

THE BIG BANG

AMATEUR ASTRONOMER'S GUIDE TO THE SKY



No. 1

FREE

FEB - MAR 1984

Editorial

THE BIG BANG is a STUDENTS' ASTRONOMICAL CIRCLE bimonthly publication, aimed at the amateur observer, and serving as a guide to the night-sky.

Every issue features a chart of the season's constellations, and one typical constellation is looked at in detail. The moon and planets are also followed closely, as well as coming interesting events - comets, asteroids, occultations, etc. An article relevant to observation is also published in every issue. Other special features include: competitions, additional charts and photographs, which are added from time to time. However, the BIG BANG will remain primarily a useful handbook to the sky-gazer; a quick reference to current positions and data, as well as coming important events.

I would like to urge all readers to contribute any material which is in direct accordance with the general theme of observational astronomy; there is also a constant demand for astronomical photographs (prints or slides, which are returned to the owner after reproduction), one of which is printed on the front page of every issue. At the end of the year, a group of judges will choose the best photograph, and the owner will be presented with a suitable prize.

Any comments and suggestions in the form of letters are most welcome.

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COMET CROMMELIN



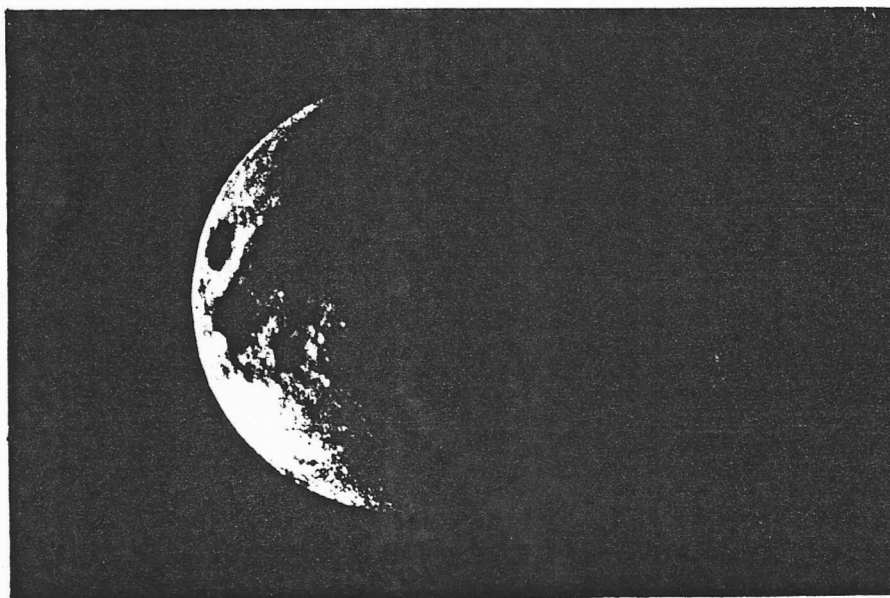
A Closer look at
Taurus

morning of the
PLANETS



THE MOON AROUND
FIRST QUATER
photographed by
TONY TANTI (on
July 20th 1980)
using an 30 mm
f/15 refractor
at prime focus.
Exposure was $\frac{1}{30}$
second on Ilford
FP4 film.

NOTE: the image
is laterally in-
verted, so West
is on the right
while North is
at the top.



PLANETS

BY

ALEX

BONELLO

On the morning of the 14th January I woke up at 04.30 to view a planetary event, described on Sky & Telescope (Jan.'84) as "the most compact gathering of planets this century".

It would be an understatement to classify waking up at that unearthly hour on a January night as a sacrifice, however, one quick look out of the window to check the sky for our solar system neighbours, or an ugly wet blanket of strato-cumulus, instantly boosted my astronomical morale, on seeing a cloudless sky. I went up on the roof to see the planets shining majestically among the stars. The sacrifice was well worth it.

On the mornings of the 12th to the 15th January, 1984, all the planets were to be located within a 60° area in the zodiac (the 1982 'disastrous' alignment involved a 95° separation), and they could all be observed simultaneously just before dawn.

