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nightwatch

Newsletter of the Pomona Valley Amateur Astronomers

Amateur
astronomers
just get better
looking . . .

**CLUB DUES OF \$27 TO
BE PAID BY AUGUST 31**

Volume 23 Number 8

nightwatch

August 2003

President's Message

Among the objectives of Pomona Valley Amateur Astronomers are to raise public awareness of and interest in astronomy. If we wish to stop the spread light pollution, we must educate the populace as to the importance of this issue. In addition, we would all like to see the advancement of the science of astronomy. And it is mostly tax money that supports space exploration and astronomical research.

This month we have two excellent opportunities to reach the local community. The first is on Thursday, August 21st. The Ontario Public Library has invited PVAA to give a public star party on that evening. The library is located in downtown Ontario at 120 East D St, Ontario. Sunset is at about 6:30 PM and it should be dark enough to begin observing by a little after 7:00 PM.

For our second public star party this month we will be returning to the Rancho Cucamonga Barnes and Noble Booksellers. The event is scheduled for Thursday, August 28th. The evening's highlight will be Mars at opposition. The Barnes and Noble store address is 11090 Foothill Blvd. in Rancho Cucamonga.

Public star parties are a pleasant way to spend a summer evening. Please plan to support these activities by attending with your telescopes or binoculars.

Ron Hoekwater

**Be sure to get your BALLOT to
P.O. Box 162 or to the meeting by
August 8, 2003. See pages 5 & 6.**

Mount Wilson Mars Trip

On Wednesday, September 3rd, PVAA will be on Mount Wilson observing Mars with the 60-inch telescope. If you wish to be there, in the dome with this historic instrument, for the closest approach of Mars in tens of thousands of years, act now. Mail a check (\$60 for members, \$75 for non-members) to the club's PO box. Or you may make payment personally to our treasurer, Ludd Trozpek. Only the first 25 to pay will be going. Mount Wilson does not allow more than 25 guests in the dome. Don't be left out. Sign up early.

PVAA Events Calendar

Month	Star Party	General Meeting	Board Meeting
August	23	8	July 31
September	27	12	5
October	25	10	3
November	22	7	13

History of the Discovery of the Deep Sky objects

Have you ever wondered where those “M” objects or “NGC” objects and others came from? Who discovered those faint fuzzies that we spend so much time hunting for and find so rewarding? It has only been in relatively recent times that the true nature of these objects has been known. Modern telescopes, space-based instruments, researchers and theorists have produced an explosion of knowledge about the cosmos during our lifetime. The following is an abbreviated account by Hartmut Frommert. Please visit his web site: <http://seds.lpl.arizona.edu/messier/xtra/history/deepskyd.html> for the complete text.

Since the earliest times, humans could view stars at night whenever it happened not to be cloudy. As in prehistoric times, there was barely any light pollution in most regions of Earth; our ancestors could view stars of very faint light, and thus some of those objects we now summarize as Deep Sky Objects. This way, some of these objects are known as long as anything is known. Some of the bright star clusters must also have been known very early, even before the time covered by any ancient records. These certainly include the Pleiades (M45) and the Hyades clusters in Taurus, which are conspicuous to the naked eye, and recorded early (i.e., the first certain document on the Pleiades is Hesiod, about 1000 BC). In the Southern Hemisphere, the two Magellanic Clouds (LMC—the Large Magellanic Cloud, and SMC—the Small Magellanic Cloud) were certainly known since earliest times. Hipparchus was the first astronomer who compiled a catalog of stars; this work was perhaps triggered by the observation of a “New Star” (Nova) in the constellation Scorpius in 134 BC. He included two “nebulous objects” in his catalog, the Praesepe star cluster (M44) and the Double Star Cluster in Perseus, now called κ Persei (NGC 869+884, not in Messier’s catalog). Ptolemy, in his Great Syntaxas compiled 127--151 AD (better known as the Almagest), lists 7 objects, 3 of which are asterisms of little interest and not physical objects, two are those taken from Hipparchos (M44 and the Double Cluster in Perseus), but two are new: “A Nebula behind the Sting of Scorpius” which has now been identified as the conspicuous open cluster M7, which the present author has proposed to name “Ptolemy’s Cluster”, and the Coma Berenices Star Cluster, now cataloged as Melotte 111 (but not in Messier’s catalog). The first really “nebulous” object to be discovered and documented was the Andromeda Galaxy (M31), observed around 905 AD and documented 964 AD by the Persian astronomer Al Sufi in his Book of Fixed Stars.

