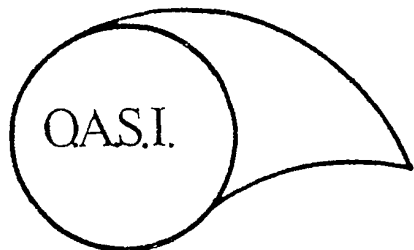


# ORWELL ASTRONOMICAL SOCIETY, IPSWICH.

## SOCIETY NEWS



### 1 1993 ANNUAL GENERAL MEETING

The 1993 Annual General Meeting will be held on Saturday 16th January 1993, in the class room behind the school's library. The meeting will begin at 8.00 pm. All members invited to attend.

### 2 1993 ANNUAL SUBSCRIPTIONS

The annual subscriptions are due on January 1st 1993. The rates for the new year will remain at the 1992 levels.

Rates for 1993-

JUNIOR & OAP	£7.50	(under 18 or in full time education)
ADULT	£10.50	
FAMILY	£12.00	

Cheques & P.O.'s made payable to the ORWELL ASTRONOMICAL SOCIETY (IPSWICH) together with this form to Membership Secretary:-

Mr. D. Barnard  
 [Redacted]  
 Ipswich  
 IP3 BRN

## NIGHT SKY

All times GMT

SUN

Rises approximately at from 0.800 to 08.10  
 Sets approximately at 15.50

MOON



2nd



10th



16th



24th

MERCURY Will be visible in the morning sky this month. It will be rising about 2 hours before the sun in mid month. It will reach greatest western elongation on the 9th of the month. Mag. -0.5

VENUS Venus is becoming well placed in the evening sky this month. It will be setting about 4 hours after the sun by the end of the month. Mag. -4.1

MARS Mars will be above the horizon all night. Mag. -1.4

JUPITER Jupiter will be rising near midnight by the end of the month.

SATURN Saturn will be setting by 19.00 at the end of the month. It is still low down the southern part of the sky. Mag. 0.4

URANUS Uranus will be setting soon after saturn. It is low down in Sagittarius. Mag 5.6.

NEPTUNE Neptune is near to Uranus, in the sky. A little to north east. Mag. 7.9. It will be too low to observe this month

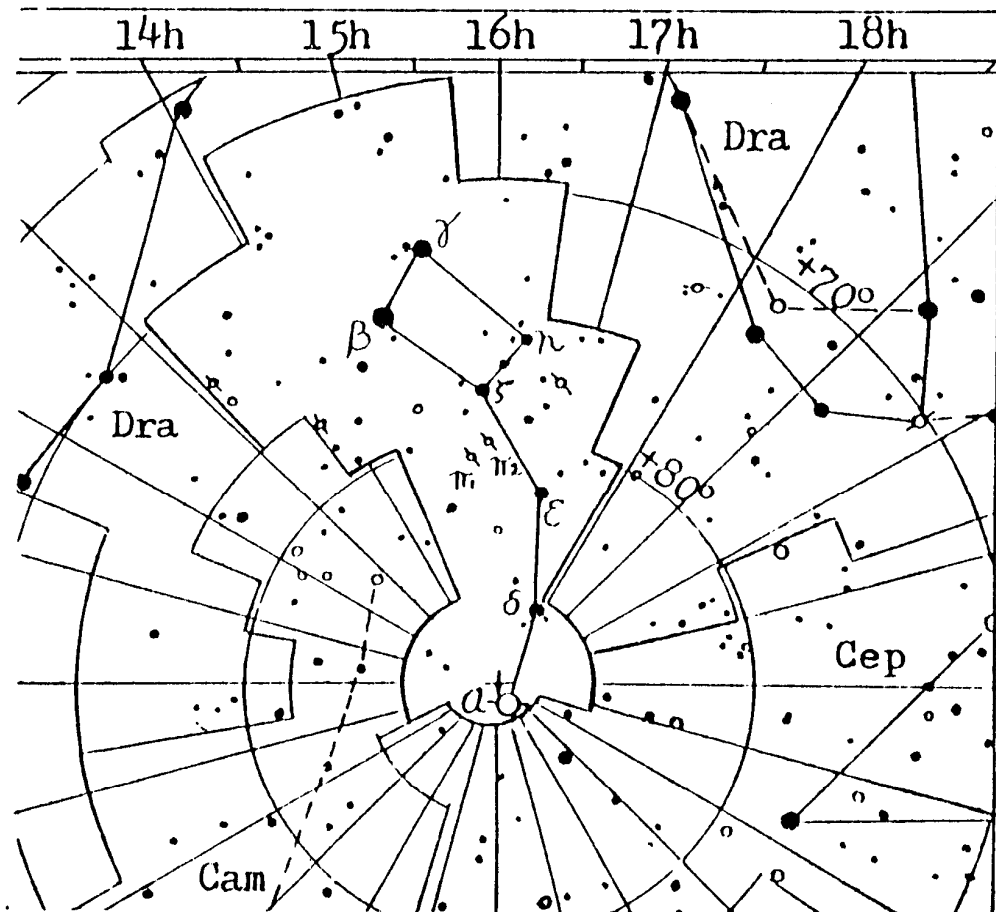
There is a Total Eclipse of the Moon on December 9/10th. Mid-eclipse is at 23.44

