EPHEMERIS

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OPENING 1991!!!

This ran last month, but I thought it appropriate to run it again.

For 1991, the General Meetings will remain on 1st Saturdays until September, when they will be moved to the 4th Saturdays. This optimizes our meeting schedule around the star parties, which in turn will be 2nd and 3rd, and later 1st and 2nd Saturdays.

The Introductory Astronomy class will again be conducted in two parts: the indoor (lecture) part on 4th Saturdays (Jan - Sept), and the outdoor part at Grant Ranch County Park on 2nd Saturdays, along with the Halls Valley Group public session.

Meetings of the Board of Directors will be moved to precede the General Meetings, to (hopefully) combine some trips for the current officers and to encourage members to participate.

The Branham Lane public presentations will remain on 4th Fridays only through March 1991, then 3rd Fridays through November, and then 2nd Fridays. Extension into 1992 has not been studied.

FLASH! - SJAA HOTLINE

A "Hot Line" telephone number has been established to provide information about coming SJAA attractions. This number will be used as a permanent source of information about public and club star parties and other meetings. Do you get your Ephemeris late? No longer can you blame your bulletin editor for missing an interesting SJAA event. You can also leave a message at the end of the recording. (No deep breathing...please!) The number is 408-997-3347, 24 hours/day.

10-METER UPDATE

Amateur Astronomer John Wright has recently returned from Hawaii where he was privileged to tour the new Keck 10-meter telescope on Mauna Kea. John got inside the dome and will provide many interesting photographs of the telescope and the fantastic world atop Hawaii. For an inside look at the world's largest optical telescope, join us at 8 pm January 5th.

JANUARY 5TH
JOHN WRIGHT
KECK TELESCOPE
UPDATE

JANUARY 1: HAPPY NEW YEAR!!! (AND I JUST GOT USED TO WRITTING 1990 ON MY CHECKS!)

JANUARY 5: GENERAL MEETING AT THE RED CROSS. 10 METER TELESCOPE UPDATE. 8 PM. 6:30 PM BOARD MEETING. ALL MEMBERS WELCOME.

JANUARY 12: HALLS VALLEY GROUP PUBLIC STAR PARTY AT GRANT RANCH. SJAA INVITED

JANUARY 19: STAR PARTY AT HENRY COE STATE PARK. WEATHER PERMITTING. DUSK TILL FROZEN.

JANUARY 26: INTRODUCTORY ASTRONOMY CLASS AT 8PM. EVERYONE WELCOME.

FEBRUARY 2: GENERAL MEETING. SPEAKER YET TO BE ANNOUNCED. CALL THE SJAA HOTLINE FOR LATE INFORMATION.

SJAA HOTLINE
24 HOUR INFORMATION
408-997-3347

ASTRO CLASS STARTS JAN 26TH

Wolfgang Hanisch will again be conducting our informative introductory astronomy class. The class will be held at 8 pm on the 4th Saturday of each month. Outdoor sessions are also planned. The class is open to everyone, both seasoned veteran and beginner alike. It assumes no previous amateur astronomy knowledge. NO, you don't need a telescope. So turn-off your TV and come on by.

BOARD MEETING MOVED

The SJAA Board Meetings have been moved to the General Meeting nights and start at 6:30 pm. This solves a number of obvious problems for those of us who enjoy participating in SJAA functions and activities but who also have another life beyond the SJAA. Most of us make the General Meetings, but often find it very hard to include another Saturday night for the Board Meeting and even harder to include another weekend night for the new moon star party. I may be on the lunatic fringe when it comes to astrophotography but 3-weekends a month is a little much. Any members interested in some involvement in the SJAA are encouraged to attend the board meetings.

BRANHAM LANE STAR PARTIES

The pubic star parties held each month at Branham Lane park are a continuing success story for the SJAA. This month's event is on January 25th. Arrive before sunset to set up your telescope, or just drop by to spell a few of the telescope operators. All activities are weather permitting. Directions can be heard on the SJAA Hotline.

