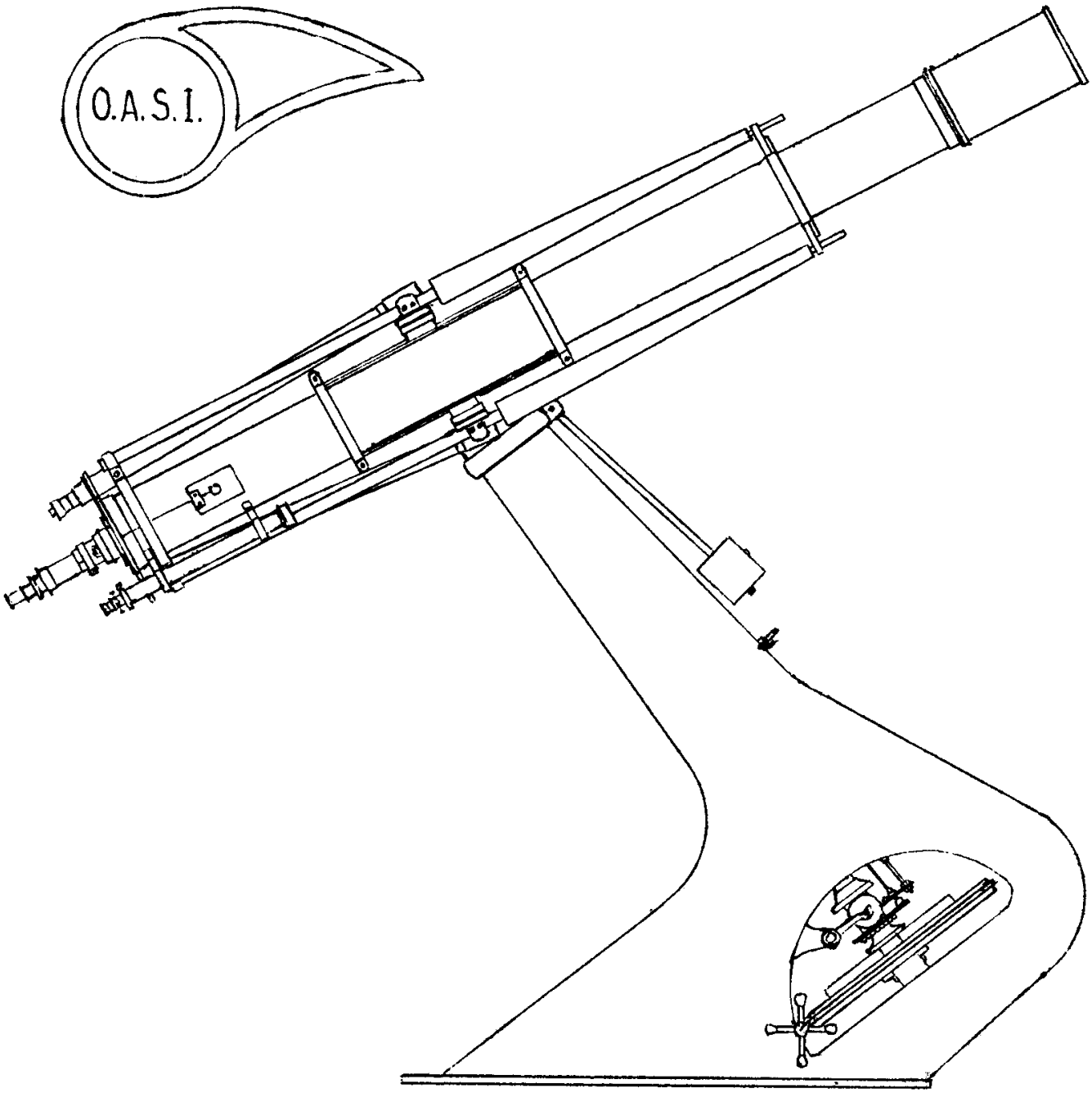
THE JOURNAL OF THE ORWELL ASTRONOMICAL SOCIETY (IPSWICH) JUNE 1978

Editor this issue: Mr. Mark Howe, [redacted], BURY ST. EDMUNDS, Suffolk
'Phone Bury St. Edmunds [redacted]
Editor forthcoming issues: Mr. Paul Burt, [redacted], Ipswich IP1 6PP
'Phone Ipswich [redacted]
Producer: Roy Adams, [redacted], Ipswich IP2 9ST 'Phone Ipswich [redacted]

Your submissions of items for the Journal will be welcome.



