Sept 18-19 Sept 19.0 Visual extra focal estimate of magnitude 2" finder

Comet equals BD 36°2715 (mag 7.9)

" brighter than BD 36°2713 (mag 8.3) ∴ Comet = mag 7.9

Transp 6/10 - no cloud.

Sept. 19-20 Sept 20.0 Visual extra focal estimate of mag. 2" finder.

Comet cons. fainter than BD 36°2722 (7.3)

Sl. fainter than BD 36°2715 (7.9) & slightly brighter than BD36°2713 (8.3)

Cons. brighter than BD 36°2717 (8.6) & BD 35°2800 (8.9)

Transparency 4/10 - passing cloud + ∴ Comet = mag. 8.1

Sept 23-24 Sept 23.9 Visual extra focal estimate of mag. 2" binoculars.

Comet ? < BD 35°2798 (7.8) K star

" slightly brighter or equal to BD 34°2759 (7.8)

" brighter than BD 34°2758 (8.2) & BD 34°2751 (8.5)

" cons. brighter than BD 34°2764 (8.5) ∴ Comet = mag 7.8

Transp 5/10 - no cloud.

(Comet fairly easy in binoculars)

Sept 18-19. Sept 18·9 C/Honda. Transparency good 6/10. Exp. 30$^{min.}$ Zenith 700
L.S.T. $20^h 9^m.5 - 20^h 39^m.5$. Moving web: P.A. 342°.0 ↓; 5 mins steps = 6″.05
Total trail = 36″.3. Temp = 55°; F = 3:10. (Plate a)

cont) Sept 19·0 C/Honda Transparency good 6/10. Exp = 30^{min} Kod IIa-O
L.S.T. $22^h 6^m.5 - 22^h 36^m.5$ Moving web: PA 342°.0 ↓; 5 min. steps = 6″.05
Total trail = 36″.3. Temp = 50°–47°; F: 3:10 (Plate b)

Both Plates (a & b): Comet α $16^h 14^m.2$, + 36° 5′ – comet near plate centre.

N.B. Both plates – Zenith 700 and Kodak IIa-O had identical exposures. Sky was equally transparent – though altitude was considerably less for the Kodak plate: but as Transparency was v. good 6/10 I doubt if this could have made more than 0.2 mags difference. In spite of this the Zenith plate showed about 0.5 mags fainter & greater extension of comet. It seems therefore that IIa-O is no better than Zenith 700 & probably a bit slower. It is certainly slightly more grainey.

Exposure 1. Zenith 700 shows strong comet image. The coma as before is oval in about P.A. 20°-30° — 200°-210°. Overall diameter is 2′.5 × 3′.0 – distinct brighter centre about 1′ × 1⅓′. Faint diffuse tail about 7′ long in P.A. 90°. Exposure 2 (IIa-O) similar though all dimensions proportionately less.

Was away in Truro Cornwall with Lindleys from Sept 24 – Oct 6. (during time of moon). About Sept 25 heard report from Lick that Elizabeth Roemer had split nucleus of Honda into 2 equal parts – separation 5″, PA 300° on Sept. 21.

45 mins Exp. On more detailed exam: The coma is much more diffuse & sharply condensed centrally than before. Definite overall diameter is 2'.5, but by averted vision one sees outer halo to at least 6' diameter. On other hand central bright part is only 0'.5 diameter. The coma is now definitely round but drawn out in very vague tail in PA 80°
Four spines are present: PA 70° is strongest, then PA 110°; PA 290° is fainter & is shorter 30" long; PA 250° same as 290° but more diffuse. Spines in PA 70° & 110° are about 45" long. The elongation of central condensation is only suspected.

1955.

Oct 8-9 C/Honda 3 exposures (2 plates) Transp 3/10 (prov) Zenith 700.
I thought it possible that the nucleus by now might have separated sufficiently to be resolved in my camera: so I tried graduated exposures: 45 mins on one plate, and 11 mins & 5 mins. on a second plate.

Exposure 1. 45 mins LST $20^h 21^m - 21^h 6^m$. Moving rate: 11".28 per 20 minutes, in 10 minute steps. PA 139°.7 (49°45' ↙).
Comet near plate centre: α $16^h 27^m.4$ + 30° 26'

Exposure 2 & 3 Both on same plate: Exp 2: 11 mins; LST $21^h 19^m - 21^h 30^m$.
Exposure 3: 5 mins: LST $21^h 33^m - 21^h 38^m$.
Drive & position of comet as in Exposure 1.

Visual observation 2" finder: Comet at limit – no time for careful estimate – roughly estimated ± 10.0 mag.

45 min exposure shows coma round not oval as before. There is a broadish spine in coma 45" long in PA 70°. Overall diameter of coma = 2'.5 Suggestion of faint diffuse tail PA 90°. Three thin spines PA 110°, 290°, & 250°
?? Central condensation suspected elongated in PA 90°-270°
10 minute exposure: central condensation? elongated 90°-270°, 30" long.
5 minute exposure: same as 10 minute exposure but less certain.

