

CASMAAG

THE OFFICIAL MAGAZINE OF THE CANTERBURY ASTRONOMICAL SOCIETY, INC.

Meetings are held on the 3rd Tuesday of the Month at **7:30pm**
Starting in the School of Forestry Staff Room, University of Canterbury

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May 2005

Issue Number 622

17 May

Tatai Arorangi

(Maroi Astronomy)

Pauline Harris



New/Beginner Astronomers Group
West Melton Observatory

14th June, 7:30 pm

2nd Tuesday of the Month



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Advertising in CasMag

Small personal advertisements in this magazine are free to financial members. Members ads exceeding 8 lines in a column will be charged the small advertisement rate. All others, rates are as follows:

Full page, \$40	Half page, \$25
Quarter page, \$15	Small advertisements, \$5.

Submission Guidelines

The Editor welcomes contributions of original articles, items of Astronomical News, letters to the Editor, or reports of observations. Articles and letters may be edited if space is at a premium. Whenever possible you should provide your contributions via email or on computer diskette (DOS only). Save your files in simple ASCII format without any special typesetting characters. Deadlines for submission are the 3rd Tuesdays of each month, unless prior arrangements have been made with the editor. Give your articles to the Editor at the monthly meetings or send them to:

Editor CASMAG

(please print clearly)

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Christchurch

Front Cover Image:

The Moon, March 5 2005.
6 inch Sky Watcher, 25mm eye piece
Kodak Easy Share CX4310 camera

Photo Courtesy:

Andrew Dallow



CAS Calendar of Events

- May 2 CASMAG sent to printers.
 May 9 Member's CASMAGs posted.
May 10 New Astronomers Meeting.
 Setting up a telescope for Observing.
May 17 May's Member's Meeting.
 May 21 Member's observing evening at West
 Melton (Weather Dependant)
 May 24 CAS Committee Meeting. Date subject to
 change.
May 29 Deadline for article submission for the
June CasMag.
 Jun 6 CASMAG sent to printers.
 Jun 13 Member's CASMAGs posted.
 Jun 14 **New Astronomers Meeting.**
 Observing Session at West Melton.
Jun 18 Mid Winter Star Party at West
Melton
 Jun 21 June's Member's Meeting.
Jun 24 – 26 RASNZ Conference Nelson.
Jun 30 Deadline for article submission for the
July CasMag.

Comment

You may notice one or two changes in this edition of CasMag. Not least is the change of the General Meeting Venue out to the School of Forestry at the University of Canterbury. This has meant some re-organizing of CasMag. I suspect the next couple of issues will also contain small changes in layout and placement until CasMag "feels" right again.

The other major "change" to CasMag is not actually in the layout. Over the years I have been editor, I have had a number of people ask if it would be possible to have an electronic version of CasMag instead of the physically printed issue that is mailed out to members. I have tried to tackle this one once before by creating a web site with each issue on. Due to health reasons back in the beginning of 2002 I lost interest in spending an extra day transcribing the CasMag "Ready to Print" edition to the Web.

In 2003, I then changed the manner in which CasMag is produced. The Word Processor I now use has a built in "Portable Document Format" or PDF export function. This allows me to create just a single monthly master copy of CasMag that can either go to the printers or in the PDF format be emailed to

members. And since the tools I use are "Free" to use, CasMag can easily be passed onto a new editor one day...

So now I have set up a "Mailing List" that members can freely subscribe to and receive CasMag each month automatically via email! The most notable benefit from this is colour. Many of the images kindly sent to me are in colour, and the printing process often takes away a good deal of quality from the original. The emailed CasMag retains the colour original.

Anyway that's my plug for the electronic (email) version of CasMag. Now back to your regular content you were expecting to see here...!

David Downing



Bino Power

After the March CAS meeting night in town it was cloudy, but heading home to Rolleston, I saw the sky was clear though cloud was heading this way. Though I was tired, I thought I would do a quick obs. to round off the night. After taking a look at the lovely M42 nebula in Orion, and the very nice double star above Rigel and to the left, I had a quick obs in Cancer which is a very faint constellation of a Y shape. First, seen naked eye as a hazy patch on a clear dark night, the sprawling open cluster of M44, known as the Beehive cluster. The to M67 which appears denser and like a misty patch through binos, found by going slightly left of the to right star. Well, I found that a nice, satisfying evening, a good meeting and ending with obs, and then sleep!

April 1, 8:30 NZST. Clocks have been put back and we are on normal time again, Hoorah!

This night I was having a look in Carina, where there are all sorts of lovely goodies, such as the stunning IC2602 looking like white diamonds and very similar to the Pleiades cluster. Next the lovely η – eta Carinae nebula with the dramatic dust lanes which is what my binos "see" best. The η car. star is estimated to be over 100 times more massive and 4 million times brighter than the Sun and is a Super Nova candidate. I see the nebula extends far through binos and the top of it, points the way to the beautiful Gem cluster, which for colour contrast, all packed into one cluster, has to be my favourite. Taking time for my eyes to adjust,, I see hues of blue/white and orange, beautiful.

Another outstanding, huge bino cluster is NGC3532, which has the unrelated yellow super giant, which is a background object and over four times as far away. There are more objects in Carina which I will hunt down another time, but these are the more prominent objects and my favourites. Enjoy.

