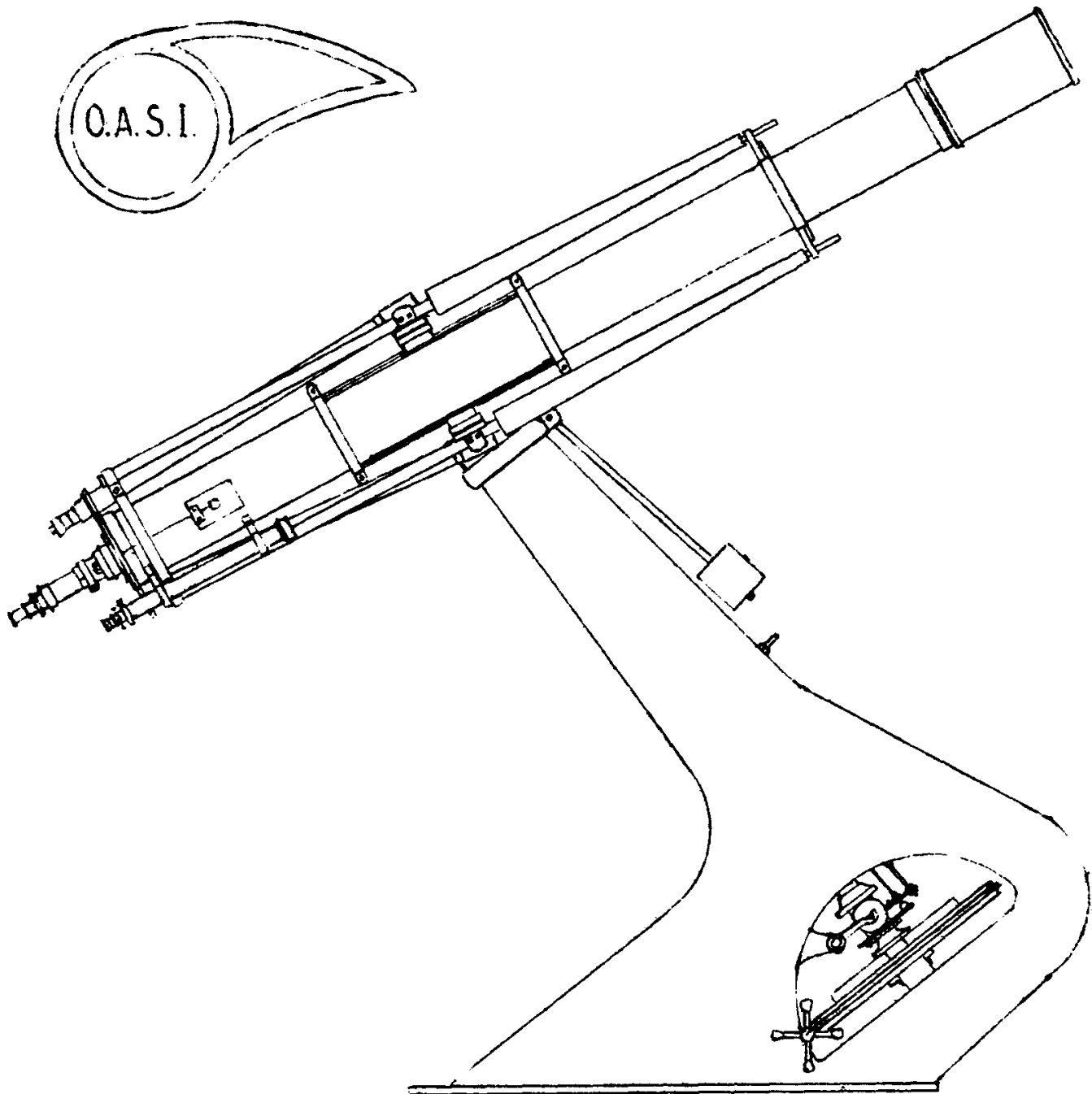


Editor: Mr. Paul Burt, [REDACTED], Ipswich IP1 6PP 'Phone Ipswich [REDACTED]

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

Capella (alpha Aurigae) is in the zenith, and can be used as a pointer to find the very faint constellations of Camelopardalis, stretching northwards from Capella to Polaris, and Lynx, which stretches eastwards from the zenith area to Leo, now rising in the late evening on the eastern horizon. Orion to the south can be used to find two more inconspicuous constellations - Monoceros lies to the east of Betelgeuse and the sword-belt, while Eridanus (the River) winds its way westwards from Rigel, doubling back on itself before disappearing below the southern horizon. Old friend Sirius is now rising in the late evening to the south-east. The western sky is dominated by Cygnus and Pegasus.