R.Gooding

## URSA MINOR

Ursa Minors telescopic interest is limited to the Cepheid-double Polaris the north pole star seen as a bright object in the sky but in reality it is only ranked at about 49th in the table of bright stars.

## URSA MINOR



### Double Stars

Pos.	1	m 2	D	d"	P A	No.
014889	2.1	-9.0	o	18.3	217	$\alpha$
130373	6.5	-8.5	b	1.1	260	B799
4077	6.7	-10.	d	26.1	279	h2682
153280	6.4	-7.2	b	31.0	81	$\pi_1$
4280	7.4	-8.1	b	0.6	35	$\pi_2$
164577	6.0	-10.	c	2.9	189	

$\alpha$  POLARIS, the pole star, will be closest to the pole in the year 2100, at a distance of 26 minutes. Polaris is Yellowish with a little blue-white companion.  
 $\pi$ . Both stars are yellow.

# Some Deep Sky Objects in Perseus

David Payne

The bright constellation Perseus is high in the sky near the zenith during the winter months making it a favourable time to observe some of the interesting objects within its boundaries. Perseus contains two Messier objects (M34 and M76) the conspicuous double cluster the "Sword Handle" and the famous eclipsing binary star "Algol" the "Demon Star" (see chart below for locations). All these objects are well worth observing using small telescope or binoculars (although M76 reputedly the faintest of the Messier objects requires at least a three inch and good dark skies to be seen).

Algol is the prototype eclipsing binary with a 1.3 magnitude change in brightness, 2.1 at maximum and falling to 3.4 at minimum. The period is 68hrs 48m 56s with the main eclipse period lasting about 10 hours. The variability of Algol was probably known in medieval times although the first positive record appears to be by an Italian astronomer Geminiano Montanari of Bologna around 1667. The first suggestion that the variability could be caused by two stars of differing brightness eclipsing one another was made by John Goodricke in 1782. This theory was confirmed 107 years later in 1889 by H C Vogel using spectroscopic analysis.

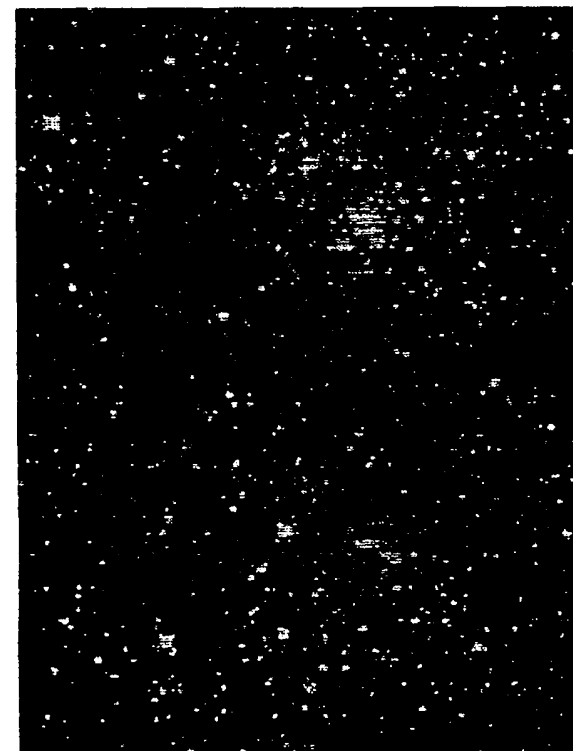
It is now known that Algol consists of at least three stars and a possible fourth. The eclipsing components 'A' and 'B' are orbiting each other at a distance of about 6.5 million miles. The third component 'C' circles the pair in an inclined orbit (and hence has no effect on the variability) at a distance of about 50 million miles with a period about 1.862 years.