Sunday, April 10. I have a look outside to see if

there is anything to see, and is that cloud or is it not? It is not, we have an Aurora. I am on the phone to the observatory, is anyone there? Yes, and the Aurora is very clear out there, right I don't have to think twice about it. Very quickly my gear gets put into the back of Florence my car, food gets put even quicker into my stomach, warm clothes are put on and off I go. A lovely night, the Aurora has a green glow, and there are some dramatic bands going up and one of the bands appears slightly curved and looks like a huge comet tail.

Apart from the Aurora, I also looked in the constellation of Columba, The Dove and found the globular cluster of NGC1851 which was easier seen by using slightly averted vision, which made it look like a fuzzy star.

The next night, I had a look outside as usual and again the Aurora was to be seen, the only problem, I hadn't had dinner and was hungry. What to do, Aurora? Dinner? I settled for both. I got my dinner, got a comfy deck chair outside and in the dark, under the stars, sat happily munching my meal and watching the lovely light show! Perfect!

Bye for now and happy hunting.

Heather Skinner



THE SOLAR SYSTEM

mid May to June 2005

SUN

TIMES OF SUNRISE and SUNSET for Christchurch

Date	May 7	May 14	May 21	2005
Rise	7.26 am	7.34 am	7.41 am	NZST
Set	5.24 pm	5.16 pm	5.09 pm	NZST

Date	May 28	Jun 4	Jun 11	2005
Rise	7.47 am	7.53 am	7.58 am	NZST
Set	5.04 pm	5.01 pm	4.59 pm	NZST

THE MOON'S PHASES



New	1st QTR	FULL	Last Qtr
May 8	May 16	May 23	May 30
Jun 7	Jun 15	Jun 22	Jun 29

The Planets

One of the more interesting solar system events to

take place during June will be an occultation of Jupiter on the evening of June 16. As seen from Christchurch, the unlit edge of the Moon will start moving over the planet at about 6.36 pm. There will also be occultations of the four Galilean Satellites, two shortly before and two after Jupiter. More details are below.

Towards the end of the month, there will be a triple conjunction of Mercury, Venus and Saturn, visible to the northwest shortly after sunset. The 3 are closest on the evening of June 26, although all 3 will be within a binocular field for a few nights either side of that date. More details of this event will appear in the June Casmag.

And, while that is going on, there will be the RASNZ conference at Nelson, a meeting which should be well worth attending. If you can't find the registration form which was sent you last month, you can get one on the web at <http://www.rasnz.org.nz>. Click on the link there to get a download form.

MERCURY, is in the morning sky during May and brightens as the month progresses. But after the middle of the month it will rise a little later each morning and so get lower in morning twilight. On May 16 the planet will be at magnitude -0.4 and will have an altitude of 9 degrees 45 minutes before sunrise, when it should be fairly visible in a direction between east and northeast. With binoculars you should be able to follow the planet for quite a time after that.

Five mornings later, the planet will have brightened to magnitude -0.8 , but it will only be 5 degrees up 45 minutes before sunrise. After that date it will become difficult to find.

Mercury will be at superior conjunction with the Sun on June 3, when it will be on the far side of the Sun to the Earth. The planet won't actually pass behind the Sun, at its closest, if we could see it, the planet would be a little less than 1 solar diameter to the north of the Sun.

After June 3, Mercury will be in the evening sky, setting after the Sun. However it is not likely to be visible much before June 20, when Mercury will be to the northwest some way below Venus

VENUS should be visible, by mid May, for a short time after sunset, low to the northwest. During the rest of May and June it will gradually get a little higher in the evening sky. By mid June, Venus will be setting nearly an hour and a half after the Sun, so should be readily visible for a while after sunset.

MARS remains in the morning sky. As it has done for the past month or two, it will continue to rise round about 1 am, very slowly getting a few minutes earlier. So the easiest time to see Mars will continue to be about an hour before sunrise. By mid June, it will then be almost due north. The planet is moving to the north, so will not be quite as high in our skies as

earlier in the year. Even so it will still be a respectable 45 degrees up.

Mars will be easy to spot in the early dawn sky as the brightest object to the north at about mid altitude.

JUPITER will be well placed for evening viewing during May and June. At the beginning of June, the planet will be due north and highest at about 8.30 pm.

Lunar Occultation of Jupiter

As the sky darkens following sunset on the evening of June 16, Jupiter will be visible (clouds permitting) very close to the Moon, which will be about 62% lit. Jupiter will be near the top of the Moon as seen from Christchurch.

An occultation of the planet by the Moon is scheduled to take place just before 6.38 pm. In fact it will take the Moon about 190 seconds to cover the disk of the planet, so it should start disappearing behind the Moon a little after 6.36 and take just over 3 minutes to completely disappear.

The planet will disappear into the unlit part of the Moon, but it will be only some 13 degrees round the limb from lit southern (upper) cusp. Although the event will probably be observable by the unaided eye, it will be much easier to see using binoculars. But, the best view will be with a telescope capable showing Jupiter's disk.

A small telescope will also show the occultations of the Galilean satellites: Ganymede first just after 6.33, Io at 6.37, Europa at 6.42 and Callisto at 6.46. The disappearances of the satellites will take a few seconds. Io will be occulted during time that Jupiter is being occulted.

