

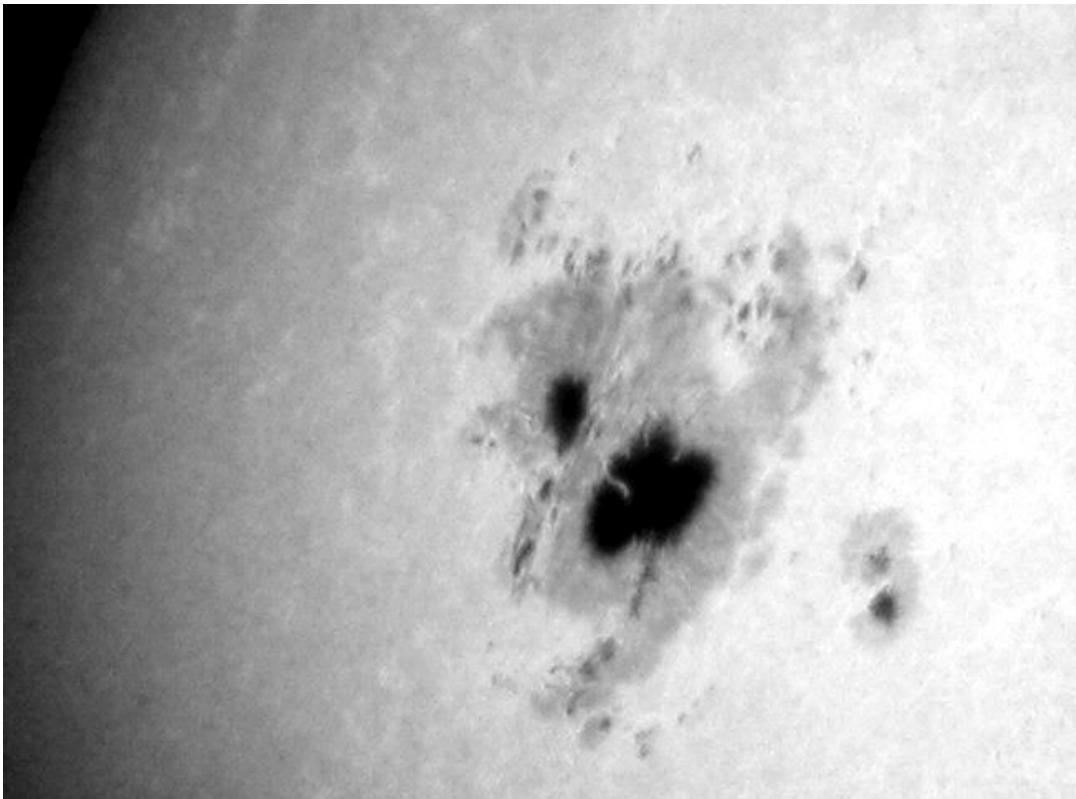
The View From Arunah

Arunah Hill Natural Science Center

Fall 2002

The Journal of the Arunah Hill Natural Science Center, Inc.

Volume 39



August and September's Incredible Solar activity!

Inside this issue:

**Deep Sky Treasures
New Book Review**

Inside This Issue

Fall 2002

Regular Sections

5 Deep Sky Treasures

The Observer's Notebook

Edited by John Davis

"The Queen's Crown Jewels"

Fall 2002 Arunah Hill Calendar:

Oct- Nov-Dec

Articles

3 The Editor's Desk. by Steve Pielock

4 Guest Article:

A Book Review "Dreams Deferred"
by Ed Faits

Front Cover:

A photo by Steve Curtis of sunspot group 10069 taken on 8/21/02 as it approached the western limb of the sun. The photo was taken at 2:00 PM under very steady seeing.

A Note from the Treasurer

I don't know if you noticed it, but there is something new on the mailing label. We added the date that your membership expires. So please check it (10/2002 means that your membership expires at the end of Oct 2002). If the date on your mailing label indicates that your membership has expired, this will be the last issue of "The View from Arunah" that you will receive unless we hear from you. We value you as a member but if you don't value us we can't continue to bring you the benefits of membership in the Arunah Hill Natural Science Center. So, if this applies to you, act now before you forget, and renew your membership!