The plates would be compatible with a double central condensation in PA 90°-270° about 15" separation – giving an elongated bar 30" long.
N.B. Further examination of the 3 images makes me doubtful of reality of elongation.

N ↑

30 min exposure Oct 9.8

Cont. from opposite page.

Exposure 1. On this plate one is reasonably certain that the photographic abberrations are real & represent a double central condensation: 15" separation in PA 290°-300° — 110°-120° with the smaller comes in PA 110-120 about 1 mag. fainter. The shaw in PA 70 is now about 1'.5 long; one still sees more faintly a short shaw in PA 100° & 280° — about 30" long — which may be same as those of 110° & 290° last night. The sector between the shaws of 70° & 100° is filled in with faint light — presumably the tail.

The coma is now much smaller & these two short exposures show no coma or tail extension — they were primarily meant to study of the central condensation.

Exposure 2 — like exposures on central condensation of previous nights — show nothing definite: only a suspected elongation. The matter is on the very limit of the camera, & perfect guiding & focus is required; & I think that this is why only exposure 1 of last night has succeeded in demonstrating it.

Star images are v. good.

N ↑

35 min Exp Oct 10.8

Exposure Oct 10.8
cont. from opposite page

previous plate) — but may be a photographic defect (see drawing above). Despite its poorer quality I think this plate confirms by showing its elongation that central condensation was split on previous night.

1955.

Oct 9-10 C/Honda 2 exposures (separate plates) 30 mins and 17 mins.
Transp ~~4-5/10~~ 4-5/10. Zenith 70°. Comet near plate centre: 16h 28m.1 +30° 15'
Moving west 11".08 in 20 minutes — 10 minute steps. PA 138°.1
(48° 5' ↘)

Exposure 1. 30 mins. L.S.T 20h 33- 21h 3m. Transp 4-5/10 / On this plate I am
Oct 9.8 almost certain the central condensation is split PA 290°-300° — 110°-120°
about 15" separation with the fainter comes in PA 120° : both ± 1 mag diffuse.
There is also a faint spike in PA 70° about 1'.5 long — ? same as
last night but longer.

Exposure 2. 17 mins L.S.T. 21h 17m - 21h 34m. Transp 3-4/10 (deteriorated)
Oct 9.8 On this plate central condensation is not split but is definitely
elongated (about 30") in PA 120°(110) — 300°(290).

Visual Observation Comet practically on top of B.D 30° 2819 (9.3 mag)
& only just visible — estimated roughly at ± 10.0 mag.

Oct 10-11 C Honda Exposure 35 mins. Transp about 4/10. Zenith 70°.
Oct. 10.8 Moving west 10".68/20 mins in 10 minute steps in PA. 136°.4 ↘
Helped by Bill McCrae. L.S.T. 20h 41m — 21h 16m.
Comet near plate centre α = 16h 28m.8, δ +30° 6'. This plate guiding shows is
less good than Exp 1. of previous night. But central condensation is definitely
elongated 30" long PA 120°-300°. There is a short spike PA 120°
which seems to curve over to join another bright spot about 40" from
main condensation in PA 70°. This is definitely not a star (cf.

Zenith 700. 47 min Exp. Oct 15.8. Showing round coma with ? comes 40" distant PA 110° [faint star trail is 75' distant PA 70°].
Suggestion of v. diffuse tail towards PA 90°.

Oa-O 17 minute exposure Oct 16.8
Showing round coma 60" diameter with central condensation of 20" diameter & ? secondary condensation 50" distant PA 110°

Oct 15-16 C Honda Exposure 47 mins. Transp. 4/10 Zenith 700.

Oct. 15.8. Comet near plate centre $\alpha = 16^h 32.3$, $\delta + 29° 24'$ (ephemeris).
Moving well: 9".34/20 mins — 10 minute steps in PA 127°.4 ↙
L.S.T. $21^h 10^m$ – $21^h 57^m$. Fairly strong image. Central condensation now almost round – but there is a small shell (not a star) 40" distant in PA 118°. A larger shell 76" distant PA 70° is a star (Cf next plate). Vague suggestion of diffuse tail towards PA 90°.

Oct. 16-17. C Honda. Exposure 17 mins (passing cloud? = 14 mins.) Transp. 4/10.
Oct 16.8 Kodak Oa-O. Comet near plate centre α $16^h 33.0$ $+29° 17'$ (ephemeris).
Moving well: 9".46/20 minutes — 10 minute steps. PA 128°.2 ↙
L.S.T. $20^h 26^m$ – $20^h 43^m$.

