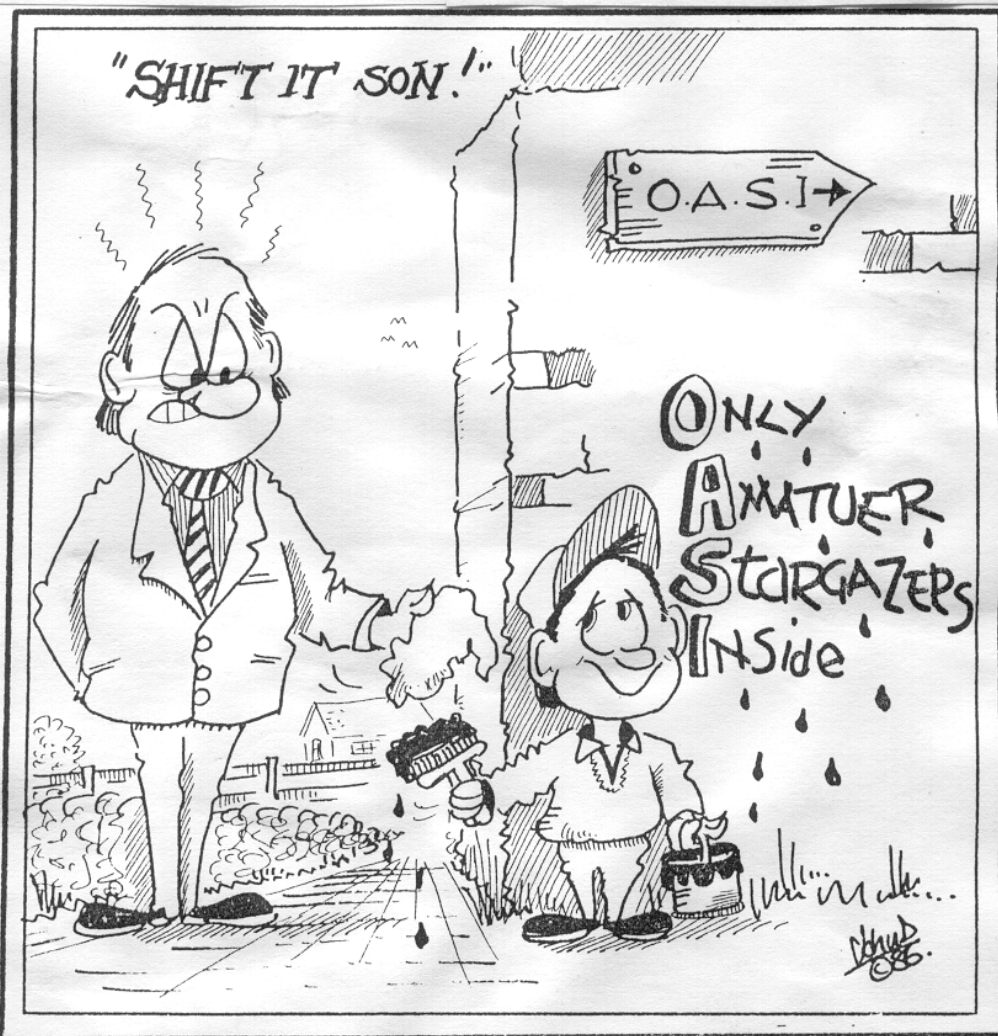


ORWELL ASTRONOMICAL SOCIETY IPSWICH

Charity No 271313.

1997 FEBRUARY



NIGHT SKY

All times GMT

SUN

Rises approximately at 07:30 to 06:50
Sets approximately at 16:55 to 17:32

Moon

New Moon 7th
First Quarter 14th
Full Moon 22nd

MERCURY Mercury will be very low down in the morning sky this month. Magnitude -0.1

VENUS Venus will be very close to the sun this month, and will probably not be visible.

MARS Mars rising by 19:30 by the end of the month. The planet will reach a magnitude of -1.0.

JUPITER Jupiter will be rising only a short time before the sun this month and will very difficult to see in the bright twilight sky. Magnitude -1.9

SATURN Saturn will be rising by 20:00 at the end of the month. Magnitude 1.0.

URANUS & Neptune Both planets will be rising a short time before the sun, so will be in bright twilight.

