

# diablo Moonwatch

## Mount Diablo Astronomical Society

number 12 • december 2010 • [www.mdas.net](http://www.mdas.net)



***"The best remedy for those who are afraid, lonely or unhappy is to go outside, somewhere where they can be quiet, alone with the heavens, nature and God. Because only then does one feel that all is as it should be."***

**Anne Frank quotes (German Jewish girl, Author of a diary of her family's two years in hiding during World War II, 1929-1945)**

## President's Corner

As my term as President of the Mount Diablo Astronomical Society is coming to an end I would like to wish the Membership a very MERRY CHRISTMAS... HAPPY HANUKKAH... HAPPY HOLIDAYS and a WONDERFUL NEW YEAR!

*Liede-Marie Haitzma*

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## Letter from the Editor

This will be my last newsletter for the MDAS. **Vianney Serriere** will be taking over the newsletter in January 2011.

I have enjoyed helping out and working on the newsletter for the last two years. I would like to thank all of you who have contributed articles and photographs. Lately we have had a resurgence of MDAS members contributing articles (like **Nathaniel Bates**) and this is a very good thing. Thank you Nathaniel. Members, and their varied interests are what will continue to keep the MDAS vital and fresh over the years.

This is also the last newsletter which will be printed and sent to a small percentage of MDAS members.

It will be a good thing, not only for the money that will be saved to the club by not having to print and mail the newsletters, but also for the Newsletter Editor in that the product will no longer have to meet certain criteria for printing (even number of pages, articles of a certain size, etc.) and that is good for everyone.

If you have an interest, whatever it may be... Astronomical Imaging, Binocular Observing, Double-Stars, anything... chances are that someone else in the club may also have that same interest. So please submit articles. Again, it is good for everyone.

Take care and keep up the interest.

Rob Haitzma

# December 21st is Movie Night!

Marni Berendsen

December 21st is your chance to pick which movie you want to see selected from Chris Ford's extensive and unique archives (remember he works at Pixar and has a fabulous collection of videos):

- **When Worlds Collide:** 1950's SciFi Classic (82 minutes)
- **Liftoff - Success and failure on the launch pad:**  
(Full of things blowing up spectacularly)
- **In the Shadow of the Moon:** Very recent Ron Howard documentary on the lunar program with many contributions from the astronauts. It also won a Sundance award. (108 minutes)
- **Selected Re-mastered NASA footage:**  
(rare footage from NASA's vaults recently re-mastered into the highest definition with color restored. Documentaries with a lot of spectacular archival footage. Most has never been seen in public before.)
- **The Mighty Saturn V:**  
43 minute documentary on the history and development of the Saturn V rocket

## Here's the agenda for the evening:

Don't miss the total Lunar Eclipse the night before our meeting!

**6:45 pm:** Come early for the NEW 15-minute Night Sky Network: demonstration is **"Why Don't Eclipses Happen Every Month?"**

**7:15 pm:** Meeting begins with Board Elections

**7:25 pm:** You vote again: this time on the video you want to see

**7:30 pm:** Curtain rises and the show begins!

*Eclipse Photo Credit: Used with Permission, ©Gregg Rappel*

Upcoming programs:

**January 25:** Dr. Ron Olowin, ArcheoAstronomy in the American SouthWest

**February 22:** Dr. Heather Knutson, UC Berkeley, Portraits of Distant Worlds:  
Characterizing the Atmospheres of Extrasolar Planets



## Special Lunar Eclipse Announcement!

Chabot Space and Science Center will be holding a special event on Monday night, 12/20/2010, on the night of the total Lunar Eclipse. There will be a special opening from 9:00 PM till 2:00 AM to view the eclipse, and have some other special events that night (like a Moon Hike) - Telescopes will be open that night.

Here is a link to the event and how to buy tickets:

<http://www.chabotspace.org/calendar.htm?date=12-20-2010&p=1439355>

# A huge THANK YOU!!! to all members who serve the club

Marni Berendsen

It takes a lot of dedicated members to keep our astronomy club running smoothly. For 2011, we have a few new folks filling various positions and we wanted to thank every member who volunteers. Let's start with the MDAS Board.

## Here's the slate for the elected Board positions for 2011:

- President: **Chris Ford**
- Vice-President: **Rick Linden**
- Secretary: **Malinda "Moon" Trask**
- Treasurer: **Wil Roberge**
- Members-At-Large (3): **Steve Jacobs, Jim Head, Richard Ozer**

As usual, all are running unopposed. Nominations are now closed. Formal election will be held at the December meeting,

**Chris Ford** is moving from Vice-President to President, as our delightful **Liede-Marie Haitsma** finishes her second term.