N.B. It was intended to give on this Kodak Oa-O plate the same exposure, 47 min., as on Zenith 700 last night. Transp. altitude & star-field were practically same in both cases. But Sky clouded suddenly & exposure was stopped after 17 minutes (probably = 14 min). Yet this Oa-O plate shows definitely fainter stars than the Zenith 700 – probably by 0.3 mags. or more. ∴ Oa-O at this exposure is at least 3 & probably 4 times faster than Zenith 700!

Comet image on the Oa-O plate is much stronger than on ~~Kodak~~ Zenith plate of last night. Central condensation round & about 20" diameter, surrounding coma 60" diameter, ? secondary condensation 50" from leading in PA 110°. Is this real & same as last night but moving outwards? I think so. Diffuse tail to PA 90° — very faint, but definite.

(cont from 4th. page)

Oct 17·8 Exp 45m Radial spurs on prominent: PAs 30°, 70°, 135° & 170° - each on about 40" long, that in 170° being more diffuse. Then is a shorter spur about 30" long in PA 290°; & a very long ~~thin~~ one 100" long in P.A. 240°.

Oct. 17·9 Exp. 20m. On this shorter exposure one can faintly identify the spurs in PA ~~same~~ 70°, & doubtfully in 135° ~~same~~° — which I think confirm their reality.

(from 4th page)
Oct 28-29 cont.)

C Mrkos. Exposure 22·5m L.S.T. $7^h\,5^m - 27^m.5$ - Oct 29·2.

Strong image on plate. Perfectly round coma overall diameter 2' diameter of brighter center 1'. No sign of tail or other peculiarity. By comparing image with that of Honda on Oct 18 - same plate, exposure, & sky I made Mrkos ½ mag. brighter.

∴ Rough estimate (photographic) makes Mrkos 10.0 mag.

1955.

Oct. 17-18. C Honda Two exposures 45m + 20m. Kodak 0a-O

Comet near plate centre α 16h 33m.6 δ + 29°10'. (Ophiuchi).

Moving wch: 9".32 / 20 minutes — in 10 min. steps., in PA. 126°.5

Oct 17.8 Plate I. Transp. 6/10 - good. Exp. 45 minutes (0a-0).

L.S.T 20h 19m - 21h 4m.

Oct 17.9 Plate II Transp. 5/10 fairly good. Exposure 20 mins.. (0a-0)

L.S.T. 22h 43m - 23h 3m. — altitude considerably lower.

Visual Observation: Comet only just visible in 6" ♂ comet eyepiece.

Rough estimate 10.5 mag.

*Plate 1 x 2 the image of comet exp. on longer exposure is very strong. Central condensation almost round & surrounded by coma of overall diameter of 2'.5 (longer exposure). The condensation is excentric towards p side - but this is due to coma being thrown out in v. diffuse tail towards PA 90°

No comets are visible as can be seen by comparing 2 faint star (on the two plates) which happen to be more or less involved in the coma.

Oct. 28-29 C/Morkos 1955 i (P/Perrine 1896, 1903). Discovered Oct 20.

Clouds prevented my obtaining it till to-night - & as this was last chance before moon I got it early & photographed it between setting of waning moon & dawn 4.30 - 5.0 hrs. Already got it visually night before.

Oct 29.2 Exposure 22.5 minutes. Transp. 4/10. Kodak 0a-O.

Moving wch: 18".94 / 10 mins - 2½ minute steps. PA 131°.4

(D.M. from selected positions on Oct 20 & 22.) Comet near plate centre α 8h 59m.0, δ 9° 56'.5 — very close to extrapolated place.

Nov 7–8 cont. C/ Haro Chavira. During this exposure temp. rose from 49°–53° – hence dewing of lens despite slight electrical warming.

The coma is round and 30" in diameter & there is a short straight tail 1' long in PA 225°. The image is definitely sharper, say 0.3 mags, than that of Honda on Nov 6·75

1955.

November 6-7. C/Honda Exposure 60 mins Transp 3-4/10 Kodak Oa-O.

Nov. 6.75. L.S.T. 21 hours 4m - 22 hours 4 min (Slight passing cloud say - 5 minutes).

Moving web.: 8".44/20 minutes - in 10 minute steps. PA. 95°.5

Comet near plate centre α = 16h 48m + 27° 58'. [illegible]

Image of comet faint: round central condensation about 20" diameter - with very faint outer halo which sweeps away as extremely diffuse tail towards PA 70°, about 2' long & a little over 1/2' wide. Plate is good. May say 0.3 mag fainter than Haro-Chavira (Say 13.5-14.0)

November 7-8 C/Honda Exposure 60 mins Transp 4-5/10 Kodak Oa-O.

Nov. 7.75 L.S.T. 21h 12m - 22h 12m. Comet near plate centre: α 16h 49m, δ +27° 56'

Moving web: 8".44/20 minutes - in 10 minute steps. PA 95°.3 T55°; F3:9.