The Orwell Park Observatory 10-inch Astronomical Telescope at Nacton near Ipswich

THE NIGHT SKY AS SEEN FROM ORWELL PARK THIS MONTH

The large constellation Hercules is on the meridian near midnight; it is a dim constellation with no star brighter than mag. 3, but is notable for containing M13, the only naked-eye globular cluster visible from our latitudes: it may be glimpsed 2/3 of the way from zeta to eta. Below it is an even dimmer constellation, Ophiuchus, which contains part of the ecliptic; Ophiuchus is flanked on either side by the disjointed parts of Serpens the Serpent, which in mythology has just been slain by Ophiuchus. The long, winding constellation Draco is in the zenith.

THE SUN

At mid-month, sunrise is at 03h40m and sunset at 20h20m, with the Sun in Gemini. Summer Solstice is at 21d18h10m, the Sun reaching a maximum altitude of 61°.

THE MOON - Phases

New Moon	5d19h01m	Full Moon	20d20h30m
First Quarter	13d22h44m	Last Quarter	27d11h44m

Occultations

Star	Phase	Mag.	Time
2013	D	7.5	16d23h08.3m
3109	R	6.5	24d00h56.0m
3112	R	6.2	24d01h44.5m

D = Disappearance
R = Reappearance
Stars listed according to Zodiacal Catalog (ZC) numbers.

THE PLANETS

Mercury will not be visible this month.
Venus will be 5° S of Pollux (Beta Geminorum) on June 11 when its magnitude will be -3.4 (increasing).
Mars will be 0.1° S of Saturn on the 5th, when the respective magnitudes will be 1.4 and 0.8. The comparison of colours should make an interesting photographic study.
Minor Planet Vesta (the brightest of the 'asteroids') reaches a maximum magnitude of 6.3 early this month: RA 16h46m, Dec. -17°49' on the 11th.
Jupiter will not be well seen this month (1.8° S of Mercury on June 24).
Saturn is still in Leo (see Mars).
Neptune comes to opposition in Ophiuchus on June 8 with an apparent diameter of 2.5" (arc) and geocentric distance of 4.38 thousand million km. It will then be 7.7 mag.

Source: BAA Handbook 1978. Please note all times are UT (= BST - 1h).

FROM OTHER JOURNALS - Sixth Moon for Uranus?

It appears likely that there are in fact 6 rings around Uranus, the divisions being caused by the interacting gravitational pulls of Uranus' satellites in the same way that Saturn's moons cause Cassini's and Encke's divisions in Saturn's ring system. The evidence comes from the variations of light intensity during the occultation by Uranus last March. However, W.H. Ip of the University of California suggests that the exact positioning of the divisions could only be explained by the presence of a sixth, inner satellite. The moon would have a mass similar to that of Miranda and periapsis (closest approach) of 103 000 km. (New Scientist)

COMET MEIER 1978f

The discovery of this comet by R. Meier at Ottawa, Canada on April 27.08 came just too late for coverage in the May OASI Journal. Charles Radley was first to submit data on this. Discovery position was RA 07h18.7m, Dec +53°47' in Lynx. Charles' information was that the comet should be visible for most of the night,

moving to the sou[illegible]bout 24' of arc daily. Magnitude at discovery was about 10. It was then a diffuse object with central condensation, moving toward the Sun and getting brighter. Estimated expected magnitudes for the comet for the beginning and middle of May were 8.7 and 8.3. By the start of June, it should be mag. 7.9.

From subsequent information, figures are available for those wishing to take an interest in viewing or just plotting the path of this comet:

May 2	07h24.00m	+52°41.7'
12	07h36.82m	+50°14.9'
22	07h51.55m	+47°42.5'
June 1	08h07.85	+45°02.1'

BETWEEN-JOURNALS INFORMATION SERVICE

It could often happen that discoveries or other matters such as the above comet discovery come up just after our OASI Journal has gone for distribution. How many of you, I wonder, would like to get such news more quickly, for example by phone or letter, and would be willing to pay a nominal sum (communication charges) to be 'in the know' as quickly as possible on selected sorts of news? This is the idea of your Producer - it is up to you to let him know if you think the idea is good.

