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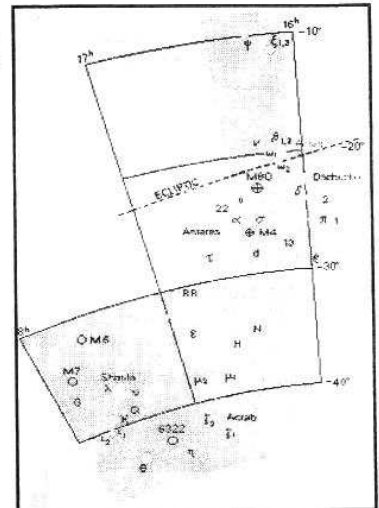
The Journal of the
Astronomical Society of Frankston Inc.

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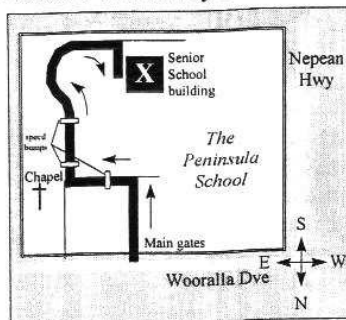
Volume XI, No. 4 (July 2002)

The Astronomical Society of Frankston was founded in 1969 with the aim of fostering the study of Astronomy by amateurs and promoting the hobby of amateur Astronomy to the general public. The Society holds a General Meeting each month for the exchange of ideas and information. Regular observing nights, both private and public are arranged to observe currently available celestial objects. For decades the Society has provided *Astronomy on the Move* educational presentations and observing nights for schools and community groups exclusively in the Peninsula and surrounding regions to Moorabbin, Dandenong & Tooradin.

Meeting Venue: Peninsula School, Wooralla Drive, Mt. Eliza (Melways map 105/F5) in the Senior School at 8pm on the 3rd Wednesday of each month except December.
Phone: 0419 253 252 **Mail:** P.O. Box 596, Frankston 3199, Victoria, Australia
Internet: <http://www.asfnet.20m.com>
E-mail: aggro@peninsula.starway.net.au



Visitors are always welcome!



Full Member	\$35
Pensioner	\$30
Student	\$25
Family	\$45
Family Pensioners	\$40
Newsletter Only	\$16
Organisation	\$50

DUE 1ST JAN EACH YEAR

President	
Peter Skilton	(0414) 645 077

Vice President	
David Girling	(03) 5975 6506

Treasurer	
Marty Rudd	(03) 5977 8863

Secretary	
Sally Zetter	(03) 5976 2679

Editor
Richard Pollard (0419) 100 802

Committee of Management:
John Cleverdon, Jane McConnell,
Russell Thompson, Ian Sullivan.

All calls after hours and pre- 8:30pm please.

FUTURE EVENTS

General Meetings:

WED 17 July 2002

As this is the same date as the visit by Apollo 17 Astronaut Harrison Schmitt, a somewhat informal gathering is expected due to the large contingent attending Dr. Schmitt's talk.

WED 21 August 2002

Session 1: Russell Thompson will present an encore performance of his recent Basic Astronomy presentation.
Session 2: Regular monthly presentations.
Session 3: Informal interaction.

Viewing Nights:

Members Only:

NOTE: Members nights are also now held on Fridays!

July 5th/6th and 12th/13th, all at The Briars, Nepean Hwy, Mt. Martha.

Aug 9th/10th and 16th/17th, all at The Briars, Nepean Hwy, Mt. Martha.

New attendees must always confirm with David Girling on 5975-6506 or 0421 452 428 before attending. Remember for security reasons you can only attend on planned Members' Nights, unless by prior arrangement with David who will liaise with *The Briars* accordingly. Last person out must switch on the shed security light. All attendees must sign the visitors' book in the observatory for insurance reasons.

Public, School & Community Groups Viewing/slide nights:

If you can assist, please contact the Secretary. All events commence at 8pm unless otherwise stated.

Mon 29 July at CAMP MANYUNG for St Oliver Plunkett School.

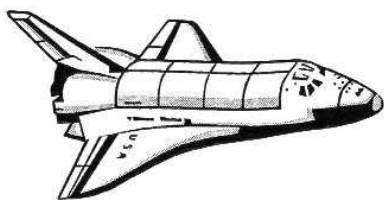
Expecting 100-110 Year 7 students, six to eight telescopes required. Starts at 8pm.

The once-a-month basic public viewing nights at *The Briars* will continue on the first Friday of each month. The next nights are 5th July and 9th August, all at 8pm. Assistants are required. New members are welcome to watch and participate if desired.

**UPCOMING EVENT:
IMAX SPACE STATION 3D
MOVIE**

The ASF Committee has organised a group booking for members who wish to see the IMAX film, 'Space Station 3D'. The date has been set for Saturday July 27 at 7pm. For those making their own way to the IMAX theatre, in Carlton, the prices are \$12.50 per adult, \$9.00 per child and \$10.50 for pensioners. Add an extra \$4.00 if you wish to catch one of the two minibuses we will be hiring from the Frankston Council. The buses will pick up from the Peninsula School carpark at 5:30 p.m. returning after the film. To secure the buses, payment **must** be made to Sally Zetter, Ph (03) 5976 2679 no later than the next meeting, July 17. You can call Sally for more information.