The double cluster NGC 869 and NGC 884 or "Sword Handle" is an excellent object for small telescopes. At least a 1 degree field of view is required to see both clusters fully and together, this means the use of low power wide field eyepieces. It can be readily seen on good nights with out optical aid as a faint patch lying midway between the main part of Perseus and the 'W' of Cassiopeia. The clusters are easily resolved in binoculars while a telescope with low power shows a splendid swarm of stars filling

the field.

The "Sword Handle" clusters containing some 700 stars between them. The brightest members are all super giants and have magnitudes in the 6 to 8 region. The brightness of these stars have luminosities at least 60,000 times that of the Sun out shining even Rigel.

The distance to the cluster is not known with great precision but is estimated to be 7000 to 8000 light years away. It is sobering to realise that a star, of brightness equal to the Sun, lying in this cluster would be fainter than 18th magnitude. The diameter of each cluster is about 70 light years and they are separated by about 1000 light years NGC869 being the closer of the pair (NGC869 is the north westerly cluster). Both clusters appear to be very young at 11.5 million years for NGC 884 and only 6.4 million years for NGC 869.



Perseus Double Cluster  
the "Sword Handle"

M34 is a bright open cluster, not as spectacular as the "Sword Handle" but worth looking for. Located about 5 degrees WNW of Algol, it is probably most easy to find using binoculars. This cluster has an integrated magnitude of 6 and can under good dark skies be glimpsed without optical aid. It consists of about 80 stars from magnitude 8 and fainter. There is a bright central knot of stars lying within a diameter of 9', which is visually the most

impressive region of the cluster and can be resolved with binoculars. The outer lying members of the cluster extend the total diameter to about 20'.

The distance is estimated to be about 1450 light years giving a diameter of about 4 light years for the central knot of brighter stars and about 8.5 light years for the overall diameter.

The other Messier object in Perseus is the faint planetary nebula M76 sometimes known as the "Barbell" nebula due to its strange elongated and irregular shape. It is often quoted as the faintest of the Messier objects with an integrated magnitude of 11.

Although it is one of the fainter objects in the catalogue it is not to difficult to find in a 3 inch or greater telescope with clear dark skies. With a ten inch telescope the elongated shape and also some of the irregular brightness, that can make the nebular appear to be in two sections, can be discerned. The visible portion is about 2'x1' with a darker region in the centre. which can give the "Barbell" or two section appearance.



