observed several meteors with a radiant near this star in the Great Square of Pegasus. No other radiant in that region of the sky was known. He and others worldwide have observed meteors from this radiant in every subsequent year. Povenmire's monograph contains everything that is presently known about the Upsilon Pegasids. It consists of about 80 unbound pages of neatly typed text, tables, graphs, diagrams, charts, a glossary, a 27-reference bibliography, and numerous photocopies of photographs of Upsilon Pegasids, including fireballs. Povenmire expects to have this published in book form when more data are gathered. Meanwhile he is offering the manuscript non-profit in its present form for \$12.00 per copy postpaid. Send order to him at 215 Osage Drive, Indian Harbour Beach, FL 32937. He offers a free fact sheet for an SASE and welcomes questions about this year's shower at maximum in a near moonless sky, Aug 6-19.

Dear Fellow Asteroiders:

The next regular issue of TONIGHT'S ASTEROIDS will be ready to mail about July 1. Please check below to be sure you have sufficient credit here to receive each regular and special issue on time. You can send four long white SASEs (22c) and a message for one first class stamp. Please do not send more than four envelopes at a time as too many envelopes cause various kinds of problems here. Subscribers who have not yet sent extra postage for envelopes here are reminded again that it is past time to do so. Overseas subscribers may remit for postage by international money order or cheque (not exceeding \$10.00 in U.S. funds) and I will supply envelopes for air mail delivery. Your credit here is as follows:

Stamped envelopes one Foreign credit \$

HALLEY'S COMET PACKET: A nontechnical information packet about the return of Halley's Comet is being made available by the nonprofit Astronomical Society of the Pacific. The 34-page pamphlet is designed to prepare the average person for finding, viewing, and understanding the most famous of all comets as it makes its once-every-76-year journey into the inner Solar System. Unfortunately, during this pass, Halley's Comet is expected to be quite dim and may be difficult to see from most urban areas in the U.S. Thus the packet includes helpful finding charts, detailed schedules, and clear instructions to help locate the comet, as well as introductory articles about comet science and comet lore, a preview of the spacecraft missions meeting the comet, a thorough reading list, and an introduction to astronomy as a hobby. To obtain the packet, send a donation of \$4.00 to A.S.P., Comet Packet Dept., 1290 24th Ave., San Francisco, CA 94122.

FURTHER NOTE ON IVAR'S DISCOVERER: In 1911 the Danish astronomer Ejnar Hertzsprung (1873-1967) compared the colors and luminosities of stars within several clusters by plotting their magnitudes against their colors. In 1913 the American astronomer Henry-Norris Russell (1877-1957) undertook a similar investigation of stars in the solar neighborhood by plotting the absolute magnitudes of stars of known distance against their spectral classes. These investigations by Hertzsprung and by Russell led to an extremely important discovery concerning the relation between the luminosities and surface temperatures of stars. The discovery is exhibited graphically on a diagram named in honor of these astronomers - the Hertzsprung-Russell, or H-R, diagram. (Abell: EXPLORATION OF THE UNIVERSE, 2nd ed.)

DAVID PHIPPS, Ojai, CA, writes that applications are now being accepted for the 27th annual Summer Science Program, to be held at The Thacher School in rural Ojai, California, from 24 June through 4 August, 1985. In this Program, 36 of the nation's brightest high school math and science majors (between their junior and senior years) spend six weeks investigating university level astronomy, mathematics and physics. Much of the program is centered around the research problem of photographically observing selected asteroids and computing their orbits. A descriptive brochure and application may be obtained from the Summer Science Program, The Thacher School, Ojai, CA 93023.

Best wishes for clear skies and successful asteroiding!

Jay.