JOURNAL

of

THE NOTTINGHAM ASTRONOMICAL SOCIETY

March 1996

EDITORIAL

Welcome to the March 1996 meeting of the Nottingham Astronomical Society. Tonights speaker is Dr. C. Tadhunter of Sheffield University, whose talk is entitled Black Holes - Do they Exist ?

Thanks to Brian, Christine and Greg for contributions to this issue of the journal. Don't forget to pick up a copy of the newsletter written by Carl. Thanks again to Greg for providing 2 finder charts for the stars 47-U Majoris and 70 Virginis. These stars were mentioned last month in the journal as having suspected planets orbiting them.

Chris Riley (Journal Editor)

NEWS

A comet discovered by Japanese amateur astronomer, Yuji Hyakutake, is predicted to be the brightest for twenty years. Northern hemisphere observers will get the best view around the end of this month. It will pass the Earth at a distance of 16 million kilometres. For more details see the section in the Skynotes on page 3.

Last Wednesday a Chinese Long March rocket exploded 20 seconds after take-off after veering off course a second after take-off. The vehicle was supposed to have launched a US communications satellite. This is the second such incident the Chinese space program has suffered in 13 months.

When local people in Ghana discovered a dirty grey lump of metal, they had no idea what it was. The news eventually got to the Ghanaian government who thought it was part of a Russian space probe. The Russians denied that it was theirs. The object turned out to be a missing £14 million German probe called Express, which had been thought to have gone down in the Pacific Ocean. The probe was a joint project between Germany and Japan and it is hoped that the results of the experiments will be analyzed in the next few weeks.

SKYNOTES

For March 1996 by B. Griffin, Director of Observing

SOLAR & PLANETARY DATA

OBJECT	DATE		RA h m	DEC	MAG.	DIA. "o"	ELONGATION, CONSTN, VISIBILITY "
Sun	Mar.	8	23 15	-4 52			
		18	23 52	-0 55			
		28	0 28	+3 01			
Mercury	Mar.	28		Superior Conjunction			
Venus	Mar.	8	1 58	+13 32	-4.1	17.3	43°, Evening Twilight, NW
	Mar.	28	3 21	+21 29	-4.2	22.5	46°, Evening Twilight, NW
Mars	Mar.	4		Conjunction			
Jupiter	Mar.	8	18 56	-22 40	-2.0	35x33	Morning sky, Sagittarius, SE
	Mar.	28	19 07	-22 25	-2.1	37x35	Morning sky, Sagittarius, SE
Saturn	Mar.	17		Conjunction			
Uranus	Mar.			Lost in Morning Twilight			
Neptune	Mar.			Lost in Morning Twilight			

LUNAR DATA

Phases:	Full:-	5d	09h	Last Quarter:-	12d	17h
	New	19d	11h	First Quarter	27d	02h
Apsides:-	Perigee	16d		Apogee	28d	

LUNAR ECLIPSE

A total eclipse of the moon will take place on the night of April 3/4 (the morning of the April NAS meeting).

Eclipse begins	April	3^d	$22^h\ 21^m$
Eclipse ends	April	4^d	$01^h\ 59^m$
Totality begins	April	3^d	$23^h\ 26^m$
Totality ends	April	4^d	$00^h\ 53^m$
Moon rise	April	3^d	$18^h\ 18^m$

The eclipse will be well placed for observation. Remember to mark your diary for April 3rd or you could miss the event.

RISING & SETTING TIMES

FEB29/MAR1		MAR31/APR1	
Sun sets	17h 35m	Sun set	18h 30m
Mars sets	17h 35m	Mercury sets	18h 30m
Saturn sets	18h 55m	Venus sets	23h 10m
Venus sets	21h 50m	Jupiter rises	02h 35m
Jupiter rises	04h 20m	Neptune rises	03h 05m
Neptune rises	05h 05m	Uranus rises	03h 30m
Uranus rises	05h 30m	Saturn rises	05h 30m
Mercury rises	06h 20m	Mars rises	05h 35m
Sun rises	06h 45m	Sun rises	05h 40m

COMETS

COMET C/1995 O1 (Hale-Bopp)

Now moving into the morning sky, this comet is predicted to be very bright in late March 1997. Currently the comet is still quite low in Sagittarius, but comes within the range of binoculars. Details are given below.