IMAX screens typically measure up to 25m in height and the seating is arranged close to the screen so that the projected image extends to the edge of each viewer's peripheral vision. By filling up the viewer's field of vision with an IMAX image, a perception of being 'inside the image' is achieved. Add electronic 3D visors and the illusion is very, very real.



For Space Station 3D, narrated by Tom Cruise, IMAX cameras were put aboard the International Space Station and used by the Station and Shuttle crews, so what you see here is not computer generated, but the 'real deal'. I have seen this film already and will not hesitate to go again. (Don't try and stop me!)

Welcome to the following new Society member(s):

Terry, Lynda, Michael and Kathleen Ryan
Carol Watson
Peter Densley
Lynette Davis

Current number of members is 172

Ken Bryant



I have the sad duty to relay to you the passing of a long time friend and dedicated active amateur astronomer for many decades, Ken Bryant.

A retired pharmacist, Ken had a passion for showing all newcomers the evening skies, and explaining the jewels on show. He was an active instrument maker, particularly if it involved using versatile "handy angle", and he lectured several times over the years to the ASF and LVAS, and probably to others that he may have been too humble to relay.

Until his health began to deteriorate rapidly in the last few months due to as yet unknown causes, Ken was a very active occultation and graze participant, and keen team player in these cooperative observations, often travelling great distances at physically and mentally challenging times of the night with telescope and timing gear onboard.



Ken was an active member in several astronomical societies in Victoria, where he had many friends. Above is a picture of Ken (on the left) at an ASF lecture on the Mornington Peninsula with Dr. Paul Maley from NASA's Johnson Space Centre in Houston.

I'll remember him for the many, many hours he would selflessly put into attending school educational evenings and public viewing nights over decades, often filling in at the last moment to fill a gap, sitting with his telescope under cool, starry skies, and personally helping to infuse the next generation across the Mornington Peninsula and beyond with his passion for the universe at large. His loss will be greatly felt.

It is fortunate indeed that he lived to successfully see the stunning Leonids meteor storm of 2001, having driven his new Ford to central Australia to witness a piece of the heavens falling, and experiencing one of the true spectacles of nature.

With greatest regret and deep respect,

*Peter Skilton,
President Astronomical Society of
Frankston Inc., 2002 June 24.*

Bruce Tregaskis was a close friend of Kens for more than 40 years, and has included this:

"Ken Bryant was born in England in 1933. He became interested in astronomy in his early teenage years. After becoming a pharmacist, Ken and his family migrated to Australia in 1962. They spent three years in Yallourn North and 14 years in Yallourn. In 1979, they moved to Langwarrin although, for a considerable time, Ken still worked in the same pharmacy in the Latrobe Valley and travelled up and down each day. This amounted to considerable driving for him each week. He retired in 1995. He also worked later for some periods in pharmacies nearer home, e.g., Mornington.

Ken joined the Astronomical Society of Victoria in 1963 and was still a member after 39 years. Whilst living in the Latrobe Valley Ken was also a very active member of the Latrobe Valley Astronomical Society. He made an 8" reflector and used it and the 10.5" reflector at the Yallourn Observatory for useful observing of a range of objects, such as the following: Flare star (e.g. Proxima Centauri) observations in conjunction with Radio-telescope observations by the CSIRO in NSW, variable star

observations, reported to the Royal Astronomical Society of New Zealand, Sun, Moon, planets, comets, asteroids, double stars, globular and open clusters, planetary and other nebulae, galaxies, artificial satellites, eclipses, etc.

He also made visual observations of the Aurora Australis.

Ken was a keen and meticulous observer and his observations were always reliable.

In addition, Ken participated in the local meetings, giving a number of talks, and also in public demonstrations. He had a wide-ranging and accurate knowledge of all aspects of astronomy.

After moving to Langwarrin, Ken joined the ASF. Over the last 3 years, Ken built an 18" reflector. Marion said that because of his recent problems he was unable to use it at nighttime, so had adapted it for use during the day. He also had an extensive library of astronomical books.

Ken was a real gentleman."

Hilmar Batza from the Latrobe Valley Astronomical Society also knew Ken well:

"Ken joined the LVAS on March 4, 1963 and was the Treasurer of the LVAS from 1964 to 1966 (3 years). Ken was then the President for 1967/68 (2 years) and then became the Secretary for a record 10 years (1969 to 1978) before he moved to Langwarrin in 1979. Ken was a keen variable star observer and carried out a total of 611 observations at Yallourn. In 1973 the LVAS was the first group anywhere in the world to observe an outburst of the star VW Hydri and this information was passed on to NASA who promptly relayed it on to 'Skylab'. In 1993, members of the LVAS awarded Honorary Life membership to Ken for his 30 continuous years of membership (after 1979 Ken became an Associate member) and for his outstanding service to the Society as a committee member.

Ken conducted many community groups through the Coach Road Observatory and regularly manned the

Observatory on Open Nights for the public. I will surely miss him!"