DECEMBER STARRY NIGHTS

- RICHARD STANTON

As we begin a new year I have been trying to decide what I am going to do with this column. No real direction has come to mind, so sometimes it will be the normal announcements of forthcoming astronomical events... sometimes it won't. This month the astronomical event we're going to talk about is you .. that's right, you, that person you see in the mirror everyday. I take no credit for what follows this month as it justly belongs to, or was stimulated by Terence Dickinson from a lecture given at the Carleton University in Canada.

NATURALISTS OF THE NIGHT - the Amateur Astronomers.

Astronomy is not an easy hobby. To be good at it takes an inordinate amount of practice. To be hooked on it is to know your life well never be empty, your brain never entirely at rest. For one thing, you'll always be dreaming about your next telescope! To love the wonder and enchantment of the starry night as it pulses through our imagination is to own the soul of an amateur astronomer.

One persistent myth about amateur astronomy is that you need a telescope before you can get started. Wrong! Depending upon your level of interest, you may never need a telescope. You certainly do not need a telescope until after you get started. Carrying a shiny new telescope into the yard for your first night of star identification is like taking a test drive in a new Porsche before ever having had your first driving lesson. It is a recipe for disaster and risks the loss of a life-long friend to share your dreams and wonders.

Unlike many other hobbies, you cannot buy your way into amateur astronomy. The only road to success in amateur astronomy is knowledge and experience. So it has been since antiquity, and so it is today. Today's amateur astronomers represent a complete cross-section of society, ages 8 to 100, all races, sexes, occupations, professions, and educations. trying to describe the average amateur astronomer is like trying to describe the average person. There is no such person. In general, amateur astronomers divide into three categories, the observers, the telescope makers, and armchair astronomers.

The armchair astronomers, those who pursue the hobby mainly through books, magazines, lectures, and discussions with their friends, are the largest segment of our hobby. The observers and telescope makers have simply taken an extra step by actively engaging in recreational astronomy.

Somewhere in the history of amateur astronomy an unwritten commandment emerged suggesting that amateur astronomers who do not spend their nights engaged in some rigorous scientific pursuit such as estimating variable star brightness or doing central meridian timings of planetary marking are wasting their time. This is absolutely absurd! Amateur astronomy is a hobby, a pastime, a recreational activity. Its usefulness is measured by the enjoyment and inspiration that it brings to you. If it is not entertaining and fulfilling, why do it? That is the sole criterion. Those among us who dedicate themselves to do systematic and potentially scientifically valuable observing deserve our admiration. Those who are conspicuously successful at it deserve our applause. But it is not every amateur astronomers duty to strive to join their ranks. Those who choose to simply be recreational or armchair astronomers are no less astronomers by the only criterion of our hobby ... it entertains and fulfills us. The common passion for all of us is to cross that timeless bridge from wondering to knowing what whispers to our souls in the starry night. If you have been reluctant to join in our activities because you thought you weren't doing your duty as an amateur astronomer, you have been wrong. It is your sense of wonder that is the very dynamo of our hobby. Please, come and share it.

SPACE PROGRAM UPDATE

-BOB FINGERHUT

ATLANTIS AND COLUMBIA COMPLETE SPACE MISSIONS - Atlantis was launched 16 Nov. and Columbia on 1 Dec. This made three launches in two months bringing the total to six for 1990. Atlantis carried a classified Department of Defense payload. High winds at Edwards AFB caused Atlantis to divert to a landing at Kennedy Space Center on 20 Nov. It was the first landing at Kennedy Space Center since April 1985 when Discovery blew a tire and damaged its brakes. The retextured runway performed better this time as there was no damage to Atlantis' tires.

Columbia carried the Astro-1 Spacelab. The Spacelab had three ultraviolet telescopes mounted on an instrument pointing system (IPS) and an X-ray telescope designed to study some of the hottest and most violent objects in the universe. A little more than half of the planned objects were observed due to problems with the star trackers on the IPS, two computers used to command the payload, a backed up toilet and bad weather at the landing site. Columbia landed at Edwards AFB a day early to avoid expected bad weather.