Image of comet excessively faint. Whereas last night there was a definite condensation & coma, there is to-night only a very diffuse cloud elongated in about PA 70° about 2' long & about 1/2' wide - almost as if coma & condensation had vanished & only the tail remained! Unfortunately this plate is grainy & poor & some features present are almost certainly spurious.

Nov. 7-8 C/Haro-Chavira 1954 k. Exposure 60 min Transp 4-5/10 Kodak Oa-O

Nov. 7.9 Very dewy night Camera lens slightly dewed at end of exposure.

Moving web: 17".2/20 minutes - in 5 min. steps. PA 354°.2 .

Comet about 2° p plate centre. Comet α = 7h 3m + 73° 36' (ephemeris).

L.S.T. 1h 23m - 2h 23m. Two of my plates last Dec. failed to show this comet. This is my first attempt since. Plate shows a quite strong image (about mag 13.5) which is comet-like & round. That it is not a nebula was definitely confirmed on Nov. 11 by comparison with Franklin-Adams Chart. It is also in correct position. Definitely the comet.

Occultation (1955 No 12)

December 4   N.Z.C. 1341. δ Cancri Mag 4·3

Dark limb Reappearance. Moon's age 19·6 days. PA 262°

Observed L.S.T. = 8^{hr} 35^{m} 00^{s}·0   Clock error 4.5 secs. fast

∴ Corrected observed L.S.T. = 8^{h} 34^{m} 55^{s}·5.

Observed corrected U.T. = <u>3$^{hrs.}$ 48^{m} 42^{s}·9</u>

(i.e. 0·9 sec later than predicted U.T. 3^{h} 48^{m}·7)

Seeing fairly good. Quality of Observation <u>Very good</u>

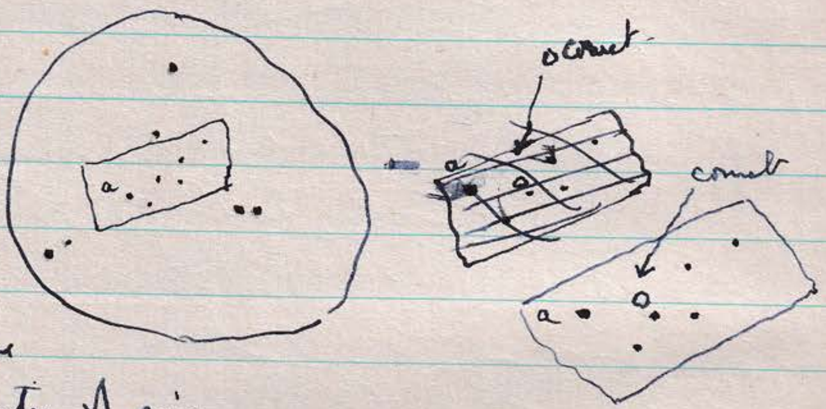
Webs were set at distance of limb to terminator & in correct P.A.

The star reappeared within about 10" of cross wire.   Quite sudden.

[This was first observation since Nov 7 – the weather or the moon preventing]

Dec. 4 Baade comet/

Stars within ink ring on plate.
The ring for centre of plate & the stars here are to + side of centre of ring



This object is fuzzy & round & appears real & is not on F.A charts which go fainter.

1955.

December 4. C/Baade (1954k) Exposure 15 min Transp 2/10
+ passing high cirrus – very poor. Kodak Oa-O.

Dec. 4·9 G.S.T 2 hr 19 m – 2 h 34 m.

Moving vol 19".68 per 20 min = ·765 Revs – in 5 minute etc,
in P.A. 243°.9 ↘ (26°.1). The sky had been overcast
but showed signs of gaps – it was rather hurriedly decided to
expose a plate + there was no time to check focus: T = 40°
Focus should have been 3:13, but was in fact 3:10.
Plate centred on star near ephemeris position: α 6h 14·3; δ + 42° 24'
No obvious cometary image on plate – but trails are v. short, poorly
focussed + swollen by diffused light from cloud. I surmise
the image, as having a central, darker, unelongated point: as
if a highly concentrated central condensation were present + untrailed – will
check shortly with F.B. charts. The magnitude is about 12, the position is
within error of estimation. No suggestion of tail – but the exposure is v. poor.
This was the first plate taken of this comet since May 22·9 – it has
been too near the sun till recently.

N.V. for comet

Check 2 days later with F.B chart shows the suspected object
is present + therefore not the comet. However there is a small
object which is almost certainly the comet within the intr-
uding cloud plate – see diagram opposite.

This object about mag 12·0 is diffuse not stellar about
0'.5 in diameter. But it is near limit of plate. Its
position is within 1' of ephemeris position which is 6h 13m·5 + 42° 30'

1955.

Dec. 16–17. Dec. 16.9 Comet Olbers plate exposed for search.

Exp. = 65 mins. Transp 5–6/10. Kodak Oa-O.