YOUR JOURNAL THIS MONTH

Because of duplicator troubles with last month's Journal, and a concentrated and comprehensive analysis of production costs with this new microtyped smaller-page, dry-photocopy format compared with the 'old', now we have to be self-supporting fully, in regard to Journal publication, we are trying with recent Committee sanction, the new method which we believe is rather better on many counts. We hope you like it. One of the advantages we hope will be shown to be realized is the ability to include photograph copywork, from contrasty pictures at least, with fair reproduction.

Unfortunately, definite instructions have been issued to me, NOT to send out a Journal copy to persons who have not renewed their subscriptions to the OASI by now, for the current year beginning January 1978. If it seems hard to believe that one should pay a sub. again preferably about January when in a previous year one became a member in the middle of the year, this is the way most societies have to control subscriptions in order for paperwork to be made easier. I wish it were otherwise and that we did not have to ask for subs., but until a better-than-money system can be practised possibly throughout the world, please let us have your co-operation. Roy Adams.

(I understand that a few reserve copies of the Journal will be kept available for those whose tardy subs are renewed quickly from this message.)

MEMBERS' ADVERTS.

* CASIO FX-1000 scientific calculator, perfect working condition. Suitable for 'A' Level/ONC/HNC/Degree work (has circular, hyperbolic, exponential, logarithmic and statistical functions, fractions, memory), £13 including spare long-life batteries. Apply to the Editor.

* STAMPS, ASTRONOMICAL THEMATICS, (postage type) wanted by Alan Smith for the OASI Astrothematic Album he is starting with some already received by the library.

* B.A.A. ANNUAL EXHIBITION Last-minute short-notice it may be, but Charles Radley and Mike Barriskill are starting out about 10am on Wednesday 31st May by car and have 2 or 3 spare seats to fill for shared nominal expenses. Charles asks if anyone is able to go, to phone him on Ipswich [redacted]. The Exhibition in London is open from 4pm to 8pm but the earlier start is for spare time in the Big City.

THE VOYAGER PROJECT Part 4 - The Experiments (ii)

Titan, the biggest of Saturn's satellites, revolves around Saturn at a mean distance of over a million km, and with a diameter of 5 000 km is bigger than Mercury. Titan's atmosphere (Mercury has none) leaks away at a minute but non-negligible rate. This atmosphere might be expected to be doughnut-like (toroidal) in shape around Saturn. If this torus is outside Saturn's magnetosphere and in the Solar Wind, it might give rise to a detectable bow shock. This would then allow the Voyagers to observe the interaction of a gas cloud with the Solar Wind.

Whether or not Uranus and Neptune have magnetospheres we cannot say for certain at the moment because the effects at Earth are far too small (if any) to be measurable. But it does not need to be said that if V2 reaches these planets, it will be able to detect the weakest magnetic fields, and the probability is that they have extensive magnetic fields.

The other major group of experiments is on the camera platform. The cameras will work some of the time with the radio science experiments examining the atmospheres. Planetary atmosphere study will be on about the same level of importance as the biology experiments were on Viking. Compositions of the planetary atmospheres read like a fingerprint of the planet's past, temperature, atmospheric composition etc. This enables us to build up a picture (once we have information from most of the planets in the Solar System) of the evolution of planets in particular, and of the history of the Solar System in general.

Scientists need to know such things as the temperature, pressure, density, gaseous and particulate compositions of the atmospheres. It has been found that heat from inside Jupiter plays by far the larger part in the circulation of the planet's atmosphere. The planets Saturn, Uranus and Neptune may behave in the same way. The atmospheres of some of the satellites may also yield some information in that respect. Photographs of the fast-rotating atmospheres will be taken as the spacecraft approaches Jupiter, Saturn, Uranus and possibly Neptune - although out there the light is less abundant and therefore the pictures take longer to take. Voyager can also affirm the presence of water ice, ammonia and silicates in Saturn's rings. The amount that sunlight is scattered by the rings will give a measure of their sizes. Uranus' recently discovered rings can also be observed. Far encounter pictures of the satellites are expected to reveal detail of between 5 and 15 km across. The spacecraft are expected to approach close enough to three of them to observe detail as small as 1 km across.

The cameras will of course look for the usual geological features such as craters, plains, scarps, mountains and polar caps. The wide-angle pictures may reveal global distribution of geological areas and perhaps show why there are variations in colour and albedo on the satellites. Sizes and shapes can be measured to within 0.1 to 1%.