He is survived by his wife, Marion, sons Stephen and Gary, and daughter-in-law Louise.

I'm sure all members of the ASF will have fond memories of Ken, and we'll all miss his presence.

YOUR SOCIETY

HELP THE ASF WHEN YOU GO SHOPPING

Now you can help fund the ASF with your shopping. The ASF has become a part of the Ritchies/IGA Community Benefit Card scheme. If you already have a Community Benefit Card and want to make the change, go to your local Ritchies/IGA store and ask for a "Change of Detail" form. If you don't have a Community Benefit Card, then go to your Ritchies/IGA store and sign up for a card.

The Society's reference number is 95158. Note that a minimum of \$1000 needs to be spent in one month by ASF card-holders for 1% (\$10) to reach the ASF. This is equivalent to say, 40 people spending \$25.

John Cleverdon

NEW AURORA NETWORK CO-ORDINATOR IS REQUIRED

Due to trekking around on long service leave, Roger Giller is looking for a replacement to be Co-ordinator of the Southern Australia Aurora Alert Telephone Network from the end of June onwards. If you have access to email and a telephone, and are interested in helping keep this group of watchers of lights in the sky vibrant and active, then please get in contact with Roger on 9702 2685.

LOAN TELESCOPE SYSTEM CHANGED

The society's loan telescope/binocular hiring scheme has changed slightly:

Anyone wishing to arrange the loan of a telescope or pair of binoculars should now either ring me at home (97870079, after 19:30), or speak to me at a meeting to arrange the loan of the equipment. It should be noted that loan equipment will now no longer be brought to general meetings unless this is part of the pick up arrangement.

Russell Thompson.

ASF CLASSES AT MT ELIZA COMMUNITY HOUSE

The first class on celestial sphere and planispheres was held on Sat June 15. The next class for those who attended the first class cannot be held until September owing to the house not being available until then.

Could old students and any new students (ASF members and others) for coming courses please see me at Aug General Meeting or phone me on 03) 9555 6913 around then to settle a date in Sept.

More classes will be advertised later.

Ian Sullivan sully@labyrinth.net.au

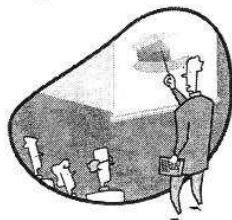
RECENT MEETINGS

GENERAL MEETINGS

The May meeting was chaired by the President with 60 members and visitors in attendance on a cool evening with the theatre's automatic after hours air conditioning on. After a rundown of the Society's school, public and member activities for the past month, the President related that he had written to the various regional astronomical societies around Victoria during the month seeking for the opportunity for our members to meet up with them, either down on the peninsula, up where they are located, or somewhere in between. So far, the Astronomical Society of Geelong had responded with an invitation on the Queen's Birthday long week to visit them at their dark sky site, 30km north of Geelong. It was also related that the ASF was trying to

invite Dr. Harrison Schmitt down for a visit in July (he was the last man on the Moon as part of Apollo 17), as it was believed he would be in the Mornington region then. Following the introduction, the main topic on the Leonids from Alice Springs was given by Roger Vodicka from the ASV meteor group and Marty Rudd of the ASF meteor group, and what a treat it was. The presentation was a first rate multimedia feast of Powerpoint slides, video footage and rock music woven together. Opening with Kylie Minogue's *On a Night Like This*, it told the history of the Leonids, some background info on the radiant, predictions and observing equipment employed, before launching into the techniques and a view of the site they chose at Bond Springs airfield in Alice Springs. The video footage was taken with an image intensifier placed in front of a normal home handycam video recorder, and with a camera lens in front, all being mounted on a block of wood attached to a tracking tripod. Following the presentation, the customary raffle was drawn before the tea break. After the break, the video on Werner von Braun (inventor of the Saturn V rocket and of the V2 rocket of WW2) was shown in the library room, while in the main theatre, the information segments were given. Bob Heale initiated the segments with Sky for the Month, handing out some informative sheets to the audience. This was followed by Roger Giller who reported on the numerous aurorae that had been sighted locally during April and May, and which had kept our aurora alert telephone network busy at all hours.

Next was Ian Sullivan who showed a very curious sundial that he had visited in Hamilton, New Zealand, being a mixture of horizontal dials, vertical dials, inclined dials and



analemmatic dials all in one. In some ways it looked like a street rubbish bin bristling with gnomons, and was built by the local astronomical society in 1953 for the Queen's coronation visit. Finally, Bruce Tregaskis talked to the group about Blue Moons (and even Green Moons) explaining some of the different definitions that have arisen over the years. As usual the entire meeting was video taped, and will be

available in the society's library. The meeting closed at 10:30pm.

The June meeting was chaired by the Vice-President and saw about 50 people attending. Guest speaker for the evening was Perry Vlahos from the Astronomical Society of Victoria, and the subject was the 18th century French astronomer Charles Messier, more specifically his catalogue of just over 100 diffuse objects in the night sky. These objects are identified by the letter M followed by a catalogue number: For example, M1 is the Crab Nebula in Taurus, M31 is the Andromeda Galaxy and M42 is the Orion Nebula.