Date	R.A.	Dec.	Mag.
Mar 8	$19^h\ 34^m$	$-21°\ 16^m$	9.3
Mar 18	$19^h\ 38^m$	$-20°\ 36^m$	9.1
Mar 28	$19^h\ 42^m$	$-19°\ 54^m$	8.9

COMET C/1996 B1 (Szczepanski)

This comet was discovered on 1996 Jan 27 in the constellation of Ursa Major and is now within the range of binoculars. During March the comet moves through Leo passing close to Regulus on 1996 Mar 15. Details are given below.

Date	R.A.	Dec.	Mag.
Mar 5	$10^h\ 46^m$	$+26°\ 21^m$	7.9
Mar 10	$10^h\ 23^m$	$+19°\ 15^m$	8.0
Mar 15	$10^h\ 05^m$	$+12°\ 32^m$	8.2
Mar 20	$9^h\ 51^m$	$+6°\ 34^m$	8.5
Mar 25	$9^h\ 40^m$	$+1°\ 29^m$	8.7
Mar 30	$9^h\ 32^m$	$-2°\ 46^m$	9.0

COMET C/1996 B2 (Hyakutake)

Discovered on 1996 Jan 30, this comet may rival Hale-Bopp for brightness. Around 1996 Mar 25-27 the comet passes only 0.1AU from Earth (15 million km, 9 million miles) and may be around magnitude +0.7. Around this period the comet will be moving at about 17°/day. Also around Mar 25 it will be in the zenith at about 2:30am (i.e. very well placed for observation). If there is any tail this will be favourably placed. Let's hope this comes upto expactation and that we get some clear skies. Details are given below.

Date	R.A.	Dec.	Mag.
Mar 5	$14^h\ 53^m$	$-21°\ 30^m$	6.3
Mar 14	$14^h\ 55^m$	$-18°\ 56^m$	5.4
Mar 15	$14^h\ 55^m$	$-13°\ 49^m$	4.2
Mar 17	$14^h\ 55^m$	$-10°\ 09^m$	3.7
Mar 18	$14^h\ 55^m$	$-7°\ 39^m$	3.4
Mar 19	$14^h\ 54^m$	$-4°\ 30^m$	3.0
Mar 20	$14^h\ 53^m$	$-0°\ 25^m$	2.7
Mar 21	$14^h\ 52^m$	$+5°\ 01^m$	2.3
Mar 22	$14^h\ 51^m$	$+12°\ 24^m$	1.8
Mar 23	$14^h\ 48^m$	$+22°\ 35^m$	1.4
Mar 24	$14^h\ 44^m$	$+36°\ 23^m$	1.0
Mar 25	$14^h\ 35^m$	$+53°\ 37^m$	0.8
Mar 26	$14^h\ 12^m$	$+71°\ 48^m$	0.7
Mar 27	$10^h\ 41^m$	$+86°\ 07^m$	0.9
Mar 28	$4^h\ 06^m$	$+78°\ 49^m$	1.1
Mar 29	$3^h\ 33^m$	$+70°\ 02^m$	1.3
Mar 30	$3^h\ 22^m$	$+63°\ 32^m$	1.6
Mar 31	$3^h\ 17^m$	$+58°\ 40^m$	1.8

This is **Not** an April 1st wind-up !

STORM WARNING

by Christine Wells

These words produce varying degrees of fear in us, depending upon whether we are at sea, in the hurricane belt or safely tucked away in West Bridgford. Through Voyager and Galileo something is understood of the Atmospheric storms of Jupiter, and we know that other planets experience similar disturbances. But what of the Sun. What happens when a star throws a tantrum ?