The Hopkins Ultraviolet Telescope (HUT) obtained data on quasars, active galactic nuclei, and the atmospheres of distant stars. The HUT was designed to observe objects 10,000 time fainter than any previous ultraviolet instrument launched into space. One key target observed was quasar 3C273, and object believed to be a super massive black hole. The Wisconsin Ultraviolet Photo-Polarimeter (WUPPE) measured polarized ultraviolet light from deep space sources. Data from the WUPPE gather information critical to theories on star formation and the evolution of the universe.

The Ultraviolet Imaging Telescope (UIT) used a film camera system to survey deep space for new ultraviolet sources. It looked for unusual stars in the Andromeda Galaxy, imaged the extremely bright and distant quasar 1700+64, the galactic cluster Abell 2246, and observed the supernova remnant in the Large Magellanic Cloud. The Broad Band X-ray telescope called the first X-ray images of the supernova and also studied galactic clusters and active galaxies.

GALILEO FLIES PAST EARTH - The Galileo spacecraft made a close pass by Earth on 8 Dec. During this close pass Galileo returned data that it collected at

Venus in Feb. and filmed a portrait of the Earth-Moon system. Galileo will encounter the asteroid Gaspra next Oct. 29 and the Earth again in two years. Galileo is scheduled to arrive at Jupiter in December 1995.

MAGELLAN REVEALS VENUS' SURFACE - Magellan continues to provide stunning imagery of Venus' surface. The resolution of the radar images is at least 10 times better than previous images. About one fourth of the surface has been mapped so far. The glitch that caused Magellan to loose communications with Earth twice in August occurred again on 15 Nov. Fortunately, due to software changes, the loss of contact was only for 41 minutes. The problem appears to be a random fault in the attitude and articulation control system.

AUGUSTINE PANEL URGES SPACE PROGRAM CHANGES - The advisory committee on the future of the U.S. space program was chartered in July by Vice president Quale and NASA administrator Truly to examine the civil space programs goals and management. The panel recommended that NASA abandon plans to build another orbiter after Endeavor, redesign the space station to focus on life sciences rather than materials processing and build a new family of launch vehicles. The panel supported the lunar and Mars missions proposed by President Bush and backed the global environmental monitoring effort called the Earth Observing System.

HUBBLE IMAGES A GRAVITATIONAL LENS - The faint object camera returned an image of the gravational lens quasar who light is bent by a nearby galaxy. The lens results in the quasar appearing as four discrete objects with the galaxy in the center.

NASA LEASES SPACEHAB - The Spacehab commercial research module is designed for use on space shuttle flights. Spacehab is located in the payload bay and connected to the orbiter crew compartment with a tunnel. The Spacehab is pressurized and contains work space and about 50 space shuttle mid-deck lockers. NASA has committed to lease 200 research lockers on six spacehab flights starting in Dec. 1992.

SOVIET SPACE PROGRAM - Japanese journalist flies on MIR: Toyohiro Akiyama became the first journalist in space on the 4 Dec. He made live television and radio reports from Mir and participated in experiments to study the effects of weightlessness on his sense of balance and on breathing rates while asleep. As well as the effect of weightlessness on Japanese tree frogs. The Tokyo Broadcasting Service paid over $12 million for the flight.

Another hatch repair EVA planned - Cosmonauts plan to remove the hinge pin and replace it on 7 Jan. An attempt to replace the hinge pin on 30 Oct. failed because the hinge pin in bent. The hatch is part of an airlock in Mir's Kvant-2 building block module.

Salyut 7 Space Station to re-enter Earth's atmosphere - The space station is expected to re-enter and burn up early in 1991. Salyut has not been occupied since June 1986. Salyut was replaced with Mir in 1986. Mir is expected to remain in service through 1995.

Soviet Shuttle flight planned for late 1991 - The mission is expected to include an unmanned automatic docking with the Mir space station followed by a separate linkup iwth a Soyuz transport to test space rescue techniques. This shuttle is the second of three vehicles funded by the Soviet Union. The first was flown in Nov. 1988.

COMET COMMENTS

- DON MACHHOLZ

Dear friends! We have moved to Colfax CA so that Laura can be a full-time mom, to live in a smaller, less expensive community, and to have darker skies. We plan on 2 observatories next to our house, which will be at the top of a hill. If anyone would like to visit, please call cause we need to give directions. We will miss all of our friends.