I started my observations at 05.02, when the most conspicuous configuration was a line of three 'stars', due South, made up by Spica, Mars, and Saturn (moving Eastwards). The red planet, shining brightly as a +1.2mag. 'star', presented telescopically (6" Newtonian), no surface features as a 6.3" arc disc, much greater apertures needed to resolve the few details it has to offer. Saturn, on the other hand, shining in its usual milky-white colour, could be easily resolved into a 15" arc disc, complete with rings (37" arc) tilted at nearly 21° - a favourable amount.

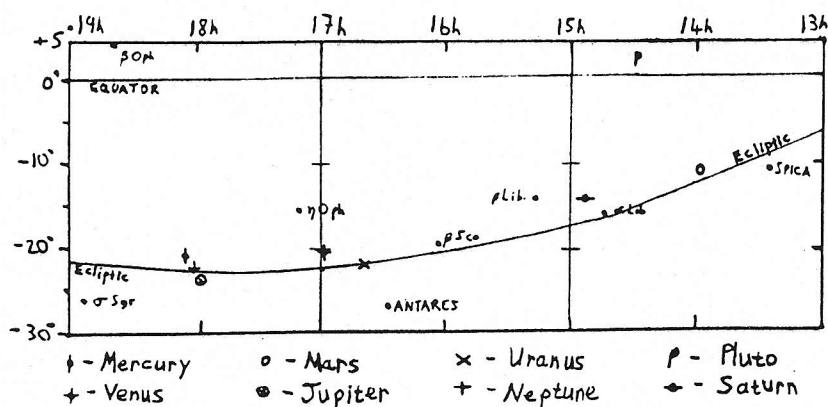
Low in the S.E. was the brilliant Venus, seemingly orange because of its low altitude. Its phase was 0.78, and it shined at a marvellous -3.5 mag.

While the other planets were still hidden just below the horizon, I had some time to try and locate Uranus, roughly between Venus and the red star Antares. With the help of a couple of detailed charts, I soon found the 5thmag. whitish planet and was also able to resolve its disc, which was less than 4" of arc. I was quite pleased, as twilight had already started and put out most of the stars in that part of the sky.

As the morning progressed, unfortunately so did the clouds, as some alto-cumulus rose instead of Jupiter (I have recently forced myself to learn a bit about clouds - a sort of "if you can't beat them join them" situation). I waited patiently for something to happen, until at 06.02 a miracle took place. I saw the giant planet shining steadily less than 1° above the rising line of clouds. I flew to the telescope and had a quick look at the 30" arc disc, with two satellites on each side. However, my last desire this eventful morning, was to locate Mercury - the elusive planet. I scanned the immediate vicinity to the East of Jupiter, now very bright with the approaching sun. At about 06.15 I was graciously rewarded, as I glimpsed an orange-looking 'star' just East of Jupiter (and again very close to the advancing clouds). The telescope immediately revealed it to be Mercury close to dichotomy and shining at a magnitude of about +0.5.