Until this century, most of mankind would have been happily unaware of violent solar activity, although those living in Northern or Southern latitudes may have admired the aurorae, appearing outside their normal zones and more intense than usual, without much idea of what was occurring. These days however, we find that at certain times power supplies are interrupted as changing magnetic fields produce direct currents in powerlines made for alternating current. Short wave radio communications are disrupted, and compass needles are erratic. Inaccuracies occur when using instruments to fix global positions, as the signals transmitted back from satellites are disturbed. Electrical systems on satellites are disrupted and render them unreliable, even changing their orbits with expensive results. High energy particles confuse the navigational systems of spacecraft by creating false star images. And even astronauts themselves have professed to feeling the dangerous effects of high energy proton radiation away from Earth's protection. Electronics such as your computer may throw wobblers. Do we need warnings of these outbursts, or what?

These are the effects, so - what are the causes? Studies of the Sun are slowly revealing how stars evolve and behave thereafter - we are lucky to be able to observe at such close quarters! Many processes are imperfectly understood of course. The existence of the solar wind has long been recognized by the way comet tails behave, although detection at earth level is difficult (from one to ten plasma particles per cubic centimeter). So no great problems there. However the interaction of magnetic forces in the region of holes in the corona of the Sun with convection activity often results in the ejection of a great mass of coronal plasma out into space. These were first detected by Skylab, and they happen several times per Earth month! The matter takes two to three days to reach the Earth's magnetosphere, if we happen to be in the way, and create varying degrees of chaos, depending on the alignment of their magnetic fields and those of the Earth.

Another collection of delights thrown our way by the Sun comes under the heading of electro-magnetic radiation - light, ultraviolet, X rays and gamma rays, kickstarted by solar flares. These are sudden violent releases of energy occurring above active regions on the solar surface, usually in the region of sunspots. They produce the disruption described in the first paragraph. Solar optical activity has an eleven year cycle, and the next geomagnetic storm to shock us out of our complacency is predicted to arrive in the years 2000 or 2001.

So, how do we protect ourselves? The first step is to understand the complexity of the processes involved before accurate monitoring and prediction can be undertaken. The European Space Agency has plans to launch four satellites to study the magnetosphere (the region surrounding the Earth which contains ionized particles controlled by its magnetic field). Other research spacecraft have been and will be deployed at various locations, for example WIND (the craft studying solar wind) proved its worth by detecting a coronal mass ejection on its way to creating havoc on Earth. However luck and timing were on its side - much more consistent monitoring would be essential for effective solar storm forecasting.

The space agencies, predictably, are caviling at such costly and tedious dedication of resources - there is no glory in mundane tasks. With more and more satellites and spacecraft, however, carrying out crucial precision work in space, manned or otherwise, the policy seems myopic to say the least. At the Millennium it would be comforting to know that there is a Bill Giles or better still an Ian McCaskill out there, alert to every solar prominence, to enable us to take shelter from the solar storms !