Two comets have been recovered and one faint one discovered. Still visible are Comets Wild 2, Tsuchiya-Kiuchi, and Levy.

Periodic Comet Harrington-Abell (1990m): Jim Scotti at Kitt Peak and H. Rickman of Pic du Midi recovered this comet at magnitude 21. It will not get much brighter.

Periodic Comet Taylor (1990n): Jim Scotti also recovered this comet on Nov. 11. It will remain fainter than mag. 15.

Comet Shoemaker-Levy (1990o): This 13th-magnitude comet was discovered by Carolyn and Eugene Shoemaker and David Levy on plates taken with the 18" Schmidt at Palomar on Nov. 15. IT was closest the Sun (1.6 AU) in mid-September, when it was probably about magnitude 11. It is now getting fainter as it recedes from both the Sun and Earth.

METEOR NOTES

- JIM RICHARDSON

Happy New Year to all of you. After the nice bare spot I had for a column last month, it looks like I need to kick off the year with a resolution to get my articles in to John Gleason on time, for once. (Don't have a heart attack, John.) Nothing like a guilty conscience to get you back on the stick again. Enough of that though, lets take a look at January.

The winter months, especially January and February, are exceptionally bare of recorded meteor showers in the northern Hemisphere. It's not so much that they aren't out there, as it is that nobody wants to get out and find them in the cold. This is starting to change, however, with the formation over the last few years of many amateur based meteor organizations, especially the International Meteor Organization, which uses a worldwide network of amateurs to collect data on meteors throughout the year. Amateurs are encouraged throughout the winter to get out and brave the cold for a few hours, to help increase our knowledge of the meteor flux in this little studied portion of the year.

The most notable shower for this period is the Quadrantid meteor shower, which can often rival the Perseids or the Geminids in intensity in some years. Even with its high strength, the shower was not recognized in the United States until the mid 1800's, when Edward C. Herrick of Yale recorded in the American Journal of Science (Vol. 33, 1862) that he had received a report of a lady in Connecticut, stating that she had observed an unusually large number of shooting stars early in the morning of Janu-

ary 2, 1862. Herrick described her observations, and put out a call for observations to be made in the following year. In answer to Herricks' call, Stillman Masterman, a noted amateur astronomer of the time, conducted observations in the hours before dawn on the 1st and 2nd of January, 1863. Masterman lived in a particularly bad location for winter observations, the village of Weld in Franklin County, Maine. ON the first night Masterman only noted an "unusual number of shooting stars", but was only out for a short time due to the weather. On the second night Masterman again observed for only a short time, but managed to see 8 meteors in a 10 minute period, all originating from an obvious radiant point. He also noted that two of these appeared simultaneously near the radiant, at a ninety degree angle to each other, thus allowing him to make a fairly accurate radiant determination from such a short observation period. It turned out to be the first radiant determination ever made for the Quandrantids, which he fixed at 15h52m R.A., +46 deg 26' Dec., not far from where it is marked today. Masterman suffered from chronic pulmonary consumption, and died at age 32 on July 19, 1863, but not before his observations had stirred enough interest to create plans for observations in 1864.

In January 1864 the "Shooting Stars of January", as they had been called, were observed by five groups in England. These observations not only supported Mastermans' , but the shower also received its modern name for A.S. Herschel, who observed "50 shooting stars" in two hours on January 2, 1864, and who derived a "Radiant point at c Quandrantis Muralis". Quantrantis Muarlis was a faint constellation which represented a navigational sextant, and was not officially adopted. The radiant now lies in the northern portion of the constellation Bootes, but Herschels'name has remained with the shower.

This year, the Quadrantids are competing with a waning gibbous moon, just three days past full. Since the shower is best viewed in the early morning hours, the moon will still be well up when the shower peaks on the morning of January 3rd, so the majority of the shower meteors will be washed out, or appear much fainter than usual. Even so, if you're up with that first cup of coffee and the sky is clear, it might be worth while to throw on your jacket and go catch a few Quadrantids.