**Rick Linden** has agreed to fill the Vice-President seat vacated by **Chris Ford**.

## New Committee Chairs for 2011:

- Newsletter Editor: **Vianney Serriere** is taking over for **Rob Haitsma** (a big shout-out to Rob for an outstanding job these last two years!)
- Main Speaker Coordinator: **Dick Flasck** has already lined up several outstanding speakers for 2011 as he steps in to fill **Marni Berendsen's** shoes.
- "What's Up" Speaker Coordinator: **Kent Richardson** is replacing our intrepid **Jim Scala**
- New Member Steward: **Nick Tsakoyias** is stepping up since **Chris Ford** is taking over as President

## More MDAS service opportunities

We still have two positions opening up in January and the person listed will be happy to show you the ropes and get you started. These take at most a couple hours a month.

- Refreshments for the Monthly Meeting (contact **Moon Trask** for details: [metallicamoon@sbcglobal.net](mailto:metallicamoon@sbcglobal.net))
- Astronomical Association of Northern California (AANC) Representative (Contact **Jim Head** for details [jamesnhead@comcast.net](mailto:jamesnhead@comcast.net))

## And a big round of applause for all the other members who currently serve:

- Outreach Coordinator: **Jim Head**
- Mount Diablo State Park Liaisons: **Richard Ozer & Jack Borde**
- Membership Coordinator: **Marni Berendsen**
- Webmaster: **Glenn Spiegelman**
- Publicity Coordinator: **Steve Jacobs**
- Meeting Room Manager: **Marni Berendsen**
- Observatory Manager: **Richard Ozer**
- Public Astronomy Program Coordinators: **Marni Berendsen & Jim Head**
- Public Events Telescope Operators and Presenters:



Marni Berendsen Thomas Boltz Kenneth Coates Rene Gandolfi Rich Girard Liede-Marie Haitsma Michael Hanley Mike Harms	Jim Head Irvin Housley Linda Jacobs Steve Jacobs Randy John Neil Kilcoin Ralph Lambert Rick Linden	Michael McKeown Chris Peterson Kent Richardson Vianney Serriere Mark Stafforini Dave Stroh Moon Trask Jon Wilson
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If we've missed anyone, be sure to log your volunteer hours for our outreach events.

Here's how to log your volunteer hours:

1. Log into our club on the Night Sky Network: <http://nightsky.jpl.nasa.gov/login.cfm>
2. Select "My Volunteer Hours" under the heading of "My Member Information"
3. Put a check mark in the box (left-hand column) that says "Include Events for which I have not entered volunteer hours" and press Search.
4. Look for the events in the list where you helped out and press "Add" under Volunteer Hours.

## Now it's your turn to lend a hand . . .

Positions we could use members to fill (to offer your services, please contact **Chris Ford** [cford81@comcast.net](mailto:cford81@comcast.net) or **Rick Linden** [Rick.C.Linden@gmail.com](mailto:Rick.C.Linden@gmail.com))

- Meeting Greeters: Greets visitors to club meetings, provides them with information on the club, and introduces visitors to other members. Assures the Welcome Table is stocked.
- Event photographer: Takes photos at public and club events. Submits photos to web master and newsletter editor.
- Event reporter: Writes newsletter/website articles about past and upcoming events.
- Event Host: Greets visitors at public astronomy events; helps visitors get oriented at the event; has handouts with club information.



# Geoff Collins Deep Sky Images Say Much About Amateur Astronomy

Jim Scala

Among its many benefits, amateur astronomy brings us in contact with remarkable people who enrich our hobby and enrich our lives. While doing so, they bring out the myriad aspects of this great hobby. Geoff Collins is one of those remarkable people.

"I like to image deep sky objects. I enjoy mastering the science, technology and art required to produce a remarkable image." Geoff Collins was clear when asked about acquiring and processing his incredible images. He works from his deep sky site near Lake Tahoe where he has built an observatory to house his 14.5 inch Ritchie Chrétien telescope. He is retired after an outstanding career as a kidney transplant surgeon, research scientist and teacher.



M 51, the Whirlpool Galaxy in Canes Venatici, often called "The Holy Grail" by deep sky imagers because it's bright, large, and high in the Northern Spring Sky. Geoff's Collins' image rivals the best M 51 produced by amateurs and professionals.