Open Cluster M34

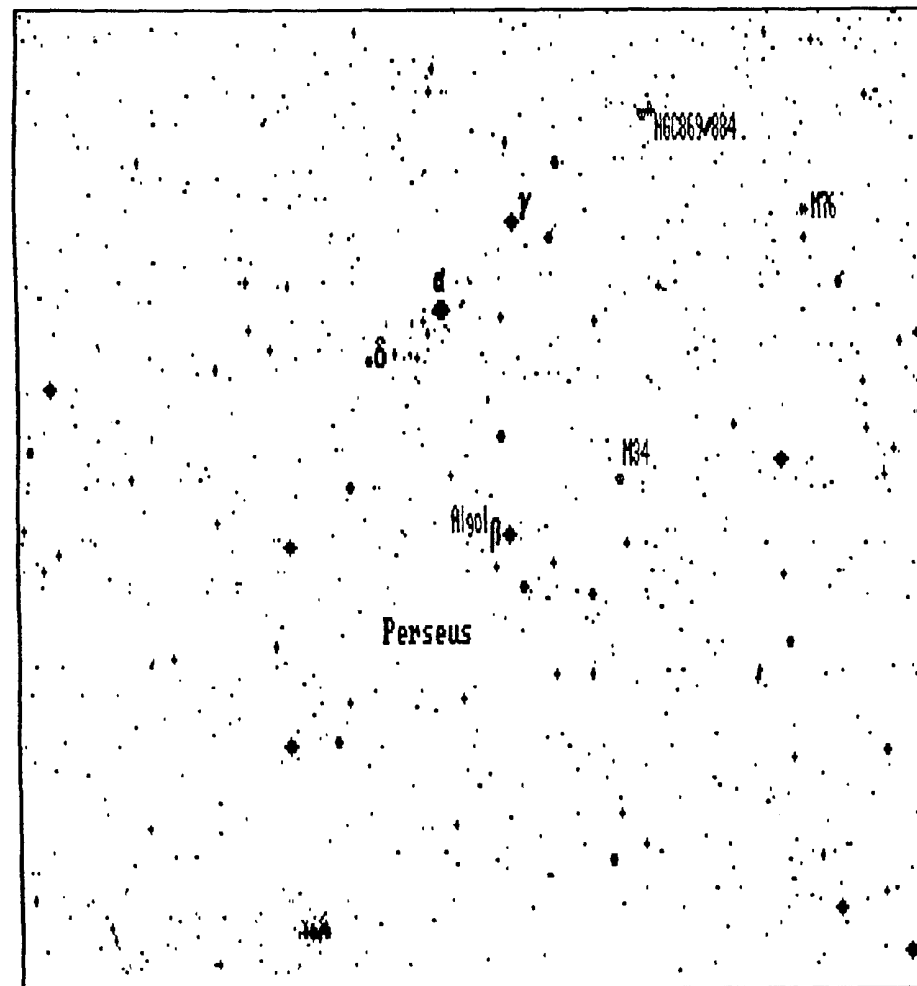


Planetary Nebula M76

As with all planetary nebula, the distance is not well determined, and estimates range from about 1750 light years to as great as 8000 light years. If we take 4500 light years as an average of the various distances that have been estimated, the diameter across

the long axis would be about 2.6 light years.

With the dark winter nights now well upon us search out the deep sky objects lying in Perseus. The constellation lies in a rich portion of the Milky Way and there are many other clusters and star fields in addition to the ones mentioned above that are worth looking for with small or moderate telescopes. Good hunting!



Constellation Perseus

# THE GRAZE OF ZC1031

by James Appleton

## A WASTED JOURNEY!

On the night of 17th October, at 23:45 UT, the magnitude 7.0 star ZC1031 was grazed by the Moon. Although the graze was a bright side approach, overall it appeared to be worth observing. The track of the graze was predicted with Meeus's software, and an observing location was selected close to Cockley Cley (near Swaffham, Norfolk).

By 10pm, Mike Harlow had decoded a weather satellite image which showed a large band of cloud moving slowly south towards East Anglia. It was not possible to estimate whether the cloud would arrive before the graze occurred. Four observers (Alan Smith, Martin Cook, Roy Gooding and James Appleton) decided to take a chance on the weather and drive to the chosen observing site.

The journey to Cockley Cley began with a transparent sky, but as we approached the observing site, cloud cover increased until at times the Moon was completely obscured. At 11:30pm, with over an hour to wait until the graze took place, the expedition was called off and the observers returned to Ipswich.

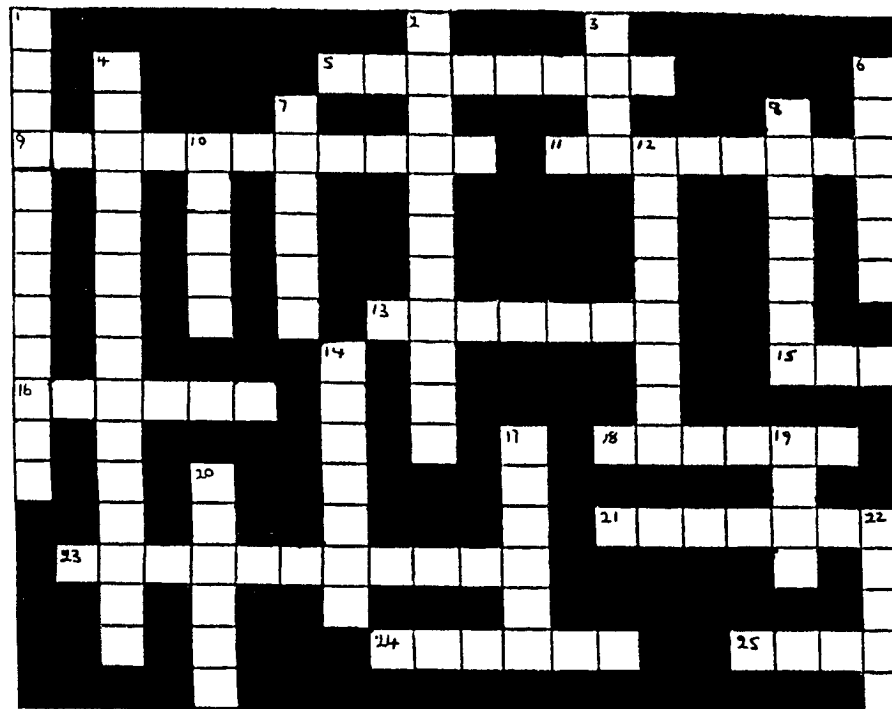
By the time the observers had returned to Ipswich, the sky had become highly transparent once more! Alan and James both independently observed ZC1031 being narrowly missed by the Moon as viewed from Ipswich. Alan found it an easy observation, but James had difficulty with glare from the Moon.

