

ORWELL ASTRONOMICAL

SOCIETY IPSWICH

Charity No 271313

NOVEMBER 1998

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Society News

1 Next Committee Meeting

The next committee meeting will be held on Saturday 21st November from 19:30 in the club room. As usual this is an open meeting and any one who is interested is invited to attend.

2 Events for 1998

Lecture Meeting: Martin Mobberley	3 rd December (Thursday) Friends Meeting House 20:00 start
Christmas Meal	9 th December. The venue for this years meal will be at the Newbourn Fox

Christmas Meal

If you wish to attend our annual Christmas meal, could you please let me know (Roy Gooding)

The cost per person is £14.95

Night Sky

All times GMT

Sun

The sun will be rising approximately between 07:00 to 07:50
The sun will be setting approximately between 16:40 to 15:50

Moon

Full Moon	3 rd Quarter	New Moon	1 st Quarter
4 th	11 th	19 th	27 th

Mercury

Mercury will be in the evening sky this month. It will be at greatest elongation on the 11th at 23°, but is too close to the sun to be observed this month.

- Venus** Venus moves back into the evening sky this month, but remains to near the sun for observation.
- Mars** Mars will be rising about 01:30 in mid month. Magnitude 1.5
- Jupiter** Jupiter will be visible in the evening sky. By mid month it will be setting by 00.00. Magnitude -2.6
- Saturn** Saturn will be at visible most of the night. It will be setting at about 04:00 by the end of the month. Magnitude 0.1
- Uranus** Uranus will be visible in the early evening sky, setting a about 21:00 in mid month. Magnitude 5.7
- Neptune** Neptune will be setting at about 40 minutes after Uranus in mid month. Magnitude 7.8

Meteor Showers

Name	Limits	Max	ZHR
Taurids	October 20 th to November 30 th	November 3 rd	10
Leonids	November 15 th to 20 th	November 17 ^d 21 ^{hr}	Storm ?

Meteor source is the BAA Handbook

Roy Gooding

Notes from Indonesia: Part 2

Bosscha Observatory, West Java

by Mike Harlow

Back in 1994, out of the blue, I received a letter from the director of Bosscha Observatory in Java. It was a simple request for a copy of a telescope making article I had written which wasn't available through their library. I sent the article and didn't think any more of it. Four years later, having booked our trip to the Sumatra annular eclipse, we discovered that a visit to Bosscha observatory was on the itinerary!

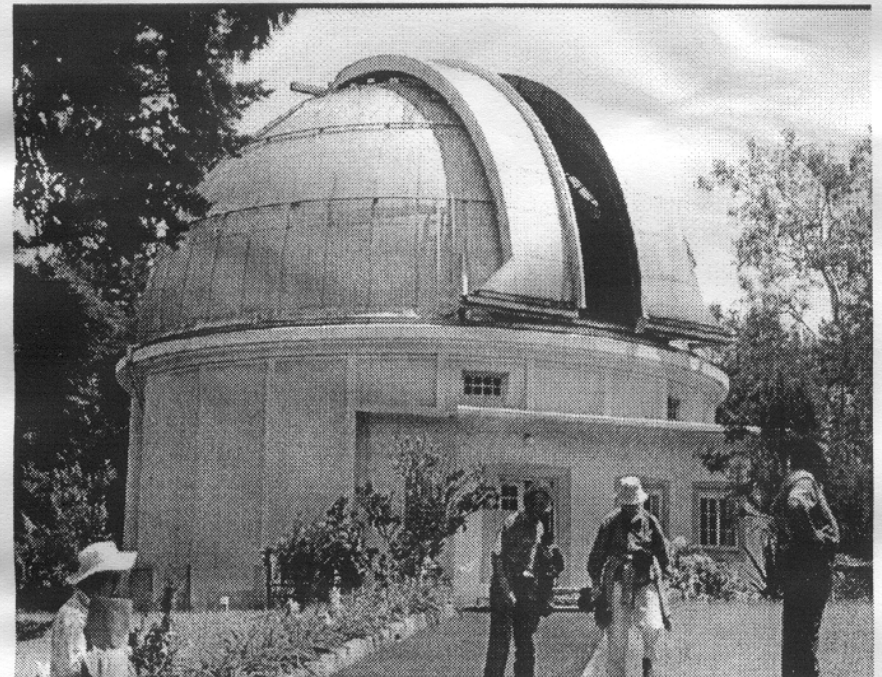
The observatory is on a hill in Lembang just a few miles north of Bandung, West Java. It was founded in 1923 using money donated by K. A. R. Bosscha, a German who had made his fortune from tea plantations in Java. The date of foundation puts the observatory just second behind

the Cape Observatory, South Africa, as the oldest in the Southern Hemisphere. The observatory buildings are surrounded by tropical plants and flowers as well as fearsome looking yellow and black spiders. Their webs can be seen draped between the trees and bushes...not a place to walk around in the dark!