S.G. Harvey.

EXOBIOLOGY Part 11 - Spaceflight (contd.)

A let-out is provided by the Special Theory of Relativity. Under this theory, a process known as time dilation occurs when you approach the speed of light; time as measured by an observer travelling on board a spacecraft at say, above 170 000 km/s, would appear to pass by more slowly than that measured by a 'stationary' observer. As the traveller's velocity approaches that of light, the effect would become more pronounced, and he would effectively be travelling at greater than the speed of light (by his own clocks).

If we could make spaceships travel at close to the speed of light, than, journeys

could be accomplished many more quickly (in terms of the person who is moving). In this way, if a man made a journey at 98% of light speed, and which took 20 years by his clock, he would find that when he came back, a hundred years had elapsed. Hence if the traveller was on a scientific mission, say, the scientists on Earth would still have to wait a long time for the answer to their problem. Neither would this effect be helpful if we wished to set up a civilization spread across many light years, since each part of the galaxy would be reckoning the time differently.

A more philosophically satisfactory solution might be provided by Einstein's General Theory. The General Theory predicts that there may exist black holes, objects so small and massive that light cannot escape them. It has been suggested that someone who entered one of these black holes might reappear elsewhere in the Universe. Further, wormholes, similar objects to black holes but much more common, have been suggested as alternatives.

How one could enter a black hole without first being stretched like elastic and then pulverized out of existence has not yet been answered, but I must admit to having a preference for this alternative because it has no other serious drawbacks (ahem, apart from not having been proved possible yet - a minor detail).

Are We Being Watched?

The title of this section is the subject of a huge literature, mainly severely unscientific. However, it has to be admitted that there are a few unexplained things going on in our skies, and it would be equally unscientific to dismiss the possibility without thought.

Flying saucers (UFOs), it is often said, were first seen in 1947. This is not strictly true, but only since that time have sightings of unusual airborne objects been investigated scientifically. Another common fallacy is the belief that all ufologists (people who study UFOs) think that flying saucers come from outer space. Over the past twenty years, many of them have been converted from this extra-terrestrial hypothesis to other, perhaps more scientific theories.

John Keel, an American ufologist, has suggested that UFOs and other 'myths' such as leprechauns, fairies, pixies and elves have a common origin. This may be connected with C.G. Jung's ideas about the 'collective unconscious'; in other words, UFOs are semi-real products of the human mind. Another theory, the Plasma Hypothesis, suggests that many flying saucers are in reality intensely hot, ionized balls of 'gas', similar to ball lightning, known as plasmas.

Yet it is still possible that some UFOs came originally from extra-terrestrial civilizations, perhaps having bases on planets in the Solar System. If so, they obviously don't want to make overt contact, and perhaps we should be wary of them.

(The end)

'IS ANYBODY OUT THERE?'

The long-awaited Radio Orwell programme was aired at last on 22nd May. From that programme one could well feel that there are people 'out there' and integrated into the various Earth societies who at least have connections with extra-terrestrial civilizations, if the latter word is the correct one to use as it is supposed to describe the advanced state of people in social development beyond barbarism. In fact I very nearly rang 217000 to put the question, 'Does the 'team' think the peoples of the world, governments especially, need better-advanced entities to give them a 'rocket' in the long-term political sense?'

Such might have been considered to be a somewhat conflagatory and delicate question,

of course, but had I not been taping the program for posterity (and our members) I'd have given it a try. It is very difficult to draw lines in classification of subject material (of questions for example) when dealing with a matter as broad as 'Is anyone out there?' John Saunders of the Aetherius Society, one speaker, suggested that mediumship (rather than physical spaceships) might be a way of (now in my words) exerting influences - whether or not this is possible or more efficient, I can not say. What I do know is that as Roy Cheesman mentioned so aptly in the programme, so many billions of billions of suns, a fair proportion of which are capable of supporting life on attendant planets, are surely visible to us. Enough of such planetary or similar life almost certainly exists (though not necessarily all benevolent, as John Saunders asserts) for there expectedly to be an enormous variety of life forms - perhaps unimaginably more variety than is known on Earth - and with possibly unimaginably more capabilities, some civilizations being worthy of the name by virtue of their having had more time (relative to their own life-spans, which may be by Earth time much shorter or much longer than ours, and so independent of some conditions of nominal age of their Solar System) to develop.