After the break, the raffle was drawn with Ian, Carol and Doris taking the honours. David presented a Sky for the Month segment despite a lack of video equipment, and the meeting closed 10:00pm.

PUBLIC VIEWING NIGHTS

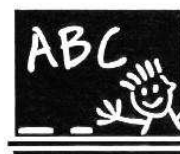
The public viewing night on May 3rd at The Briars had an overwhelming number of bookings made, with almost a hundred known to be expected, and about 20 had to be turned away the day before due to capacity limitations of the auditorium. In addition, a local paper had mentioned the evening, but forgotten to say that bookings were needed or provide a telephone number. The planetary alignment and clearly a very positive referral from a local primary school in Tyabb, seemed to be what boosted the numbers. Although the evening was pleasantly cool to begin with, with no cloud cover whatsoever, only 60 members of the public showed on the evening. Peter Skilton delivered two talks back to back in anticipation of more people arriving, and to cater for the number of younger children present. Thanks in the field to David Girling and Don Leggett for organising supper and collection of monies, and around the instruments to Sharron Fletcher, Peter Elias, David Huby, Jeremy Scott, Jane McConnell, Ian Sullivan, Val and Greg Walton, Bob Heale, Hal Shuster and Roger Chandler. Special thanks to John Cleverdon for rapidly relocating his Dobsonian telescope to different spots (including perched on top of a chair on the Visitors' Centre verandah!)

so that the assembly could at least spy Jupiter before it set between trees. The mists slowly descended later in the evening just prior to moonrise, when the stalwart members finally departed with their instruments.

The public night on June 7th saw Richard Pollard give the talk to 25 people on a night that started with the promise of clear skies, but ended with wind, cloud and lightning shortly after starting. Thanks in the field to Greg and Val Walton, Don Leggett, John Cleverdon, David Huby, Phil Snelling, Peter Skilton, and new members Peter Densley and Helene and Clarrie Rowdon.

SCHOOLS

One hundred and twenty pupils and parents were visited at Langwarrin Primary School on May 1st, the day before the kids were due to visit the Melbourne Planetarium in Spotswood. Due to the unexpectedly large number (about double what we had been led to believe!), and the initially totally overcast conditions, the number of telescopes was not really enough to cope with the load. The moral is, as always, to turn up irrespective of the weather. However, the colourful slide show was held outside under the stars and was given by Richard Pollard and Peter Skilton. During the show, the clouds parted wonderfully allowing the region of Crux and Scorpius to be clearly seen by all overhead. Afterwards, the children looked through the assembled telescopes in the field nearby, before getting a good night's sleep. Thanks on the telescopes



to Ian Sullivan, Don Leggett and Roger Giller, each of whom travelled a long way on the night. There were many photographs taken for the school newsletter, and the meteorites sparked much interest.

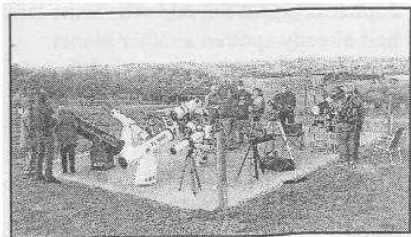
On May 6th, eighty eight St. Francis Assisi year 5 pupils and teachers from Mill Park were visited at Camp Manyung for a night under the stars. The talk was delivered by Peter Skilton, then followed up an evening under moonless conditions on their dark oval. Thanks in the field go to

Don Leggett, David Huby and Greg Walton with telescopes and binoculars.

On May 9th, another group of 60 St. Francis Assisi year 5 students and teachers were again visited at Camp Manyung. Ian Sullivan gave the talk, however, the overcast conditions prevented viewing of the night sky afterwards. Thanks in the field to Don Leggett, Greg Walton, Jacob Bukovsky and Richard Pollard.

Telescope Learning Day

A very successful TLD was held on 22nd June at the Observatory site with about 15 attendees. Topics discussed were Star Atlases, from Planispheres to the latest computer programs and how to use them, and, what is best for the beginners. We also shared telescope information as well as setting up the telescopes of two new amateur astronomers.



As the weather was cold at best, as evening came many left, so we turned the heater on in the Observatory and had our BBQ, one very wise person brought soup. After-dinner observing was interrupted by cloud for a fair bit of the time.

Two telescopes; Simons 10-inch as well as my 8-inch kept people happy in between the cloud. As the night wore on Russell Thompson arrived with his 10-inch Dob. Simon had packed up and gone home and I packed my scope away. As it happened a little after that the cloud disappeared and we viewed for a couple of hours.

The most thrilling part of the day (and night) was the 10 inch scope viewing the Moon at 1405X!

Yes, that's *One Thousand Four Hundred and Five times!!*

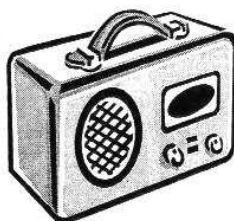
To say the least, a telescope working at that magnification is extraordinary. A better view was had at... wait for it ... 1254X yes that's *1254X!!* All this on a Dobby Mount! So much for your 100x or 200x! I thought I was

doing well at 880x in my 8 inch... sorry, not in the ball park. There's a saying: Those who Dare, Wins. A bit cold but a great day and night. Cheers Dave Girling.