THE SUN

Sunrise is at 07h50m at the beginning of the month, changing to 08h10m at month-end. Sunset changes from 15h50m to 16h00m. The Sun moves from Scorpius to Sagittarius during the month.

THE MOON - Phases (December)

First Quarter	7d00h34m	Last Quarter	22d17h41m
Full Moon	14d12h31m	New Moon	29d19h36m

Occultations

Star	Phase	Mag.	Time
3066	D	6.0	4d19h08.7m
219	D	5.1	9d20h54.8m
237	D	7.1	10d00h47.8m
352	D	7.3	10d23h01.0m
362	D	6.5	11d00h34.1m
464	D	6.4	11d20h08.9m
1029	R	5.1	15d23h01.8m
1567	R	6.3	21d00h17.5m
4002	D	-4.4	26d13h06.9m

D = Disappearance

R = Reappearance

Stars listed according to

Zodiacal Catalog (ZC) numbers.

Please note the inclusion of Venus' occultation for the benefit of those members wishing to drag themselves away from their Boxing Day lunchtime festivities.

And on the subject of Yuletide, may I take this opportunity of wishing all

readers a HAPPY CHRISTMAS and a prosperous (?) NEW YEAR - Ed.

THE PLANETS

Mercury is at inferior conjunction on the 5th, after which it will be a morning star reaching greatest elongation of 22° on the 24th at mag. -0.7, rising 2 hours before the Sun. (At 06h10m on Christmas morning - again for the keen ones amongst you.)

Venus reaches greatest brilliance of mag. -4.4 on the 14th, and will be rising about 4 hours before the Sun this month.

Mars is lost in the Sun this month.

Jupiter is now rising in the early evening at mag -2.1, and is in retrograde motion in Cancer. (Be prepared at the start of 1979 for the mutual phenomena of Jupiter's satellites, the inclination of these satellites' orbits then being favourable.)

Saturn, still in Leo at mag. +1.0, will be rising at 2200hrs by the end of the month, and reaches its stationary position during mid-month.

Source: BAA Handbook 1978. All times are UT.

(Paul, do you really expect to have lunch that early on Boxing Day?)

(Good tip for taking the Mercurial check on Christmas morning - without relying on an alarm clock to go off or just you to get up simply for the alarm clock. Forget to put the Santa case - pillow, sack, or whatever, out for the offspring. They will assure you do get up if only you can get it from high enough on top of the wardrobe. The rest is simple - you won't sleep after that with their burbling, so you might just as well go out and view! If you've no such 'facility'; 'tune-in' to a neighbour... - RCA.)

You'll be up like
quicksilver !!

HAPPY CHRISTMAS

MARS



FROM OTHER JOURNALS - An orbiting junkyard is inevitable

NASA scientists at the Johnson Space Center have estimated that, due to the steady increase in satellite launchings, a belt of debris will encircle the Earth within 50 years, formed by collisions between satellites, and then between subsequent fragments, in much the same way as the asteroid belt is believed to have formed. The debris could quickly become so dense that new orbiting vehicles with a long life expectancy would have to avoid the 500 to 1200 km height range.

It seems that little can be done to halt the process (the scientists predict that the first major collision WILL occur in the next 10 to 20 years). Measures such as reducing the number of launches, re-entering and burning up spent vehicles, and design improvements to reduce the number of accidental break-ups (already 30 satellites have exploded or disintegrated) would merely slow down the inevitable formation of the debris belt, say the scientists.

(New Scientist)

Space Telescope Possibilities

With a space-borne telescope such as the 2.4-metre instrument proposed by NASA for launching in the early 1980s, it may be possible to search for planets in star systems up to 10 parsecs away by using the Moon as an occulting edge. The spacecraft's Earth orbit could be matched with that of the Moon, allowing the dark lunar limb to be aligned precisely to cover the star under investigation, leaving planets a fraction of a second of arc to one side of the limb fully visible.

A stationary Moon relative to the telescope could be maintained for two hours, whereas due to the perfect airless Moon limb, only 20 minutes would be required to detect a Jovian-sized planet, even though the planet would be 3×10^8 times fainter than its parent star. Repeated viewing of prospective stars over a number of years would cover all likely orbits of giant planets.

The telescope would also be able to record slow lunar occultations of virtually any object, with resolution of at least as low as 1/1000th of an arc-second, which would provide accurate structural details of stellar disks, binary systems, pulsars and quasars. Some sources believe that such a telescope would be one of the most productive and valuable scientific satellites ever orbited.

(New Scientist)

NEWS REVIEW

by S.G.H.