## OUTLOOK FOR THE NEXT GRAZE

The next graze of a reasonably bright star visible from East Anglia occurs on the night of 12th December. (There are, in fact, two grazes that night, but only one concerns a bright star.)

The star, ZC1246, is magnitude 6.6, and hence is slightly brighter than ZC1031. However, the illuminated fraction of the Moon's disc is greater (87% compared with 63%) and the cusp angle is worse (7.0° bright side compared with 0.7° bright side). Overall therefore, observation of the graze of ZC1246 may be more difficult than that of ZC1031.

Plots of the track of ZC1246 will be made available nearer to the date of the graze. A decision on whether to mount a field trip to observe the graze will also be made closer to the date of occurrence.



- | <u>Clues</u>  |   |
|---|---|
| <u>Across</u>   | <u>Down</u>   |
| 5/ Largest Crater on Phobos                                     | 1/ Hotspot on Mercury                                     |
| 9/ Mars Largest Volcano   | 2/ Venusian Valley  |
| 11/ Prominent Crater on Mimas                                   | 3/ Ios Largest Volcano                                    |
| 13/ Mountainous Region on Venus                                 | 4/ Martian Canyon   |
| 15/ Martian Day   | 6/ Volcanic Gas   |
| 16/ Dog Star  | 7/ Venusian Landmass                                      |
| 18/ Brownish Substance meaning Muddy found in Titans Atmosphere | 8/ Huge Volcanic area on Mars                             |
| 21/ Crystalline or Glassy type of Rock                          | 10/ Dark Floored Lunar Crater                             |
| 23/ Site of the first manned Lunar Landing                      | 12/ Lunar Soil  |
| 24/ Fine grained  | 14/ Type of Sedimentary Rock                              |
| 25/ Our Satellite   | 17/ Alternative to 13 Across                              |
|   | 19/ Earths Core is made of this                           |
|   | 20/ Region of hot dense rock beneath the the Earths crust |
|   | 22/ Common term for broken rock                           |

CROSSWORD

By J. WALSH

**C) ★ Crew Neck Sweatshirt - 100% Acrylic**

£8.95 (+ 1.57 vat)

Good quality sweatshirt made in our own factory. First class washability and wearability.

Colours: Navy, Black, Maroon, Grey, Sky Blue, Bottle Green, White, Red, Royal.

Sizes: Childs 26/28, 30/32 - Less 40p - NO VAT  
Adults S(34-36), M(38-40), L(42-44), XL(46-48)



**D) ★ Fleecy lined "Top of the Range" Sweatshirt**

£9.45 (+ 1.65 vat)

Crew Neck top quality heavy fleece sweatshirt, with rib knit collar, cuffs and waist.

Colours: White, Black, Navy, Royal, Red, Grey, Maroon.  
(Other colours may be available - please ask)

Sizes: Childs 26/28, 30, 32 - Less 40p - NO VAT  
Adults S(34), M(36-38), L(40-42), XL(44-46), XXL(48)  
XXL £1.00 extra



**E) ★ Lambswool V-Neck Sweater - Standard Quality**

£14.75 (+ 2.58 vat)

Supersoft fully fashioned pure wool sweaters. Best seller for many years. Delicately shaded, styled for comfort and a guaranteed winner. Hand wash.

Colours: Navy, Black, Red, Bottle Green, Maroon, Royal, Sky, Silver

Sizes: S(34), M(38-40), L(42), XL(44), XXL(46)  
XXL £1.00 extra STOP PRESS: Please check stocks before ordering. Subject to availability.



**A) ★ Acrylic V-Neck Sweater**

£10.45 (+ 1.83 vat)

A superior acrylic, raglan sleeved sweater. Machine washable. Made in England to our specification. Fashion and quality at an attractive price.