WORKING BEES

Now that the hotter weather is over for the year, Stage 2 of plantings at The Briars site got underway at the working bee on 5th May, when 150 additional natives were planted as future light shields against surrounding areas and approaching car headlights, and also to act as wind shields. If you are visiting the observatory site, please take extra care not to trample, or drive, over the new plantings. It's hard to imagine these days that the site was bare except for the couple of mature or dead trees on the site when we first moved there all those years ago. For the botanically minded, the plantings were selected to be no more than 4 metres high when mature, and very dense foliage, and included a mixture of Collistemons, Melaleucas, Acacias and Kunzias from AustPlant nursery on Arthurs Seat. In addition, the caravan got a fantastic sanding down and quick repair by Greg and Val Walton and Frank Lang, before being painted battleship grey, which should help ensure it survives Winter well. Thanks to Jane McConnell for being barbecue chef, and chief plant waterer and also thanks to those who worked very hard under the Sun for much of the day in the fields – Don Leggett, Bruce Tregaskis, Peter Skilton and kids, David Girling and kids, Jeremy Scott and daughter and John Cleverdon. Thanks to Jane McConnell and Peter Skilton for following up with subsequent watering of the new plants in the following weeks while the wetter weather was pending.

Astronomy on the Radio



Amateur astronomers can now get their weekly fix of astronomy and space science by tuning into

the ABC's NewsRadio segment, "StarStuff". The show is presented by Stuart Gary and can be heard in Melbourne on 1026AM at 11pm

Sundays, 5am and 12.30pm Mondays (AEDT). It is also available anytime at the StarStuff website:

www.abc.net.au/newsradio/star.htm

ASTRONEWS

Plentiful Water Ice Found under the Surface of Mars

Using instruments on NASA's 2001 Mars Odyssey spacecraft, surprised scientists have found enormous quantities of buried treasure lying just under the surface of Mars-enough water ice to fill Lake Michigan in the USA twice over. And that may just be the tip of the iceberg.

"This is really amazing. This is the best direct evidence we have of subsurface water ice on Mars. We were hopeful that we could find evidence of ice, but what we have found is much more ice than we ever expected," said William Boynton, principal investigator for Odyssey's gamma ray spectrometer suite.

Scientists used Odyssey's gamma ray spectrometer instrument suite to detect hydrogen, which indicated the presence of water ice in the upper metre of soil in a large region surrounding the planet's South Pole. "It may be better to characterise this layer as dirty ice rather than as dirt containing ice," added Boynton. The detection of hydrogen is based both on the intensity of gamma rays emitted by hydrogen, and by the intensity of neutrons that are affected by hydrogen. The spacecraft's high-energy neutron detector and the neutron spectrometer observed the neutron intensity.

The amount of hydrogen detected indicates 20 to 50 percent ice by mass in the lower layer. Because rock has a greater density than ice, this amount is more than 50 percent water ice by volume. This means that if one heated a full bucket of this ice-rich polar soil it would result in more than half a bucket of water.

The gamma ray spectrometer suite is unique in that it senses the composition below the surface to a depth as great as one metre. By combining the different type of data from the instrument, the team has concluded the hydrogen is not

distributed uniformly over the upper metre but is much more concentrated in a lower layer beneath the top-most surface.

The team also found that the hydrogen rich regions are located in areas that are known to be very cold and where ice should be stable. This relationship between high hydrogen content with regions of predicted ice stability led the team to conclude that the hydrogen is, in fact, in the form of ice. The ice-rich layer is about 60 centimetres beneath the surface at 60 degrees south latitude, and gets to within about 30 centimetres of the surface at 75 degrees south latitude.

"Mars has surprised us again. The early results from the gamma ray spectrometer team are better than we ever expected," said R. Stephen Saunders, Odyssey's project scientist at NASA's Jet Propulsion Laboratory. "In a few months, as we get into Martian



summer in the Northern Hemisphere, it will be exciting to see what lies beneath the cover of carbon dioxide dry-ice as it disappears."

"The signature of buried hydrogen seen

in the south polar area is also seen in the north, but not in the areas close to the pole. This is because the seasonal carbon dioxide (dry ice) frost covers the polar areas in winter. As northern spring approaches, the latest neutron data indicate that the frost is receding, revealing hydrogen-rich soil below," said William Feldman, principal investigator for the neutron spectrometer.

"We have suspected for some time that Mars once had large amounts of water near the surface. The big questions we are trying to answer are, 'where did all that water go?' and 'what are the implications for life?' Measuring and mapping the icy soils in the polar regions of Mars as the Odyssey team has done is an important piece of this puzzle, but we need to continue searching, perhaps much deeper underground, for what happened to the rest of the water we think Mars once had," said Jim Garvin, Mars Programme Scientist.