INDIVIDUAL SHOWER NOTES:

COMA BERNICIDES - The December portion of this stream is called the December Leo Minorids by Cook et al. (1972), by Linblad (1971b) found bridging meteors that connect the December Leo Minorids to Coma Berenicids in January.

QUADRANTIDS - One of the best three showers of the year, though not so often observed. The radiant begins as a broad 8-12 degree area, but narrows to a small 2 degree circle on the maximum. Levels at the maximum can be quite variable, and quite intense, as high as 100 meteors per hour correct Zenith Hourly Rate.

Ref: (1) Cook, A.F., "A Working List of Meteor Streams", Evolution and Physical properties of Meteoroids, NASA (1973). (2) Roggemans, P. (ed), "IMO Handbook for Visual Meteor Observations", Sky Publishing Co. (1989). (3) Olson, D.W., "The First American Observations of the Quandrantid Shower", AMS Meteor News, No. 89 (April 1990).

THE GALAXIES OF ORION

- STEVE GOTTLIEB

Now wipe that silly grin off your face because I'm quite serious about this topic. Say the word "galaxies" and it's unlikely that Orion is going to come to mind. Most observers rightly think of Orion in terms of its beautiful emission, reflection and dark nebulae, but it is also home to quite a number of faint galaxies and even some unexpected treats! So follow along and you'll discover there is much more to the Great Hunter than just M-42 and the Horsehead Nebula. You won't find any of these objects plotted on the Tirion Sky Atlas 2000.0 as they fall just below the magnitude cutoff so you'll need to use the more detailed Uranometria 2000.0 as your guide. Most of my observations were made with a 13.1" Odyssey 1 at 144X and I later returned to pick up some of the fainter galaxies with my 17.5" f/4.4 Dobsonian operating at 220X. The best place to start hunting for galaxies is to the west of the galactic plane in the southwest portion of the constellation where Orion blends into the rich galaxy fields of Eridanus.

The barred spiral NGC 1691 can be easily found 50' north of 8 Orionis (also known as c5), a naked-eye 4th magnitude star. At 166X, it appeared faint and very small with either a bright stellar core (mag 12-13) or else a foreground star is superimposed. Backtracking to 8 Orionis and moving 50' south this time brings you to a much fainter elliptical galaxy, NGC 1690. At 15th photographic magnitude, this object was very dim in my 13" but held steadily with averted vision and appeared as a very small, round, featureless disc. Dominating the field is a mag 6.6 star 7' to the southwest and several faint stars surround the galaxy including one at the west edge.

Just over 2x southeast you'll find a trio of faint galaxies. The brightest is NGC 1713, a fairly faint and small elliptical with just a gradually brighter center surrounded by a faint halo. In 1854, Lord Rosse discovered a very faint companion located just 2.7' west-northwest which was missed by both John and William Herschel. As NGC 1709 is both dim and diminutive it's easy to see why, but a 13th magnitude star just 45" west can help pinpoint its location. Moving 20' northeast will now bring you to NGC 1719. This faint spiral is also very small yet clearly elongated east-west. Look for a faint star, mag 14 or 15, at the west end.

In the southwest corner of Orion, you'll find a group of 6 NGC galaxies located less than 2x east of f (Mu) Eridani. NGC 1670 was easily seen and held steady with direct vision. Although small and round, it contained a brighter core and a mag 14 star was close southeast. Moving 28' east-northeast you'll come to NGC 1678, a slightly fainter oval galaxy with a small bright core. A brighter mag 12 star sits prominently just 40" to the west.

Travel 30' southeast and you'll arrive at a clump of 4 faint galaxies, NGC 1682 / 1683/1684/1685. The brightest in the group, NGC 1684, appears as a fairly prominent oval oriented east-west with a

large bright core. A mag 9 star 3' south highlights the field. Second brightest is the close neighbor NGC 1682, 3' to the west. Although fairly faint, it had a bright core and a stellar nucleus. The faintest member of the group, NGC 1683, is 5' further north. This dim low surface brightness galaxy was found hiding among an elongated group of 5 mag 14 stars. Finally, NGC 1685 is also located in the same field 5' to the northeast. Look for a slight elongation northwest-southeast and a mag 14 star off the southeast edge.