Thank you, Peter Scherff,

DEEP SKY TREASURES

By John Davis

Gracing our autumn skies is the conspicuous “W” shape of Cassiopeia, the Queen, soaring ever higher in the northeast, until by November mid-evenings her characteristic “W” has become a flattened “M” nearly overhead, high in the north. In Greek mythology, Cassiopeia was the attractive and vain queen and wife of Cepheus, the King who boasted her beauty was unsurpassed, exceeding even that of the beautiful sea nymphs, one of whom was the wife of Poseidon (the Roman Neptune), the god of the sea. This of course angered the sea nymphs who prevailed upon the sea god to exact punishment for such vocal vanity, and a sea monster (Cetus) was sent to ravage the coast, imperiling their daughter, the princess Andromeda, who was chained to a cliff as a sacrifice to the monster, only to be miraculously rescued by Perseus. As further punishment Cassiopeia was consigned to the heavens, relegated to spend eternity circling the pole and spending half her time hanging upside-down on her throne. Despite her storied fate, as royalty Cassiopeia provides us with excellent opportunities to view her substantial chest of royal crown jewels – deep sky celestial treasures. In Tirion’s Sky Atlas 2000 (1st edition) over two dozen open star clusters are plotted in Cassiopeia, still just a portion of the several dozen in the Queen’s rich treasure trove of clusters. We’ll look at just a few here, and also take a peek at some of Cassiopeia’s several asterisms.

One of the most magnificent clusters in the autumn sky, certainly one which shouldn’t be missed (and too often is!) is **NGC 7789**, a distinct hazy mag.6.7 glow in binoculars 3 degrees SW of 2nd mag. Caph, (beta Cas.) and easily located midway between rho and sigma Cas., 5th mag. luminaries just to the SW, off the upper right (W) end of the “W”. This incredibly rich cluster has densely packed but fairly evenly distributed stars of mag. 10.7 and dimmer with very little central concentration. It covers 16 arc min. of sky (some sources say 25’-30’ depending on how you measure the outliers) and lies some 6000 LY away spanning almost 50 LY of space. An 8 inch scope will show up to 100 stars, but with increasing aperture (and optical quality) as many as 200 – 300 stars can be made out in some amateur scopes. The cluster’s total population, including stars from 11th on down to 18th mag. is listed in various sources from 583 up to 1000 stars. Discovered by Caroline Herschel in 1783, (another one missed by Messier!) the age of this stellar aggregation is estimated to be at least 1.6 billion years, quite an advanced age for an open (or galactic) cluster. Its brighter

members are considerably evolved K type orange giant stars, now off the main sequence.

Observing NGC 7789 is a viewing delight in any size scope from smaller refractors on up. You will see dark starless lanes running between myriad loops, chains and arcs of stars, a “condensed patch in a vast region of inexpressible splendor” according to 19th century observer Admiral William Smyth, who also likened the “rays of stars” to the appearance of a crab. Other observers have seen rose petal designs in the swirling patterns of the stars. Whatever you see in this remarkable cluster, NGC 7789 is bound to rank among your “top ten” open star clusters of the deep sky!

Just 2 degrees SSW of 2.7 mag. delta Cas. (Ruchbah) lies 5th mag. phi Cas., a nice yellow and blue binocular double; its companion, 7th mag. HD 7902 lies 231” SW. On a clear, dark night binoculars should also show you a comet-like haze of mag. 6.4 extending 13 arc min. NW from phi. This will resolve in a telescope into the splendid open cluster **NGC 457**, sometimes known as “**The Owl Cluster**”, and since that Sci-Fi movie (recently re-released), some observers refer to it (for obvious reasons) as “**ET**”. This noteworthy aggregation was given its name back in 1977 when a young observer named Dave Eicher, now the editor of Astronomy magazine, while studying the cluster one night was struck by its remarkable resemblance to the figure of an owl. The two eyes are the bright phi Cas. and HD 7902 dominating the scene with the rest of the spooky bird’s wings and body made up of a narrow central grouping extending NW from phi and chains of stars stretching outward in shallow arcs. The bird’s tail (or feet) are a pair of 9th and 10th mag. stars at the NW end. There is a bright (mag. 8.7) orange-red star in the E “wing”. Many observers easily make out the figure of a little man with big eyes and outstretched arms in this grouping. (Hence, the “ET” nickname). Others, like veteran observer and SKY & Telescope magazine columnist, Sue French see the pattern of a dragonfly here. Despite its very remote distance of 9300 LY at least 50 stars can be seen in many amateur scopes, with up to 100 visible in larger (18”-20”) apertures. It is thought that 5th mag. type F0 phi Cas. is a member of the cluster. If so, it would be, at absolute mag.-8.8 truly one of the most luminous supergiant stars we know of. If the cluster contains common sun-like or even lower luminosity stars the total population of this remarkable cluster could run to well over a thousand.