Being so close to Bandung with a population of 2½ million people means that light pollution is becoming a problem. However, by carefully concentrating on observing programs including double stars and cluster studies good use can be made of the 200 clear nights per year.

The largest instrument is a double refractor completed in 1928 with each telescope having a 60cm Carl Zeiss lens of 11 meters focal length. Mounted together in a single tube they are held in an English type yoke mount. As the observatory is only 6°S of the equator the mount is at a very odd angle with the polar axis appearing almost horizontal! The telescopes are used for double star work and high-resolution photography of clusters.

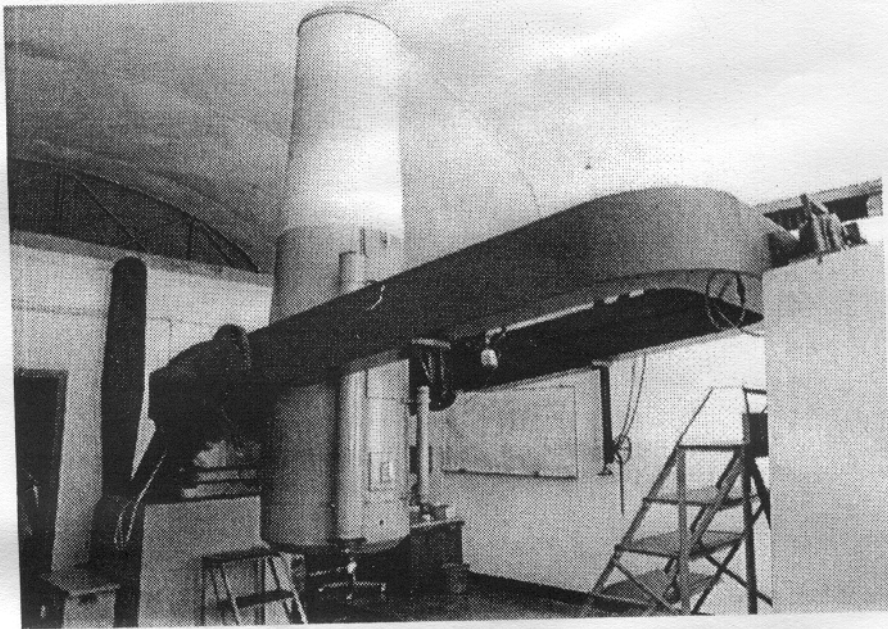
There are a number of run-off roof type buildings housing smaller instruments one of which is a 45cm Cassegrain built in Japan and given to the observatory as part of the Indo-Japan project. It is used for photometry of close binaries and spectroscopy.



The Dome of the 60cm Double Refractor

The last of the three instruments we were shown was the 51cm Schmidt camera, which was inaugurated on 28th May 1960. The corrector and the 70cm primary mirror, made at Yerkes Observatory in Chicago, combine to give an f/3.5 instrument that can cover a five degree field on 11cm square glass plates. The camera is used for studies of the structure of the Milky Way. One student I spoke to was using the camera to measure the rotation curve of our galaxy by taking images using a 6° objective prism giving 312Å/mm dispersion. The spectra of the stars can be used to work out their velocities around the galactic centre.

The hospitality of our host, Dr Bambang Hidayat, made us feel like visiting royalty. We were welcomed with tea and cakes on the lawn outside the director's house by the director, many of his staff and students. Our tour leader, Dr Peter Cattermole, was interviewed by local and national press and an article appeared in the newspapers the following day. Along with the solar eclipse this was a high point of our trip to Indonesia.



The 51cm Schmidt Camera

Details of the observatory and its history are adapted from "Astronomy in Indonesia" by B. Hidayat, J. Korean Ast. Soc. Vol 29, S455-457, 1996.

Our "Quakin Shakin" Sun.

By J. Walsh.

At a mean distance of 92,960,000 Miles (149,600,000 KM) from our planet Earth is the nearest star to us, our Sun, which is a very ordinary G class star in the Main Sequence stage of it's life.

