

GuideStar

At the May 7 meeting...

Opportunities for Scientific Contributions to the Study of Minor Planets in 2010

- Paul Maley

What kind of an eclipse only lasts from 2 to 10 seconds yet offers huge possibilities for HAS members to make a unique science contribution? The answer is timing eclipses of faint stars by distant asteroids. Generally without even leaving home you can assist in characterizing certain types of objects in the solar system that might one day threaten earth. These are truly rare events and just to see one of them is exciting in itself. Anyone can view the moon or a distant galaxy almost any night of the week, but being in the right spot at the right time when the shadow of an asteroid sweeps over you can make for a profound experience.

Many HAS members are uniquely qualified to spot 10th to 12th magnitude stars, typical targets of these eclipses. Because it takes a group of observers to make this work, your timing of the exact moments when the star vanishes and then returns can help 1) define the asteroid's real shape, 2) determine whether the star it eclipses might have a hidden companion, 3) potentially discover an asteroid satellite, 4) enable errors in the asteroid orbital elements or position of the star to be measured. It is also one discipline in astronomy where even if you do not see an eclipse during the predicted time, that your negative data could be of major importance. Become a "shadow master"!

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HAS Web Page:

<http://www.AstronomyHouston.org>

See the *GuideStar's* Monthly Calendar of Events to confirm dates and times of all events for the month, and check the Web Page for any last minute changes.

Schedule of meeting activities:

All meetings are at the University of Houston Science and Research building. See the inside back page for directions to the location.

Novice meeting: 7:00 p.m.
Determine Stellar and Galactic Distances — Richard Nugent, HAS Education Chair, IOTA

General meeting: 8:00 p.m

See last page for directions and more information.

The Houston Astronomical Society

The Houston Astronomical Society is a non-profit corporation organized under section 501 (C) 3 of the Internal Revenue Code. The Society was formed for education and scientific purposes. All contributions and gifts are deductible for federal income tax purposes. General membership meetings are open to the public and attendance is encouraged.

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Special Interest Groups & Help Committees

These are now listed on the inside of *GuideStar* (not every month). See the Table of Contents

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 Dr. Lawrence Pinsky, U. of H.
 Dr. Lawrence Armendarez, U. of St. Thomas

Dues and Membership Information

Annual Dues:Regular\$36
 Associate.....\$6
 Sustaining\$50
 Student\$12
 Honorary..... N/C

All members have the right to participate in Society functions and to use the Observatory Site. Regular and Student Members receive a subscription to *The Reflector*. Regular, Student, and Honorary Members receive *The GuideStar*. Associate Members, immediate family members of a Regular Member, have all membership rights, but do not receive publications. Sustaining members have the same rights as regular members with the additional dues treated as a donation to the Society. *Sky & Telescope* and *Astronomy* magazines are available to members at a discount.

Membership Application: Send funds to address shown on last page of *GuideStar*. Attention - Treasurer, along with the following information: Name, Address, Phone Number, Special Interests in Astronomy, Do you own a Telescope? (If so, what kind?), and where you first heard of H.A.S.

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Special Interest Group Listing

Any member who wants specific information on a SIG listed below may call the listed individual. Also, see the "Ad Hoc Committee Chairpersons" on the inside front cover and the "Special Help Volunteers" listing (not in every issue).

Advanced.....Bill Leach.....281-893-4057

2010 Star Party Dates

- 9/11 All Clubs with B-B-Que
- 10/9 All clubs annual picnic
- 12/4 HAS members only

Other Meetings...

Fort Bend Astronomy Club meets the third Friday of the month at 8:00 p.m. at the First Colony conference Center. Novice meeting begins at 7:00, regular meeting begins at 8:00. Web site: <http://www.fbac.org>

Johnson Space Center Astronomical Society meets in the the Lunar and Planetary Institute on the 2nd Friday of each month. Web site: www.jscas.net

North Houston Astronomy Club meets at 7:30 p.m. on the 4th Friday of each month in the Teaching Theatre of the Student Center at Kingwood College. Call 281-312-1650 or E-mail bill.leach@nhmccd.edu. Web site: www.astronomyclub.org

May/June Calendar



Date	Time	Event
May		
5	11:15 p.m.	Moon at last quarter
7	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
14	8:05 p.m.	New Moon
15		Prime Night Columbus Observing Site
20	6:43 p.m.	Moon at first quarter
26	9:00 p.m.	Mercury at greatest elongation west
27	6:07 p.m.	Full Moon
June		
4	5:13 p.m.	Moon at last quarter
	7:00 p.m.	HAS Novice Meeting, U of H
	8:00 p.m.	HAS General Meeting, U of H
12	6:14 a.m.	New Moon Prime Night, Columbus Site
18	11:30 p.m.	Moon at first quarter
21	6:29 a.m.	Summer Solstice
25	10:00 a.m.	Pluto at opposition
26	6:30 a.m.	Full Moon

Send calendar events to Doug McCormick
- skygazer10@sbcglobal.net

Check the web site:
www.astronomyhouston.org
Webmaster: Kay McCallum
kaym@mcclibrary.net

The Houston Astronomical Society Web page has information on the society, its resources, and meeting information. Want your astronomy work and name on the Internet for the whole world to see? Have some neat equipment? Pictures in film, CCD, hand drawings or video format are all welcome on the page. Do you have an idea to improve the page? I'm listening. Send me Email at kaym@mcclibrary.net.