An answer to the question, 'why do any 'flying saucer' people seem reluctant to be seen?' could be in one or more of the following:

The 'Culture Shock', mentioned on the programme by a caller.

Their difference of form, which in spite of their advancement, may not be easy to change to something we may readily accept.

The phenomenon of 'fear of what is good' in some Earth people, again, possibly, notably governments, who might feel put to shame by the advanced methods of social organization (although the government folk too, could also benefit) indicated by such more advanced societies.

The fear on the part of extra-terrestrials (and anyone sympathetic) of severe repercussions to themselves on 'interfering' as it could be termed.

The disgust on seeing that some (most?) Earth people never seem to learn, take heed and act on their learning, or act fast enough - even though we have a Money-God who is supposed to be worhipped at all times, they may feel this insufficient excuse for the continued ill-use of certain fossil materials, for pollution and continued warfare and armament interest, and just keep what they, too, hope, is a respectable distance...

The question also might be asked, 'Do we deserve outside help?' or 'Should we not be more forceful ourselves and make ourselves worthy to receive more-advanced visitors?'

John Hood (another of our members) and Mr. Martindale, who gave us an interesting talk on UFO sightings earlier this year, completed the 'team'. The programme certainly added food for thought to the large amount already available for chewing-over. Anyone wishing to hear the hour-long recording of the programme should make special arrangement with me, or suggest it forms part of a talk or similar session at the Friends' Meeting House when Summer is over.

Additional points I can mention briefly here are that John Saunders said the UFO folk contacted all world government heads some time ago, but that in almost all cases, such contacting was swept under a very definitely non-flying carpet. Roy Cheesman seemed in favour of keeping a very open mind about the whole thing and suggested that as the sound barrier had been transcended, so might also be the light barrier, maybe by such a loophole as involving no-mass particles. Mr. Hood said there was concrete evidence of extra-terrestrials having lived on the Moon and other bodies, such as Venus, in our Solar System. Lastly, I understand there is something on at the Central Hall, Westminster, re encounters of the Fourth kind! Oh, for a 'flying saucer'to go!
(Thursday, June 1st.)

If I did have a flying saucer, of course, you can guarantee that the primary question would then not be 'Is anybody out there?' but how to avoid all the people of presumably terrestrial origin who make it their interest to tell you what you can't do and what you must do instead, and the question, 'Why are there so many people on here (the Earth and my hypothetical flying saucer)?'...'We' are also 'out there' watching 'us'! though near-surface radar'UFO'blips are busily 'ignored'?

Roy Adams

ORWELL 10-INCH TELESCOPE DRIVE

It is with great pleasure that we announce the successful preliminary operation of Alan Smith's (and co-workers') variable frequency oscillator and squirrel-cage motor drive on the big telescope at the Observatory. It has been tested over several observing periods on solar work and stellar observation, and been found to be accurate in following in sidereal time to about 2.5%, with this small error on the 'fast' side.

Provision of the drive has renewed interest on the part of a couple of members, in sunspot observation and sunspot photography, and a solar projection box to enable a camera to be fitted behind the translucent projection screen for an erect image and avoidance of excessive stray light is in the offing. This is by far the best method of recording sunspot activity, as the camera can be placed square-on to the optic path centre instead of being angled to one side as in the case of camera-use in front of the projection screen.

As most of you will realize, great care should be exercised in solar-work sessions: always be mindful of where your eyes are pointing, as even a quick over-the-shoulder glance at the telescope could bring your eye in line with the eyepiece with the screen at a distance, and it is best to keep the finder 'scope also covered with a can. The main telescope should also be turned away from intense sun to assure excessive heating of the main lens does not impair it - every few minutes or so, behind the dome shutter opening edge. 'Rest' periods for the main telescope should also last a few minutes. NEVER try to directly view the Sun through a telescope unless the atmosphere is continually hazy, as near sunset sometimes for a little while. Such a position near the horizon will not be the best for resolving sunspots, and the Sun should be dull red, not glowing, before any direct exercise is attempted. Even then, I don't really advise it. Sorry to digress, but with another sunspot maximum coming in a few months, and some large groups already having appeared this year, a little mention of such precautions will hopefully be excused.

The telescope drive should naturally be used with care, and the polar axis should be kept unrestrained when the drive is engaged.