Further south in New Zealand, in the region of Oamaru and Dunedin, a grazing occultation of Jupiter and its satellites will take place. Observers there will see Jupiter partly covered as it skims the edge of the Moon, but the planet will not be completely disappear.

Jupiter and its satellites will reappear from occultation behind the Moon 30 to 40 minutes later, but they will emerge from the lit edge of the Moon, so the events will be much more difficult to see.

Jupiter will appear at about 7:18 pm again taking 190 seconds to emerge completely from the Moon. Jupiter will reappear just below the 10 o'clock position round the Moon. The satellites will also reappear over an interval of about half an hour from 7:05 to 7:35, in the same order as they disappeared. They will be difficult to see even in a small telescope until clear of the Moon.

We should make the most of the occultation of Jupiter, the next at night, visible from New Zealand, will not be until 19 March 2027.

SATURN will set shortly after 9 pm in mid May, a few minutes after 8 pm by the beginning of June and just before 7.30 pm by the middle of June. Thus it will be getting lower in the sky and only visible, to the

northwest, for a short while after sunset.

As Saturn gets lower in the evening sky, Venus will be gradually rising to meet it, the two passing June 26 and 27. By then Venus will have been joined by Mercury, forming a rare, triple planetary conjunction. More details will be given next month.

Brian Loader

From One of our Maths Teachers

The speed of light is a constant, c . Therefore the speed of dark must also be a constant, d .

For "normal" energy: $E = mc^2$

Therefore dark energy: $Ed = md^2$

Can we have our Nobel prize please?

Forwarded by Graham Townsend

Sunspot Observations March to April

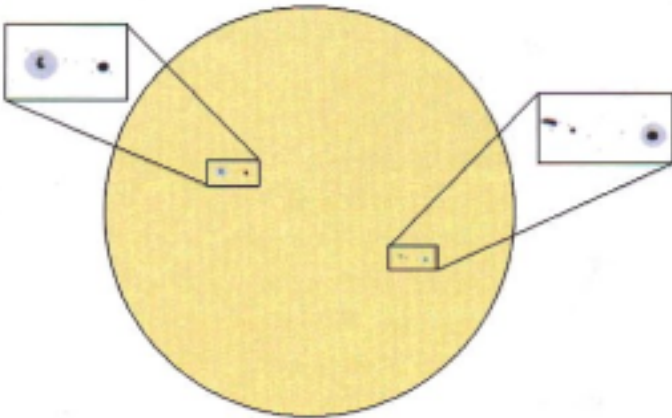
During the most recent Solar rotation (25 March to 21 April) I was able to observe the Sun on 12 days. This was a good month for solar viewing as usually I get less than 10 observations, sometimes as few as only two or three in a month.

At the start of the rotation on the 28 March there was only one group containing 5 small spots visible. This was group 0745, classification Cao, visible near the solar equator half way towards the west limb. A few days later this group had disappeared to the west but two or three more groups had appeared on the sun's disc. On the 3rd April under very poor seeing conditions I could make out two groups - 0747 with at least 4 spots, classification Dao just to the west of centre and a fuzzy spot in the north east, group 749 classification Hax. I should have been able to see group 0748 to the north of centre but the conditions were too poor to see small faint spots on that day. By the 6th April there were four groups visible on the sun. Group 0747 had now increased in size to class Eai containing at least 6 spots. Groups 0748 could just be made out to the north west of centre as a faint pair. Spot 0749 had by now moved further on to the sun's disc and was followed by another spot near the North East limb - this was group 0750, class Hsx.

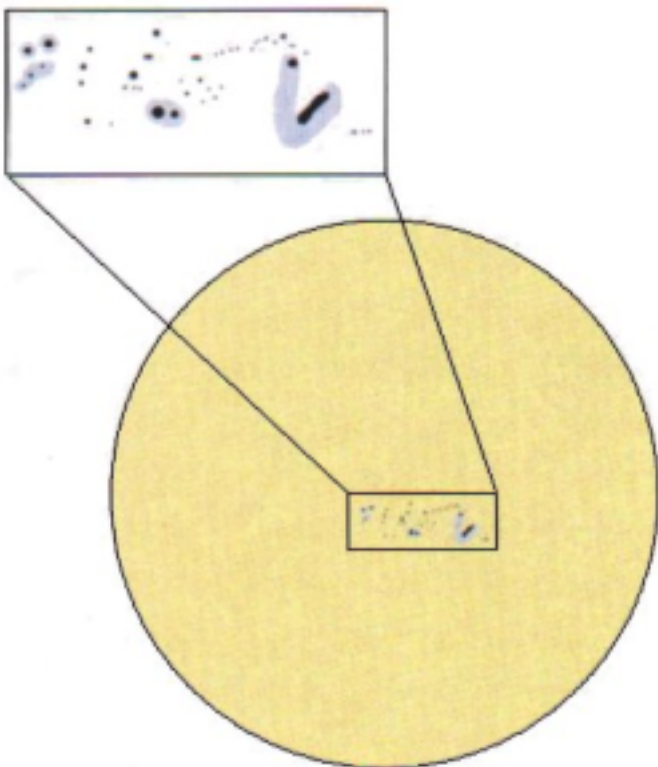
How does one designate sunspot classifications? What are they? What do the different classifications mean? There are a number of ways in which sunspot groups can be classified. I use the modified Zurich system. A good place to find information about the Zurich system is the AAVSO solar observing website <http://www.aavso.org/observing/programs/solar/>. The

diagrams in this article come from the AAVSO website.