I asked him – my standard question – "What got you started in astronomy?"

"A friend and I – we were 15 – attended the local Sidney, Australia astronomy club meetings and the president encouraged us to make a telescope. Our mir-

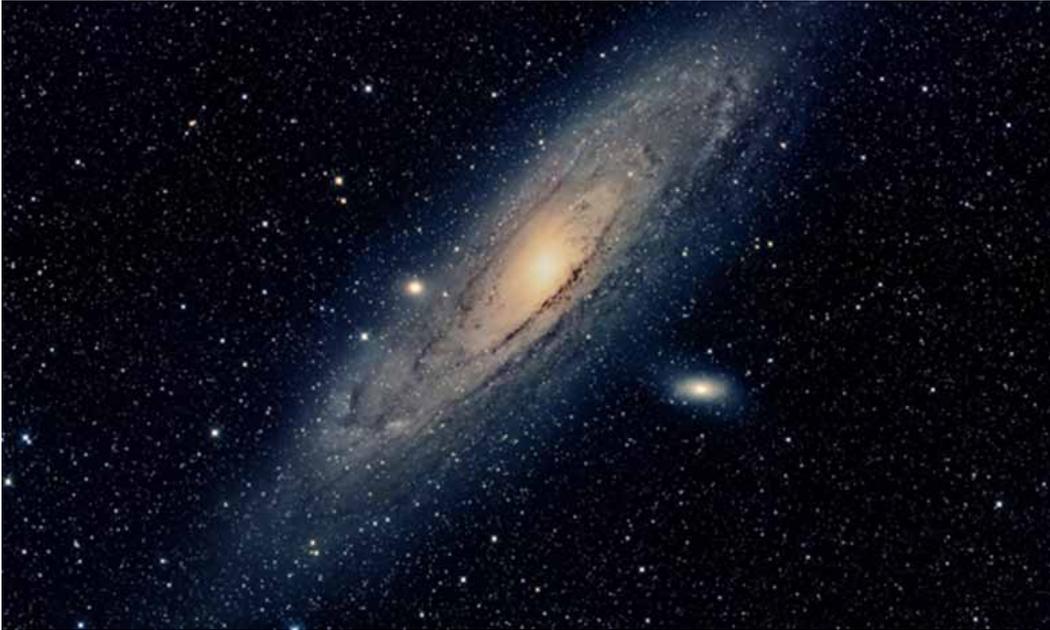
ror figuring effort was a disaster." Unknown to Geoff and his friend at the time a seed had been planted; it germinated, went dormant, grew a little more off and on over the years and finally blossomed. How typical is that story?

Isn't Geoff's experience the reason Astronomy is called "The gateway science?" Don't many professionals – doctors, scientists and engineers – tell how an early interest in astronomy, usually encouraged by a caring adult indirectly nurtured an interest in science and subsequently their life's career? And grinding and polishing a mirror nurtures artistic talent and combines the appreciation of precision. Even though the interest waxes and wanes, most people return to it as adults and it becomes a rewarding hobby; especially in retirement as it was for Geoff. Isn't the age distribution at local meetings mute testimony to this trend?



A startling, seldom seen view of the Ring Nebula (M 57) in Lyra. Geoff used Hydrogen Alpha filtering to bring out the dim outer regions and show its vast extent. The inner ring is about all that we ever see through our telescopes. An RC 14 inch Image.

By 1972, an accomplished Kidney Transplant Surgeon, Geoff moved from Sydney, Australia to San Diego where he joined a medical school research team whose findings and techniques have benefited many people. However, the dormant Astronomy seed that had been planted in that 15 year old boy drew him to the San Diego AA meetings in the Balboa Park science center. Almost predictably, Geoff purchased a C-8 for visual observation. But, like many amateurs his interest – and telescope needs – kept growing along with his interests.



“SDAA has a 4,000 feet dark sky site where I quickly realized that film could capture far more than the eye could see.” He traded up to a C-14, attached a Cold Camera that with dry ice slush reached  $-80^{\circ}$  dramatically reducing film’s reciprocity failure. “At the time, I got some spectacular images that by today’s standards – set by modern CCDs – were pretty poor.” He added smiling. I’ll bet those early film images were great.

The Andromeda Galaxy (M31) by Geoff Collins. This is exceptional mosaic was made by “stitching” several images together because the RC’s FOV is definitely too small for the entire galaxy to fit on the CCD chip.