Space Processing - Steel executives in the U.S. heard the president of Rockwell's Aerospace Division lay down the potential in space processing to be started by the Shuttle. Besides acquainting them with the benefits of zero-G, he emphasized the 'exotic' metals which could be produced in space when the Shuttle becomes fully operational. (See New Scientist, 9th November 1978: 'Will space processing get into orbit?')

Pioneer Venus - The two Pioneer Venus craft passed critical tests, making them now ready for a Venus encounter. The timing and separation mechanisms were tested on the Multiprobe, the equipment which should allow three small probes to plummet towards Venus' atmosphere. The essential systems which will place the Orbiter in orbit around Venus have also been tested. 6 400 commands have been sent to the Orbiter, and 3 600 to the Multiprobe since their respective launches.

End of an Era - The USNS Vanguard, one of the ships designed to fill in gaps in the deep-space network, is being transferred to a new assignment. The ship supported the Apollo, Skylab and Apollo-Soyuz projects, totalling 12 years service. The Vanguard was essentially an ocean-borne tracking station, and will now be used for navigational and ocean survey work.

Seasat Hitch - Following the loss of communication from the new ocean monitoring satellite SEASAT-A on October 10th, NASA engineers are still trying to revive systems aboard the crippled craft. At Goddard spaceflight center, efforts are being continued to trace the fault by analyzing the data received from the satellite just before contact was lost. The problem is thought to be power failure in the batteries, and engineers

are waiting till December when solar panel alignment will allow 100% power to the batteries, which hopefully will overcome the fault.

Space Shuttle - The target date for the first Space Shuttle launch is now set for September 28th 1979. Measures have been taken to accelerate the installation of the thermal tiles, and to speed up assembly of the craft. Testing of the main engines is continuing, and between September 10th and October 12th last, they were fired for a total of 3 800 seconds, most of the time at full thrust level. Subsequent inspection proved the engine design to be reasonably sound. Another test firing of a Solid Rocket Booster engine was also successful. And for the first time, all parts of the Shuttle system have come together. Two SRBs, an external tank and an Orbiter underwent vertical vibration tests in Alabama.

The Shuttle's orbital manoeuvring system was tested for the second time at 6 000 lbs thrust (2 800 kg), the engine being fired 29 times for a total of 608 seconds. These tests on the manoeuvring system are carried out in what is called an altitude chamber, which roughly simulates the environment of space.

Nimbus G (7) - The Delta rocket that was assigned the job of launching Nimbus 7, was successfully fired from Cape Canaveral on October 24th, not, as mistakenly reported in the November OASI Journal, on September 18th. (The report was apparently due to an oversight on Simon's part, and Yours Truly, your Producer, thought this mistaken date was for another Nimbus-G, and didn't question Simon's news-script.) No date was given for the release of lithium over Scandinavia, but the barium was released from the delta stage over Alaska on October 28th. Project CAMEO, as it is named, is (or was? - RCA) an experiment designed to find out more about the behaviour of ions in the Earth's polar regions.

Naustar III - The U.S. Airforce navigation satellite, Naustar III was said to be in good condition following its launch from Vandenburg AFB. At the time of going to Press, the satellite should be in orbit and fully operational, and ready to play an integral part in accurate navigation together with the two other Naustars already up.

Solar Cells - Ten companies have been selected to begin contract negotiations to build more-efficient solar cells. The contract award is a joint venture between the U.S. Department of Energy and NASA. The aim is to produce solar cells by 1986 with a cost of below \$0.50 per watt installed. This would make solar energy competitive with other sources. (Currently, average cost of decent solar cells for electricity installations per peak watt is in the region of 100 times this. - RCA)

NASA-ESA Data Agreement - NASA and ESA have signed an agreement allowing European ground stations to receive and process data from the Seasat, Landsat and Nimbus-G satellites, and to use it in ESA-co-ordinated activities.



REVIEW - 'Atoms and Astronomy'

This publication is one of an educational series recently produced by NASA. Containing 30 pages inside a soft cover, the book has been written on a purely astronomical basis. It is divided into two sections, the first dealing with basic topics, the second with intermediate and advanced material. The basic topics section acquaints you with the fundamentals such as atomic structure and states of matter at high temperatures. It is very concise and clear, with spaciouly presented diagrams. Light and spectroscopy is studied with sub-reference to emission and absorption lines together with methods of spectroscopic analysis. The section dealing with stellar light emission deserves special mention because of its excellent illustrations and actual star spectra. In fact, 'line drawings' are expressly omitted.