Colours: Navy, Black, Sky Blue, Royal, White, Bottle Green, Silver Grey, Maroon, Red (Jade, Lemon and Mint subject to availability)

Sizes: Childs 26/28, 30/32  
Adults S(34-36), M(38-40), L(42), XL(44), XXL(46-48)

Childrens less 40p - NO VAT  
XXL £1.25 extra



**B) ★ Sports Shirt/Polo Shirt - Fred Perry Style**

£9.95 (+ 1.74 vat)

Soft collar, short sleeve with three button neck. Ideal for sports or leisure wear.

Colours: White, Black, Red, Royal Blue, Yellow, Sky, Navy, Jade, Bottle Green (Other shades may be available - please ask)

Sizes: M,L,XL (XXL may be available £1.50 extra)  
(Childs may be available - please ask)



Orders are now being taken for sweatshirts, sweaters and sports/polo shirts with O.A.S.I. embroidered logo. Prices are as listed + vat + postage which is less the more that are ordered. Please contact P Richards. Address & phone no on back page.

**PROGRAMME FOR**

**DECEMBER-1992**

DAYS & DATES	DIRECTORS	SECTION & ADDRESSES	PHONE INC. STD CODE
<b>Mondays</b>	<b>from 7.30pm</b>	<b>GENERAL OBSERVATION SECTION</b>	
7,14,21	Mr R Newman Mr J King	[redacted], Felixstowe, IP11 9DY [redacted], Felixstowe, IP11 9LQ	[redacted]
<b>Tuesdays</b>	<b>form 7.30pm</b>	<b>GENERAL OBSERVATION SECTION</b>	
1,8,15,22,29	Mr R Newman Mr J King	(Address above.) (Address above.)	(Number above.) (Number above.)
<b>Wednesdays</b>	<b>from 8.00pm</b>	<b>NEBULA &amp; FAINT OBJECTS SECTION</b>	
2,9,16,23,30	Mr M Cook Mr D Payne	[redacted], Ipswich, IP4 5PZ [redacted], Wickham Market, IP13 0SD	[redacted]
<b>Thursdays</b>	<b>from 7.30pm</b>	<b>OBSERVATORY VISITS FROM OUTSIDE GROUPS</b>	
3,10,17,31	Mr P Richards Mr G Marriott	[redacted], Nacton, Ipswich, IP10 0HS [redacted], Ipswich, IP4 4JB	[redacted]
<b>Fridays</b>	<b>from 7.30pm (may be postponed to Saturday)</b>	<b>PLANETARY &amp; LUNAR SECTION</b>	
4,11,18	Mr P Richards Mr R A Lobbett Mr G Marriott	(Address above.) [redacted] Felixstowe, IP11 8UJ (Address above.)	(Number above.) [redacted] (Number above.)

All members are welcome to come but, on nights other than Wednesdays please check with directors that the observatory will be open. Directors will also be able to tell you if a group visit is taking place. All of the sections observe anything of interest but the title of each section suggests a popular subject.

Lectures and other events: IPSWICH & DISTRICT NATURAL HISTORY SOCIETY.  
Saturday December 12th 7.30 pm at the Odd Fellows Hall 37 High St Ipswich, a talk by P. Richards entitled "The Soiar Eclipse," everybody welcome.

**1992 COMMITTEE**

			Home Phone:	Work Phone:
CHAIRMAN	D Payne	(Address above)	[redacted]	[redacted]
VICE CHAIRMAN & MEMBERSHIP SECRETARY	D Barnard	[redacted], Ipswich, IP3 8RN	[redacted]	[redacted]
SECRETARY	R Gooding	[redacted], Ipswich, IP1 6AE	[redacted]	[redacted]
TREASURER	M Nicholls	[redacted], Capel St Mary, Ipswich, IP9 2EX	[redacted]	[redacted]
MAINTENANCE CO-ORD	M Cook	(Address above)	[redacted]	[redacted]
JOURNAL CO-ORDINATOR	E Sims	[redacted], Ipswich, IP1 4HA	[redacted]	[redacted]
PUBLICITY & VISIT CO-ORD	P Richards	(Address above)	[redacted]	[redacted]
EQUIPMENT CURATOR	J King	(Address above)	[redacted]	[redacted]
SPECIAL EVENTS CO-ORD	A Smith	[redacted], Ipswich, IP4 5RZ	[redacted]	[redacted]