“I enjoy technology as a means of overcoming problems and providing the best that one can achieve.” That’s an understatement of Geoff’s entire medical career that continues to benefit people and elegantly summarizes his retirement in 2000. He simply combined his love of astronomy, his understanding of science and his artistic appreciation and got serious about imaging.

“Beginning in 2003 I put my RC14.5 on a Mathis 750 fork mount inside a clamshell dome on the deck of our vacation home which sits on a hill at 6800feet. Before long, I upgraded my CCD to a large format FLI 16803, CCD and added an off axis guider.” For wide field imaging Geoff uses an FSQ106, and a Newtonian 10 inch F/3.65 that piggy backs on the RC. The Mathis mount carries everything without even breathing hard.

Geoff makes no bones about his personal pleasure, “I like to image the classical objects and compare my results with the best that others have achieved and published on the internet.” Although he didn’t say it, his fine work proves he strives to make images at least as good as or better than the very best. And more, he does it for his own satisfaction and takes pleasure in doing his very best. His images also speak volumes about his career that must include dedication, patience and a nurturing ability pull the best from what you’ve got...

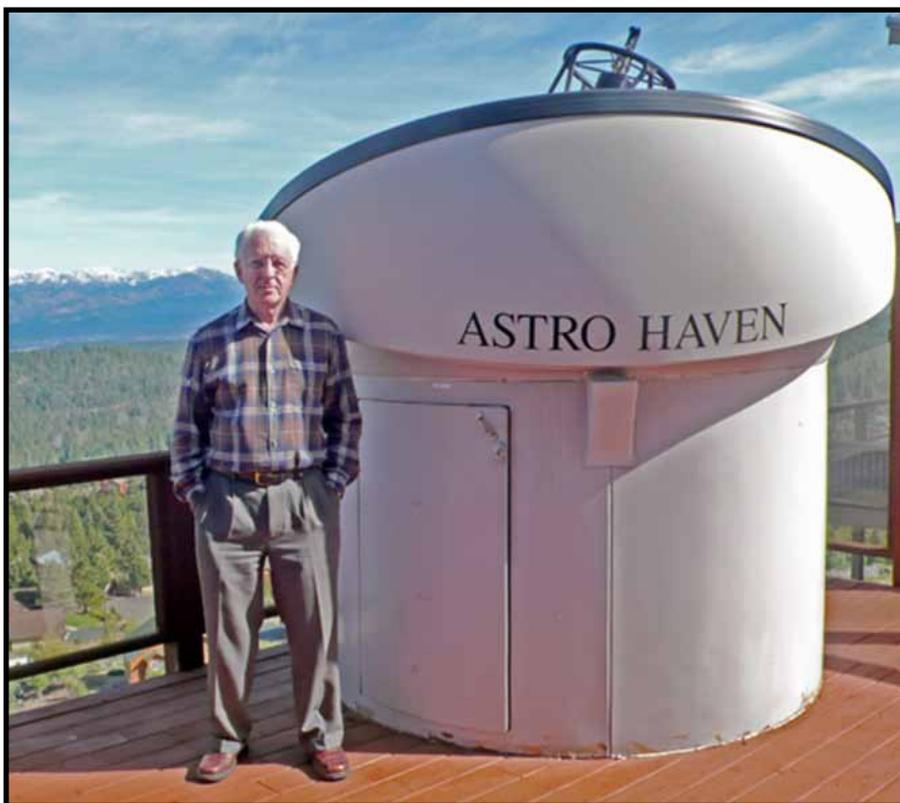


NGC 7023 in Cepheus; aptly named the “Iris Nebula”. Using his RC 14.5 Geoff has brought out its reflection character and “Iris” flower like appearance.

Geoff has a deep, abiding interest in cosmology. "I follow developments in the field with great interest to the extent that my layman's knowledge permits. That we understand how the universe began and evolved to its present form, I find amazing." Doesn't Geoff's comment speak for amateurs we all know?

M 42, the great nebula in Orion imaged by Geoff Collins with his 10 inch F/3.65 Newtonian. Notice the fine detail and Hydrogen rich in this image captures.

Isn't Geoff's story about most amateurs? We become interested when we're young and are encouraged by an adult; often a parent. Over the years, our commitment waxes and wanes, but we always look up and astronomy beckons us to return. Geoff's long affair – now over 60 years – with amateur astronomy proves that we can all find our dream and carry it to the fullest extent we can.