While you're here near the Eridanus border, let's locate NGC 1661 to the northwest. This faint, small spiral appears roundish and contains a brighter core. Look for a line of 4 stars oriented east-west situated just 2' south. As a side trip, you can cross the Eridanus border just 20' west and take a peek at the pair of galaxies, NGC 1654/1657.

Now head back to the NGC 1684 group and then turn your scope about 2x east-southeast. You'll come to a loosely knit trio whose brightest member is NGC 1729. In my 17.5" at 220X, it appeared elongated roughly north-south and was bracketed by an 11th magnitude star off the east end and a 13th magnitude star off the northwest side. About 25' east you'll find a similar galaxy, NGC 1740, which is elongated southwest-northeast and contains a small bright core. At the south- west edge is positioned a star between 12th and 13th

COMET EPHEMERIS

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
			Periodic Comet Wild 2 (1989t)				
12-25	14h10.1m	-11°00'	14h12.8m	-11°14'	58°	M	10.8
12-30	14h24.0m	-12°02'	14h26.7m	-12°16'	60°	M	10.8
01-04	14h37.8m	-13°01'	14h40.6m	-13°14'	61°	M	10.8
01-09	14h51.6m	-13°55'	14h54.3m	-14°08'	63°	M	10.8
01-14	15h05.1m	-14°45'	15h07.9m	-14°57'	65°	M	10.8
01-19	15h18.4m	-15°31'	15h21.2m	-15°42'	67°	M	10.8
01-24	15h31.5m	-16°11'	15h34.3m	-16°22'	68°	M	10.8
01-29	15h44.3m	-16°47'	15h47.2m	-16°57'	70°	M	10.8
02-03	15h56.8m	-17°19'	15h59.6m	-17°27'	72°	M	10.9
02-08	16h08.9m	-17°45'	16h11.8m	-17°53'	75°	M	10.9
			Comet Tsuchiya-Kiuchi (1990i)				
12-25	04h21.6m	-41°22'	04h23.2m	-41°15'	111°	E	8.7
12-30	03h50.4m	-38°46'	03h52.2m	-38°37'	107°	E	9.1
01-04	03h27.0m	-36°02'	03h29.0m	-35°51'	103°	E	9.4
01-09	03h09.8m	-33°24'	03h11.8m	-33°13'	99°	E	9.7
01-14	02h57.1m	-30°58'	02h59.2m	-30°46'	95°	E	10.0
01-19	02h47.7m	-28°46'	02h49.9m	-30°46'	90°	E	10.3
01-24	02h40.9m	-26°46'	02h43.1m	-26°34'	86°	E	10.6
01-29	02h36.0m	-24°59'	02h38.2m	-24°46'	81°	E	10.9
02-03	02h32.6m	-23°23'	02h34.8m	-23°09'	77°	E	11.2
02-08	02h30.3m	-21°56'	02h32.6m	-21°42'	73°	E	11.4
			Comet Levy (1990c)				
12-25	13h33.1m	-40°28'	13h36.0m	-40°44'	60°	M	7.1
12-30	13h22.0m	-40°18'	13h24.9m	-40°34'	66°	M	7.2
01-04	13h09.1m	-40°00'	13h12.0m	-40°16'	73°	M	7.2
01-09	12h54.1m	-39°31'	12h57.0m	-39°47'	80°	M	7.3
01-14	12h36.8m	-38°44'	12h39.5m	-39°01'	88°	M	7.3
01-19	12h17.2m	-37°35'	12h19.8m	-37°52'	96°	M	7.3
01-24	11h55.3m	-35°56'	11h57.8m	-36°13'	105°	M	7.3
01-29	11h31.5m	-33°41'	11h34.0m	-33°57'	114°	M	7.4