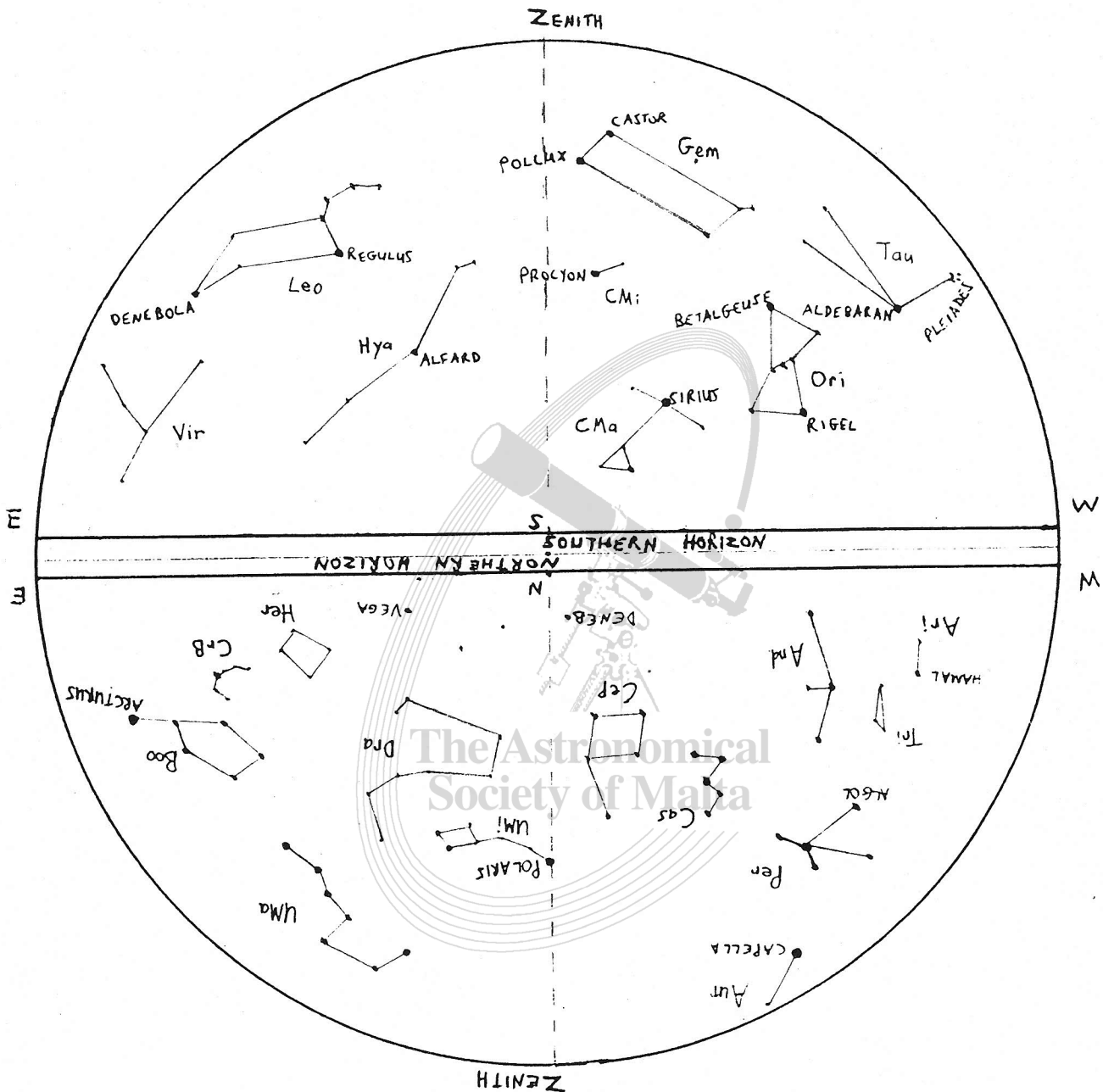
Although Neptune and Pluto were also bunched up in the same part of the sky, I did not attempt to observe them - Pluto not being bright enough, and Neptune rising to a favourable altitude in bright twilight.

Such a morning is definitely one I shall remember - not for any single event or observation, but for the amassing of so many at once; surely on my list of agenda for performing an encore - next century.



STAR GUIDE

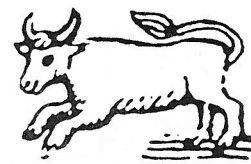
february - march



The Chart shows the principle constellations and their brightest stars seen during these two months, between sunset and midnight. Although not very detailed, these charts are very helpful to the beginner who is still learning to recognise the patterns in the sky. For simplicity, the sky is here divided into 2 hemispheres. Simply determine whether you are facing Northwards, and turn the chart accordingly. The hemispheres meet at the sides (circumference). The dashed line running from the N. and S. points is the meridian. Relative star positions are exact.

A Closer look at

TAURUS



Tauri Tau The Bull 797sq.deg.