While not a deep sky discovery as the others mentioned here, the occurrence of a supernova on July 4, 1054, was observed and recorded by Chinese and (very probably) by ancient North American astronomers; this supernova produced the Crab Nebula (M1), one of the most interesting deep sky objects. No more new deep sky objects were discovered until

Magellan, in 1519, reported the sighting of the Large and Small Magellanic Clouds. Galileo revealed that Praesepe (M44) was not a nebula but a star cluster. Nicholas-Claude Fabri de Peiresc (1580-1637) was the first to discover a true gaseous nebula, the Orion Nebula M42, in 1610. This was also the first deep sky discovery with a telescope. Giovanni Batista Hodierna (1597-1660), astronomer at the court of the Duke of Montechiaro compiled a catalog of some 40 entries, including 19 real nebulous objects, found with a simple Galilean refractor of magnification 20, and printed in Palermo in 1654. Johan Hevel or Hevelke (known as Hevelius, 1611-87) from Dantzig compiled a catalogue of 1564 stars, Prodomus Astronomiae, published posthumously together with his star atlas, Uranographia. He included a list of 16 entries, 2 of which are objects (the Andromeda Galaxy M31 and the Praesepe star cluster M44), while the other 14 are asterisms or non-existent. In his star catalog Historia Coelestis Britannica, published in 1712 and revised in 1725, John Flamsteed (1646-1719) refers to several “nebulae” and “nebulous stars”. This includes many of the then-known objects (Coma Cluster Mel 111, κ Persei, M31, M42) plus three independent discoveries, including re-discoveries of unknown Hodierna objects NGC 6530 (associated with

..PVAA 24 HR. Hotline.

Get the latest news on the star party, club meetings, special events and astronomy happenings.call
909/596-7274

Visit or website at

<http://www.cyberg8t.com/patrick/PVAA.htm>

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M8) and M41 and his own true original discovery of NGC 2244 around the star 12 Monocerotis (associated with the Rosette Nebula NGC 2237-9, neither the cluster nor the nebula in Messier's catalog). Edmond Halley (1656-1742) published a list of six "luminous spots or patches" in the Philosophical Transactions of the Royal Society for 1715, including his own discoveries of globular clusters Omega Centauri (on a journey 1677 at St. Helena) and M13 (1714), and the previously known objects M42, M31, M22, and M11. Abbe Nicholas Louis de la Caille (Lacaille, 1713-62) observed stars and Deep Sky objects in the Southern sky from South Africa during his 1751-52 journey, invented several southern constellations (many of which are still in use), and compiled a catalog of Southern Deep-Sky objects with 42 entries, 33 of which are real. Lacaille's major original discoveries include the Eta Carinae Nebula NGC 3372, globular cluster 47 Tucanae (NGC 104), the Tarantula Nebula NGC 2070 in the Large Magellanic Cloud, and spiral galaxy M83, the first discovered galaxy beyond the Local Group. This was the last discovery in the deep sky before Charles Messier (1730-1817) started to compile his catalog, and made his first original discovery of M3 in 1764. For more than a decade, Charles Messier was alone in looking for clusters and nebulous objects. During that time, he discovered 27 objects of which 25 are actually deepsky objects (the other two are the Sagittarius star cloud M24 and the double star M40). Messier himself originally discovered 15 more nebulous objects (14 deepsky plus the star quartett M73) in the subsequent years until 1781. About five years later, in 1779, when Messier and Bode were still active in compiling their lists, four more astronomers entered the "club" of successful deepsky discoverers: Antoine Darquier de Pellepoix (Darquier, 1718-1802) of Toulouse discovered the Ring Nebula M57 in January, shortly before Messier; both found it when tracing a comet. Finally, Messier's friend Pierre Mechain (1744-1804) began his astronomical observing career, and made his first original discovery of M63 on June 14, 1779. Subsequently, Mechain discovered originally about 29 objects most, of which he contributed to Messier's catalog, as he was observing in close cooperation with Charles Messier. As he surely has communicated all his discoveries to Messier, Helen Sawyer-Hogg, in 1947, decided to add three more of them to the Messier catalog (M105 to M107). As a major milestone in deepsky discovery, the Messier Catalog was published in its final version of 103 objects in 1781 in the *Connaissance des Temps* for 1784. Together with its more recent additions which brought it to 110 entries, which at least all but one (M102) belong to real objects (though four of them were missed for over a century), it contains the majority of all clusters, nebulae, and galaxies known up to April, 1782 (when M107 was the last Messier object to be discovered, by Pierre Mechain). The Messier catalog did in particular impress the great German-British astronomer Friedrich Wilhelm (William) Herschel (1738-1822), who by that time had become famous especially because of his discovery of planet Uranus in 1781. Herschel cataloged over 2500 discoveries, most of which are real deepsky objects. As he had the best telescope of that time, he was without competition.