Too Close for Comfort: Asteroid Passed Within 120,000km of Earth

By SPACE.com Staff

An asteroid about the size of a football field made one of the closest known approaches to Earth Friday, June 14, zooming by just 119,229 kilometres away, less than a third of the distance to the Moon. Astronomers working on the LINEAR search program, near Socorro, New Mexico did not detect the object until June 17.

The space rock, now named 2002 MN, was travelling at more than 10 km/s when it passed Earth. The last time a known asteroid passed this close was back in December 1994, according to a statement issued by the Near Earth Object Information Centre in the United Kingdom.

The asteroid is small compared to some but still capable of causing local devastation had it hit the planet. A similar sized rock is thought to have exploded above Tunguska, Siberia in 1908. Thousands of acres of forest were flattened. Other boulder sized objects and smaller rocks routinely crash through Earth's atmosphere but go largely unnoticed.

Astronomers say several close passes -- though not this close -- probably occur yet are undetected each year. Every few months, typically, an asteroid passing within the Moon's orbit is noticed before or shortly after it makes its closest approach to Earth.

An undetected asteroid passed about twice as far away in March.

Jupiter-Like Planet Could Point to Another Earth

By Robert Roy Britt
Senior Science Writer, Space.com

A team of astronomers announced June 13 the discovery of the first planet outside our solar system with an orbit similar to Jupiter's, a configuration that has the potential to support an Earth-like planet.

They also found the least massive world ever detected around another star, a planet just 40 times as heavy as Earth.

The primary discovery is a gas giant planet that circles a star called 55

Cancri every 13 years, comparable to Jupiter's 11.86-year orbit. The planet is between 3.5 and 5 times as heavy as Jupiter.

"It's the first extrasolar planet that reminds us of a planet in our solar system," lead researcher Geoffrey Marcy said in an interview with SPACE.com several days prior to the announcement.

Marcy, of the University of California, Berkeley, said he and colleague Paul Butler, of the Carnegie Institution of Washington, have dreamed of this discovery for 17 years as they compiled data using a technique that many scientists said would never work. The two astronomers, whose team has grown in recent years, also announced 11 other worlds at a press conference at NASA headquarters, bringing the total of known extrasolar planets to 98.

The new planet orbits 55 Cancri at 5.5 astronomical units (AU). One AU is the distance from Earth to the Sun. Jupiter orbits at 5.2 AU. The same team had already spotted another planet around 55 Cancri, a place slightly less massive than Jupiter. It orbits so close to the star that it makes a complete orbit in just 14.6 days.

Marcy speculated that the two-planet system could harbour more intriguing worlds, possibly even rocky planets like Earth, known as terrestrials.

"A Jupiter at five Earth-Sun distance units might serve as the marquee of a planetary theatre located within, where terrestrial bit players are racing around on smaller tracks," Marcy said. "We are left to imagine what geophysical and perhaps biological improvisation is taking place inside this planetary playhouse."

Armed with their new data, Marcy and Butler enlisted theoretician Gregory Laughlin of the University of California, Santa Cruz, to look into whether the 55 Cancri system could also retain an Earth-sized planet in a life-sustaining orbit. Such a region, called a habitable zone, would maintain moderate temperatures suitable to the retention of surface water and the possibility of life. Laughlin ran the data through computer models of planet formation. The answer is "yes."

"We tried a hypothetical configuration of a terrestrial planet in the habitable zone around one AU from the central star and found it very stable," said Laughlin, who also is associated with Lick Observatory. "Just

as the other planets in our solar system tug on the Earth and produce a chaotic but bounded orbit, so the planets around 55 Cancri would push and pull an Earth-like planet in a manner that would not cause any collisions or wild orbital variations."

Marcy and Butler caution, however, that there is no way to detect an Earth-sized planet with present technology.

Meanwhile, their data does suggest a third planet in the system, a possible Saturn-sized object. Others could lurk there. Laurance Doyle, a researcher at the SETI Institute who was not involved in the discovery, told SPACE.com the new finding "is a strong encouragement" that our solar system "may not, after all, be totally unusual."

The Jupiter-like planet has another potential benefit, Doyle points out: Its gravity would lure comets, shielding inner planets from life-threatening bombardment. Jupiter plays this protective role in our solar system.

Marcy, Butler and their colleagues also announced today the lightest extrasolar planet ever found, one 40 times as massive as Earth.

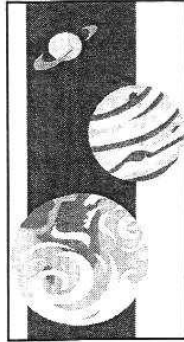
This discovery pushes the lower limits of their wobble method, which spots movement in a star induced by the gravity of an orbiting planet. (No confirmed planet outside our solar system has ever actually been photographed.)

This relatively small planet, whose possible presence was first reported in May by SPACE.com, was detected around a star called HD 49674. It is just 15 percent the mass of Jupiter. Theory holds that it would be gaseous, not rocky. Previously, the lightest known extrasolar planet was more than 50 times heavier than Earth.

For comparison, Neptune is about 17 times as massive as Earth and Saturn is about 95 times as heavy.

Marcy has said the wobble method will not be able to find planets weighing less than 10 Earth-masses.