SOCIETY NEWS

1 1997 Subscriptions

Subscriptions for 1997 will be due from 1st of January

The rates for the new year will be:-

Junior	£8.00
Adult	£12.00
Family	£14.00

A renewal form was included with the January newsletter. It would be appreciated if you could return this so that the society

membership records can kept up to date.

Please return all subscriptions to

Martin Cook

Ipswich
IP4 5PZ

2 Committee Meeting

The next committee meeting will be held on Saturday 15th February at the observatory, from 19:30. This will be an open meeting and any member is welcome to attend.

3 Events for 1996

This list of events was first presented at the AGM.

Astrofest	31st Jan to 1st Feb.
Lecture Meeting Jerry Workman	7th Feb.
Lecture Meeting Keith Triton	20th Feb.
Lecture Meeting Andy Reid	20th March
Lecture Meeting Mike Harlow	17th April
Open Weekend April	No date fixed as yet
BAA Winchester Weekend	4th April
Summer excursion	No date fixed as yet
BAA Exhibition Meeting	8th June
Astro Camp	3rd to 17th Aug.
FAS Cambridge Convention	4th Oct.
Second Open Weekend ?	No date fixed as yet
Christmas Meal	10th Dec.

4 Lecture Meeting 7th February from 20:00

A lecture meeting has been arranged for Friday 7th February. It will be held at Orwell Park School.

The talk will be given by Jerry Workman on the

Hubble Space Telescope

5 Lecture Meeting 20th February from 20:00

A lecture meeting will be held at the Friends Meeting House at 39 Fonnereau Road, on Thursday 20th February

The talk will be given by Keith Tritton on
Life in the Universe

Summary from the AGM

The society AGM was held on Saturday 11th January. This is a summary of some of the items discussed.

1 Reports from the Chairman, Secretary, Treasurer and Trustees, for 1996 were first heard.

2 No nominations for new committee members were received. Alan Smith wished to stand down from the committee for 1997, which leaves one place vacant. If any member wishes to take up this position, please contact any society committee member for more details.

3 A society prospectus pack is nearing completion. The pack will consist of 3 booklets on:

The history of the observatory.

Operation of the observatory.

The aims and activities of the society.

These booklets will be given out to all present members and all new members. (It will probably be a month or two until sufficient numbers of each have been printed to give out to all members).

4 Society funds are quite healthy at present. It was decided to spend some of this money on various items for the observatory. Some of the items discussed included:

- i) Maintenance budget £100
- ii) Library budget £50 to £100
- iii) 6" reflector (Already purchased by Dave Payne)
- iv) SLR camera body.
- v) Spare binoculars (1 or 2)
- vi) Computer up grade.
- vii) Finder for the 10" Dobsonian reflector.
- viii) Deep sky filter.
- ix) Tripod for camera and binoculars.
- x) Roy Cheesman has a 8" reflector which he may be willing to dispose off.
- xi) The 8" mirror started last year will require a set of fittings, eg focusing mount, spider, tube and mount to complete it.

OCCULTATIONS DURING FEBRUARY 1997

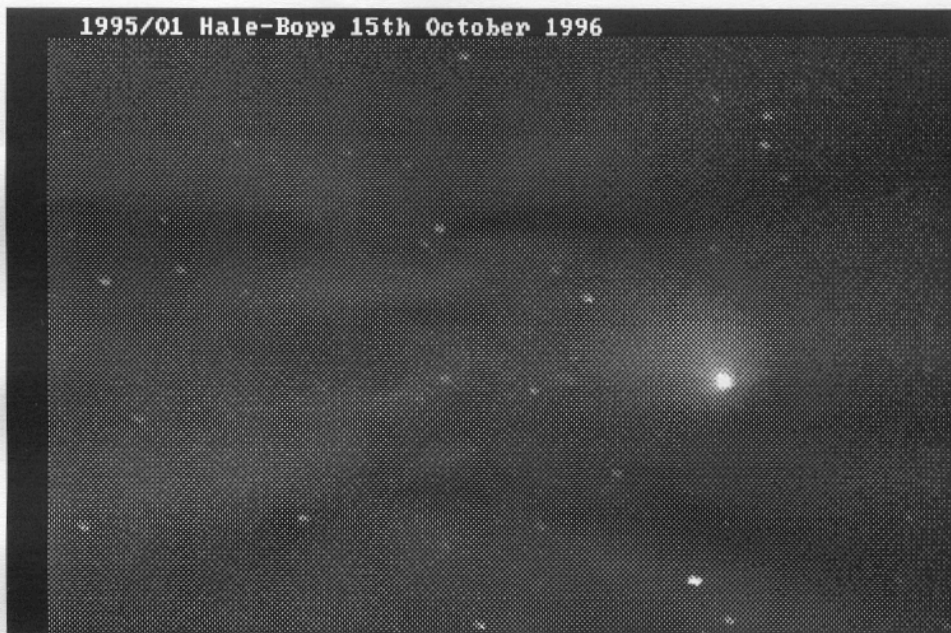
The table lists stellar occultation disappearance events which occur during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Date & Time (UT)	Lunar Phase	Sun Alt (°)	Star Alt (°)	Min Dist rad	Star	Mag
13 Feb 20:06	.44+	-28	40	.55S	SAO93301	7.1
13 Feb 21:22	.44+	-39	30	.26S	3 B. Tau/Ari	6.4
15 Feb 19:12	.64+	-19	55	.17N	SAO94187	7.1
15 Feb 21:20	.65+	-38	47	.45N	318 B. Tau	5.7
16 Feb 19:45	.74+	-24	56	.18N	130 Tau	5.5
17 Feb 22:18	.82+	-44	51	.96N	26 Gem	5.1
21 Feb 21:23	1.00+	-37	38	.78S	83 B. Leo	5.9