Now, bypassing M-103 for the moment, by looking with your binoculars or finder-scope exactly one degree SE of the midpoint of a line connecting delta Cas., Ruchbah with 3.3 mag. epsilon Cas., the star marking the eastern end of the “W” you can discern a 7.1 magnitude glow, which at a distance of 7200 LY is the rich and beautiful open cluster **NGC 663**, spanning some 16 arc minutes with its array of some 80 stars. Also, being brighter and larger than M-103, it is definitely another one Messier shouldn’t have missed! This is an often overlooked assemblage of stars with its own distinctive character. You will notice a dark void of stars in the center extending into a curving dark lane snaking N-S through the cluster; this separates a group comprising one third of the cluster’s stars on the western side. There is a nice range in brightness including a number of 8th and 9th mag. stars, with others arrayed on down to 13th magnitude. Several nice doubles grace the cluster, and conspicuous arcs and chains of stars can be seen. One of these curves from the W end, east through the center of the cluster, then meanders S, and tapers off eastward, resembling somewhat a lazy letter “S”.

NGC 663 has two neighbors which I call its “satellite clusters” decorating the rich stellar neighborhood. **NGC 654** lies 40 arc min. to its NNW, while **NGC 659** lies 30 arc min. to the SSW. At mag. 6.5 NGC 654 is a bright, condensed triangular shaped little cluster 8200 LY distant. It spans only 5’, but contains 60 stars: one 7.5 mag. on the SSE end, the rest running from 10th to 14th mag., and some forming what some observers see as a “teapot” pattern - a miniature “Sagittarius” within the cluster. NGC 659 is fainter, shining at mag.7.9 from 6900 LY away. Of its 40 faint stars, only one is mag. 10.4; the others are mostly of 12th mag. and fainter and cover again only 5’ of sky. A pentagon of stars forms the small core, while larger apertures may reveal six straight line “rays” of stars extending outward from the cluster in a “starfish” pattern.

In 1781 Pierre Mechain, a contemporary of Charles Messier discovered **M-103**, the last entry in the original Messier catalog. You’ll find this gem just one degree ENE of delta Cas. (Ruchbah). Shining at mag. 7.4 from the considerable distance of 8500 LY, its 6 arc min. glow stands out easily in binoculars or finder. M-103 is a very attractive and remarkable cluster in a triangular form shaped like an arrowhead. The arrowhead, or wedge-shaped arrangement of stars has also been likened to a lit up Christmas tree. There is a 7.3 mag. double star: Struve 131 on the NNW at the point of the arrowhead. Actually, it is a foreground star and not a true member of the cluster. Within the compact group are three other bright stars: one 8th and two 9th mag. stars in a narrow pattern running NNW-SSE, one of which is a noticeable red giant glowing among some 50 or 60 other surrounding cluster stars down to fainter than 12th magnitude. Actually recent studies suggest the total population of this remote

cluster may reach 172 stars within its breadth of only 6.5 min. of arc.

For our next attraction we’ll navigate carefully from M-103 in a NNE direction, and travel exactly 40 arc min. ENE to find a neat little asterism of two 10th and two 11th mag. stars, the four equally spaced close together in a straight line. A number of years ago at “The Conjunction” star party in Northfield, Mass. I came upon this striking little “cluster” while exploring around M-103 with an 18 inch dobsonian scope. Sharing the view with two or three others present we decided that “**The Zipper**” would be a fine name for this marvelous little asterism. After precisely locating “the Zipper’s” position at this year’s “Conjunction”, it turns out that the “Zipper”, along with another line of three 11th mag. stars to the SE make up the cataloged star cluster, Trumpler 1 of some 20 stars. Scattered fainter 12th - 14th mag. members mostly to the N and W complete the group. Whether you call it “The Zipper” or Trumpler 1, I’m sure you’ll enjoy finding and observing this little gem! Its coordinates are: 01 hr 35.7 min., +61 deg.17’.