The simple Zurich system is an uppercase letter A through to H designating the stage to which the sunspot group has developed. When a sunspot group usually first appears as a small single dot or sometimes two or three small dots very close together. This is class A. After a short time the group may develop another one or two small spots usually to the east of the first one. We now have a class B group. The more forward or westerly spot or spots are the 'leading' spots. The spots at the eastern end of a group are the 'followers'. When the main spot grows slightly and develops a shadow or penumbra around it we have class C group. See diagram C.

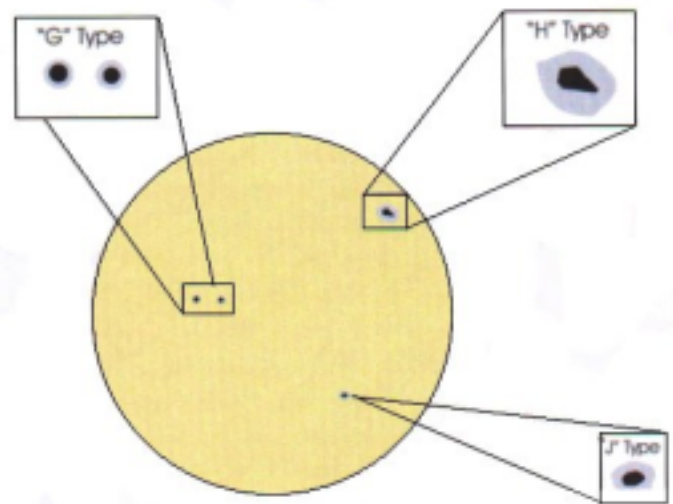


As the group continues to develop more spots enlarge and develop penumbra. By now the group is likely to have been visible for two or three days and may be up to about 10 degrees in extent. Some groups never develop this much while others, particularly during the period near a sunspot maximum, may grow yet more increasing to a spread of up 15 degrees across (class E) or even greater (class F). By the time



a group has developed this much there are usually several penumbra visible, often the largest will be asymmetrical and contain a number of dark spots or umbrae within it as well as numerous other spots or umbrae in the group. See diagram F.

When a group develops to this extent it may remain visible over an extended period of two or even three months. That is, as the sun rotates it 'disappears' round the west limb and 'reappears' in the east approximately two weeks later. However eventually the various spots begin to diminish and fade. When a large group has faded leaving just a few widespread spots with a couple of penumbra we might have a "G" group and finally just a single penumbra containing one or two umbrae - this being an H group. As this finally diminishes it may sometimes be visible as a "J" class. See diagram G.



It should be noted that many groups do not develop to "E" or "F" class and as we move towards a sunspot minimum even class "D" groups are likely to become less frequent.

So far I have described the simple Zurich system. The modified Zurich system includes two additional letters, usually written in lower case. The second letter just describe the penumbra around the main spot. For class A or B there is no penumbra so the second letter is 'x'. Sometimes a class C or H group will have just a slight, partly formed rudimentary penumbra, in this case the second letter is 'r'. If the penumbra forms a nice symmetric ring or disc about the main spot then the second letter is 's', or if the penumbra is misshapen or asymmetric the second letter is 'a'. For very large penumbrae the letters 'h' or 'k' may be used instead of 's' or 'a'.

The third letter is an indicator of how complex the group appears. For class A or H groups this letter is again 'x', so for small groups we may have class "Axx" or "Hsx". For groups which are very open i.e. none or very few spots between the leading and following spots the third letter is 'o'. Thus class B groups are frequently "Bxo". As a group become

more complex and more spots start appearing between the leader and follower the third letter may be 'i'. Use 'c' to denote a very complex group with many patches of penumbras well as numerous spots between the leading and following spots.

Thus a typical progression for a group at the height of a sunspot maximum may be something like

Axx, Bxo, Csi, Dsi, Eac, Fac, Fkc, Fki, Eki, Eao, Hax

As this sequence may take place over several weeks not all of these stages may be seen. For example if a large group starts to develop on the face of the sun away from the earth it may have grown to a D or even E size group by the time it rotates to the visible side. Conversely a new group may rotate around the west limb before it fully develops and be fading by the time it reappears.

Later in a sunspot cycle a typical progression would be more like the following

Axx, Bxo, Cso, Dsi, Dac, Csi, Hax. Some groups may never develop to more than a single "Axx" or "Bxo" classification.

The actual designation an observer may give to group can depend on the size of telescope, method of viewing (projection or filter) and the seeing conditions prevailing at the time of observation. Day time conditions tend to be poorer than night time conditions because air currents are greater during the day due to the warming effect of the sun. Poor seeing can make it difficult to see small groups, particularly "A" and "B" groups without a penumbra. It can also be difficult to see the smaller spots within a more complex groups under poor conditions, so that for example a group may classed as "Hsx" under poor conditions when in better conditions some small following spots would have been visible leading to a classification of "Cso". Consequently different observers on the same day may give different classifications to the groups observed. This doesn't mean that either is 'wrong' or 'right' but simply that the observations were made under different conditions. Also these classifications are somewhat subjective and a matter of judgement.