Welcome New Members

Ronan B. Smith

Bernard Koudelka

Jacob Allen Morales

Jessica Morgan

Ed Malewitz

Daniel James Zaccariello

Hagit Barkai

Siobhan Saragusa

★
★ ★ ★
GuideStar deadline
★
for the June
★ ★ ★
★ ★ **issue** ★
★ ★ ★
★ ★ **is May 15** ★
★ ★ ★

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GuideStar_HAS

Observations... of the editor

by Bill Pellerin, GuideStar Editor

Remember Windows 95?

I was digging through some old stuff last weekend and came across an old laptop computer that I hadn't turned on in years. For fun, I plugged it in and booted it up... to Windows 95. Remember that?

I do. It was revolutionary at the time because the whole user interface was so different from previous versions of Windows. Back then, I went to a special session with Microsoft folks who showed us (I was working in IT) the wonders of Windows 95. It seemed pretty impressive to us at the time.

Loaded on my old machine was an early version of TheSky software, so I started it up. It didn't work because it couldn't find its database of objects. Oh yeah, the database didn't fit on the hard drive so I had to leave the information on its CD. There's more... the computer didn't have a CD drive in it, so I had to use an external CD drive. I have no idea where the CD is for this application, so I never got it running.

The laptop has a diskette drive, but no USB ports, and no Ethernet network ports. There was one serial port and a parallel printer port. Not only that, the laptop was more like a brick than a portable device. I used this 15 years ago, or so, and I remember taking it to the Texas Star Party. I was very impressed by this machine and how far we've come in the last 15 years. I wonder how things will be in the next 15 years.

What's next?

Computers will be more powerful and be able to do things we can only imagine right now. I'm guessing that the biggest changes we're going to see are in imaging technology. The imaging chips will get bigger and cheaper but they'll probably be more versatile as well. Today, imagers often (but not always) take separate images with color filters and then combine those images using image processing software. Future cameras may allow us to tune the camera electronically to see only the color of light we want to see. Or the ability to do single-image full-color deep sky photography may be improved.

I expect that telescope mounts will get considerably more sophisticated. New telescopes will set themselves up (see the new Meade models) so all you have to do is tell it what you want to see. I expect future models to do this much more precisely. By taking a picture of the sky seen through the telescope, the electronics will know exactly where it is pointed and will be able to automatically

correct any pointing errors that exist. You can already see these capabilities in high-end systems. You see the relatively new (to me, at least) phrase 'plate solving' used more often.

The term means that a computer will 'look at' the image and figure out where on the sky this image was taken. The basis for this capability is the ability of computers to do pattern matching — in this case matching the image and the sky map, something we've often done 'by hand' in the past.

If you've used the Global Rent a Scope, there's a Photometrica (photometry) option that does a plate solution for you. Photometrica can tell you which stars in the image are variable stars, identifies the comparison stars and determine the magnitude of the variable star(s).

See you at the Texas Star Party

If you're going to the 2010 TSP you are in get-ready mode. I hope you're going to make the trip this year. I'll be doing a presentation on 'Observing Stellar Evolution' during the day on Wednesday.

See you there!

Until next time...

clear skies and new moons!

..Bill

Just Looking

A GuideStar Interview by Clayton L. Jeter

Gary Seronik — Telescope Maker



Once every month, I take my stroll out to the mailbox to snatch the newest issue of *Sky and Telescope*. As I sit in my recliner later and thumb through its pages, I always first turn to my favorite monthly article, 'Telescope Workshop'. I savor every word. As you all know, I'm a telescope junkie... all designs. For some reason, the telescope (excluding the hand-crank ice cream maker) is my favorite machine on the planet.



In Egypt photographing the 2006 total eclipse of the Sun

sign. Enjoy and learn....here's Gary...

The Gary Seronik bio...

An award-winning writer, experienced lecturer, observer, and equipment reviewer, Gary Seronik has been fascinated by the night sky since childhood. Indeed, he began subscribing to *Sky & Telescope* magazine in 1973 when he was only 12 years old! "The truth is, I can't remember a time when I wasn't drawn to the night sky. Maybe part of the reason was that my family lived on an orchard under a splendid, dark rural sky. For me, the stars were as much a part of nature as the birds in the trees and the bugs crawling on the ground," he recalls.

In the early 1990's, Gary's passion for sharing the wonders of the night sky eventually lead him to the H.R. MacMillan Space Centre in Vancouver, British Columbia, where he wrote and produced

'Telescope Workshop' is a monthly article written by Gary Seronik. He's an avid observer of the moon and planets. He's also a scope lover too like me. Below is Gary's bio that I'll know you will enjoy. He's got some good thoughts and ideas on telescope de-

sign. In 1996 he began writing for *S&T* and joined the staff full-time as an associate editor in 1998. He is currently a contributing editor.