He was assisted by his sister Caroline Lucretia Herschel (1750-1848) who was an avid observer herself; she discovered a lot of the clusters and nebulae in Herschel's catalog (among them is an independent discovery of M110 = H V.18, which Messier had discovered but not cataloged 10 years earlier, and an independent rediscovery of the missing Messier open cluster M48 = H VI.22), and discovered 8 comets. As the true nature of the objects was still unknown at that time, this classification is more of historical importance today. John Frederick William (John) Herschel (1792-1871) had continued his father's work, and added 525 new entries (northern objects) in a catalog published in 1833. But John Herschel also wanted to catalog the southern skies. On November 13, 1833, he and his family went on ship to sail to the Cape of Good Hope, South Africa, where they arrived on March 4, 1834. He intensively studied the southern skies in the subsequent years. His observations of southern nebulous objects were published in 1847 as a catalog with 1713 entries. Evidently, he summarized his and his father's, as well as others' deepsky discoveries in his great General Catalogue of over 5000 entries. The work of the Herschels finally brought the great "nebula" (and cluster) discovery time to a conclusion. Nevertheless, it took time and new research methods (especially photography and spectroscopy), until the nature of the various deepsky objects was uncovered. The British amateur and pioneer of spectroscopy William Huggins (1824-1910) discovered the gaseous nature of the "true" nebulae in the late 19th century. And in the 1920s the true nature of galaxies as independent "island universes" like our Milky Way became apparent (due to the work of Edwin Hubble (1889-1953)).

Allen Whang

Annual Election of Officers This Month

The ballot for the election is on page 6 and the instructions are on page 5. Be sure to get the ballot to the treasurer by mail or in person by August 8, the day of our General Meeting.

Club dues of \$27 must be paid by August 31

The August 23rd star party will be at Cow Canyon Saddle. To get there, go north on Mt. Baldy Road, as you enter Mt. Baldy village, turn left on Glendora Ridge Road. About half mile up the hill there will be parking on the right.



CAMP

This early morning view shows the complement of telescopes at Grandview. Ron's 22-inch Starsplitter, Bob's 12 1/2 inch homebuilt, and a 16-inch Meade Starfinder. In addition there was a short-tube refractor, a 90-mm f/11 refractor, and a half-dozen pairs of binoculars. The tent in the background was useful for storing things during the day and was large enough to take most of the telescopes in for the few short periods of



Joe Cooks

Joe Hillberg is establishing a nice tradition of cooking up a slow-cooked pot roast at star parties. He did so at RTMC and reprised that performance at Grandview. He used seven-bone chuck that cost 87 cents per pound. Those who ate the meal were in agreement that the meat was easily worth 89 cents per pound; some even went as high as 94 cents per pound. Here, Joe serves Ron the savory roast, rice, and potatoes.