James Appleton

Comet Hale-Bopp Update by Mike Harlow

Comet Hale-Bopp is already starting to live up to expectations and by the beginning of February it will be an easy naked-eye object, visible before dawn in the East. I saw the comet for the first time last September, low in the south-west after twilight and got my first CCD image on 15th October.



Comet Hale-Bopp imaged with a Starlight-Express CCD on a 4.5" F/5 Newtonian, 15th October 1996, 19:56 BST

On the original image 5 jets were visible showing a high level of activity even though the comet was then over 400 million kilometers from the Sun.

Three months later the comet had reappeared after solar conjunction and became a naked-eye object by 17th January when I next imaged it.

This image is at the same scale as the 15th October image and shows both a change of structure and a significant increase in size. The jets have now

been obscured by a dense coma. At this time the comet was still beyond the orbit of Mars, which it crossed on 20th January, and over 340 million kilometers from the Earth. Both images are 25 x 38 minutes of arc, i.e. the full Moon would just fit across the width of the field and a quick calculation shows that the visible part of the coma in the image below is over 9 million kilometers across!



Comet Hale-Bopp imaged on 17th January 1997, 06:13 UT. (Equipment the same as 15th October image).

In February Hale-Bopp will continue to brighten and the chart on the next page shows its path through the sky. Starting between Aquila and Sagitta it moves past M71 on 6th (an excellent opportunity for photographs) into Vulpecula and finishes the month in Western Cygnus. By this time it should be bright enough to be seen even with the Moon nearby.

More images should appear next month in the journal and on our www-page at: <http://www.ast.cam.ac.uk/~ipswich/>

MASSIVE BLACK HOLES DWELL IN MOST GALAXIES,

ACCORDING TO HUBBLE CENSUS

Announcing the discovery of three black holes in three normal galaxies, an international team of astronomers suggests nearly all galaxies may harbor supermassive black holes which once powered quasars (extremely luminous nuclei of galaxies), but are now quiescent.

This conclusion is based on a census of 27 nearby galaxies carried out by NASA's Hubble Space Telescope and ground-based telescopes in Hawaii, which are being used to conduct a spectroscopic and photometric survey of galaxies to find black holes which have consumed the mass of millions of Sun-like stars.

The findings, being presented today at the 189th Meeting of the American Astronomical Society in Toronto, Canada, should provide insights into the origin and evolution of galaxies, as well as clarify the role of quasars in galaxy evolution.

The key results are:

Supermassive black holes are so common, nearly every large galaxy has one.

A black hole's mass is proportional to the mass of the host galaxy, so that, for example, a galaxy twice as massive as another would have a black hole that is also twice as massive. This discovery suggests that the growth of the black hole is linked to the formation of the galaxy in which it is located.

The number and masses of the black holes found are consistent with what would have been required to power quasars.

"We believe we are looking at "fossil quasars" and that most galaxies at one time burned brightly as a quasar," says team leader Doug Richstone of the University of Michigan, Ann Arbor, Michigan. These conclusions are consistent with previous Hubble Space Telescope observations showing quasars dwelling in a variety of galaxies, from isolated normal-looking galaxies to colliding pairs.