Taurus is the second sign of the zodiac, lying between Gemini & Aries. Mythologically, it commemorates Zeus in the form of a bull, carrying off the princess Europa.

The sun enters this constellation on the 13th May and leaves on the 19th June; Taurus, therefore, is best observed in Northern winter.

★ ★ ★ ★

Tauri or ALDEBARAN
(R.A.4h34m Dec.+16°35')

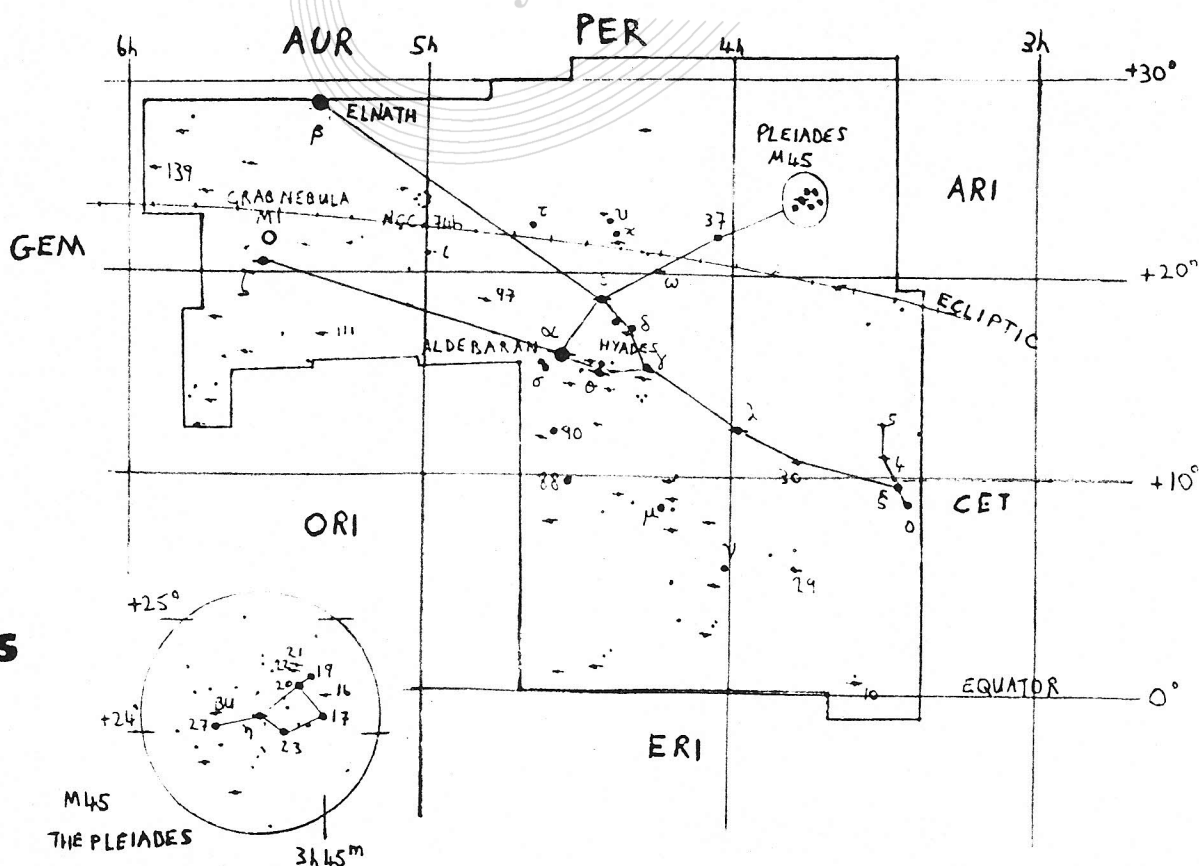
is a red giant (spectral group K5 III), 68 light years away. It is the brightest star in Taurus, and the 13th brightest in the sky, shining at an apparent magnitude of 0.86; its absolute magnitude is -0.8. It is part of a multiple star system, and is a slow irregular variable.