The intermediate and advanced section continues the theme of light. It explains the equation $\lambda f = v$, as well as giving the meaning of 10^{-8} cm. The Quantum Theory is outlined, as are Kirchhoff's laws. Hydrogen is then discussed in detail, with emphasis

MEMBER'S ADVERT: @ FOR ALL CLOCK REPAIRS, B.I.G or small, ancient or modern, by competent craftsman Society member, 'phone [redacted] (evenings) for all inquiries.

applied to what are called Balmer lines. These lines occur in spectra, caused by the clumping of spectral lines toward the ultra-violet. It then goes on to link what has been learned earlier, and applies this to the stars. Nothing is left for the reader to work out, and a full glossary is also included.

Unfortunately, before you all rush to your catalogues, the publication will not be found on bookshelves in the U.K. To obtain it, and other publications in the series, the address to write to is: Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402 USA.

The price is £1.20 (60p) excluding postage etc, and for the money it is a good A to Z review of exactly what its title implies - Atoms and Astronomy. SGH

THE VENUS MULTIPROBE MISSION: Some more facts and figures on the second spacecraft of the Pioneer Venus Project, from N. Spooner of Wivenhoe, Essex.

The multiprobe vehicle is a cylindrical spin-stabilized craft consisting of a transporting vehicle, the "Bus", with an exterior array of solar panels, one large conical probe (situated at top centre), and three smaller conical probes placed symmetrically about it. Each probe has a payload of various scientific instruments.

The spacecraft was put into a 167-km Earth parking orbit by Atlas SLV-3D Centaur rocket on August 8th this year, and adopted a Venusian trajectory 23 minutes later. The craft was given a spin of 5 rpm, increased to 15 rpm three hours later. After contact with the Canberra ground station, velocity corrections of up to 12 m/s were transmitted to the forward antenna of the craft, 5 and 20 days after launch.

24 days before arrival at Venus (scheduled for December 9th), the main probe will be separated, and the craft spin increased to 48.5 rpm with a velocity correction of 5.1 m/s. This will provide a suitable trajectory for the three smaller probes, to be ejected four days later by the release of spring-loaded clamps. Two days after this, the remaining part of the craft, the transporting vehicle, will be decelerated so that it arrives 90 minutes after the probes have impacted. All the probes will transmit data simultaneously for a two-hour period on arrival at the Venusian atmosphere. The large probe will enter the atmosphere on the daylight side, using a parachute for an 18-minute period between altitudes of 67 and 46 km. The small probes will be aimed at widely different locations about 7 000 miles (11 000 km) apart, two on the dark side and one on the light side. Each small probe will take 59 minutes to reach the surface, at a velocity of 11.6 km/s, without parachutes. 30 minutes later, the transporting vehicle will burn up, at a height of 120 km, having transmitted data from its two main instruments. The probes are designed to withstand high temperatures, pressures and accelerations, but not impact. They should, however, provide information about the lower Venusian atmosphere and surface, which will add to theories about the Earth's origin.

Letters

Mr. T.M. Keys writes:

'Having followed with interest the recent discussions in the Journal regarding an information/letters feature, I would like to say that although it would be painfully slow to exchange news and views by this method, a letters page would make an ideal forum for members to contribute ideas and questions of a more practical, down to earth nature. Members such as myself, whose main interest lies in looking at new objects through a telescope or binoculars, could put forward any problems they have (e.g. in building telescopes, choosing a telescope to buy, setting it in line with the true celestial pole or trying to find objects without the aid of setting circles), or they could write in with suggestions or methods they have used to resolve such difficulties, tips on how best to keep and maintain a telescope, which maps they find most useful, how to construct a windbreak or otherwise keep warm on winter nights etc, etc. A letters page along these lines, together with a list of objects worth looking for with hints on how and when to find them (similar to the present summary at the beginning of the Journal) would be ideal.'

I must say that what Mr. Keys mentions is the true substance of astronomy possibly

for most members and prospective members, more of which could well be included in the Journal. Mr. Keys submitted the following article with his letter, about the handling of celestial objects.

ASTRO INDEX CARDS

In order to locate faint galaxies and the like with a telescope, I have recently been using a set of these so-called "Astro Index Cards". These cards give a map of the visible stars in the constellations around the object in question, including a key star a few degrees away from the object. This star is reproduced on a large-scale map of the immediate area around the object. Using this second map it is possible to "star-hop" (using a telescope) from the key star to the object. This second map shows considerably more detail than there is on, for example, Norton's Star Atlas, and is very useful once one has got used to the scale with which it is drawn. (This scale is unfortunately different for different maps.) The set of cards shows all the Messier objects, the only serious drawback being that they come from America. One set costs about £4.50. There is another set on the brighter NGC objects. They can be obtained through Bretmain, Ltd., 2 Station Road, Rayne, Essex.