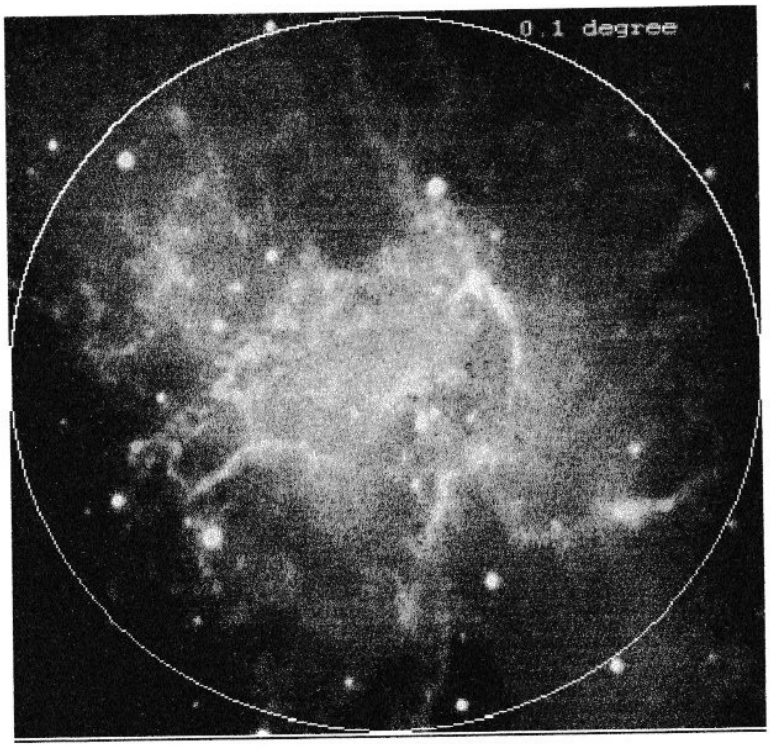
MESSIER OBJECTS FOR BINOCULARS

by Greg Eisenhauer

M1 TAURUS

NGC 1952 8th mag 05h 34 +22d 01m

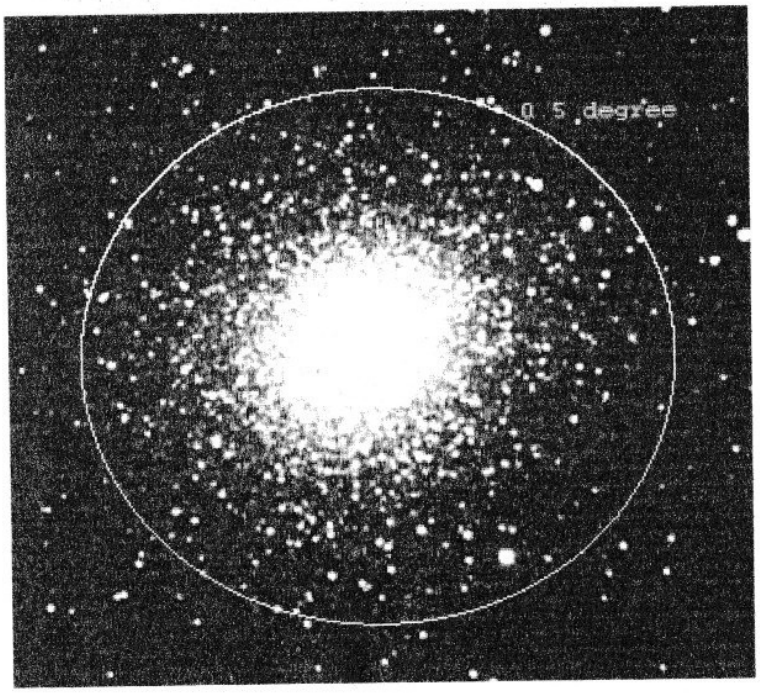
The Crab Nebula - This is part of the Winter Grouping of Messiers, a challenging object to see with medium binoculars (10x50), and fairly tough even with 11x80's. This is the remnant of a supernova and a strong radio source. It appears as a little patch of light in small reflectors with no detail appearing until over 6 inch in aperture. Look northwest of zeta Tauri.