Two of the black holes "weigh in" at 50 million and 100 million solar masses in the cores of galaxies NGC 3379 (also known as M105) and NGC 3377 respectively. These galaxies are in the "Leo Spur", a nearby group of galaxies about 32 million light-years away and roughly in the direction of the Virgo cluster.

Located 50 million light-years away in the Virgo cluster, NGC 4486B possesses a 500-million solar mass black hole. It is a small satellite of the galaxy M87, a very bright galaxy in the Virgo cluster. M87 has an active nucleus and is known to have a black hole of about 2 billion solar masses.

Though several groups have previously found massive black holes dwelling in galaxies the size of our Milky Way or larger, these new results suggest smaller galaxies have lower-mass black holes, below Hubble's detection limit. The survey shows the black hole's mass is proportional to the host galaxy's mass. Like shoe sizes on adults, the bigger the galaxy, the larger the black hole.

It remains a challenging puzzle as to why black holes are so abundant, or why they should be proportional to a galaxy's mass. One idea, supported by previous Hubble observations, is that galaxies formed out of smaller "building blocks" consisting of star clusters. A massive "seed" black hole may have been present in each of these protogalaxies. The larger number of building blocks needed to merge and form very luminous galaxies would naturally have provided more seed black holes to coalesce into a single, massive black hole residing in a galaxy's nucleus.

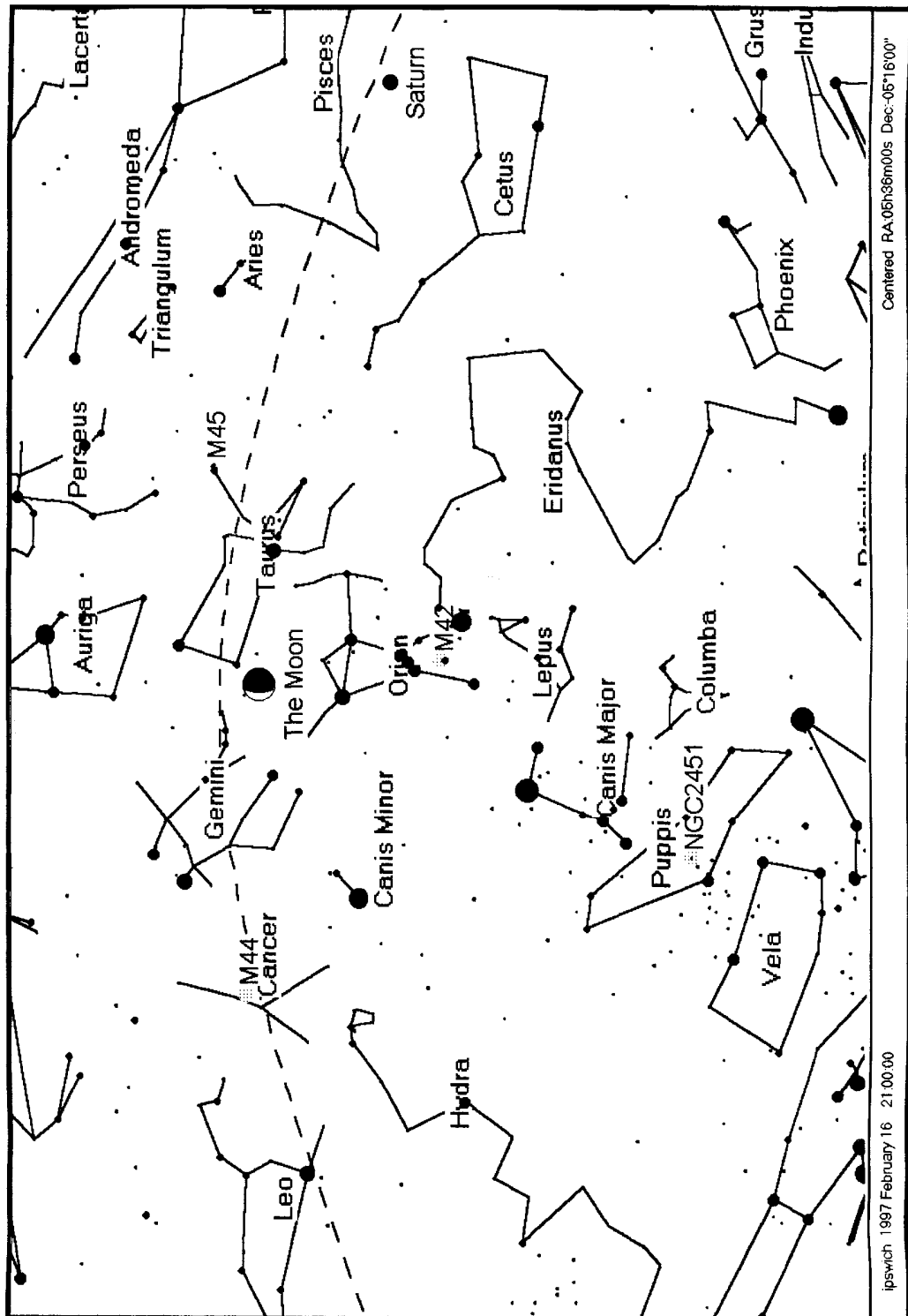
An alternative model is that galaxies start at some early epoch with a modest black hole (not necessarily approaching the masses discussed here), but that the black hole consumes some fixed fraction of the total gas shed by the stars in the galaxy during their normal evolution. If that fraction is around 1 percent, the black holes could easily weigh as much as they do now, and would naturally track the current luminosity of the galaxy.