Roughly translated according to the Hertzsprung-Russell catalogue of stars our Sun has lived about 4.6 Billion years of a 12 Billion year lifespan. It has a surface temperature of about 6,000°c, and with it's visual magnitude of +4.8, puts it in the G class category. when a star is in the main sequence stage, it means that it is in the Hydrogen burning stage of it's life.

As stars go, our Sun is one of the commonest stars in the galaxy, classified a Yellow Dwarf, it's mass is 333,000 times that of the Earth, and is made up of 70% Hydrogen and 28% Helium with the other 2% made up of mostly Oxygen and Carbon. The Sun's diameter is 865,318 Miles (1,392,530 KM). The Sun's Density is about 1.41 times that of water. The Sun burns it's fuel quite steadily about 4 Million Tonnes per second, no need to worry though, there is still enough Hydrogen fuel left for another 5 Billion years yet!!!

Our Solar System lives on one of the spiral arms of our Galaxy, The Milky Way. About 30,000 Light Years from the centre. Our Galaxy is rotating and it takes the spiral arm that our Solar System is within about 220 Million years to revolve once around the galactic centre

The Sun has it's own rotation period of 25 days and 9 hours. This can be measured by following the progress of Sunspots across the Solar Disc. The accepted safe way of doing this is to project the Sun's image through a telescope and on to a piece of white card. Sunspots are cooler areas on the Sun's surface which show up darker than the surrounding photosphere, and is thought to be where magnetic flux lines from the Sun's magnetic field pass through the photosphere. Sunspot activity is cyclic and Sunspot Maximum occurs every 11 years.

The S.O.H.O. (Solar and Heliospheric Observatory) satellite has detected solar tornadoes forming at the Sun's polar regions, some of these tornadoes are as big as the Earth and the windspeeds of some of these have been measured at 9 miles (14 KM) per second (constant) and gusts of up to 10 times more than the constant rate. These windspeeds were measured by using the Doppler Effect.

Another phenomenon spotted by the S.O.H.O. satellite were Sunquakes. These are caused by solar flares producing seismic waves in the Sun's interior. These resemble the ripples produced when a stone is dropped into a pool of water, but instead of the ripples travelling outwards at a constant rate, the ripples on the Sun's surface accelerate to a maximum velocity of 250,000 Miles (402,250 KM) per hour.

In another 5 Billion years, after 10 Billion years on the main sequence, the Sun's Hydrogen fuel will begin to run out, as this happens the Sun will begin to burn its fuel faster to compensate for this. It will burn brighter and hotter and will be almost 50% larger than it is today. When the Sun's Hydrogen fuel falls to a critical level the pressure will not be enough to hold up the outer layers and the core will collapse. Due to the compression of the core, this will in turn cause the temperature to rise yet again and will cause the outer layers to expand 100 fold and the Sun will pass on to the next stage of its existence - that of a Red Giant Star. Sadly that will mean the end of the inner planets of our Solar System.

The Sun will burn for another 250 million years as a Red Giant Star, during this time its core will fill with Helium and as the core continues to contract the temperature there will continue to rise until the critical temperature of 93,000,000°C is reached. This is the temperature that Helium atoms fuse and at that moment in time the core will explode in a Helium flash, and the Sun will settle down to a brief period as a Helium burning star.

When the Helium fuel too is exhausted and the core collapses again due to the weight of the outer layers, it will be very unlikely that the Sun will become a Carbon burning star as the Sun is not massive enough to initiate Carbon fusion. So the Sun will shed its outer layers far out into space to become planetary nebula, leaving the core as a White Dwarf in the centre (this matter is so

dense that one teaspoon full will weigh several tonnes on earth). In time the White dwarf will eventually cool to become a Black Dwarf floating endlessly in space.

But at present our Sun is a very dynamic place, with its tornadoes, sunquakes and its energetic magnetic field - Our Quakin Shakin Sun.

OCCULTATIONS DURING NOVEMBER 1998

The table lists stellar occultation disappearance events which occur during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

D or R	Date & Time (UT)	Lunar Phase	Sun Alt (d)	Star Alt (d)	Min Dist (r)	Star	Mag
D	02 Nov 01:16	.92+	-48	21	.80S	14 Cet	5.9
D	05 Nov 21:40	.95-	-47	33	.26S	theta 1 Tau	4.0
R	22:41		-52	42			
D	05 Nov 21:45	.95-	-47	34	.60S	theta 2 Tau	3.3
R	22:35		-52	41			
D	06 Nov 01:21	.95-	-49	54	.07S	Aldebaran	0.8
R	02:32		-40	52			
D	15 Nov 04:22	.13-	-26	11	.36S	gamma Vir	2.9
R	05:26		-16	20			
D	24 Nov 18:05	.27+	-20	15	.57S	pi Cap	5.2
R	19:05		-29	10			
D	24 Nov 19:10	.27+	-30	10	.54N	rho Cap	5.0

Gamma Virginis (common name Porrima) is a well known double star. The components are both of magnitude 3.5 and are separated by 1.8 arc seconds.