M2 AQUARIUS

NGC 7089 6th mag 21h 33 -0d 49m

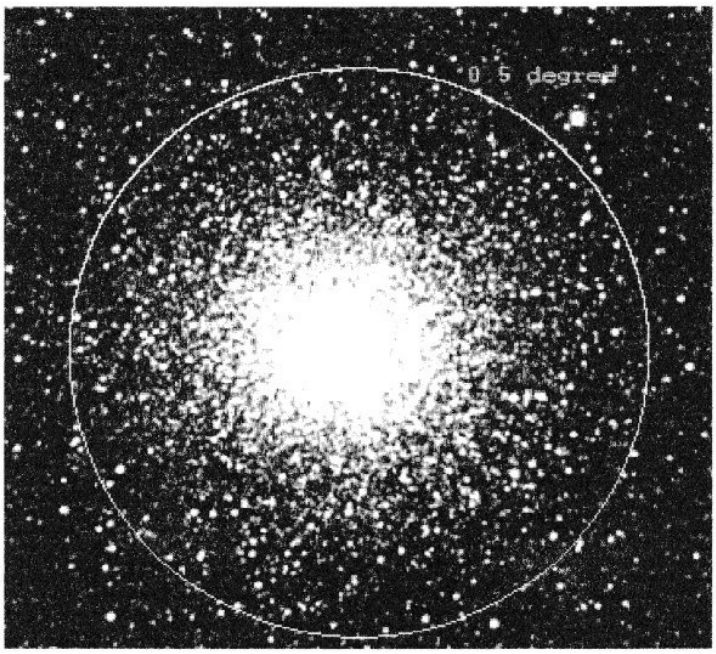
This is part of the Autumn and early Winter Group of Messiers. One of the brighter, larger globular clusters which can be easily seen with small binoculars (7x35). A six inch at 225x shows little resolution. It is almost straight west of alpha Aquarii.



M3 CANES VENATICI

NGC 5272 6th mag 13h 42m +28d 23m

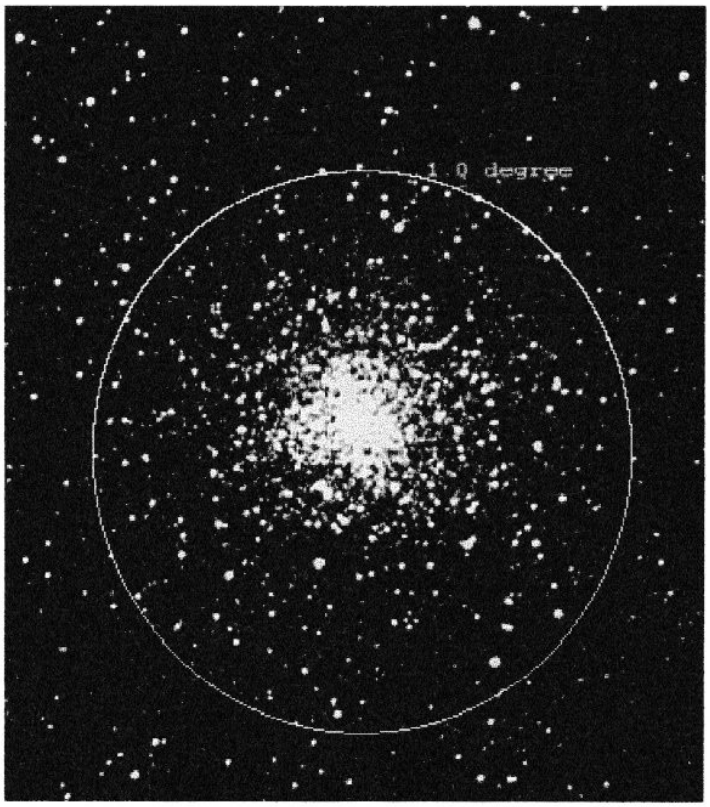
Another easy Messier for small binoculars. It is part of the early Spring Group. One of the best globular clusters being large and bright, a six inch aperture reflector at 300x resolves the edge, a good opportunity to use very high powers to see just how far you can resolve the centre. It can be found on a line from Arcturus to alpha C.Venatici.



M4 SCORPIUS

NGC6121 6th mag 16h 24m -26d 32m

Yet another easy object for small (7x35) binoculars, as long as you can get a reasonable southern horizon. It is not very compact and can be resolved at 300x on a six inch reflector. Look 2 degrees straight west of Antares.