I first started observing sunspots about nine years ago. Initially I just recorded the number of spots in each group. After I had been observing for a few months I started trying to classify them and this has become easier with practice. I frequently refer to the Space Environment Centre website <http://www.sel.noaa.gov/ftpmenu/forecasts/SRS.html> for information about currently visible sunspot groups. Why not try observing the sun and comparing your observations with the information on this website?

Pauline Loader
palbrl@clear.net.nz

WARNING

Permanent eye damage can result from looking at the disk of the Sun directly, or through a camera viewfinder, or with binoculars or a telescope unless suitable safe filters are used.

Viewing the Sun through viewfinders, binoculars or telescopes without proper filters is like using a magnifying glass to focus sunlight onto tinder. The retina is delicate and irreplaceable. There is little or nothing a retinal surgeon will be able to do to help you. Never look at the Sun outside of the total phase of an eclipse unless you have adequate protection.

For more information on Safe Solar Observing

http://skyandtelescope.com/observing/objects/sun/article_162_1.asp

Also websites such as the following on viewing eclipses have useful information which is applicable to viewing the sun safely at any time

How to Watch a Partial Solar Eclipse Safely

http://skyandtelescope.com/observing/objects/eclipses/article_609_1.asp

Observing Eclipses Safely

<http://www.mreclipse.com/Totality/TotalityCh11.html>

Reminder

The Annual Mid Winter Star Party at West Melton will be Saturday 18th June, Wet or Fine. **This is the weekend before the Main Meeting.**

Bell Burnall, (Susan), Jocelyn (1943-)

Observational astronomer who discovered pulsars in 1967, while still a student.

Born in Belfast, Northern Ireland, Jocelyn's father was the architect of the Armagh Observatory, which was near their family home. There she was able to nurture her childhood interest in astronomy. Bell studied at the University of Glasgow, graduating in 1965, then began her Ph.D at Cambridge, under the supervision of Anthony Hewish. This involved constructing a special kind of radio telescope which would be sensitive to rapid variations in the brightness of radio sources, called scintillations. These are the radio equivalent of the twinkling of light from a star, and are caused by the passage of radio waves from a distant source, such as a quasar, through clouds of electrically charged material in space. This is ejected

by the sun, so the scintillation is more pronounced in daytime.

The telescope was more like an orchard than the conventional image of a radio telescope. A field covering four and a half acres was filled with an array of 2,048 dipole antennae. Each dipole (a long rod aerial) was mounted horizontally on an upright pole, a couple of metres above the field, like the crossed yard-arm of a square-rigged ship. By wiring the antennae up correctly, which was one of Bells jobs, their signals could be combined to scan a strip of sky as the Earth rotated.

By summer 1967, Bell had the system working, and had begun to use it to search for previously undiscovered quasars. On 6th August that year, she found a peculiar signal that could not be explained in terms of scintillation, and repeated observations showed that it was always coming from the same part of the sky, at the same time of night (so the radio waves were not passing through the clouds of plasma associated with the sun). Nor could it be explained as interference from human activities. By November, it was clear that she had discovered an astronomical source varying with a regular period of just 1.3 seconds, and continued observations refined this to 1.3370113 seconds. This remarkable accuracy led Hewish and his team to consider seriously the possibility that it might be an interstellar beacon, a kind of radio lighthouse, planted by an alien civilization, and among themselves the Cambridge radio astronomers referred to the source as "LGM", "Little Green Man".

Just before Christmas 1967, Bell found second, similar source, with a period of 1.27379 seconds, and soon after two more, with periods of 1.188 seconds and 0.253071 seconds. As the number of objects known grew, it became clear that they were a natural phenomenon, and they were given the name pulsating radio sources, soon contracted to pulsars, and was soon published. After being awarded her Ph.D for this work, Bell worked on gamma ray astronomy and X-ray astronomy, in infrared, optical and millimetre astronomy, at various establishments and since 1991 has been professor of physics at the Open University. In 1974, Hewish was awarded the Nobel Prize for his part in the discovery of pulsars. The Nobel Committee failed to include Bell in this award (presumably because she was "only" a student when she made the discovery. Perhaps partly because of the consternation this caused, when the time came for the award of Nobel Prize for the discovery of the binary pulsar, the student who made this discovery did share the award with his supervisor.

Gibbon, John (1996), *Companion to the Cosmos*.
Forwarded by Karen Moffat

CASMag

Via email

For those interested in getting their Monthly CasMag by email, a mailing list has been setup to send out the latest CasMag to members in Adobe Acrobat format (PDF file).

As an indication of the file size involved, the March 2005 CasMag was a larger than average (16 pages instead of 12) edition, and the PDF file being emailed was just over 700 Kilo-Bytes in size.

To subscribe, just send an email to:
casmag-subscribe@hynlar.co.nz

If you have any queries regarding the CasMag mailing list, please send an email to: editor@hynlar.co.nz and I will do my best to answer your questions.

Please Note:

This service is only available to members of the Canterbury Astronomical Society (Inc.) on your request.

David Downing

For Sale

Excellent 20x100mm binoculars including deep sky filters case and beech binocular mount.
Good optics and collimation.