The SETI Institute's Doyle uses a different method for planet hunting, however. He looks for slight dips in a star's light that indicate the passage of a planet. The method has yet to discover



a planet, but it has been used to detect the atmosphere of a known extrasolar planet.

This so-called transit method could spot a planet twice as big as Earth, Doyle says, if the planet's path is properly aligned so that it passes in front of the star as seen from Earth. Such a planet would have roughly eight times the mass of our own. It would still be rocky and could, theoretically, harbour life.

Doyle said the existence of two planets bracketing the habitable zone around 55 Cancri "indicates that planet production may have taken place within the habitable zone of that system."

Giant Dinosaurs Arrived With a Bang

From Jeff Hecht, New Scientist.com

Dinosaurs may have arrived with a bang, as well as gone out with one. Scientists have found the hallmarks of a meteorite impact and mass extinction in rocks just below strata containing the earliest footprints of large meat-eating dinosaurs.

The finding of high levels of iridium metal and fossilised fern spores suggests that a sudden extinction cleared the ecological stage, leaving room for meat-eating dinosaurs to grow suddenly larger. A subsequent, massive meteorite impact about 65 million years ago resulted in the extinction of the creatures.

Dinosaurs evolved about 230 million years ago and competed with many other reptiles until the Triassic period ended about 202 million years ago. Then most of the competitors vanished and dinosaurs grew to their characteristically monstrous proportions in the Jurassic period that followed.

The key to how the dinosaurs came to dominate the land in this way may now have been discovered in the sedimentary rocks laid down over the Triassic-Jurassic boundary in what is now northeastern North America.

The rocks contain few fossil bones, but they preserve both fossil pollen and the footprints of animals that walked beside ancient lakes. Lake levels rose and fell with periodic climate cycles, so the rocks can be finely dated, says Paul

Olsen of the Lamont Doherty Earth Observatory of Columbia University.

Surveying 80 sites, Olsen's group found that fossil footprints changed from typical Triassic to typical Jurassic groupings in a period of just 50,000 years. In between lay the boundary between the periods, defined by a change in pollen type, and including the layer rich in iridium and fern spores.

The fern spores are indicative because ferns spread rapidly over devastated landscapes - sharp peaks of spores also occurred just after the final, cataclysmic impact 65 million years ago.

The faunal change was also sharp. "In the late Triassic, there were lots of different footprints representing many different reptile groups," Olsen said. Yet at the start of the Jurassic "all you see are dinosaurs, lizards and very small, fully terrestrial crocodiles".

And the size of the dinosaurs jumps sharply. Just 50,000 years after the start of the Jurassic, there are tracks of *Eubrontes giganteus*, a six-metre long predator that Olsen says was nearly twice as massive as the biggest Triassic dinosaur.

The meat eaters survived the disaster probably because of their adaptable diets, says Olsen. It is typical for a "decimated ecosystem" to become dominated by animals that can survive on whatever they can find, he says.

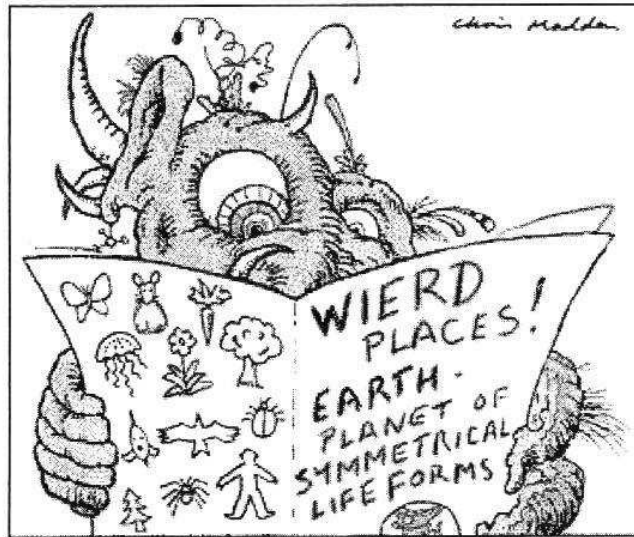
Instead of hunting plant-eaters, "they're primarily hunting other carnivores and things in the water," such as fish. Not until about 100,000 years after the extinction did a few small plant-eaters start leaving their footprints by the lakes.

Michael Benton of the University of Bristol agrees that the rapid change in seen in the dinosaurs suggests "it was more of a catastrophic event than people had thought". However, he warns that Olsen's group has studied only one area, while iridium-rich deposits from the impact 65 million years ago have been found at 200 different sites.