Dr. Geoff Collins with his RC telescope just visible above the open dome at his Lake Tahoe deep sky site. How many amateur astronomers have a story, but with different interests? Isn't this a marvelous hobby?

Most of us will never produce spectacular images as Geoff does, but the one thing we all do – whether with our images, telescope making, simply showing on object or some other aspect – is that we encourage other people to enjoy this great hobby. In doing so, by example we encourage young people to become comfortable with science, technology and art. Surely that's good.

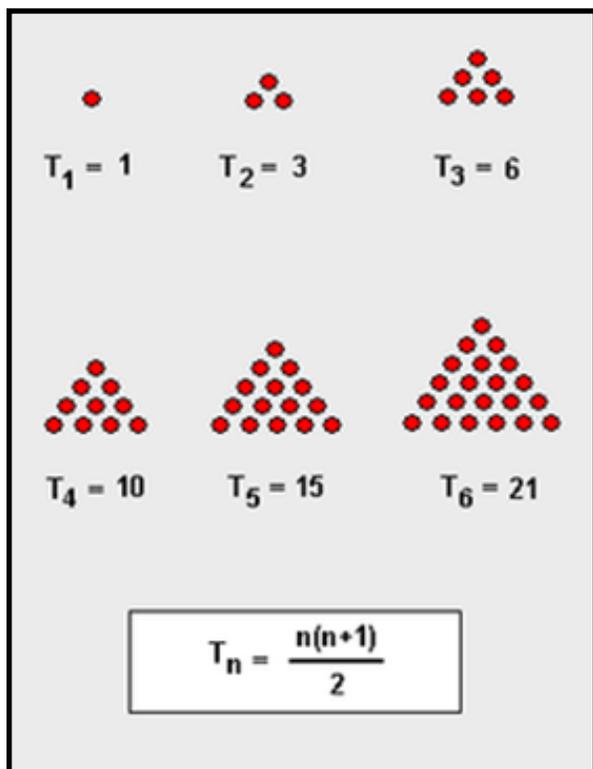
# What Would An Alien Message Look Like?

Nathaniel Bates

If SETI optimists are correct, and the Galaxy is potentially teeming with life ready to contact us through the electromagnetic spectrum, then the question arises as to what we should look for. An alien message would have to be in a language that is universal. English is not universal. Nor is Mandarin a universal language. In fact, even the old familiar canard that mathematics is a universal language probably falls short of reality. Some aspects of mathematics are culturally conditioned. Algebra would not be a good means of communication to begin with, since Algebraic equations depend on knowing symbols. Nor would Calculus be a good means of communication for us to start off with for the same reason. Geometry would also not suit us at first, since we would have to know how to decipher shapes. Even sending out sophisticated messages around transcendental numbers like Pi would be troublesome at the very beginning, even though such a signal made Carl Sagan's Contact a great read.

True communication would have to begin with a form of mathematics that would be universally understandable, and that would be the counting number system. "Natural numbers" are the numbers we use to count with. You know, "1, 2, 3, 4, 5, 6, 7..." which is the sequence we all learned when we were young. Sequences using these numbers would truly be understood universally. Before we began to discuss irrational numbers or more advanced concepts, we would have to begin with counting numbers and learn symbols as we progress to more advanced concepts. Given the vast distances radio signals would have to travel, it might take us thousands of years to even learn basic concepts like what they call "five," but at least we could start with pulses that represent natural numbers in order to begin the daunting task of learning the mathematics of an entirely different culture.

I believe that an extraterrestrial message would probably look like some of the familiar numerical sequences that mathematicians marvel at when constructing patterns using natural numbers. First of all, the aliens might broadcast a signal simply repeating prime numbers. Such a sequence would either start with one or two, depending on whether the aliens define one as a prime number or not. If humans were to send such a signal, we would begin it with 2, then 3, 5, 7, 11, 13, 17, 19, 23... and upwards. Such a sequence would be universally understood because all mathematical systems that deal with counting numbers would have to incorporate knowledge of prime numbers. Prime numbers are numbers that can only be divided by themselves and one if our division is to result in a counting number. Variations on the theme of primes, such as Mersenne primes, might also be possible.