L.S.T. $3^h 49^m - 4^h 54^m$. F = 3/11.5 T = 45°–44°.

Moving web. 20 mins = 17".6 = ·683 Revs – 5 minute steps

PA 27°.5 ∡ (297.5) (297°.5). Error in calculation: should have been ~~[illegible]~~ 303°

W.H.S. stopping. Nothing definite on plate: but one or two suspicious objects.

Plate centre about $3^h 20^m.0$ –16° 17'

Dec. 18–19 Dec 18.9 Comet Olbers plate for search.

Exposure 60 mins. Transp 3/10 (haze) Kodak Oa – O.

L.S.T. $3^h 20^m - 4^h 20^m$. T = 30° – 30° F3/1.6.

Moving web: 17".86 per 20 mins. = ·694 Revs. in 5 min steps.

P.A. = 35°.5 ∡ (= 305°.5).

W.H.S. stopping. Plate at least 1 magnitude less efficient than previous plate. Comparison of 2 plates gave no result.

We searched to 3 or 4 degrees from Ephemeris position along line ↘ given by ΔT corrections.

Plate centred about $3^h 21^m.6$ – 15° 56'.

The first of these plates was reexamined after comet's recovery by Mrkos & Van Biesbroeck correction to the ephemeris. A suspected object (originally ringed in ink on plate) was close: $3^h 24.0$ –17° 16' (1950) – calculated position $3^h 22^m.5$ –17° 1'. The error is too large ∴ this is probably not the comet. The comet must have been fainter than mag 13.5 on Dec 16.9.

1955.

Dec. 31 C. Baade. Exposure 50 min. Transp 6/10. (good). Kodak Oa-O

Exposure stopped as light from rising moon was just appearing.

Dec. 31.8 L.S.T. $0^h 47^m - 1^h 37^m$. Approx U.T. mid exp = $18^h 30^m$.

Drove moving web 21".4 per 20 minutes in 5 minute steps.

P.A. = 38°.5 ↘ i.e. towards PA 231°.5 T = 43°–40° F 3/13.

The plate shows considerable sky fogging (due to moonlight) but not excessive. The drive was not of the best, but images appear good. The plate has unfortunately several bad smudges on emulsion – but not interfering with comet. It must go at least to mag. 15.5.

The comet shows a small but strong image – I should put it about mag. 13.5.* It has an overall diameter of 1' arc & brighter center of about 30". It is as close as I can get to ephemeris position – rough measure relative to BD 36° 3140 gives α = $5^h 23^m.8$ + 36° 34'

Marked on plate with ink ring. The image is probably quite round – a slight elongation of it is probably due to the grain.

* This is a very rough guess but image is about equal to that of Harro Chiron on Nov 7 with approx same exposure + sky & same plate.

° This must be a photo defect: on the much stronger plate of 7 Jan 16 (next page), it does not appear either in its present position or in that predicted for comet on 7 Jan 16. The real comet is the other object (see below) which was considerably off the ephemeris path.

* See next page 7 Jan 16·9. This is definitely Haro Chavira. The found ephemeris, based on early measures, has not been revised & is thus in considerable error.

1956

Jan 2-3 . Jan 2.75 C. Haro-Chavira. Exp 45^{min}. Transp 4/10. Kodak Oa-O
L.S.T. $1^h 37^m - 2^h 22^m$ (approx UT mid Exp = $19^h 15^m$) T = 40°-40°. F 3/13.
Driven on moving web 23.68 per 40 minutes in 10 min. steps. PA 35°
true PA = 235°. Circles set $1^h 30^m$ + 83° 23'. Plate is v. good
What is undoubtedly the comet is extremely minute stellar point, quite
round & not trailed, 2'.5 S f, & 0'.9 f BD 82° 37 (mag 9.5). This gives
from BD positions Comet α = $1^h 15^m.8$ + 82° 57' (1855) or $1^h 27^m.0$ + 83° 29' (1955)
— which agrees with position from ephemeris $1^h 26^m.3$ + 83° 28' — This is difficult
to calculate exactly owing to being so near to Pole. The nucleus is stellar
& is all that is seen except for a very questionable surrounding haze
— the magnitude must be 14.0 or fainter.

There is another v. suspicious object close by:
This is 2'.5 following & 2'.0 N. of BD 88° 28. Its position from
BD cat. comes out at: Comet α $1^h 7^m.6$ + 83° 4'.6 (1855) or
$1^h 18^m.8$ + 83° 36'.4 (1955). This is a perfectly circular object partially
transfixed by a faint star trail. It is a hazy object 30" diameter with
marked central condensation — about 12-12.5 mag. Unfortunately it is too
faint for checking with the F.A chart. It is odd, if it is real
that it is so nearly circular: it must have roughly same DM as
that of Haro Chavira.*

Bad weather followed & I had no chance to expose another plate till Jan 16.
News since that P/Olbers. was discovered by Ahnert Jan 4 & found to be 16 mag.
Error there 1° from prediction.