Star party at Grandview in the White mountains

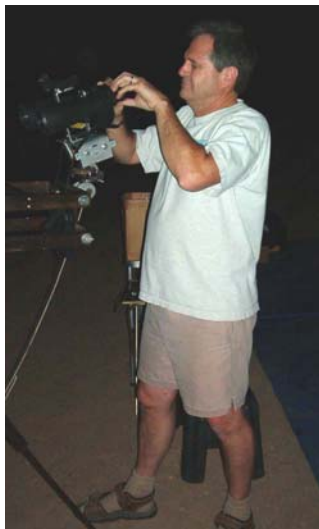


Planning

Bob Akers plans the nights observing

Bob at night

Bob Akers sets up his 15x70 Barska binoculars on his binocular mount. The inexpensive Barskas give fantastic views for little cash outlay. At 15 power, they do benefit from a binocular mount or tripod.



Solar observing

Using Bob Akers' 90 mm refractor, newly purchased at RTMC over Memorial Day, Ron Hoekwater gets in a little solar observing. The mylar solar filter over the objective protects Ron's vision. The Sun's disc showed numerous spots: there was one large group and a line of spots extending from above the equator to beyond 70 degrees south solar



Ron Adjusts Secondary

PVAA President Ron Hoekwater adjusts the secondary of his 22-inch Starsplitter telescope.



Joe and Ron collimate

Joe Hillberg and Ron Hoekwater adjust the primary mirror to complete the collimation of the Starsplitter.

ELECTION OF PVAA OFFICERS

Once again it's election time for the Pomona Valley Amateur Astronomers. The board asks that you mark your ballot in the prescribed manner so that it might be counted. Your ballot is important as it will help decide the next slate of officers. Select the nominee of your choice by marking an "X" in the appropriate box, and on unopposed nominees mark each office with an "X" in the yes box to elect the nominee or a n "X" in the no box to reject the nominee. Remember every ballot carries the same weight in this election.

Rules for voting

Please follow the rules accordingly so that your ballot is validated and counted in the election. Ballots will be distributed in the August newsletter to the membership eligible to vote (according to paid dues). Additional ballots can be obtained at the general meeting of August 8th. In the event that a member submits more than one ballot, the last ballot received by the treasurer prior to "closing of the polls" will be counted with all previous ballots being destroyed. Any ballots submitted at the August 8th meeting will supercede any mailed ballots with the mailed ballots being destroyed prior to counting.

Each ballot must be returned to the treasurer of the P.V.A.A. either by mail (as described below) or by personal delivery at the August 8th meeting. Nothing is to be written on the ballot other than selection markings. Do not sign the ballot or add any additional notes or comments or the ballot will be declared invalid.

Ballots returned by mail must be sent to: P.V.A.A.
Attention treasurer
P.O. Box 162
Upland, California 91786

Mailed ballots must be received at the post office by August 8, 2003 in order to be valid. Mailed ballots must be signed on the **FACE OF THE ENVELOPE** in the lower left hand corner to establish eligibility.

(See Ballot on page 6)



Shadow

We hope the subtle shadows of this picture will survive the printing process. It was taken at sunset and is a view to the EAST, not west. Note the slightly dark shadow in the skyglow apparently emanating from (or receding to) the large bush on the right. The shadow limits are approximately 25-30 degrees up from the horizon to the left and 45-50 degrees up and to the left. A puzzle: What causes this? Answer in the next issue of *Nightwatch*.

**Official ballot of the Pomona Valley Amateur Astronomers
for the term of officers 2003-2004**

YES NO

President

Shall Ron Hoekwater be elected President of the P.V.A.A.——

Vice President

Shall Joe Hillberg be elected Vice President of the P.V.A.A.——

Secretary

Shall Claire Stover be elected Secretary of the P.V.A.A.——

Treasurer

Shall Ludd Trozpek be elected Treasurer of the P.V.A.A.——

V P Facilities

Shall Bob Akers be elected V P of Facilities——

Board members at large serving a two year term

Shall Larry Pall be elected as a board member at large ——

Shall Spencer Crump be elected as a board member at large —