James Appleton

AMATEUR EXTRAORDINAIRE

BBC Radio 4 is currently broadcasting a series of programmes entitled "Science in the Attic" to celebrate the work of amateurs in the world of science. The subject of the first programme was Guy Hurst, by day a senior bank manager, by night a very experienced amateur observing astronomer.

Besides observing the heavens for interest and relaxation, Guy has taken on the role of recording the observations of others. He verifies reports made by British amateur astronomers of sudden astronomical events, then collates and logs these reports. Late night telephone calls often have him out in his garden observatory, pyjama clad, to verify the appearance of sudden phenomena such as meteor showers, comets, or exploding stars. The main telescope in his observatory is a 17" reflector.

There is now so much observational information being generated that the need for systematic collection and dissemination of reports is paramount. Reports of new British amateur discoveries are now routed through Guy, and distributed amongst professionals and amateurs around the world.

All this after a hectic day at the office!

Since 1975 he has been receiving and checking reports of sudden astronomical occurrences. Some reports are false alarms ; on one occasion Patrick Moore got Guy out of bed one frosty winter night to verify a new star, only to realise later that it was a satellite. By then however, Guy was already up, out, and in his icy observatory. If the weather in his locality is poor, he is fortunate in being able to call upon a number of enthusiastic colleagues around the country to help him. Hopefully at least one of them will enjoy weather good enough for observing.

According to Martin Mobberly, president of the BAA, Guy's reputation is so high in the astronomical world that when professional astronomers, particularly at the Minor Planet Centre and the Central Bureau in Boston, USA, get a discovery claim with Guy's name backing it up then they know its a real discovery.

In recognition of his work over the last 25 years Guy has been awarded a medal by the BAA.

Garry Coleman

OPEN EVENINGS OCTOBER

On October 16th 17th & 18th we had our open evenings to the general public. On the first two nights we had clouds and some rain but people still came to have a look at the observatory and find out more about astronomy.

Telescopes and binoculars were on display and lots of posters about our own solar system in the club room below the main observatory in the dome. We also had Mylar specs on sale ready for the eclipse of the Sun next August plus leaflets on how to observe and not damage your eyes. Another thing that is always very popular is the short history of the observatory that we sell for 50p.

On the third night our prayers were answered and the sky was as clear as a bell. Several members turned up at the observatory at about 7.15 thinking that as it was clear, some members of the public might turn up early and they were right about six people were already waiting. We dashed about to set up telescopes and binoculars and then the main rush started and we had people queuing up on the stairs waiting to get in.