Another Cassiopeia asterism you might enjoy is one I came across a year or so later exploring the region with my 12x50 binoculars. Our friend, veteran observer and author Phil Harrington describes it in his book, “The Deep Sky” on page 159 (along with M-103 and NGC 663). We call it “**The Queen’s Kite**” and its distinct kite shape stands out fairly well, even in less than ideal dark skies – perfect for binoculars. You can easily find it by looking just 1½ degrees SE from our reference star, Ruchbah (delta Cas.) where you’ll see 4.6 mag. chi Cas. marking the top of the kite, the rest of which is formed by seven 6th and 7th mag. stars extending about 2¼ degrees toward the SE from chi. Its tail of six mostly 7th mag. stars extends another 3 degrees, meandering south, west, then south again in a fairly rich milky way starfield.

For our last object here in Cassiopeia we’ll visit one of my favorite asterisms, one that always seems to make a hit with folks we show it to at star parties. It’s actually a formally cataloged open star cluster, **Stock 2**, but by including two chains of stars forming a “V” to its immediate E we have a delightful asterism I call “**The Muscle Man**”. It too is described in Phil’s book, “The Deep Sky” (pp 159, 160). At a distance of about 1000 LY the cluster, Stock 2 at mag. 4.4 contains 100 stars forming several chains and loops and covers a full degree of sky. You can easily locate “The Muscle Man” just two degrees NNW of the famous Perseus Double Cluster, and less than a degree N from the 6th mag. star at the end of a curved chain of stars leading from the Double Cluster. During early fall evenings the Muscle Man is ideal for viewing as he stands upright and is best seen in large binoculars or rich field scopes at very low power. He stands with his legs spread apart – that’s the “V” to the E. From there,

chains of many mostly 8th and 9th mag. stars trace a stick-like figure over a degree W to his head. Two opposing C-shaped arcs of stars represent his muscle-flexing upraised arms with his clenched hands almost reaching his head. No doubt you are sure to find this athletic little guy, Stock 2 a “fun” target to liven up your autumn observing as you explore the many stellar splendors in and around Cassiopeia and her celestial crown jewels!

The Editor's Desk

By Steve Pielock

Hello Everyone

It has been a phenomenal summer for astronomy. With over 200 showing up, Arunah Hill Days had the best attendance ever! The Sun has been the definite "star of the show" (please forgive the pun). As you can see from the front cover we are definitely getting large amounts of sunspot activity as well as Aurora! Earlier, this August the Perseids also put on a great show.

Even with the onset of the fall season we aren't slowing down at the Hill. Star Watch is on it's way. This year it will be on the weekend of Friday evening, October 25th through Sunday Morning October the 27th. Please see the pull-out flyer in this mailing or go to the Website to get more information about this important event.

On other fronts, we are still pushing forward with the electrification of the area that will hold the Telescope Restoration Building. It is our hope that electricity will be through to the building site by November.

Remember, if you would like to lend a hand, we welcome volunteers to help out on the hill the first Saturday of each month.

Enjoy this newest addition of the VFA.

Steve

How to Submit Material to *The View from Arunah*

The View from Arunah welcomes material submitted by guest contributors. The strength of this publication is its writers and photographers, so we are always on the lookout for new contributors. If you have an idea that you think might make a good article, or if you are an astrophotographer who would like others to enjoy your work, then please consider contacting us. Our staff will be happy to provide any assistance that you might need to get your work published in *The View From Arunah*.

To submit articles, photographs, or drawings, please send to them to: Steve Pielock, 132 Sand Gully Rd, So. Deerfield MA 01373. Materials submitted via electronic mail should be sent to "Pielock@acad.umass.edu". Comments and criticisms are always welcome. Letters to the Editor or any of the section editors are also welcome.

The Editorial Staff of *The View From Arunah*

Editor: Steve Pielock

Web Editor: Dan Carnevale

Section Editors

Business and Programs: Joe Zuraw

Astronomy Association:

Alan Rifkin and John Davis

Calendar: Tom Whitney

Columnists

Deep Sky Treasures: John Davis

Barlow Bob's Corner: Barlow Bob

Photographers

Bob Osgood

Photocopying:

Copy Cat Print Shop of Amherst, MA

Assembly/Distribution

Steve Pielock

Bill Naff

Rose Naff

Bruce Blanchard

Peter Scherff

Jim Downing

Janice Kachavos

A Book Review: "Dreams Deferred"

by Ed Faits

What happens to a dream deferred?