Gary enjoys a wide range of observing pursuits from studying intricate details on the surface of the Moon to seeking out faint fuzzies at the limits of perception. One of his favorite activities is binocular observing — as regular readers of *S&T* know from his popular monthly *Binocular Highlight* column. A compilation of his articles, *Binocular Highlights: 99 Celestial Sights for Binocular Users* has recently been published and has risen to #1 in its category at Amazon.com several times since its release.

But when it comes to his absolute favorite telescope target, Gary will quickly tell you that for him, nothing beats the Moon — though Jupiter comes in a close second. His lunar observing and imaging skills are put to good use at *S&T*. Gary served as editor for the new edition of Antonín Růkl's classic *Atlas of the Moon* and for Charles A. Wood's highly regarded book, *The Modern Moon*. But of all the Moon products he has helped bring to fruition, Gary is proudest of the recently published *Field Map of the Moon*, which he regards as the ideal telescopic companion for dedicated lunatics like himself.

Recently Gary also became a regular contributor to the highly regarded Canadian publication *SkyNews*. His column, *On The Moon*, allows him to share his love of lunar observing with that magazine's audience.

Over the years Gary has ground mirrors for numerous homebuilt telescopes, several of

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which have appeared in the pages of *S&T*. Many of the magazine's readers will remember articles describing his 6-inch f/9 planetary Newtonian and his 8-inch f/4 travel scope. Currently, his favorite instrument is his home built 12¾-inch Dobsonian travel scope, which has already flown with him to a number of far-flung locations, including Costa Rica. His knowledge of optics and equipment serve him well as *S&T's Telescope Workshop* columnist and as a frequent contributor to *S&T Test Report*.

Gary continues to enjoy exploring the night sky, making telescopes, and writing about it all from his home near Victoria, British Columbia.

The Gary Seronik interview...

Clayton: It is so nice to have you here for this long overdue interview. I'm really glad I had the opportunity to corner you for a few astronomy questions. Let's get started...

How did you first become involved with *Sky and Telescope*? When did you start writing for them?

Gary: That was back in '96. They ran an advert saying they were looking for an editor. On a lark, I sent in a jokey resume, not thinking I had chance in a million of being considered. I guess my sense of humor appealed to Leif (Robinson, then editor-in-chief) because I soon got a letter saying they were interested. I was shocked. Next thing I knew, I was flying out to Boston to meet him and the rest of the staff. They didn't hire me straight away — they were in the midst of some kind of major reorganization that they had to sort out first — but they did ask me to send in stuff, which I did. My first *S&T* piece was an article describing my optimized 6-inch f/9, which appeared in the June 1997 issue. I moved to Boston in '98 and took a desk next to Alan MacRobert and down the hall from Roger Sinnott, Dennis di Cicco, and Leif. It was a thrill to work with these guys.

Clayton: You talk a lot about different telescope designs within your column, which is your favorite?

Gary: I don't really have a favorite. I'm pretty utilitarian in my scope choices — if it works, I use it. That said, since I built pretty much all my scopes, I do have a lot of Newtonians. They work well and the design is very versatile. Can you name another optical train that can effectively span so many apertures and f-ratios? I can't.

Clayton: Tell us a bit about your 12 3/4" Travel Scope. Just how

portable is it? Do you get funny looks from custom agents in foreign airports when they see it?

Gary: That scope has been with me to Costa Rica several times (I lead a star-gazing tour there every year) and across the country too, so it's portable enough to go on a commercial flight. I take the mirror and mirror box as carry on, and the rest goes as checked luggage. No way I'm trusting that mirror to baggage handlers! As for customs and security agents, they're mostly curious and, in my experience, usually friendly. Often we'll get into a long chat about astronomy while I'm gathering my things and putting my shoes back on. I imagine they mostly see the same boring stuff coming through the X-ray machine all day long, so a scope probably breaks the tedium somewhat.

Clayton: Are you a visual observer only? Tell us about a typical observing session for yourself.

Gary: I dabble in astrophotography, but yeah, mostly I like to see the stuff in real time with my own eyes. I find I have a much deeper and immediate connection with the universe that way. I find pictures are one or two steps removed from that experience.

My routine depends to some extent on work. Luckily, where I live, the sky is pretty good, so I don't have to get in the car to observe. When I'm working on my *Binocular Highlights* column, I usually get up in the pre-dawn hours. Not only is the world very peaceful at then, but the sky is usually at its best. And since I'm writing for an *S&T* issue that's several months ahead, I'm observing things that won't be in the evening sky for awhile. The pre-dawn ritual is partly a result of me not having my act together enough to view these things a year in advance when they're in the evening sky!

For binocular viewing I set up my home-built mount (the one described on my web

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page), which allows me to quickly switch between 10x50 and 15x70 binoculars. I try to use the same gear that most of our readers have, though I'll haul out the image-stabilized binos too.

Sometimes I'm evaluating telescopes for *S&T* Test Report. In those situations, I'm trying to replicate what the average user of that particular instrument would be doing. It's fun and I get the chance to play with a lot of commercial gear that I otherwise probably wouldn't spend time with.