Occultation 1956 No 1.

7 Jan. 16. NZC 3287 51 Aquarii (m.) Dark limb Disappearance Moon = 3.6 days.
Earth shine very clear. Mag. = 5.8 P.A. = 0° (Cusps at 333°)
Seeing only mod., V. low altitude. Disappearance would observed & observed to coincide with tick of clock – hence error probably well under ± 0.25 secs.
Observed G.S.T. = 2 hr 11 m 0.0 secs. Clock correction −11.1 secs (fast)
∴ Corrected G.S.T = $2^{hr}\ 10^{m}\ 48^{s}.9$
∴ Observed U.T. = $18^{hr}\ 32^{m}\ 39.1$ secs. (exellent quality).
The star observed v. obviously to flash for over one second – but the seeing was poor & there had just passed some dense cloud. I think the sky was quite clear at time, but I cannot be sure. Anyhow the final pop-out was definite & instantaneous.

1956

Jan 16-17. C Haro-Chavira. Exposure 50 mins. Transp 6/10 good. K Oa-O.
Jan 16·9 L.S.T. 4hrs 36m – 5hrs 26mins. Approx mid U.T. 21h 30m.

Drove with moving web: 17".76 per 40 minutes in 10 minutes stops.
in PA (61°.1 ⌐) = 208°.9. T=38° starting F= 3/13. roof opened
2 hours earlier. Very good plate.

This plate, which goes considerably fainter than that of Jan 2, shows a strong cometary image which again is not in good agreement with the ephemeris for Haro Chavira. The error appears closely the same as on Jan 2 & nothing is now in the position of the Jan 2 object. Clearly the two objects are the same & is a comet. [Phoned Merton who tells me has just heard that ephemeris of H-Chavira is badly in error] So undoubtedly this is Haro-Chavira. There is a strong fairly sharply defined condensation about 20" diameter with a faint surrounding haze – total diameter 30"-40". There is however a very definite tail 2' long in PA 110°. Position of this object from BD 81°3 & BD80°4 comes out 0h 14m.8 + 80° 46'.5 (1855) Ephemeris 0h 19m.4 +80°41' (1855) which means a correction to ephemeris of −4m.6 + 5'.5. Rough mag = 12.5

March 3

Jupiter. Eclipse of Sat. III by IV predicted by Bignell.

U.T. of Heliocentric conj 22h 10m. Umbra = 0.60 Sat Diam.

I just started observing at 22h 10m. Seeing quite good — about 4/10. Discs nicely defined for short moments. III appeared quite round & evenly illuminated — & brightness relation to IV remained unchanged from 22h 10m to 20h 30m. I think there was no eclipse.

1956

Jan 29-30. C/Olbers. Exposure 40 mins. Transp 4/10 - but much stray light from a nearby building causing some fogging. Kodak Oa-O.

Jan 29.8 LST $3^{hm} 29^m - 4^h 9^m$ (approx mid UT = $19^h 20^m$).

Drove with moving web 17".5 per 20 mins in 5 min steps "PA 90°" — true PA = 0°. The plate is very badly fogged. No cometary image is seen near ephemeris position — except for an elongated fuzz emanating precisely from a faint star. Either this is the comet, or, if not, comet is below mag 13. This is elongated in PA 0°.

Several minutes distance is another elongated fuzz - elongated 90°-270° — but I think that is a flaw.

Feb/ All February very bad weather & extremely cold. Though roof was frozen I was able to turn it (having used "Kilfrost" on the flat part). But none of the week-end moonless nights were good enough for photography.

Mar 10-11 C/Olbers Exposure 30 min Transp 3/10 - haze. Nearby lights dimmed with curtains so not interfering. Kodak Oa-O.

Mar 10.8 L.S.T. $6^h 44 - 7^h 14$ UT mid exp approx $19^h 45^m$.

Drove moving web. 11".5/10 minutes : 5 min steps. 55°.5 PA = 34°.5

Roof opened just before exposure T = 42° → 40° F 3/13. Images rather poor.

Comet exactly in ephemeris position: $3^h 15^m.7$ + 10°20' (1950)

Image strong & round. Bright central part 30" diam, overall diam = 2'.5

Suspect narrow straight tail 5' long PA 40°

Mag. rough estimate 11.0

No.2. Occultation

Mar 18. N.2.C. 752 ζ Tauri Mag 4.7 D. dark limb. Age 6.2 days
P.A. 144°. Dark limb faintly visible.
Obs. L.S.T. disappearance $7^h\ 18^m\ 48^s.0$ Clock error $7^s.4$ fast.
∴ Corrected Observed L.S.T. = $7^h\ 18^m\ 40^s.6$
∴ Corrected Observed U.T. Disappearance = $19^h\ 35^m\ 54^s.1$
(Kindal in Observatory & heard occultation in my finder - his estimate was $^s0.2$ earlier.)
N.B. Then appeared to be a definite slight fading for 3 or 4 seconds prior to disappearance: but the final big drop in brightness was quite sudden.
Very good quality.