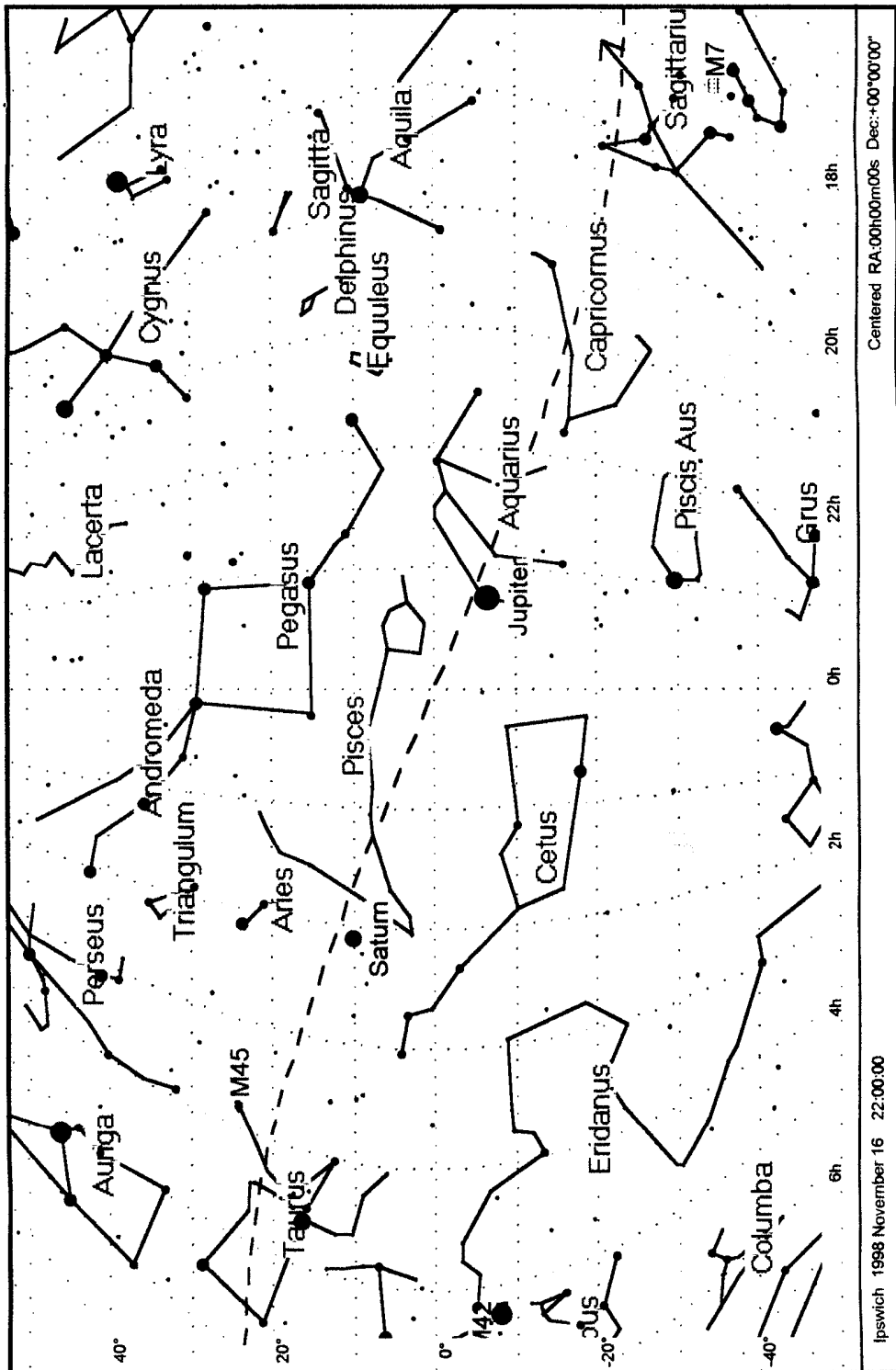
After a very successful last night which boosted our visitors numbers the observatory was closed at about 11.00 O'clock.

Total admissions to the observatory was about 140 adult visitors and 85 O.A.Ps and children. We had four people join as members and about twelve membership forms taken by people who are very interested in joining.

A lot of the visitors are also interested in the eclipse of the Sun next year so several pairs of Mylar specs were sold. The short histories of the observatory were also popular and about thirty copies were sold.

I would like to thank all the members who turned up at the observatory to help make this another very successful week end.

Eric Sims
Journal Coordinator



PROGRAMME FOR NOVEMBER

<i>Mondays from 7.30pm</i> Mr N Gage	GENERAL OBSERVATION SECTION
<i>Tuesdays from 7.30pm</i> Mr P Richards	OBSERVATORY VISITS FROM OUTSIDE GROUPS
<i>Wednesdays from 8.00pm</i> Mr M Cook	NEBULA & FAINT OBJECTS SECTION Mr D Payne
<i>Thursdays from 7.30pm</i> Mr P Richards	OBSERVATORY VISITS FROM OUTSIDE GROUPS
<i>Fridays from 7.30pm</i> 6th - 23rd Mr J Hood	DOUBLE STARS

All members are welcome on any night, but on nights other than Wednesday please check with the director of the night that the observatory will be open.

Lectures and other events:

Committee Meeting

The next committee meeting is to be held on Saturday November 21st in the club room at the observatory at 7.30pm. All members are welcome to attend.

LECTURE at the Friends Meeting House on Thursday 3rd December at 8pm admission FREE.

Comets and how to catch them by Martin Mobberley President of the B.A.A.

e-mail enquires to oasiengq@btcs.bt.co.uk
WWW url <http://www.ast.cam.ac.uk:80/~ipswich/>

1998 COMMITTEE

	Home Phone	Work Phone
CHAIRMAN	D Payne	
SECRETARY	R Gooding	
TREASURER	M Harlow	
MAINTENANCE CO-ORD	M Cook	
JOURNAL CO-ORDINATOR	E Sims	
SOCIETY ACTIVITIES & DARK SKIES	P Richards	
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