And if I'm just banging around the sky for my own enjoyment, I'll choose whatever scope I'm in the mood to play with that night. My 12.75-inch gets the most use -- no matter if it's the Moon or faint fuzzies. I've been rebuilding that scope over the winter, so it'll be getting "first light" for the second time very soon. I've got a long series of articles about that project on my web site.

Clayton: How do you rate your overall eyesight? Are you one of those folks with exceptional vision? Can you detect faint colors in those faraway fuzzies?

Gary: I don't know -- I'm probably pretty average. I'm no Steve O'Meara, but I manage to see quite a bit. So much of it has to do with technique and experience that even if your vision isn't the very best, you can still do very well.

Clayton: Just how tough is it to grind and produce a good telescope mirror? How many have you made? When was your first?

Gary: Wow -- that's a question and a half Clayton!

Making a good mirror is 90% a matter of patience. There's less skill involved than most people think. Yes, you have to learn to do some things, but they're not terribly difficult. But the difference between a good mirror and one that's *excellent* often comes down to artistry, I believe. I used to teach mirror making at the planetarium in Vancouver and in each group of 20 or so students, there'd always be one or two who just had a certain touch. Real artists. You never know until you try -- you might be one of those. If not, you have to rely on determination.

I can't remember how many mirrors I've made -- quite a few over the years. My first was a 6-inch f/9 back in '92. I made, and re-made that mirror many times before calling it "done." That piece of glass was my education in optics and turned out beautifully in the end. Fortunately, in those early years, I had the help of an excellent local ATM (and close

friend) named Lance Olkovich. A phone call to Lance would usually get me back on track if I hit a snag.

Clayton: You have great articles in *Sky and Telescope*, but placing you on the spot here, how do you like *Astronomy* magazine? Ever have articles/photos in that publication?

Gary: I've never contributed to *Astronomy*, though I did subscribe in the very early years when Steve Walther was editor. I think the Richard Berry period was good too. But you know, I started subscribing to *S&T* when I was a kid, so that's always been my favorite, even long before I got into the writing game. Besides *S&T*, I also really like the Canadian publication *SkyNews*, which is edited by Terence Dickinson -- one of the finest astronomy writers around.

Clayton: Do you have an amateur observing mentor?

Gary: Not really. I was a loner for many, many years, so by the time I started viewing the skies with other people, I was already set in my ways and knew my way around the sky.

Clayton: Have you a favorite star party that you attend regularly? Are there others?

Gary: Over the years with *S&T* I've had the chance to visit most of the big ones several times, and many of the lesser ones as well. Each one has its own personality and they're all fun. The one I never miss is the Mt. Kobau Star Party. I've been every year starting in 1986. (Jeez, that makes me feel old.) It's a small event in a beautiful spot near where I spent my childhood, so it's unique for me. Most of my observing buddies attend as well, which makes it even more special. The other favorite (naturally) is the Costa Rica Southern Skies

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Star Party, which I lead. That event happens usually in February and lets me see some of the fabulous southern sky. Plus, for a Canadian boy, the chance to observe Orion in the warmth of the tropics is just way too good to pass up!

Clayton: How do you envision amateur astronomy in the next 25 years?

Gary: Hard to say. Right now, beginners have never had it so good when it comes to information and equipment. My colleagues at the magazine and I often reflect on how much decent gear you can get these days for so little money. I think you have to have been doing this since the '70s to really appreciate how good things are right now. I have my doubts that this situation will last though since so much of it depends on economic conditions that are bound to change in the coming decades.

Clayton: Do you have any helpful advice to pass on to observers just starting out in astronomy?

Gary: Simple. Follow your interest. I think too many beginners feel like they have to do everything -- they've got a get a monster scope to see deep-sky objects, an apochromatic refractor to view the planets, and they want to take pictures too. Eventually it feels like a burden. Pick the one you're most keen on and don't worry about the others -- you'll get to them eventually. The main thing is to enjoy what you're doing, otherwise, what's the point?

The other piece of advice I'd offer is to watch out for on-line overload. The internet is great, and the forums can be very helpful, but they can also be very confusing -- on almost any topic you can name you'll find conflicting points of view. There's also a lot of stuff out there that's misleading, self-serving, or just plain wrong. The internet is a very useful tool, but beginners in particular have to keep in mind that opinion and information are often different things. I'd say, get the basics from books and magazines first, then you'll be better able to wade through the on-line material with some perspective.

Clayton: Is there an email address that you have that a Houston Astronomical Society member could contact you for an additional question or two?

Gary: The easiest way is via my web site (www.GarySeronik.com). If you don't find what you're looking for there, you hit the "contact me" link.

Clayton: Thanks Gary for taking the time to share your interest and thoughts within our HAS newsletter, *The GuideStar*. We wish you luck with all of your astronomy interests. You told me earlier that you have attended and spoke at a past H.A.S. meeting many years ago. Please come back and visit our society when in the Houston area, we'd love to see you.

Clear skies always!

Gary: Thanks Clayton -- it's been a pleasure.