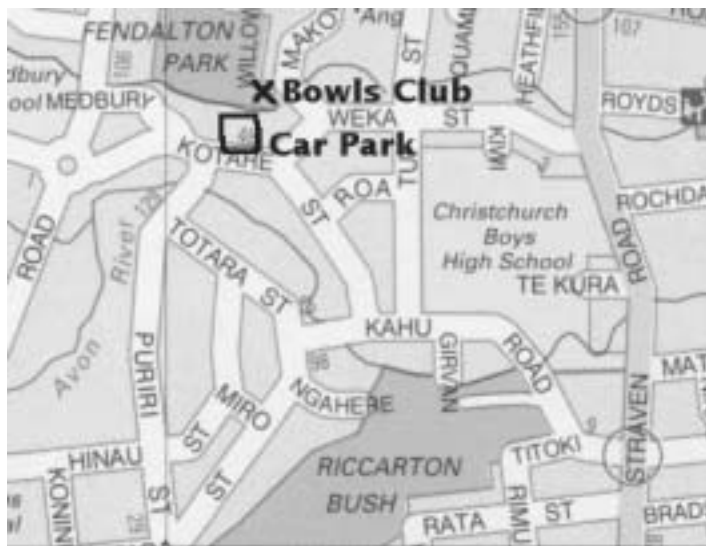
\$650

- Note doesn't include a tripod a sturdy video tripod would do the job.
- Binos are 9 pounds in weight multicoated and have bak4 prisms.

Phil Barker
03 3833683

phil.sonja@xtra.co.nz

New Astronomers Meeting



**Fendalton Men's Bowling Club
Public car park is off Kotare Street.
2nd Tuesday of the Month**

Fresh Debate over First Photo of Extrasolar Planet

In a wild turn of cosmic events, a group of astronomers is trying to reclaim the role of having made the first photograph of a planet around another star.

They may have to wait for history to award the blue ribbon, however, since the hunt for planet-like objects is turning out to be easier than developing a classification system for the variable types of orbs being found.



The saga goes back to last September, when *SPACE.com* broke the news that a team based at the European Southern Observatory (ESO) had made what they said was likely the first picture of an extrasolar planet. That object, 2M1207b, appeared

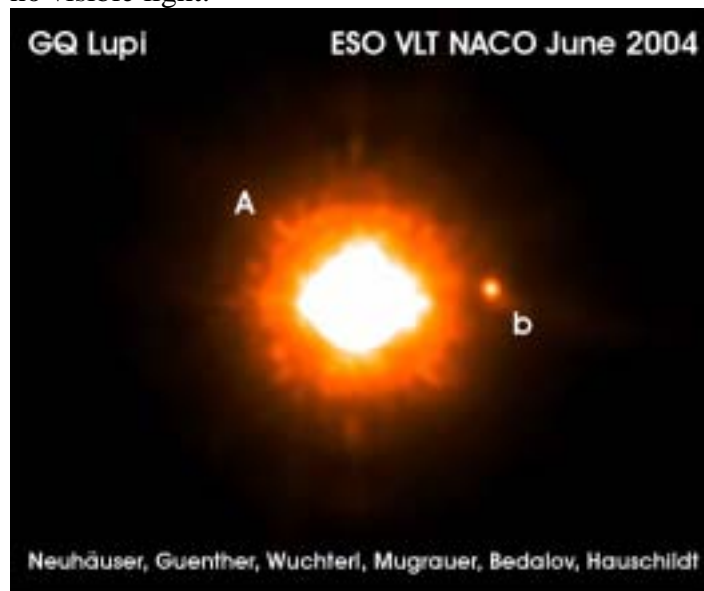
bound to a young but failed star known as a brown dwarf sitting about 200 light-years from Earth.

But it was also possible that 2M1207b was instead a distant background object. More observations were needed to make sure the object was indeed orbiting the brown dwarf star.

The competition

Meanwhile, earlier this month, Ralph Neuhaeuser of the Astrophysical Institute & University Observatory said his team had made the first confirmed picture of a planet around another star called GQ Lupi, some 400 light-years away. In this case, also first reported by *SPACE.com*, the object was observed to be clearly bound to the star.

Importantly, GQ Lupi is similar to our Sun, rather than being a dim brown dwarf star that emits virtually no visible light.



But again there was a hitch: While observations suggest the planet orbiting GQ Lupi is about twice as massive as Jupiter, there is a slight chance it is 42 times the mass of Jupiter - so heavy that it would be considered a brown dwarf. The outlying models, however, are very unlikely to apply to the system, some astronomers said.

"Based on what we know, that image is an image of an object much like Jupiter at an extremely young age," said Ben Oppenheimer of the American Museum of Natural History, who was not involved in either study.

Both claims were appropriately modest, in the sense that the researchers admitted more observations were needed to confirm their apparent discoveries.

Back in this corner ...

Today, the ESO team announced new observations of 2M1207b that show convincingly, they say, that their target is indeed a planet. If so, it could be remembered as the first picture of an exoplanet, since the team had already released the initial image last

fall.

"Our new images show convincingly that this really is a planet, the first planet that has ever been imaged outside of our solar system," said team leader Gael Chauvin, an ESO astronomer.

"The two objects -- the giant planet and the young brown dwarf -- are moving together; we have observed them for a year, and the new images essentially confirm our 2004 finding," says Benjamin Zuckerman, another ESO team member from UCLA. "I'm more than 99 percent confident."

The object's mass is based on both observations and assumptions about the system based on its age, which is about 5 million years (our solar system, by comparison, is 4.5 billion years old). Leading theory suggests 2M1207b is between three and seven times the heft of Jupiter -- well within the limits of planethood.