Tauri or El Nath
(R.A.5h24m Dec.+28°35')

is the second brightest star in Taurus, originally part of Auriga. It is a blue-white giant of spectral class B7 III lying at a distance of about 260 light years. Its visual magnitude is 1.66, seen in the shorter half of the spectrum (ultraviolet to yellow), its magnitude increases to -0.62.

Please turn to next page


MAG.	
1st	0.6 - 1.5
2nd	1.6 - 2.5
3rd	2.6 - 3.5
4th	3.6 - 4.5
5th	4.6 - 5.5
6th	5.6 - 6.5



Taurus

The Pleiades
M45.NGC1432 is probably the most well known star cluster in the sky. It is a young open cluster about 400l.y. distant, covering about the same area in the sky as the full moon. The brightest stars are blue-white (B or Be), while less bright ones are mainly white (A and F). There are, perhaps, up to 3,000 stars in this cluster, six of which are easily visible with the naked eye. These are: Alcyone, Maia, Atlas, Electra, Merope and Taygete, while Pleione is believed to have been brighter in the past. Since the stars are young (less than 50 million years old), they are still surrounded by gas and dust, which will, in time, be drawn into the stars by gravity. These clouds produce reflection nebulae around the bright stars.

The Hyades is an open, moving cluster, containing about 200 stars which are moving at about 40 km/sec. in the same direction. The stars are about 500million yrs old, few of which are bright and hot like the Pleiades. This cluster lies at a distance of about 150 light-years.

The Crab Nebula
M1.NGC1952 is an expanding cloud of gas and dust lying about 2,000 parsecs away (6500l.y.), and is believed to be the remnant of the supernova observed in the East in July 1054. It was first observed telescopically in 1731 by the English astronomer John Bevis. Large telescopes resolve the nebula to be 7 by 4 minutes of arc; its present size, therefore must be about 12 light-years across. Inside the Crab Nebula is a pulsar. This emits powerful radiation at all wavelengths. The pulsar is now rotating 30 times per second, but is slowing down very gradually 

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

LOOKING OUT FOR LUNAR OCCULTATION

On February 13th at 18.56 U.T., the star Epsilon Geminorum (or Mabsuta) will be occulted by the 12 day old moon. Disappearance will take place at the dark limb at position angle 87° . Observed from the Maltese Islands the occultation shall be at a high altitude, making it easier for observers with obstructed horizons.

LOOKING OUT FOR

Comet CROMMELIN

by Stephen Abela

Amateur astronomers will be able to see a comet through a small telescope during the next two months. It is COMET CROMMELIN the 16th comet observed in 1983 - hence designated 1983n. This comet orbits the sun every 27 years.

It was first discovered in 1818, and in 1928 Andrew Crommelin found that the comets Pons 1818 I, Coggia-Winnecke 1873 VIII and Forbes 1928 IV were three apparitions of the same comet.

In August 1983, the comet was recovered photographically by L. Kohoutek at Hamburg Observatory, and S. Wyckoff and P. Wehinger at Kitt Peak National Observatory.

Comet Crommelin can be seen in February and the beginning of March, when it will possibly reach 6th magnitude. It shall be positioned in the evening sky just after sunset. The following ephemeris is taken from the B.A.A. Handbook and from Astronomes.

DATE	R.A. h m	DEC. ° ' "	E °	MAG.
Jan 31	23 20.6	+4 34	44	10.8
Feb 10	0 07.5	+2 58	43	9.6
Feb 20	0 59.7	+0 17	44	7.2
Mar 01	1 56.5	-3 36	47	6.4
Mar 11	2 57.2	-8 11	53	7.7

MOON

PHASES

	d	h	m
New:	Feb 1	23	46
	Mar 2	18	31
1st	Feb10	04	00
Quat:	Mar10	18	27
Full:	Feb17	00	41
	Mar17	10	10
Last	Feb23	17	12
Quat:	Mar24	07	58