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pect. The biggest complaint I have for this book is the brevity of the historical overviews. You'd have thought that at least some mention of Dreyer's work on the New General Catalog or the Index Catalog would have merited some mention, among others (i.e. Trumpler, Collinder, Dolizde, Biurakan, King, Ruprecht, Terzan, and the Berkley Catalog, just to name a very few), but it is entirely lacking. Personally, I don't think the coverage presented does the topic sufficient justice. Please take this criticism with a grain of salt, as I am a bit of a history buff, and like to know the details about the progression of discoveries.

On the positive side, I found the two subsections on Colour Magnitude Diagrams to be excellent reads that really tied together the many facets of stellar evolution in a relatively short space. Of course, the copious line drawings and cluster descriptors that formed the lion's share information in the handbook are probably the best reason for inclusion of this book in your personal library. The book is well situated to be a significant aide in your pursuit of viable observing objects in a light polluted environment, or even better, in truly dark skies.

Title: Webb Society Deep-Sky Observer's Handbook: Volume 3: Open and Globular Clusters

Editor: Kenneth Glyn Jones

Enslow Publishers, Hillside, New Jersey, 07205

Joint US-UK publication date: 1980

ISBN: 0-89490-037-X (vol.3)

Observatory Corner

By Bob Rogers, Observatory Chairman

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Hello everyone.

I'm writing my Observatory Corner article from my house instead of from the site due to the fact that the weather has cancelled the April Star Party. Not much to report on except to say that spring is finally here because Ed Fraini mowed the observing field last weekend. Also, a little bit more of good news is that I was able to get a gentleman in Columbus to come out and haul away a bunch of metal that has been lying around the site for years. You may notice next time your out there that the metal dome that was on the West side is now gone along with the old mowers that were behind the Well House. I am slowly but surely trying to get the place cleaned up. It is a work in progress.

I'm glad to report that I will be going to TSP this year with Dana Lindstrom. The first year that I missed I was in the hospital enduring a bunch of surgeries and was not doing to well. I didn't go last year because I wanted another year to recoup from the hospital. So I'm looking forward to seeing everyone out at TSP and I hope that everyone has a safe trip.

I **do need** to remind everyone that we need to start filling out Log Reports at the site so I can give this information to the Fondren Foundation. The property is on a 99 year lease and part of the Lease agreement is that HAS needs to report every year to the Fondren Foundation that the Property is being used. The Log Reports are located in the box in the middle of the field. Just open the cover, fill out the report and then slide it into the slot that is in the inside of the cover and then close the box. It is very important that **everyone** fill out a Log Report so that we are showing that the Observing site is being used. Your help on this is very much appreciated.

If you have a Randalls card, and have not done so, please have it coded for the Houston Astronomical Society. Our number is #6618. The Society gets 1% of the gross sales that members spend at Randalls. Randalls totals up the amount spent each quarter and will send us a check if the amount goes over \$2,500.00, otherwise the total roles over to the next quarter or zeros out at the end of the calendar year. So please link your Randalls card to the Houston Astronomical Society so that the society can benefit from this Randalls program. Our number is #6618. This is very easy to do, just go to the Courtesy Booth and tell the person there what you want to do.



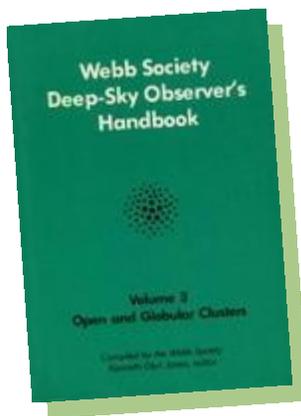
If you have any suggestions or thoughts for the site, let me know.

Bob Rogers

Observatory Chairman
281-460-1573
siteworkerbob@hotmail.com

Webb Society: Open and Globular Clusters

Book Review by Jim Wessel



Continuing from last month with the idea that suburban astronomers must target relatively bright objects, another logical step in that progression is the observation of star clusters. Volume 3 of the Webb Society Deep-Sky Observer's Handbook deals with this very topic in a rather succinct manner. For those that might be interested, this book provides a wonderful companion to the Astronomy League's Open Clusters Observing List, which is an on-again, off-

again side project of mine.

Again, in what seems typical for this series, the honor attributed for writing the book seems oddly misplaced. Edmund S. Barker actually wrote the handbook, but Kenneth Glyn Jones gets the cover credit. Barker's writing style is flowing and for the most part easy to read, but occasionally he does stick a sentence in there that makes the reader wish he had taken a deeper breath, first, before tackling it.

There are four major sections to the book. Part one covers open clusters (hereafter OC). Part two provides an understanding of globular clusters (hereafter GC). Parts three and four are catalogs of OCs and GCs, respectively, and both are filled with descriptions of the clusters and line drawings of the brighter member stars. A series of appendices follows, and closes the book.

Within Part one, there is an extremely short page and a half overview of the history of OCs. Then, the initial chapter on O Associations attempts to set a distinction between the eponymously named stellar group and the generalized term of 'open cluster'. The author of the book tries to set a rule of thumb with size and distance, and, as you can imagine, fails due to the myriad sizes of OCs which overlap O associations at both extremes. He then tries using the overall shape of each type to be the defining characteristic. This too falls short, as he describes the effect of gravity and distance from the galaxy's core, and also the age of the cluster in question largely determine its shape. Finally, he settles on an increase over the generalized mean of a

given area of O-B2 type stars as the ultimate clincher for defining O associations. I find this to be a satisfactory answer, but why go to the effort of all the prior explanations?