CANCER

Cancer, (the crab) is a constellation of the zodiac best seen around March time. It is located to the east of Gemini and to the west of Leo. Although it contains no stars brighter than 4th magnitude, it nevertheless contains several objects of interest. Not so long ago the Sun used to lie in Cancer when it reached its must northerly point, at the time of the summer solstice. The latitude at which the Sun was directly over head was then given the name of the Tropic of Cancer. Precession has moved the most northerly point into Gemini now.

Double & Variable Stars

ζ (Zeta) Cancri or Tegmene is a pair of 5.6 and 6.0 magnitude yellow stars separated by 5.6 arcseconds. Each component is itself double with separations of less than 1 arcsecond.

ι (Iota) Cancri is a beautiful double consisting of a gold coloured G8 star and a blue A3 star separated by 30.5 arcseconds. This pair has been said to resemble the famous double in Cygnus, Albireo.

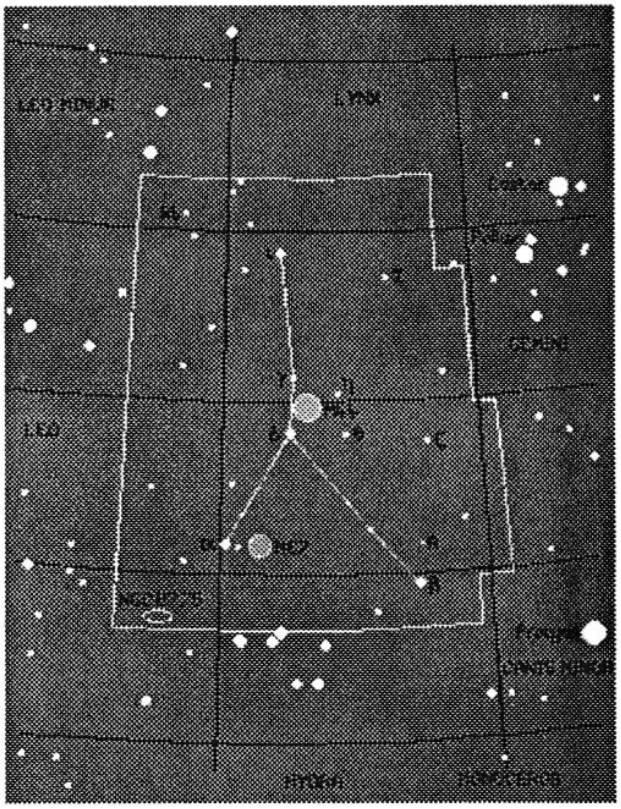
R Cancri is a Mira type star with a period of 362 days which varies from 6.2 to 11.8 mag.

RS Cancri is a semi-regular variable with a period of approximately 120 days and a magnitude range of 5.3 to 6.4.

Deep Sky Objects

M44 (NGC2632) or the Beehive cluster, or the Praesepe is a galactic cluster which contains upto 300 stars brighter than 17th magnitude of which, many are double. I can just see the cluster with the naked eye from my home even with nearby sodium street lighting. The cluster is estimated to be 650 million years old and lies 520 light years away.

M67 (NGC2682) shines at magnitude 6.5. Located near α Cancri this galactic cluster believed to be one of the oldest known at 10 billion years.



Note: Don't forget the March 21st informal meeting.

.Weekend Observing Sessions

To find out about weekend observing sessions contact either Brian or Robin.

Brian Griffin Tel. (0115) 9298364.

Robin Gray Tel. (0115) 9654782.

ABOUT the SOCIETY

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Telephone	0115 938 4521
Meetings:-	Djanogly City Technology College, Sherwood Rise, Nottingham Road, NOTTINGHAM, NG7 7AR
Doors open:-	7:30pm
Meeting starts:-	7:45pm
Meeting ends:-	10:00pm

There are formal monthly meetings with speakers. They are held in Room 003 on the ground floor in the C.T.C.. A small charge of £1.50 Adults, £1.00 Juniors is made to non-members. Invited guests free.

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