LITERARY SERVICE TO MEMBERS

This service is being offered by Simon Harvey, who writes:

'As from this month, for an experimental period, I would like to offer members who are looking in certain literary or illustratory material, that which they require. I have a large collection of 'primary source' information waiting to be tapped. Any member requiring information on any aspect of space research can write to me at the address given below, and hopefully I should be able to assist. Small requests I can probably do free of charge (except for s.a.e.). If larger literary items are required, and I do not have spare copies available, I must obviously ask for reimbursement for photocopying costs. (Please note, this service would be absolutely non-profit making.) Whether I continue the service after the experimental period would depend on the response.

All requests and questions are invited, and further details will be sent on request. Please write to me at:

██████████, Needham Market, Suffolk.

Also, for any prospective society lecturers, I possess a set of official European Space Agency slides, should they be of assistance. The 20-slide set covers the history of ESA and its projects.

NOTABLE ASTRONOMICAL ANNIVERSARIES - EDWARD BARNARD

by Roy Gooding

December 16th is the 121st anniversary of the birth of Edward Barnard. He was born in Nashville, Tennessee, where he received a mediocre education only. Barnard became interested in photography, and for a few years made it his profession. From an early age Barnard was interested in astronomy, being a serious sky observer in his leisure time. In August 1877, the American Association for the Advancement of Science held a meeting in Nashville. Having recently come by a 5-inch refractor, he went along to the meeting to seek advice as to how best to use it. Barnard returned from the meeting having seen a Professor Newcomb who suggested that he should search for comets.

This was the beginning of Barnard's world fame as a comet discoverer. After about four years of searching he discovered his first comet on May 12th, 1881, near alpha Pegasi. This discovery was short-lived, as the object was visible for two nights only before being lost from view. There was, however, only a four-month gap until Barnard found his first comet that was to bring his name to prominence (1881 VI). The following years proved even more fruitful, his discovering 1882 III, 1884 II and six more during the next three years. Every comet discovered in 1891 was by Barnard.

During 1883 Barnard received a fellowship in astronomy at Vanderbilt University. After only a short period at the University he was given charge of their observatory. Later in the year, whilst observing an occultation of beta Capricorni he noticed that the star flickered instead of disappearing instantly. Barnard proposed that the star

could be a binary. This suspicion was confirmed by the Dearborn Observatory, Chicago, which housed a larger telescope than Barnard had. Also in the same year, he rediscovered the Gegenschein, which had first been reported in 1854, but attracted little attention.

After completing his University course, Barnard was offered, and accepted the post of assistant astronomer at the new Lick Observatory on Mount Hamilton, California. While at Lick Observatory he made three important discoveries in 1892. During the year there was a nova in Auriga. After studying the nova for some months he noticed that a patch of gaseous matter had appeared round the star. This was the first conclusive evidence that a nova was an exploding star. Barnard's second discovery of the year was the fifth satellite of Jupiter. The third discovery has remained in relative obscurity. During the 1892-93 period he noted craters and mountains on Mars. At the time he kept quiet about these observations, fearing that he would be disbelieved. Barnard's Mars observations were made known widely only as recently as 1966.

In 1895 Barnard moved, and began working at the Yerkes Observatory where he had the use of the 40-inch refractor. This move necessitated him taking up the post of Professor of Astronomy at Chicago University. At Yerkes, Barnard continued his programme of photographing the Milky Way. Along with Wolf, he was one of the first to realize that the dark patches in the Milky Way were in fact clouds of gas and dust that obscured the stars behind. In 1917, the Carnegie Institute of Washington published a photographic atlas of selected Milky Way regions based on Barnard's photographs.

During 1916 Barnard discovered a star that had a very fast proper motion in Ophiuchus. This star moves about $1/20^\circ$ in a period of only 18 years. This object has become generally known as Barnard's Star, holding the record for the greatest proper motion of any known star.

Barnard lived to the age of 65, dying in February, 1923.

I have heard a soft rumour that one of our more ballistic members may be about to undergo a meteoric rise to fame as a result of probity around the roots of a tree. Anon.

A LONG SHOT FOR PLUTO (AND ITS POSSIBLE PAL?)

by Roy Adams

The BAA Handbook for 1979 at Page 76 shows a map of the path that Pluto is expected to follow between March 10th and June 25th 1979 when Pluto is in opposition. In one instance, the path line virtually cuts through the centre of a 14th mag. star position dot, at RA $13^h29^m25^s$, Dec $+90^\circ41'.5$ approx, coinciding with the early morning of 27th April 1979 (according to rough calculations and examination of the map, sometime about 0200 to 0400). The map I have taken the liberty of reproducing here on the next page to indicate the possibilities for research.