The second chapter is titled "Galactic Open Clusters" and here is where the book starts to come into its own. Under it are five sections, each a couple of pages long. They are: 1. Classification, 2. Relation to the Galaxy, 3. Cluster morphology, 4. Stellar populations, and 5. Colour (his spelling) magnitude diagrams. The first OC classification system was Shapley's, which I was personally unaware of, then came the more familiar Trumpler system. The section on Relation to the Galaxy talks about OCs' placement throughout the Milky Way, and how they are almost always found along the arms of a spiral type galaxy and often in close proximity to their natal H II regions. Cluster morphology covers the shape and density of OCs, and the sometimes similar asterisms are largely eliminated from consideration, as are gravitationally bound and largely spherical globular clusters. The extremely brief section on Stellar populations covers the five categories of stars ranging from extreme Pop. II stars located in the halos of GCs to extreme Pop. I stars which form young OCs and O-B associations. Finally, the section on Colour magnitude diagrams goes into detail on the stellar temperature (hence color), spectra (giving the metallicity of stars) and age of star clusters based on location of the 'turn off point' and is closely tied to stellar evolution.

Briefly stated, chapter three (titled Catalogues of Open Clusters) gives a total of 1039 OCs for the Milky Way Galaxy, as of 1970's 2nd edition of Catalogue of Star Clusters, Associations, and

(Continued on page 11)

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Groups. A recent search on Google suggested that the actual total may be over 10,000 OCs.

The fourth chapter is on observing OCs and is split into two main parts, Identification of OCs and Cluster characteristics. Under the former, Barker mentions the difficulty in separating the true stellar members of an OC compared to the field or background stars, which is even more troublesome when the OC is in a rich star field of the Milky Way. He points out that use of the Palomar Sky Survey prints are useful in this regard. (Jim's Note: I'll do you a step better – get familiar with using the online STScI Digitized Sky Survey, http://archive.stsci.edu/cgi-bin/dss_form . Using it, you can make a collection of your own of any section of the sky. I have a complete reference collection of these images for use as a 'ground truth' to compare my drawings against as I go through the AL's Open Cluster certification. But back to the book review...). The second section describes OC structure (whether they are loose, compressed, dense, etc), their magnitudes, the number of member stars, whether or not the OC is associated with a H II region, and finally flare stars and colored stars.

The start of the second section of the book begins with an extremely brief historical overview of the history of Globular Clusters (GCs). The fifth chapter proper, Galactic Globular Clusters, is broken into sections identical to the second chapter outlined above. In the first section on classification, the author covers Shapley's scheme then touches on Morgan's scheme based on the integrated spectra of the GC, and finally goes into Oosterhoff groups based on types of RR Lyrae variable stars present. Under the section on relation to the galaxy, we find that unlike OCs, which are typically found along the arms of a spiral galaxy, GCs form a loose halo orbiting around the nucleus, with a density gradient towards the center. The structure of GCs goes into a bit more detail with the Shapley classification scheme and describes stellar concentration differences between the Messier Globes and the far more spread out Palomar Globes. In the next section we again revisit Color Magnitude Diagrams and what they can tell a researcher about the evolution and age of a GC. The remaining topic here is Radio and X-ray sources in GCs.

The very short chapter six talks a bit about GCs that have been found in galaxies other than the Milky Way. Chapter seven fills in a tiny touch more on the history of GCs, mainly from the viewpoint of mid 20th century catalogs. The earliest one the book refers to is Melotte's of 1915 which had 83 member GCs. A few others are discussed in the following years peaking at 131 GCs, and at last Barker comes to the most recent catalog (at the time of the book's publication) which was Alter et al.'s 1970 Catalogue of Star Clusters, Associations and Groups, with no total given. A Google search today gives a figure of 150+ GCs for the Milky Way with perhaps an additional 10 to 20 yet to be found.

Chapter eight turns our attention and focus to the observation of GCs. Its three component parts are Intrinsic Factors, Non-Intrinsic Factors and Further Selected Clusters. The section on intrinsic factors revisits the Shapley classification as function of stellar density against areal size, and then incorporates integrated magnitude of the cluster and looks at the role played by the magnitude of the brighter member stars. Non-intrinsic factors examines the effect of dark nebulae and implied intragalactic dust, as well as the distance between the cluster and the earth on how those components alter our view of GCs. The remaining section talks about resolving GCs, the unusual NGC 2419 and Palomar GCs, and briefly discusses globulars around other nearby galaxies.

Part three of the book is a major section spanning 106 pages. Within, we find 176 selected OCs each complete with a short description and a pretty fair accompanying line drawing showing what the cluster looks like through a typical amateur astronomer's telescope (8-10") at low to medium power. There are an additional 29 OCs covered that only have a written description. This section is worth purchase of the book in and of itself, even though the J1975 epoch was used for coordinates and some the clusters may have moved a bit since then.