Critical ground-based observations to identify candidates were obtained for all three of these objects by John Kormendy with the Canada-France-Hawaii Telescope (CFHT) on Mauna Kea, Hawaii. The NGC 4486b black hole detection was also based on CFHT spectra.

Hubble's high resolution then allowed the team to peer deep into the cores of the galaxies with extraordinary resolution unavailable from ground-based telescopes, and measure velocities of stars orbiting the black hole. A sharp rise in velocity means that a great deal of matter is locked away in the galaxy's core, creating a powerful gravitational field that accelerates nearby stars.

The team is confident their statistical search technique has allowed them to pinpoint all the black holes they expect to see, above a certain mass limit. "However, our result is complicated by the fact that the observational data for the galaxies are not of equal quality, and that the galaxies are at different distances," says Richstone.

One of the features of the February 1997 servicing mission to the Hubble will be the installation of the Space Telescope Imaging Spectrograph (STIS). This spectrograph will greatly increase the efficiency of projects, such as this black hole census, that require spectra of several nearby positions in a single object. This group will be continuing this census with the refurbished telescope.



Centered RA-05h36m00s Dec-05°16'00"

Ipswich 1997 February 16 - 21:00:00

PROGRAMME FOR FEBRUARY

Mondays from 7.30pm No Directors available for this night	GENERAL OBSERVATION SECTION
Tuesdays from 7.30pm Mr D Barnard [redacted] daytime only	GENERAL OBSERVATION SECTION
Wednesdays from 7.45pm Mr M Cook [redacted]	NEBULA & FAINT OBJECTS SECTION Mr D Payne [redacted]
Thursdays from 7.30pm Mr P Richards [redacted]	OBSERVATORY VISITS FROM OUTSIDE GROUPS
Fridays from 7.30pm 14th - 28th Mr J Hood [redacted]	DOUBLE STARS Mr M Barritt [redacted]

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 -----On Saturday 10th February at 7.30pm in the club room at the observatory. All members are welcome to attend.

Lecture "HUBBLE SPACE TELESCOPE - LATEST NEWS" Friday 7th February 8.00pm at Orwell Park School Nacton.

Lecture "LIFE IN THE UNIVERSE" Thursday 20th February 8.00pm at The Friends Meeting House Fonnereau Road Ipswich.

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

1996 COMMITTEE

	Home Phone	Work Phone
CHAIRMAN	D Payne	[redacted]
SECRETARY	R Gooding	[redacted]
TREASURER	M Nicholls	[redacted]
MAINTENANCE CO-ORD	M Cook	[redacted]
JOURNAL CO-ORDINATOR	E Sims	[redacted]
PUBLICITY & VISIT CO-ORD	P Richards	[redacted]
EQUIPMENT CURATOR	M Harlow	[redacted]
SPECIAL EVENTS CO-ORD	A Smith	[redacted]
LIBRARIAN & COMP SOFTWARE	J Appleton	[redacted]
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CORRESPONDENCE ADDRESS	R Gooding	OASI Secretary [redacted] Ipswich Suffolk IP1 6AE
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