What is a planet?

The whole issue is further clouded by the fact that 2M1207b orbits a brown dwarf rather than a regular star. Brown dwarfs stars do not have enough mass to trigger the thermonuclear fusion that powers a regular star. So a planetary-mass object around them exists in an unusual system that is unlikely to have any chance of harboring life as we know it. It also may have had a different formation history.

"Given the rather unusual properties of the 2M1207 system, the giant planet most probably did not form like the planets in our solar system," Chauvin said. "Instead it must have formed the same way our Sun formed, by a one-step gravitational collapse of a cloud of gas and dust."

Alan Boss, a planet formation theorist at the Carnegie Institution of Washington, said both findings represent "great stuff" but he's not ready to draw firm conclusions about who wins.

"This object [2M1207b] should be termed a sub-brown-dwarf (star), in order to convey this suspicion about its formation mechanism," Boss said in an e-mail interview. "A number of sub-brown dwarfs have been observed as single objects in regions of recent star formation, but 2M1207 would seem to be the first one in orbit around a brown dwarf (star). All in all it is an excellent discovery of a new class of object, but it is unclear if this object should be termed a 'planet.'"

Boss is careful to note that this is his opinion, however. There is no agreement among astronomers on the definition of the term "planet." A spirited debate dates back to attempts to define the word five years ago.

"I consider it as a planet, regardless whether it formed differently than Jupiter - and regardless it's orbiting a failed star instead of solar-type star," says Christophe Dumas, a colleague of Chauvin. "Actually, this discovery is even more interesting due to the fact

that the brown dwarf and the giant planet are not forming a 'traditional' system as we know it from looking at our own solar system. We did not expect to find a giant planet in orbit around a brown dwarf and it's there."

For now, the International Astronomical Union lists 2M1207b as a "possible planetary-mass companion to a brown dwarf. It catalogues the GQ Lupi discovery as "a possible planetary-mass companion to a young star."

The ultimate challenge

Someday history will sort out a winner. Meanwhile, there are more challenges for planet hunters to tackle.

More than 140 planets have been found around other stars. Most are very massive and have been detected by noting the gravity wobble they induce on their stars. Photographing planets around other stars is difficult because the starlight so greatly overpowers any light coming from a planet.

The tricks used to tease the two present contenders out of their respective glares surprised the whole astronomy community.

Scientists expect to eventually photograph obvious planets around normal stars, and even Earth-sized planets when technology allows. Those images will likely come from space-based observatories that are now only in the planning stages.

"We're collecting here the first piece of a puzzle that will lead - within the next decade - to define a big picture of planetary systems," Dumas said via e-mail. "Some will be like our own, but most of them probably not. Some planets will be orbiting close to giant stars and will not be in a position to sustain life. Others will be orbiting far away from much less massive stars like in the 2M1207 system. Others will be Earth-like and will orbit at the right distance from the star to produce the right conditions, so life as we know it could emerge."

The paper describing the 2M1207 observations has been accepted for publication in the journal *Astronomy and Astrophysics*.

For the record, there was a third player in all this. A Hubble Space Telescope photograph reported by *SPACE.com* in May 2004 was also said to be a candidate planet. That object, a much more tentative detection than the two recent cases, was later found to be a background object, showing how difficult this quest has been.

By Robert Roy Britt
SPACE.com

SPACE CALENDAR

May 2005

- 04 - GPS 2RM F-1 Delta 2 Launch
- **05 - Space Day**
- 05 - Deep Impact, Trajectory Correction Maneuver #3 (TCM-3)
- **05 - Eta Aquarids Meteor Shower Peak**
- 09 - 100th Anniversary (1905), Paul Gotz's Discovery of Asteroid 564 Dudu & Asteroid 565 Marbachia
- 11 - NOAA-N Delta 2 Launch
- 11 - Stardust, Deep Space Maneuver #4 (DSM-4)
- 14 - Griffith Observatory's 70th Birthday (1935)
- 14-15 - Jet Propulsion Laboratory Open House, Pasadena, California
- 15 - Mars Passes 1.1 Degrees From Uranus
- **19 - Moon Occults Jupiter**
- 20 - 5th Anniversary (2000), Galileo, Ganymede 28 Flyby
- 21 - Cassini, Enceladus Flyby
- 21 - Direct-TV 8 Proton M-Briz M Launch
- **22 - STS-114 "Return To Flight" Launch, Space Shuttle Discovery, PCSat 2 (International Space Station LF-1)**
- 22 - 10th Anniversary (1995), Saturn Ring Plane Crossing (1 of 3)
- 24 - 45th Anniversary (1960), Midas 2 Launch (1st Experimental Infrared Surveillance Satellite)
- 25 - Cosmos-OkO N87 Molniya M Launch
- 27 - Egiptsat 1/ Saudisat 3/SaudicomSat 3-7/ AKS 1 & 2/N-Cube 1 Dnepr 1 Launch
- 28 - Frank Drake's 75th Birthday (1930)
- 28 - 100th Anniversary (1905), Paul Gotz's Discovery of Asteroid 566 Stereokopia & Asteroid 567 Eleutheria
- 31 - Cosmos 1 Volna Launch (Solar Sail Mission)
- 31 - Foton M-2/Fotino Soyuz U Launch
- 31 - Syracuse 3-A/ Telcom 2 Ariane 5GS Launch
- **31 - Moon Occults Mars**
- 31 - European Space Agency's 30th Birthday (1975)