Part four is another long section and spreads over 40 pages. Here we find the GCs getting similar treatment, with 53 GCs illustrated with line drawings and description. There are another 10 GCs that only receive a written overview. This too, is an exceptionally worthwhile addition to the book.

The book ends with 5 appendices, one on Class 7 OCs, one on a few more observations on OCs, and one on measurement of distance to OCs using Cepheid stars and the like. There is one on sources to consult for photographic images of clusters, and finally the bibliography, which constitutes the last appendix. As you can imagine from a book published in 1980, it's not a strong source of research materials. Interested parties in that sort of thing should definitely look elsewhere.

For the final wrap-up, I'll start with the negative as-

(Continued on page 8)

A Rock Hound is Born

It's tough to be a geologist when you can't tell one rock from another. Is that a meteorite or a chunk of lava? A river rock or an impact fragment? Houston, we have a problem!

It's a problem Spirit and Opportunity have been dealing with for the past six years. The two rovers are on a mission to explore the geology of the Red Planet, yet for the longest time they couldn't recognize interesting rocks without help from humans back on Earth.

Fortunately, it is possible to teach old rovers new tricks. All you have to do is change their programming—and that's just what NASA has done.

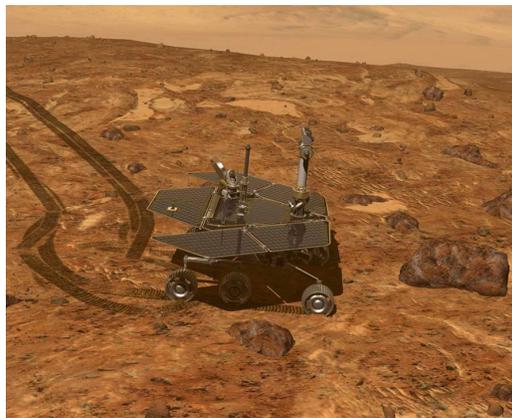
"During the winter, we uploaded new software to Opportunity," says Tara Estlin, a rover driver, senior member of JPL's Artificial Intelligence Group, and the lead developer of AEGIS, short for Autonomous Exploration for Gathering Increased Science. "AEGIS allows the rover to make some decisions on its own."

Estlin and her team have been working for several years to develop and upload increasingly sophisticated software to the rovers. As a result, the twins have learned to avoid obstacles, identify dust devils, and calculate the distance to reach their arms to a rock.

With the latest upgrade, a rock hound is born.

Now, Opportunity's computer can examine images that the rover takes using its wide-angle navigation camera (NavCam) and pick out rocks with interesting colors or shapes. It can then center its narrower-angle panoramic camera (PanCam) on targets of interest for close-up shots through various color filters. All this happens without human intervention.

The system was recently put to the test; Opportunity performed splendidly.



Opportunity spots a rock with its NavCam that its AEGIS software says meets all the criteria for further investigation.

NASA Space Place

At the end of a drive on March 4th, the rover settled in for a bit of rock hunting. Opportunity surveyed the landscape and decided that one particular rock, out of more than 50 in the NavCam photo, best met criteria that researchers had set for a target of interest: large and dark.

"It found exactly the target we would want it to find," Estlin says. "It appears to be one of the rocks tossed outward onto the surface when an impact dug a nearby crater."

The new software doesn't make humans obsolete. On the contrary, humans are very much "in the loop," setting criteria for what's interesting and evaluating Opportunity's discoveries. The main effect of the new software is to strengthen the rover-human partnership and boost their combined exploring prowess.

Mindful that Opportunity was only supposed to last about six months after it landed in 2004, Estlin says "it is amazing to see Opportunity performing a brand new autonomous activity six years later."

What will the rock hounds of Mars be up to six years from now? Stay tuned for future uploads!

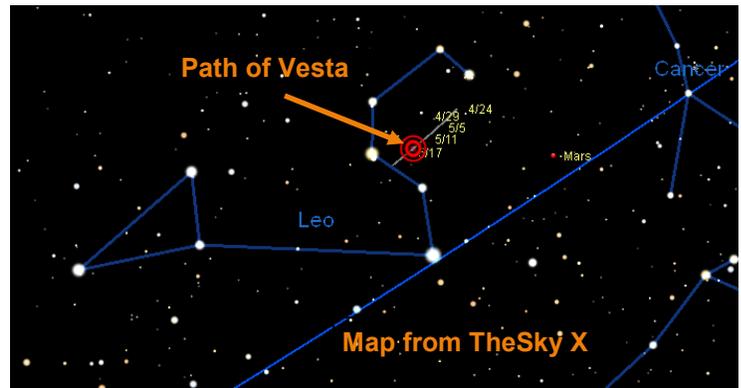
Learn more about how the AEGIS software works at <http://scienceandtechnology.jpl.nasa.gov/newsevents/newsdetails/?NewsID=677>. If you work with middle- or high-school kids, you'll find a fun way to explore another kind of robot software—the kind that enables "fuzzy thinking"—at: http://spaceplace.nasa.gov/en/educators/teachers_page2.shtml#fuzzy.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Vesta — A Bright Asteroid