The drive operates from mains electricity, via a transformer and variable oscillator, pulsing a squirrel-cage motor acting through the motor's own gearbox, another gearbox and a flexible (though not too flexible!) coupling, and existing 1:1 bevel gears to the main polar axis worm-gear drive. The 'flexible' coupling may be replaced by a nylon unit to improve the very slight high-magnification wobble (it is only just noticeable) the rubber of the coupling being just a little too flexible.

The torque transmitted by the coupling and other final shafting and gears is well over the required 25 kg/cm (about 20 lb/in). Please make sure until there is a cover fitted, that nothing gets caught in the gearing. It is fairly out of the way, so this should be easy enough. It is aimed to enclose the whole drive unit and polar axis worm gear 'department' with a specially made cover and sandwich bolts, so we do not have to drill into the mount casting (which would be a prodigious task anyway) and so we can keep the dust out.

More about the drive will appear in the next issue. Meanwhile, good viewing!

PROGRAMME FOR JUNE 1978 At ORWELL PARK OBSERVATORY, NACTON, IPSWICH

TUESDAYS from 7 pm: Planetary Section June 13th and 27th
Directors Mr. J. Deans, , Capel St. Mary 'Phone Gt. Wenham
and Mr. J. Hood, , Ipswich
TUESDAYS from 7 pm: Solar, Lunar and Planetary Section June 6th and 20th
Directors Mr. J. Hood, , Ipswich
and Mr. M. Barritt, , Ipswich
THURSDAYS from 8 pm: Double Stars Section June 8th and 22nd
Director Mr. D. Bearcroft, , Ipswich 'Phone
FRIDAYS from 8 pm: Variable Stars Section June 9th and 23rd
Directors Mr. R.S. Manning, , Ipswich 'Phone
and Mr. M. Siggers, , Ipswich

Other meetings at the Observatory may be arranged by prior agreement.

Meetings held on FOXHALL HEATH, IPSWICH usually each Saturday for shower or sporadic meteors.

SATURDAYS Meteor Section Director Mr. D. Barnard, Ipswich
'Phone

SHOWER METEOR COUNT, SATURDAY, JUNE 17th. Please support, 10pm outside Golf Hotel come what may!

Other meetings are occasionally held, and for further information about the Orwell Astronomical Society and activities, please contact any of the persons above or mentioned on the front cover, or
Assistant Chairman, Mr. Alan Smith, , Ipswich 'Phone Ipswich , or
Treasurer, Mrs. P. Long, , Ipswich 'Phone Ipswich .

JUNE METEOR NOTES (With reference to Observational Astronomy for Amateurs, & BAA Hdbk '78
June Lyrids reaching maximum on 16th with a ZHR of 8. Normal limits June 10-21st. Radiant RA 18h32m, Dec +35°. Meteors bluish. (Moon and twilight (end 22.7h, start 3.3hBST) interfere.
Ophiuchids. These also have their maximum in June but are best observed in the S hemisphere.
There are 3 daylight streams this month, observable by radar only. These are:
Epsilon Arietids, max. June 8th, normal limits June 1-18th, RA 03h04m, Dec +21°, transit HR=60
Zeta Perseids - Max. June 8th also, (N. limits June 1-16th) RA 04h12m, Dec +21°, transit HR=60
Beta Taurids - Max. June 27th, N. limits June 24-July 5th, RA 05h52m, Dec +17°, transit HR=25

Dave Barnard

THE WHITE-DWARF by Wayne Brieske and Andrew Arbon

Ten years ago the white-dwarf was discovered around Sirius and Procyon. It was thought they were the most dense and compact stars yet known - these white-dwarfs were the first of their kind to be discovered. These stars are old stars which have exhausted their fuel and collapsed under their gravitational strain. The matter of a white-dwarf is different from the matter we are familiar with on Earth, with atoms consisting of a nucleus, which is very small, surrounded at some distance by electrons.

In the case of a white-dwarf star, the outer structure of the atom has collapsed under gravity and no longer are the electrons well spaced around the nucleus keeping apart the nucleus or nuclei of separate atoms; the nuclei are closer-packed than usually. A white-dwarf of the same mass as the Sun would have a diameter about thirty times smaller than the Sun's and would be so dense that a match-box of it (if it could be brought here to Earth) would weigh a ton.

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PUZZLE CORNER - Do you know what this is?
Answer in next issue