APSIDES

		Diam.
Perigee:	Feb17 09	33'29"
	Mar16 21	33'27"
Apogee:	Feb 4 09	29'24"
	Mar 2 11	29'23"

VENUS

	R.A. h m	Dec. ° ' "	Mag.	Diam "	Ph.	El °
Feb10	19 21	-21 43	-3.4	12.5	0.85	32
Feb20	20 13	-20 01	-3.4	12.0	0.87	30
Mar 1	21 04	-17 20	-3.4	11.6	0.89	27
Mar11	21 53	-13 50	-3.3	11.2	0.91	25
Mar21	22 41	- 9 43	-3.3	10.9	0.93	23
Mar31	23 27	- 5 09	-3.3	10.7	0.94	20

MERCURY

	R.A. h m	Dec. ° ' "	Mag.	Diam "	Ph.	El °
Feb 5	19 45	-22 00	-0.1	5.5	0.82	21
Feb15	20 47	-19 39	-0.3	5.1	0.90	17
Feb25	21 53	-15 07	-0.6	4.9	0.96	11
Mar 8	SUPERIOR CONJUNCTION					
Mar21	0 45	+ 5 03	-1.2	5.5	0.88	12
Mar31	1 45	+13 06	-0.2	6.9	0.53	19

SATURN

	R.A. h m	Dec. ° ' "	Mag.	Pol. Diam	Ring Maj.	Tilt °
Feb10	14 58	-14 23	+0.7	15.5	38.6	+20.9
Feb20	14 59	-14 23	+0.7	15.6	39.3	+20.9
Mar 1	14 59	-14 21	+0.6	15.9	39.9	+20.9
Mar11	14 58	-14 16	+0.6	16.1	40.6	+20.8
Mar21	14 57	-14 09	+0.5	16.3	41.1	+20.7
Mar31	14 55	-13 59	+0.5	16.5	41.6	+20.5

MARS

	R.A. h m	Dec. ° ' "	Mag.	Diam. "
Feb10	14 49	-14 31	+0.7	7.7
Feb20	15 05	-15 41	+0.5	8.5
Mar 1	15 20	-16 40	+0.3	9.3
Mar11	15 31	-17 28	0.0	10.2
Mar21	15 40	-18 05	-0.2	11.4
Mar31	15 45	-18 30	-0.5	12.6

JUPITER

	R.A. h m	Dec. ° ' "	Mag.	Eq. Diam
Feb10	18 19	-23 06	-1.5	33.3"
Feb20	18 27	-23 02	-1.5	34.1
Mar 1	18 34	-22 57	-1.6	34.9
Mar11	18 41	-22 52	-1.6	35.8
Mar21	18 46	-22 47	-1.7	36.9
Mar31	18 50	-22 43	-1.8	38.0

FEBRUARY

- 4th Moon at apogee.
6-9th Alpha Aurigids meteor shower maximum (ZHR 12)
9th Mercury at aphelion
11th PM. Aldebaran near moon
13th PM. Lunar Occultation of Epsilon Geminorum
15th Conjunction of Mars and Saturn (less than 1°)
22nd Early AM. Mars S., Saturn N. of moon
24th Early AM. moon only about 0.2° S. of Uranus
AM. Mercury fairly favourable
26th AM. Jupiter 2° N. of moon
28th Venus 4° N. of waning moon

MARCH

- 2nd Extreme apogee of moon (252,719 miles) - greatest for all years
1750 - 2100
8th Mercury in Superior Conjunction
20th Vernal equinox
AM. Saturn less than 1° N. of moon
21st AM. Mars less than 0.5° N. of Uranus
23rd Moon 3° N. of Neptune
24th Lat PM. Jupiter 3° N. of moon
30th Early AM. Venus 4° N. of moon

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or £M1 per year

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SOME OF NEXT ISSUE'S
FEATURES

URANUS & NEPTUNE
detailed maps of their present locations, + a short article on both planets.

QUESTION BOX

A chance to solve any difficulties you might have in the field of astronomy.