Possibly many people have thought the same thing, and indeed, it has, I believe, already been done with a minor planet - to use an occultation to better knowledge about the diameter of Pluto, and perhaps even find that there is an attendant very close to Pluto. The position of the star particularly in question as on the map made me think that there is a possibility of observing two (or more) occultations from well-chosen, widely distributed sites on the Earth (or from airborne or orbiting observatory stations) so that a time map of at least a few observations of pairs of occultations would dot out the disk of Pluto, and if any attendant Plutonian moon was proud of the main Plutonian disk, another pair of occultations, disappearance and reappearance, may turn up. The chances of the latter may well be slight, though, as a lot of observing sites would have to be manned and successful in patterning what would expectedly be a smaller moon body. If the map and my rough estimates are correct, the Moon (of Earth) wont be glaring out the event in the UK, Europe, Africa and parts of America well-enough disposed, as the Moon doesn't rise in the UK until about 0530 or later.

I can not say what the map error is, for the representation of the expected path of Pluto through the star locality mentioned, nor can I say what departure will be

LATE NEWS: It has been found that the Orwell 10-inch needs re-balancing, and the Drive will not be reconnected until this has been done as drive strain is unequal for different paintings. It should take long.

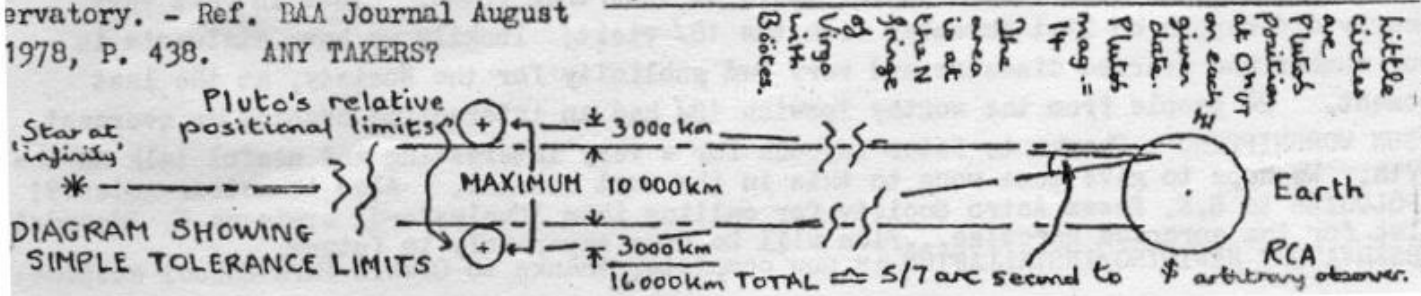
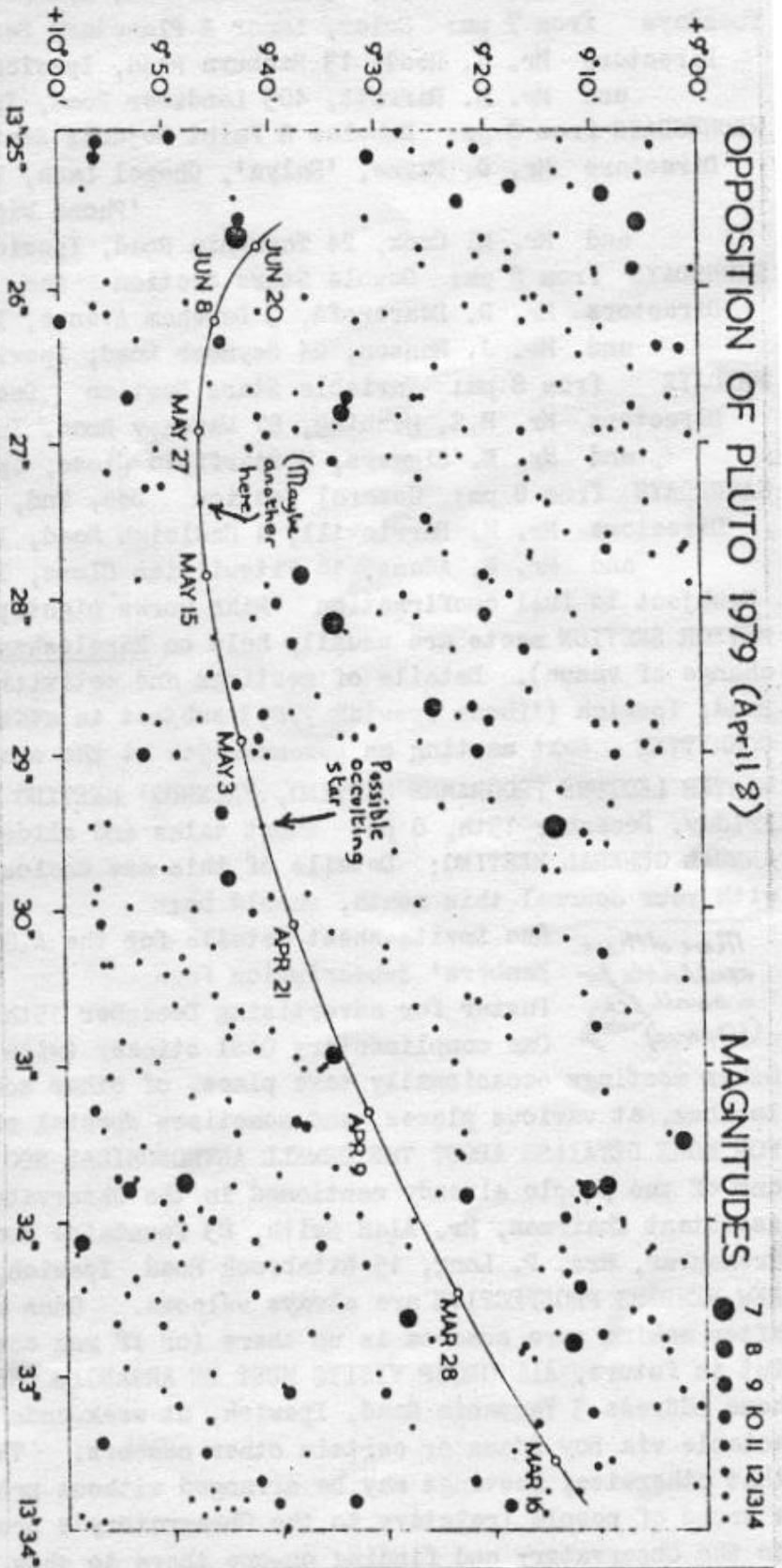
evident from the findi... the actual path Pluto describes. But the scale in dec. on the map is about 1 mm per 1' arc, and it seemed reasonable to hope that the orbit line was within 1" (1 arc second) of the 'point' source star mentioned. This may be expecting a bit too much from mapping, prediction and interpretation, but it would I feel be bad to miss an opportunity for want of trying or at least, more discerning appraisal.