The extraterrestrials might also broadcast the Fibonacci Series, which begins with the number one and is defined as the sequence in which each number is the sum of the two numbers before it. Begin with 1, repeat 1, and then we have 2, 3, 5, 8, 13, 21, 34, 55, 89... This sequence is complete with mysteries that astound mathematicians, and would be known to any advanced civilization that deals in mathematics. As the sequence progresses to infinity, the ratio of any given number to the one before it approaches the Golden Ratio, one of the most awesome mysteries of mathematics that defines the shape of a sunflower, the architecture of the ancient Greeks, and even the arrangement of trees. Communicating this sequence would give other civilizations some indication of a planetary civilization's sophistication and elegance.

There might be other possible signals that would introduce us to the aliens. We would probably be required to send a signal in kind. Our return signal might be our entry to a cosmic dialogue that is as much aesthetic as it is mathematical. Again, we would probably want to begin with easily recognizable numerical sequences, like powers of 2 or else the triangular numbers. Triangular numbers would be a fun sequence to begin with. These are the numbers defined by the sum of the counting numbers. We start with 1. We then go to  $1+2=3$ . Then,  $1+2+3=6$ ... So, we would have 1, 3, 6, 10, 15, 21, 28... Why are they called triangular numbers?

[http://en.wikipedia.org/wiki/Triangular\\_number](http://en.wikipedia.org/wiki/Triangular_number)

Yes, you can see the pattern. As the triangle grows, the number of points it takes to fill the triangle grows according to the triangular number series.

We might also broadcast the Lucas Series. We might try square numbers. There are many possibilities; all with the intent of showing them that we are intelligent enough to merit further communication. We should begin with simple numerical sequences that are both easy and fun. They would establish that we are an intelligent species. Again, any introduction should avoid fractions in order to make initial communication easy and concise. Even forms of mathematics that require knowledge of Base 10 would be best avoided. So, primes, Fibonacci numbers, and triangular numbers would be good ways for them to communicate with us and for us to communicate with them in the beginning.

One last possibility to begin with...We might also broadcast the sums of cubic numbers with the intent to showing that they add up to the squares of triangular numbers. We would broadcast 1 and 1. Then we would broadcast 1,8,9. ( $1+8=9$ ) We would then broadcast 1,8,27, 36 ( $1+8+27=36$ ). Then, 1,8, 27, 64, 100 ( $1+8+27+64=100$ ). We would really be showing them how smart we are. Numerical sequences would form a language that would be a way of beginning a dialogue based on mutual wonder and admiration at the ratio's and proportions that define the Universe in which we live.

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## The Philosopher and the Formation of the Solar System

Nathaniel Bates

The Nebular hypothesis is the current running theory of the formation of the Solar System. The theory states simply that the Solar System began with a cloud of gas that condensed due to gravity. Collapsed gas eventually formed the sun and planets. The theory has been verified in stages. Sir Fred Hoyle demonstrated that the sun was ignited due to the fusion of hydrogen in to helium. Soviet Astronomer Victor Safronov eventually came up with a working model of how the planets formed, namely the fusion of hydrogen in to helium. Yet, to tell an ironic tale, the actual origin of the nebular theory is a strange one. It did not come from astronomers or physicists. The Nebular Hypothesis arose from the minds of a mystic and a philosopher.

Emanuel Swedenborg was the first to come up with some form of the Nebular Hypothesis. He was a Swedish mystic who claimed to have Visions from God. He was also a scientist, and was the first to propose the idea that the Solar System formed as a compressed disk from a broader cloud of gas. Immanuel Kant considered the writings of Emanuel Swedenborg, and further refined the Nebular Hypothesis. Both men were fascinating historical figures. In the case of Emanuel Swedenborg, he inspired pacifists, vegetarians, and diverse groups of people who rejected authoritarian forms of religion for the sake of a personal experience of God. He had an extensive influence on such diverse figures as William Blake, Johnny Appleseed, and the New England Transcendentalists. Philosopher Immanuel Kant considered Swedenborg's beliefs, but rejected them for the sake of the rationalism of the Enlightenment. Yet, Kant still considered the nebular hypothesis as ultimately rational and he helped to popularize the concept.

It must be stressed that Kant was not a "scientist" in the way that we understand the term today. Kant was a philosopher. Yet, the two fields were intertwined with one another during that day and age. In fact, science in that time was called "natural philosophy." Many great scientists and mathematicians were also philosophers. Blaise Pascal was a mathematician, and also a philosopher. Ben Franklin and Thomas Jefferson were scientists of the Enlightenment spirit, and also rational philosophers. Indeed, the barrier between science and philosophy was not written in stone. Indeed, it would take the rise of late nineteenth century and early twentieth century philosophies such as Empiricism, Positivism and Naturalism to really begin the divorce between the hard sciences and philosophy. Even then, however, Mathematicians like Bertrand Russell, Alfred North Whitehead, and Gottlob Frege are also noted as philosophers. The full divorce of science and philosophy may not have been accomplished until the rise of Deconstructionism and Post-Modernism in the middle and late twentieth century. Thus, the idea of a philosopher as scientist was not so uncommon in the time of Kant.