No3. Occultation

Mar 18 N.2.C. 766. 105 Tauri Mag 6.0 D dark limb Age 6.3 days
P.A. 94°. Obs. L.S.T. $9^h\ 23^m\ 30^s.0$ Clock error $7^s.3$ fast.
∴ Obs. corrected LST = $9^h\ 23^m\ 22^s.7$
∴ Corrected Observed U.T. Disappearance = $21^h\ 40^m\ 12^s.5$
(Unfortunately my new assistant began talking & though I am practically certain Obs. L.S.T was $23^m\ 30^s.0$ it may have been $23^m\ 33^s.0$)
Quality v. good - but uncertainty re the second.

Disappearance perfectly sudden.

Olbers

Mar. 12-13. The sky was very hazy; but I thought it worth exposing a plate in order to confirm beyond all doubt that the image on plate 2 night earlier was really the comet. Actually I have no doubt that it is real — but in view of its great increase in brightness since the latest charted estimate I was anxious to make doubly certain. Unfortunately the thick haze at start of exposure increased rapidly — so that my guiding star almost disappeared, & now but the brightest stars remained visible to naked-eye.

Exposure 60 min α ST 6h 55 - 7h 25m (mid U.T. about 19h 50) Drive with moving web.

Careful search of plate should no object in correct position — but stars as faint as comet on previous plate were also invisible. The plate was therefore of no use & was not kept. But I have no doubt that my image of Mar 10-11 is definitely that of the comet.

March 24-25 New Comet Mrkos 1956 b discovered Mar 12. absence of my assistant & bad weather prevented any attempt for 12 days when moon was nearly full. But since charted mag was 8-9 there was a chance of getting it. Having no assistant I had to get outside help & had to expose early in evening when comet was very low down. 5 min. exposure driving on fixed web Mar 24·8 Plate centred 22h 0m + 62° about. K Oa-O v. badly fogged — moon 2 days from Full altitude about 35°. No sign of comet. Comet has v. rapid motion & v. uncertain.

Mar 25-26 C/Mrkos 1956 h. Further attempt at search.

March 25.8 Exposure 3 mins. Centred $\alpha = 22^h\ 4^m$ $\delta + 64°$
Moon 1 day off full. Not very clear. Altitude about 35°.
Plate extremely fogged – no sign of comet.
Heard afterwards from Hendrie (Westcliff-on-Sea) that he photographed it (3 plates) March 25.0 – but despite his information I found no definite sign of it on my plate. He had a good transparency sky & photographed after midnight when comet was higher up & was able to give 15 minute exposure with F/5.6 camera. As regards this earlier plate of Mar 24.8 – the comet should have been just off the edge of my plate.

April 2-3 Search for Reported comet by Tcherepashtchuk: Mag 5.0

April 2.9. Exposure 15 minutes. Transp Moderate 4/10, but v. low altitude. Approximate U.T mid exposure = 9 hrs 30 mins. very rough. Approximate centre of plate: $\alpha = 3^h\ 50^m$ $+ 23°$ just east of Pleiades (Venus just below Pleiades & v. bright on plate). No sign of any bright comet on plate* & rough search further afield with binoculars showed nothing. (*certainly nothing within 4½° of reported position – March 30.75). Probably a Venereal ghost! [This comet was never confirmed by any other observer]

Olbers comet

This plate happens to show Olbers comet quite clearly near edge of plate (ringed in ink) in its exact observed position.

No 4. Occultation ✓.

April 21 N2C 1670 ε Leonis Mag 5.1 Disap. dark limb. age 10.9 days

PA 88° Obs L.S.T. $12^h\ 59^m\ 51^s.0$ Clock corr. + 3.9 secs. (slow).

(Signal obtained 2 minutes before occultation)

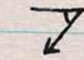
∴ Assumed Corrected L.S.T. $12^h\ 59^m\ 54^s.9$.

∴ Assumed U.T.(ω) of Disappearance = $23^{hr}\ 2^{min}$ 31.6 secs.

Very good quality observation. Quite instantaneous.

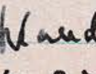
1956

April 9-10. C Mrkos 1956 b. Exposure 27.5 min. Transparency fair 4/10 but passing cloud. Kodak Oa-O

April 9.9. L.S.T. $10^h 20^m 45^s$ to $10^h 48^m 15^s$. Drove on moving web: in 52°.5  i.e. P.A = 142°.5 at 32".5 per 10 minutes in 2½ min. steps.
T = 48° F = 3/11. Plate centred approx: $3^h 43^m$ +52° 14'. Exposure stopped because the passing clouds suddenly thickened & completely obscured sky. For this reason I could not look visually for comet.
This is my first successful plate of this comet.