By Bill Pellerin, GuideStar Editor

Object: Vesta or 4 Vesta
Class: Asteroid
Magnitude: 7.5 (est)
R.A.: 10 h, 07 m, 31 s
Dec: 19 deg, 36 m, 35 s
Date/Time: 5/15/2010; 22:00
Constellation: Leo
Size/Spectral: 320 miles (not symmetrical)
Distance: 2 AU
Optics needed: Small telescope / binoculars

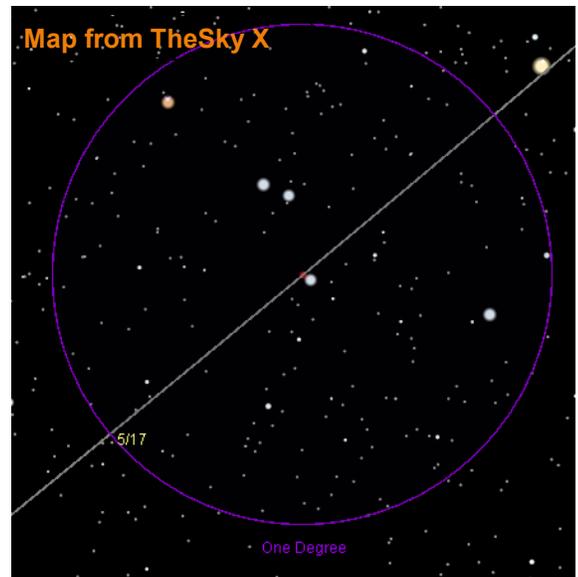


Why this object is interesting.

This object will be visible during the Texas Star Party and careful observers with good maps will be able to track its position in the sky from night to night and from hour to hour. Note that the map supplied here is for 22:00 (10:00 p.m.) on the night of 5/15/2010.

Vesta is the brightest asteroid in the sky and I've seen it with binoculars from my home 3 miles from downtown Houston.

- Vesta, by itself, comprises 9% of the mass of the entire asteroid belt, but takes second place to Ceres (or maybe third behind Ceres and Pallas).
- It was discovered by Heinrich Wilhelm Olbers in March of 1807
- For a while, Vesta was considered to be a planet, along with Ceres, Pallas, and Juno
- The DAWN spacecraft will reach Vesta next summer (2011) and go into orbit around the asteroid. Its mission is to get shape, size, composition, and position data that will help us understand the processes that led to the formation of the solar system.



Vesta is near 9.73 magnitude star GSC1415:868 at 22:00 on 5/15/2010

Houston Astronomical Society

P.O. Box 20332
Houston, TX 77225-0332

General Membership Meeting

The Houston Astronomical Society holds its regular monthly General Membership Meeting on the first Friday of each month, unless rescheduled due to a holiday. Meetings are in Room 117 of the Science and Research Building at the University of Houston. A Novice Presentation begins at 7:00 p.m.. The short business meeting and featured speaker are scheduled at 8:00 p.m.

Parking is NOW across from Entrance 14, by the stadium.

Board of Directors Meeting

The Board of Directors Meeting is held on dates scheduled by the board at 7:00 p.m. at the Houston Chronicle office, downtown. Information provided to *GuideStar* will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

GuideStar Information

The H.A.S. *GuideStar* is published monthly by the Houston Astronomical Society. All opinions expressed herein are those of the contributor and not necessarily of Houston Astronomical Society. The monthly Meeting Notice is included herein. *GuideStar* is available on the HAS web site to all members of H.A.S., and to persons interested in the organization's activities. Contributions to *GuideStar* by members are encouraged. Electronic submission is helpful. Submit the article in text, MS-Word format via email BillPellerin@sbcglobal.net. Copy must be received by the 15th of the month for inclusion in the issue to be available near the end of the same month. Or, bring copy to the General Membership Meeting and give it to the Editor, or phone to make special arrangements.

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The Houston Astronomical Society welcomes you to our organization. The HAS is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers.

The benefits of membership are:

- Access to our 18 acre observing site west of Houston -- a great place to observe the universe!
- A telescope loaner program -- borrow a HAS telescope and try observing for yourself!
- A monthly novice meeting, site orientation meeting, and general meeting with speakers of interest.
- Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties at schools)
- A yearly all-clubs meeting for Houston area organizations
- Meet other amateurs and share experiences, learn techniques, and swap stories

You're invited to attend our next meeting.

You'll have a great time.

Houston Astronomical Society

Meeting on Friday, May 7

7:00 Novice & Site Orientation

8:00 General Meeting

University of Houston

Directions to meeting:

From I-45 going south (from downtown)

- exit at Cullen Boulevard
- turn right on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

From I-45 going north (from NASA/Galveston)

- exit at Cullen Boulevard
- turn left on Cullen
- turn right into the parking lot (by the stadium)
- Science and Research is across the street (2nd building back)

Parking:

There is Free Parking, **BUT DO NOT PARK IN ANY RESERVED PARKING SPACES AT ANY TIME.**
U of H parking enforcement will ticket your vehicle.