Yet, Kant is not that well known as a scientist even in times past. Really, his well known contribution to human thought was in his influence on the study of human thought itself. Kant wanted to understand what it means when we say "I know." During the time of Kant, philosophy was divided between an English school of thought that focused on "empirical" observations and a "rationalist" European school of thought that focused on reason and systematized thought. Kant was neither a pure rationalist nor a pure empiricist, but somewhere in between the two worlds. He came to the conclusion that human truth claims can be divided between opinion, belief and knowledge. Knowledge is what is provable both through reason and through discovery. Even morality itself has to be arrived at through a kind of balanced logical approach that attempts to consider universals.

Kant was an optimist who believed that rationality could be a guide to reality. Even though Kant critiqued pure reason, he made it clear that he considered scientific reality to be objective. Later German Idealists would reject "English philosophy," and with it both science and the idea of individualism. Although Kant had a great influence on those later philosophers, he remained a philosophical liberal and committed Constitutionalist throughout his whole life. Kant also remained a believer that science, while not the solution to all of man's problems, was an important part of progress. Kant also went a long way to rejecting earlier severe

Platonic dualism between pure reason and base material reality that tended to hamper scientific progress in the west. The nebular hypothesis for Kant was undoubtedly part of the scientific attempt to make the world of the senses and the world of reason one in the same instead of two realms conflicting with each other, as earlier Platonic philosophers saw them.



In the end it was scientists and not philosophers who would end up verifying the nebular hypothesis. Pierre-Simon Laplace added his scientific name to the nebular hypothesis in 1796. He proposed a disk that flattened due to cooling in the way that modern scientists believe that Herbig-Haro objects collapse due to gravity in to form proto-stars. The Laplacian model fell in to trouble due to the fact that it seemed to contradict certain Newtonian laws. Only with the theories of twentieth century Russian astronomer Viktor Safronov and George Wetherill was the nebular hypothesis reconciled with the Physics of Angular Momentum. Today, planets are understood as arising from planetesimals that merged with one another in a way that formed modern planets. While alternate theories exist, this model is the commonly accepted model that unifies the nebular hypothesis with the laws of Angular Momentum.

Few would suspect that the modern model of the formation of the Solar System was initially put forward by a Mystic and then a Philosopher, both from a bygone age in which the boundaries between Philosophy and Science were not as rigid as they would later become.

Indeed, while modern physicists and astronomers verified the theory, the fact that Swedenborg and Kant could make such intuitive leaps beyond what science could prove in their time is a testimony to the mystery of human knowledge. Ironically, it was a mystery of the human mind of the type that Kant himself tried to answer but which may be yet more mysterious than any one philosophical system can describe. Let that be an ironic end to the ironic tale.

# Astro Classifieds

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1986 - Meade 2045

4" Schmidt Cassegrain Telescope

I am helping my friends sell a telescope for her friend: This telescope is the forerunner of the ETX model, but it is constructed with mostly metal parts. I have never used it, but I have downloaded a few old reviews. One person said the 2045 is a poor man's Questar! In 1986, the telescope's cost was approximately \$500 without the T-Adapter, Lumicon, Orion & Meade sunshade accessories and books.

## The telescope comes with the following accessories;

- a. 9 mm and 25 mm eye pieces;
- b. Eyepiece holder/diagonal prism;
- c. 5 x 24mm view finder;
- d. 126 - 2x teleneegative amplifier (Barlow)
- e. 3 thread-in tripod legs for setting onto a table;
- f. T-Adapter for astronomical photography;
- g. Lumicon illuminated k.12 mm eyepiece;
- h. Lumicon 211 Research Drive w/cables;
- i. Lumicon switch pod;
- j. Orion erecting prism;
- k. Meade 582 sunshade
- l. AC power cord;
- m. Very sturdy aluminum carry case;
- n. Meade Operating Instructions;

## Books:

- a. Astrophotography - A step by Step Approach by Robert T. Little, 1986;
- b. Astrophotography 2nd edition by Barry Gordon, 1983;
- c. Scientific America - The Planets, 1983
- d. Sky Catalogue 2000.0, volume 1, 1982
- e. Sky Catalogue 2000.0, volume 2, 1982
- f. Star Map for Beginners by Levitt & Marshall