June 2005

- 01 - 15th Anniversary (1990), ROSAT Launch
- 03 - 40th Anniversary (1965), Gemini 4 Launch, USA's First Spacewalk (Ed White)
- 08 - 30th Anniversary (1975), Venera 9 Launch (Soviet Venus Orbiter/Lander)
- 08 - 40th Anniversary (1965), Luna 6 Launch (Soviet Moon Flyby)
- 08 - Giovanni Cassini's 380th Birthday (1625)
- 10 - Progress M-53 Soyuz U Launch (International

Space Station 18P)

- 11 - 20th Anniversary (1985), Vega 1, Venus Landing/Balloon
- **14 - Pluto At Opposition**
- 14 - 20th Anniversary (1985), Vega 2, Venus Landing/Balloon
- 14 - 30th Anniversary (1975), Venera 10, Venus Landing
- 15 - GOES-N Delta 4M Launch
- 15 - Spaceway 2/ MSG-2 Ariane 5 Launch
- **16 - Moon Occults Jupiter**
- 17 - Galaxy 14 Soyuz FG-Fregat Launch
- 17 - 5th Anniversary (2000), Discovery of the Dhofar 378 Meteorite (Mars Meteorite)
- 20 - 335th Anniversary (1670), Discovery Of Nova 1670 Vulpeculae
- 21 - Summer Solstice, 06:46 UT
- 22 - Royal Greenwich Observatory's 330th Birthday (1675)
- 23 - Near-Earth Flyby (0.030 AU)
- 24 - Express AM-3 Proton K Launch
- 24 - Fred Hoyle's 90th Birthday (1915)
- 25 - Rupert Wildt's 100th Birthday (1905)
- 26 - Mercury Passes 1.4 Degrees From Saturn
- 26 - Venus Passes 1.3 Degrees From Saturn
- 26 - Charles Messier's 275th Birthday (1730)
- 27 - Mercury Passes 0.1 Degrees From Venus
- 30 - Monitor E N1 Rokot KM Launch
- 30 - Deep Impact, Trajectory Correction Maneuver #4 (TCM-4)

July 2005

- 02 - Deep Impact, Trajectory Correction Maneuver #5 (TCM-5)
- 02 - 15th Anniversary (1990), Giotto, Earth Flyby
- 02 - 20th Anniversary (1985), Giotto Launch (ESA's Comet Halley Mission)
- **03 - Deep Impact, Impactor Release**
- **04 - Deep Impact, Comet Tempel 1 Impact/Flyby**
- **04 - Earth At Aphelion (1.017 AU From Sun)**
- 08 - Cassini, Orbital Trim Maneuver #25 (OTM-25)
- 09 - Mercury Greatest Eastern Elongation (26 Degrees)
- 10 - NROL-20 (B-26) Titan 4B Launch (Final Launch of the Titan 4B)
- 11 - 15th Anniversary (1990), Gamma Observatory Launch (Soviet Union)
- 12 - STS-121 Launch, Space Shuttle Atlantis (International Space Station ULF-1.1)



Please Submit your articles for the June edition of CasMag by the 29th of April.

SPECIALIST SECTIONS

Aurorae & Solar	Orlon Petterson	942-5382
Comets	Orlon Petterson	942-5382
New Astronomers	David Downing	385-8170
Occultations & Minor Planets		
	Brian Loader	(03) 318-7659
Astrophotography	Phil Barker	383-3683
Variable stars and photometry		
	Clive Rowe	(03) 318-3166
	c.rowe1@xtra.co.nz	
Telescope Making	Phil Barker	383-3683

New Astronomers Meeting

Tuesday, 14th June

**2nd Tuesday of Month. (No Meeting
January)**

Starting at 7.30 pm

**DEADLINE FOR CONTRIBUTION
FOR NEXT CASMAG IS ...
29th May 2005**

Address of the
Ashburton Astronomical Society
c/- 11 Queens Drive
Ashburton.

SUN

**TIMES OF SUNRISE and SUNSET for
Christchurch**

Date	May 7	May 14	May 21	2005
Rise	7.26 am	7.34 am	7.41 am	NZST
Set	5.24 pm	5.16 pm	5.09 pm	NZST

Date	May 28	Jun 4	Jun 11	2005
Rise	7.47 am	7.53 am	7.58 am	NZST
Set	5.04 pm	5.01 pm	4.59 pm	NZST

THE MOON'S PHASES

New	1st QTR	FULL	Last Qtr
May 8	May 16	May 23	May 30
Jun 7	Jun 15	Jun 22	Jun 29

Canterbury Astronomical Society (Inc.)
P.O. Box 25-137
Victoria Street Post Office
CHRISTCHURCH

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2005/2006

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(* denotes keyholder to West Melton Observatory.
Any of these people may be contacted for supervised
access to the observatory.)

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For observatory bookings and Enquiries, please
contact

Lionel Hussey Cell Ph: 021 296 4780

Obs. Groups Helper Co-Ordinator

Richard Rutherford 327-7579

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Financial year April to March

Standard membership.....	\$50
Family membership.....	\$75
All others classes (Junior,.....)	\$25
Senior Citizen, Tertiary Student & Educational)	