Does it dry up
Like a raisin in the sun?

Or fester like a sore--
And then run?

Does it stink like rotten meat?
Or crust and sugar over--
Like a syrupy sweet?

Maybe it just sags
Like a heavy load

Or does it just explode?
-LANGSTON HUGHES

I'm a "sputnik" kid; I was in elementary school when the United States pumped money into science and math education in the panicked belief that the Russians were passing the United States in technological leadership. I'd skip school to watch Mercury launches on our 17" black and white TV. Astronauts were my heroes, NASA could do no wrong. The Apollo landings were the ultimate America victory... and indeed a giant leap for all mankind.

Somehow, the American people and their leaders lost nerve and never followed up on the promise of Apollo. I recently read two very different new books that proved to be very interesting summer reads for me, and though the books are certainly not for everyone, I suspect both will appeal to readers of the "View From Arunah".

The first book is "Lunar Lander: How We Developed the Apollo Lunar Module" by Thomas J. Kelly. The book is an honest, straightforward memoir by the engineer from Grumman who served as the chief engineer for the LM.

Aerospace engineers aren't generally known for their communications abilities, and don't expect Moon Lander to be a breezy read. In the genre of history of Apollo, it's not a starting point. But if you've already devoured Lovell's Lost Moon, Chaikin's A Man on the Moon, and cut your teeth on Wolf's The Right Stuff, you'll love Kelly's hands-on descriptions of the politics, engineering, manufacturing, and flying challenges that Grumman faced.

Of all the authors of Apollo era memoirs, Kelly has the courage to go into some details of the fears, uncertainties, and anguish of the challenge of Apollo. He doesn't pull punches, shows genuine contempt for Grumman and NASA bean counters, and doesn't hide the rivalries and jealousies between Grumman and command module prime contractor North American Aviation. Of note: Kelly's boss during the period was Joe Gavin, a long-

time friend of Arunah Hill. Joe comes off heroically in the book, providing the managerial and technical support for Kelly's team and having both the will and insight to lead the Grumman effort to successfully develop the lunar lander.

I also came away with an even greater appreciation for the tremendous effort that went into the success of meeting President Kennedy's promise to put a man on the moon during the decade of the '60's. The costs were high – Kelly and his team worked 60 and 70 hour weeks, for six years. The risks to careers and family were great, and the success of Apollo was in question until the moment of Neil Armstrong's touchdown in July of 1969.

I also came away with a sense of what we all lost by our retreat from the moon. Indeed, for Grumman, despite the huge technological success of the Lunar Lander (9 near perfect manned flights, including the miraculous rescue of Apollo 13), Grumman was only able to secure minor NASA contracts after Apollo, and did not survive the 1990s intact. Grumman is now part of the defense giant Northrup-Grumman. Grumman, and the American people achieved a great success... but let the fruits of this success slip away in the mire of Viet Nam, Watergate, Oil Embargos, Reaganomics, Bill and Monica, and September 11th.

The second book proved to be an ideal answer to these feelings. Back to the Moon is a science fiction response to exactly this sense of loss. Author Homer Hickam is the ultimate "sputnik kid", a NASA insider, a retired aerospace engineer and mission trainer. Hickam is best known as the author of the best-selling book and movie October Sky, his memoir of the Rocket Boys of his West Virginia high school.

Back to the Moon is a fantasy of how an off-track NASA can be shaken up and space exploration can reclaim its place in the American dream. Without giving away the plot, I'll just mention it involves a "legal" hijacking of the space shuttle Columbia by a brilliant but talented engineer discarded by NASA. It involves nuclear fusion, helium-3, conspiracies by oil company executives and political leaders around the world, intrigues by thugs and wayward computer hackers, and a Native American media princess.

The paperback edition of Back to the Moon is 500 pages of small type on cheap paper. Like much science fiction, the science is a lot better than the fiction. Some of the plot turns will have you rolling your eyes and a few events will remind you of that really bad Bruce Willis landing on the asteroid movie. Hickam's characters are shallow (either good guys, bad guys, or good guys that look like bad guys because the bad guys temporarily have corrupted them...) and the last chapter that "wraps up all the loose ends" is almost laughable.

This ain't Shakespeare. But it will prove to be good summer reading for you "sputnik kids" out there that want to believe that the Dream of Space is still alive, only deferred.