To see what distance is involved at Pluto's distance from Earth or approximately from the Sun, by the subtension at the latter, of 1 arc second, the possible tolerance here we may hope for, I made a simple calculation: At 5 000 000 000 km radius, the circumference is about 30 000 000 000 km. = 360°.

- 10 arc = 80 000 000 km,
- 1' arc = 1 300 000 km,
- 1" arc = 22 000 km.

The diameter of Pluto is nominally about 6 000 km. The passage of Pluto over a star therefore would need for any occultation to occur, to be within 1/7 arc second of the diametral chord coincidence of the mutual Pluto/star passage to be of any use to an observer confined to one site say in England. But an additional allowance comes from having most of the Earth's nearly 12 000 km diameter (roughly in latitude) to choose from and indeed to use as widely as possible. Thus, even for just ground-based observing maybe 3/7 arc second N and minimum (less S. America) nearly 2/7 arc second gives 5/7 second of arc which is nearly 1 arc second and puts the chances at about 25% for one site seeing the event should the actual deviation and inaccuracy tolerance be the order of 1 arc second.

The technique has been used on Pallas with the Kuiper Airborne Observatory. - Ref. BAA Journal August 1978, P. 438. ANY TAKERS?



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

TUESDAYS from 7 pm: Planetary Section December 12th

Directors Mr. J. Deans, [redacted], Capel St. Mary 'Phone Gt. Wenham [redacted]
and Mr. J. Hood, [redacted], Ipswich

Tuesdays from 7 pm: Solar, Lunar & Planetary Section Dec. 5th, 19th; Jan. 2nd

Directors Mr. J. Hood, [redacted], Ipswich
and Mr. M. Barritt, [redacted], Ipswich

WEDNESDAYS from 8 pm: Nebulae & Faint Objects Section Dec. 6th, 13th, 20th; Jan. 3rd

Directors Mr. D. Payne, [redacted], Wickham Market, Suffolk and
'Phone Wickham Market [redacted] maybe
and Mr. M. Cook, [redacted], Ipswich 'Phone Ipswich [redacted] Dec. 27th

THURSDAYS from 8 pm: Double Stars Section Dec. 7th, 21st; Jan. 4th

Directors Mr. D. Bearcroft, [redacted], Ipswich 'Phone Ipswich [redacted]
and Mr. J. Ranson, [redacted], Ipswich 'Phone Ipswich [redacted]