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Thanks, Richard Pollard (Editor)



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 2nd June 2002
 Photo by John Cleverdon



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 22nd June 2002
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SKY FOR THE MONTH 21 AUGUST TO 17 SEPTEMBER 2002 MORNINGTON PENINSULA

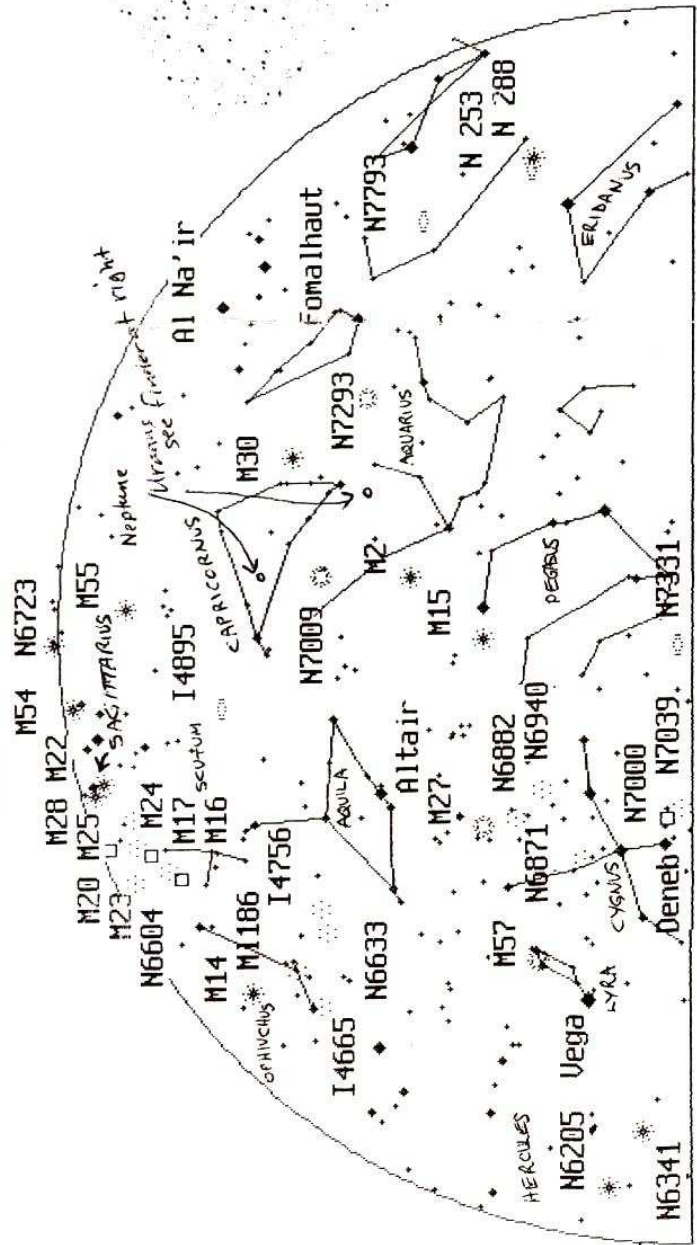
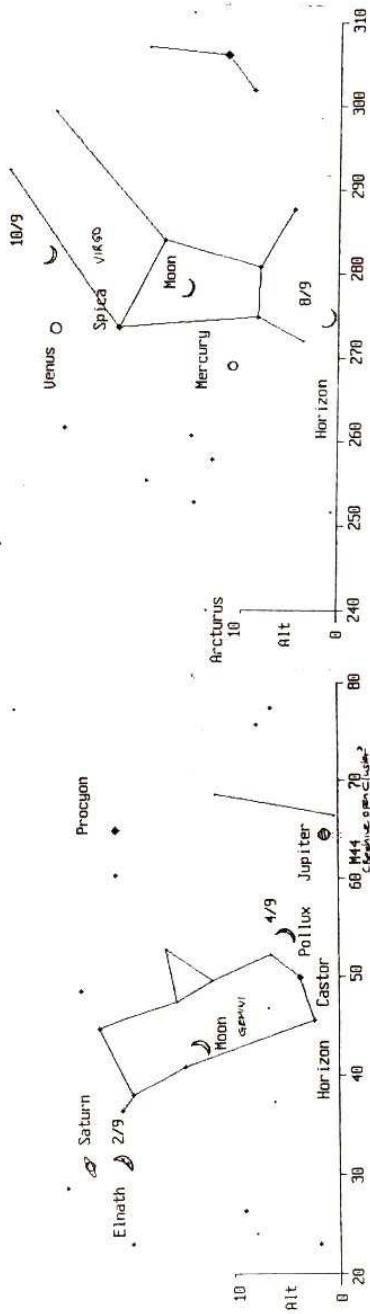
5 20 am North-East 4/5 Dark Sky 2th September 2002 Standard Time
 U1.00 (c) Bob Heale 10/4/99
 All objects no fainter than 4 1 X Sky View

7 13 pm West 2/3 Dark Sky 8th September 2002 Standard Time
 U1.00 (c) Bob Heale 10/4/99
 All objects no fainter than 4 1 X Sky View



US plebeians do not see it like this, rather a bright very bright blue in circular haze in nearly any telescope east of ♃ Aquarius

NGC 7109 - Saturn
 Bright planetary nebula,
 4.0 mag, angular diameter
 30" x 26". Its central star is
 a blue dwarf with a surface
 temperature of 55,000 K. Sit-
 uated at a distance of some
 3,900 light-years.



8 30 pm 3rd September North-East Night Sky 2002 Standard Time
 Also 9 30 pm 20 August and 7 30 pm 17 September Standard Time