## Misc:

- a. Rangematic Distance Finder
- b. Leather wrapped 1 3/8" Antique telescope (?) extends to 23 1/2" made by Ross, London
- c. **If you are interested in any of these items, please call Leary Wong and we can discuss prices - (925) 930-7024**

# Cool Astro Links

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## Night Sky Network: Club Member Login

<http://nightsky.jpl.nasa.gov/login.cfm>

## Night Sky Network: Astronomy Clubs

<http://nightsky.jpl.nasa.gov/>

## Astronomy Picture of the Day

<http://antwrp.gsfc.nasa.gov/apod/>

## NASA - Home

<http://www.nasa.gov/>

## Jet Propulsion Laboratory

<http://www.jpl.nasa.gov/>

## ESA Portal

<http://www.esa.int/esaCP/index.html>

## JAXA | Japan Aerospace Exploration Agency

[http://www.jaxa.jp/index\\_e.html](http://www.jaxa.jp/index_e.html)

## Main Hubble Page

<http://hubble.nasa.gov/>

## HubbleSite:

**Out of the ordinary...out of this world**

<http://hubblesite.org/>

## Universe Today

<http://www.universetoday.com/>

## Bad Astronomy

<http://blogs.discovermagazine.com/badastronomy/>

## SpaceWeather.com: News and information about the Sun-Earth environment

<http://www.spaceweather.com/>

## Cloudy Nights

<http://www.cloudynights.com/>

## Astromart

<http://www.astromart.com/>

## The Planetary Society

<http://www.planetary.org/home/>

## Astronomical Society of the Pacific

<http://www.astrosociety.org/>

## AANC: Astronomical Association of Northern California

<http://www.aanc-astronomy.org/>

## Mount Diablo Astronomical Society

<http://www.mdas.net/>

## Astro Classifieds

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I have a **Konusmotor 114** (4.5", 900mm, f/8) equatorial reflector telescope with tripod available for sale. I got it in August 2008, but have never set it up or used it.

After attending some star parties, I realized rather quickly that I was more interested in stargazing with the naked eye.

I wonder if anyone might be interested in purchasing it.

Thanks for your help.

Nancy Brown - [ndowdsbrown@hotmail.com](mailto:ndowdsbrown@hotmail.com)

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**Rubylith**, red, clear, transparent, huge 24" x 36" sheets. For flashlight lens, laptop covers, car lights, etc.

\$5.00 per sheet, can be picked up at my home in Oakland, or at an EAS or MDAS meeting or viewing night that I attend.

But if you want shipping, you have to order here:  
<http://dragonflybridge.com/Rubylith/>

Jon Steel  
510-531-6218  
[jonlee@aol.com](mailto:jonlee@aol.com)

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What's Up? Program Chair: James Scala  
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MDAS

P.O. Box 4889

Walnut Creek, CA 94596-3754

### **Meetings are held:**

Fourth Tuesday every month,  
except on the third Tuesday in November and December.  
Refreshments and conversations are at 6:45pm.

### **Meetings begin at 7:15pm.**

Where:

Concord Police Association Facility

5060 Avila Road, top of the hill.

Take Avila Road from Willow Pass Road.

Directions to facility:

[http://nightsky.jpl.nasa.gov/club-view-directions.cfm?Address\\_ID=18](http://nightsky.jpl.nasa.gov/club-view-directions.cfm?Address_ID=18)

# MDAS Meetings and Viewing Events in December 2010

< December			
Sunday	Monday	Tuesday	Wednesday
28	29	30	
5 	6 7:30 PM Board Meeting	7	
12	13 	14 7:00 PM MDAS Imaging SIG	
19	20 10:30 PM Total Lunar Eclipse 10:30 PM Eclipse: On Your Own	21 7:15 PM GenMtg: SciFi 	
26	27	28 	



Wednesday	Thursday	Friday	Saturday
1	2	3	4 Society Observing  Sunset: 4:50 PM
8	9	10	11 Society Observing  Sunset: 4:50 PM
15	16	17	18   Sunset: 4:52 PM
22	23	24	25 Christmas Day  Sunset: 4:55 PM
29	30	31	1

**Mount Diablo Astronomical Society**  
**P.O. Box 4889**  
**Walnut Creek, CA. 94596-3754**