FRIDAYS from 8 pm: Variable Stars Section Dec. 8th, 22nd; Jan. 5th

Directors Mr. R.S. Manning, [redacted], Ipswich 'Phone Ipswich [redacted]
and Mr. M. Siggers, [redacted], Ipswich

SATURDAYS from 8 pm: General Section Dec. 2nd, 30th*

Directors Mr. M. Barriskill, [redacted], Ipswich 'Phone Ipswich [redacted]
and Mr. R. Adams, [redacted], Ipswich 'Phone Ipswich [redacted]

*subject to full confirmation *Mike works nights; 'phone times somewhat restricted
METEOR SECTION meets are usually held on Martlesham Heath outside Ipswich (note recent change of venue). Details of meetings and activities from Mr. D. Barnard, [redacted], Ipswich ('Phone Ipswich [redacted] subject to availability) or from Mike Barriskill.
COMMITTEE - Next meeting on December 9th at the same place as before.

WINTER LECTURE PROGRAMME MEETING, FRIENDS' MEETING HOUSE, 39 FONNEREAU ROAD, IPSWICH:
Friday, December 15th, 8 pm: Short talks and slides by OASI members.

ANNUAL GENERAL MEETING: Details of this are enclosed with a separate set of items - with your Journal this month, should be:

- More of these available for a small fee (10 pence) → One invite-sheet/details for the A.G.M. & Election Form 1979 *Cheap at the price for the very latest in silhouettes!*
- Members' Subscription form
- Poster for advertizing December 15th's meet
- One complimentary OASI sticker (with best wishes for a sunny Christmas)

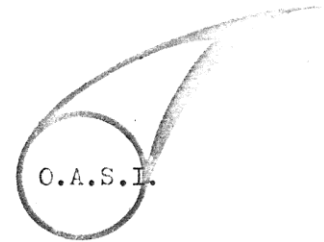
Other meetings occasionally take place, of other societies and clubs to us, and of us to them, at various places, and sometimes special observing projects are organized.

FOR MORE DETAILS ABOUT THE ORWELL ASTRONOMICAL SOCIETY and activities, please contact any of the people already mentioned in the Observatory Programme, Editor Paul Burt, or Assistant Chairman, Mr. Alan Smith, [redacted], Ipswich, 'Phone Ipswich [redacted], or Treasurer, Mrs. P. Long, [redacted], Ipswich, 'Phone Ipswich [redacted].

NEW MEMBERS PROSPECTIVE are always welcome. Ones and twos can be shown the Observatory after making sure someone is up there (or if you come on spec. you may be disappointed). But in future, ALL GROUP VISITS MUST BE ARRANGED ONLY THROUGH CHAIRMAN ROY CHEESMAN, home address [redacted], Ipswich, at week-ends only, but for urgent matters contactable via Roy Adams or certain other members. The reason for this stipulation is that otherwise, meetings may be arranged without proper consultation and could lead to a crowd of people (relative to the Observatory's proportions, though it is large) going to the Observatory and finding no-one there to show them round. This in fact very nearly did happen on 21st November with the 18/ visit: luckily we have stalwarts in our number who averted disaster and very bad publicity for the Society, at the last moment. 26 people from the worthy Ipswich 18/ had an interesting evening tho overcast.

'SUN WORSHIPPING': Thanks to Peter Laycock for a very interesting and useful talk on the 17th. We hope to give some room to this in the next Journal. Also to meteor notes??!
APOLOGIES to S.E. Essex Astro Society for calling them 'Chelmsford' - redears, N. Edmonds!
Also for the auroraed Hercules...Pics will be done separately in future.
OBSERVATORY REWIRING/INSTALLATION is now complete, thanks to Orwell Park School auspices.

Orwell
Astronomical
Society (Ipswich)



PRESENTS

An evening of illustrated talks given by our Society Members

1. The History of Orwell Park Observatory
given by Charles Radley

2. Cosmology
given by David Payne

3. 'Forty - Perhaps?'
given by Colin Munford

- - - - Coffee break - - - -

4. A demonstration of a home made Planetarium
demonstrated by Royston Cheesman

at

The Friends Meeting House,
Fonnereau Road,
IPSWICH

on

FRIDAY 15th DECEMBER, 1978 at 8p.m.

----- ADMISSION FREE ----- EVERYBODY WELCOME -----

further details from:-

Mr. M. Barriskill,

Hon. Sec. Orwell Astro. Soc.

4 Hadleigh Road, Ipswich

Phone Ipswich 53388