THIS MONTH'S METEORS

SHOWER NAME	DATES	DATE OF MAXIMUM	MAXIMUM VISUAL ZENITHAL RATE (per Hr.)	RADIANT POINT (ON MAX DATE) R. A.	DEC	VELOCITY km/sec.	NOTES
Coma Bernicids	Dec 12 - Jan 23	Dec 17	5	11h 40m	+ 25	65	swift velocities
Quadrandtids	Jan 1 - Jan 4	Jan 3	variable (up to 100)	15h 20m	+ 49	41.5	variable displays
Delta Cancerids	Jan 13 - Jan 21	Jan 16	<1	8h 24m	+ 20	28	
Virginids	Feb 3 - Apr 15	(broad)	<1	12h 24m	+ 0	35	very broad stream no noticeable peak
Delta Leonids	Feb 5 - Mar 19	Feb 26	<1	10h 36m	+ 19	23	

magnitude. Finally, look just 10' east and you may glimpse the very dim NGC 1753. This galaxy required averted vision to see well and a close, faint double star, perhaps mag 13 and 15, was spied 3' southeast.

If you now return back to 8 Orionis where we started and then move 80' southeast you'll come to the 4.5 magnitude star, 10 Orionis. Another hop 50' east brings you to d630, a pleasing mag 6.5/7.7 duo with a separation of 14". NGC 1762 can then easily be found by drifting 1.6 minutes from this pair (or moving 24 arc-minutes due east). The drifting method works perfectly on altazimuth scopes and floating through my field was a faint, small oval galaxy, extended north-south with a mag 13 or 14 star attached at the east end. Another spiral, NGC 1819, is located 43' west of a mag 5.5 star about 4x northeast of NGC 1762. This small galaxy was elongated northwest-southeast (position angle 120x) and contained a noticeably brighter core.

Of course, no trip to Orion would be complete without a deep, long gaze at the breathtaking Orion Nebula, M42. Take your time but when you're done move your scope just 2x west for a big surprise-NGC 1924! I'm amazed that a fairly bright galaxy this close to M42 has not been mentioned often before. NGC 1924 appeared red moderately bright and large (the best of the Orion galaxies) with a slightly brighter core. It was bracketed by a mag 9 star 4' northwest and a mag 8 star 4' east. Next time you're gazing into the sword of Orion, take a look at this neglected galaxy!

The northeast portion of Orion flows into the dusty Milky Way where galaxies are generally blotted out from view but 4.5x north of Betelgeuse, you'll run across the solitary galaxy, NGC 2119. As expected, the star fields are rich here but the galaxy was not too difficult to pick out in my 17.5" at 220X. A small oval oriented northwest-southeast with a bright core was visible and a 10th magnitude field star was positioned just 2' northeast.

For the last leg of our journey, head straight to Bellatrix (Gamma Orionis), the upper right star in the outline of the hunter. Just under 1x west-northwest you may pick up a very small, round object catalogued as NGC 1875. A faint stellar nucleus was discerned and a 14th magnitude star was visible about 1' west. I later noticed on the POSS that an interacting triplet of galaxies is located just southeast. Anyone want to give these a try?

We've now run across several small groups but just over 1x west of NGC 1875 you'll run into a rich cluster of galaxies! First catalogued in 1957 by George Abell as number 529 in his list of 2712 galaxy clusters, its brightest members shine at only 15th photographic magnitude. But this cluster is worth the effort as 8 members were located in my 17.5" in one small field. None of these galaxies are listed in either the NGC or IC and so you'll need to refer to Zwicky's Catalogue of Galaxies and Clusters of Galaxies (CGCG) for identifications. The brightest member, Z421.018, is actually a triple system and is part of VV 161, a chain of 5 or 6 galaxies. With close scrutiny, I could just resolve 2 objects, oriented north-south. In addition, several other nearby members of this chain were visible with averted vision. Search this field carefully, as these objects are quite small and dim and could be passed over for extremely faint stars even at moderate power.

The next clear night you're observing why not take a break from the usual fare of open clusters and nebulae along the winter milky way and head out into Orion for some galaxy hunting. I guarantee it will spice up your evening and if the transparency is good you should find success with most of these galaxies in a 10"-12" scope.

Name	Type	RA	Dec	Size	Mag
N1661	Sb	04.47.2	-0203	1.8x1.3	14.3
N1670		04.49.9	-0244		14.1
N1678		04.51.7	-0238		14.4
N1683		04.52.3	-0301		
N1682		04.52.3	-0306	0.3	14.0
N1684		04.52.5	-0306	0.8	13.0
N1685		04.52.6	-0257	1.0	14.5
N1690	E	04.54.3	+0138	1.1x1.1	15.0
N1691		04.54.6	+0315	1.8x1.7	13.2
N1709		04.58.8	-0029	0.9x0.7	15.6
N1713	E	04.58.9	-0030	2.2x1.8	13.9
N1719	Sa	04.59.6	-0016	1.2x0.4	14.5
N1729		05.00.1	-0321	1.2	13.0
N1740		05.01.9	-0318	0.6	15.0
N1753		05.02.5	-0321	1.0	15.5
N1762	Sc	05.03.6	+0134	1.8x1.1	13.5
N1819		05.11.7	+0512	1.7x1.2	13.7
N1843		05.14.1	-1038	1.8	

ASTRO ADS

ASTRO ADS are free to all non-commercial advertisers wishing to sell astronomically related products or services. Please send your ad directly to the Editor, John P. Gleason, 5361 Port Sailwood Dr. Newark, CA 94560 **NO LATER THAN THE 15TH OF EACH MONTH.** Your Astro Ad will run approximately 3-months.

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cord for use with #784 motor, $20. Home made 8-inch f/4 Newtonian optical tube assembly with Novak spider and mirror cell, Meade 680 focuser, end rings, dust caps, 2.60" secondary. Optical performance unknown (my first and last mirror). No finder or eyepiece included. Make Dobsonian mount and your all set, $175. (hardware alone a $164 value) All above equipment is in new or very good condition. Bill Dellinges, 415-792-9206

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:::CELESTIAL CALENDAR - JAN-1991::::
        by Richard Stanton

LUNAR PHASES    Date  Rise Tran  Set
  LQ  10:35hr   07-01 0036 0602 1126
  NM  15:50hr   15-01 0701 1154 1642
  FQ  06:21hr   23-01 1122 1824 0126
  FM  22:00hr   29-01 1709 2351 0632

NEARER PLANETS
  Mercury.......07-01 0516 1026 1532
  1.06 A.U.     17-01 0524 1021 1515
  Mag -0.2      27-01 0551 1037 1520

  Venus.........07-01 0814 1303 1748
  1.59 A.U.     17-01 0814 1314 1809
  Mag -3.9      27-01 0811 1324 1833

  Mars..........07-01 1338 2045 0353
  0.82 A.U.     17-01 1304 2012 0322
  Mag -0.4      27-01 1232 1942 0254

  Jupiter.......07-01 1837 0136 0834
  4.34 A.U.     17-01 1752 0052 0751
  Mag -2.6      27-01 1706 0007 0708

  Saturn........07-01 0743 1239 1730
  10.9 A.U.     17-01 0708 1204 1656
  Mag +0.5      27-01 0633 1129 1622

SOL Star Type G2V Mag -26.72
  1904-2230.....07-01 0708 1159 1645
  1944-2100     17-01 0704 1200 1652
  2025-1848     27-01 0658 1201 1701

ASTRONOMICAL TWILIGHT
JD 2,448,263.5..07-01 0531   -  1821
        273.5  17-01 0528   -  1827
        283.5  27-01 0523   -  1835

SIDEREAL TIME
Transit Right...07-01 0000 PST= 0658
Ascension at    17-01 0000 PST= 0737
Local Midnight  27-01 0000 PST= 0817

DARKEST Saturday Night....January 12
        Sunset.................1648
        Twilight End...........1824
        Moon Rise..............0548

TIMES & DATES ARE  PACIFIC  STANDARD
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EPHEMERIS is published monthly by the San Jose Astronomical Association - 3509 Calico Ave., San Jose California 95124. Members are encouraged to submit articles for publication. These should be typed and submitted no later than the 12th of the previous month. All submissions should be sent directly to the Editor, John P. Gleason, 5361 Port Sailwood Dr. Newark, California 94560 415-792-8248

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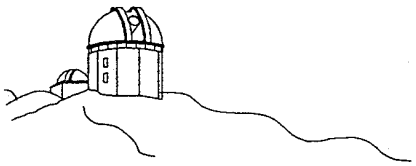

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