Strong image of comet. Very diffuse with only slight central condensation. Overall diam is ± 5'. Central brighter part is about 40" diameter - but this central part shows v. little further condensation towards centre. Position agrees closely with Merton & Hoffmann ephemerides.

May 10.9 C. Olbers Exposure 15 mins. Transp 4/10 - but very low altitude (about 10°) & aperture partially cut off by observatory wall - also some twilight. Kodak Oa-O

L.S.T. $13^h 15^m - 13^h 30^m$. (Approx U.T. mid exp. about $22^h 20^m$.)
Drove on moving web 18".15/10 minutes - 2½ min steps - PA 59°
 Roof opened 1 hour T = 55°-55° F = 3...9.
Strong image of comet Overall diam coma 3' - very heavily condensed brightest part 30" and fairly bright 1' diameter. Coma elongated & fading off towards PA 50°. Central condensation eccentrically placed towards PA 230°. Very roughly equal photographically to BD 33° 1010 - 7.2 mag A1. mag est 7.2
Seen briefly in 6" with x130 after exposure
Position v. close to ephemeris.

May 14·0 (13·95) C. Haro Chavira Exposure 50 min Transh good 5/10 – but some slight twilight & light from young setting moon. Plate Kod. 0a-O.
L.S.T. 13h 56m – 14h 46m [Mid exposure about 23h 0 U.T.]
Stars moving web 11"·68 per 20 minutes in 10 minute steps. In PA 42°11' ↖ i.e. PA 47° 49'. Plate shows strong image of comet – fair amount of sky fog. Coma is quite round – no tail. Extremely condensed. almost stellar & black central part 20" diameter, surrounded by foggy halo 60" diameter overall. Polar sequence is on edge of plate & stars in it to 14·8 photographic mag are easy: plate at centre must reach at least 16 mag. Comet compared directly on plate (& checked indirectly via Franklin Adams Chart) appears closely equal to Polar sequence (Sub. Seq.) 426 HA 40 – photo mag 13·8. Comet est. more to 14·0 – probably 13·8. Position of comet from comb. with BD 84° 58 & BD 85° 55 & using BD position is approx (1855) 3h 0m 40s + 84° 57'·5 : which after applying precession appears about 5' north of Newton's Nov ephemeris – but Prec is ??? !

May 29·0 (May 28·96) C Haro Chavira Exposure 28 mins. Kod 0a-O
Transh. only moderate.
L.S.T. 15h 14m – 15h 42m. (Approx UT 23h 5m) Stars moving web
PA 5°·4 ↘ 6"·46/10 min No sign of comet.
Plate centre 6h 44m·3 86° 56'·5 = Comet's ephemeris position
Plate was centred between this & Polar sequence – so comet is off centre.

C. Haro Chavira

June 2.0 (June 1.99). Exp. 50m. Transp. v good 6/10 Kodak Oa-O
L.S.T. $16^h 2^m - 16^h 52^m$. Approx U.T. $23^h 50^m$.
Comet position for chimney $7^h 57.^m2$ $+86$ $37'$
Drawn with moving web PA = 15° → $13.''50$ in 20 min 10 min steps.
Temp 55°–60° F = 3…8. Careful search shows no comet
Plate was centered on a point between comet & N. Polar Sequence
– hence comet is considerably off center. This may be part of the
reason why no sign of comet is seen. I think comet must have
faded below mag 15.0.

July 1-2 (July 1.92) P. Olbers Visual Obs. No photograph.
Sky cleared late & unexpectedly – further moon rose too early for
attempting photo. I set 6" on comet & was surprised to find
it so easily & to see it so bright. There was a bright star ± 5th mag
nearby & easy in finder – but 3 other stars close to comet about
mag 8.0 – 8.5 were quite invisible – comet however was
immediately spotted in finder. A rough estimate – no comparison
– put it about mag 6.5. Next night cloudy – no photo possible.

* Phot of C Olbers July 29.95

Unfortunately there are some flaws in the emulsion & on reexamination of the plate some of the details mentioned opposite are best disregarded in case they are spurious. One can be certain however of the straight & fairly narrow tail in PA 70° about 4' long, & of the broad fan extending between PA 70° & 110°.

N

C. Olbers photo.

July 29-30. (July 29.95) Exposure 5 min. C Olbers. Kodak Oa-O
Transp. v. good 6/10 – but v. considerable twilight & last quarter moon just rising. Unable to wait till later because of increasing moonlight. Decided on only 5 minutes — but plate was unexpectedly free from fog & 15 minutes could have been given. Comet estimated by W.H.S. & myself between 7.0 & 7.5 mag. In low power comet eyepiece I saw a broad fan tail with an angular extent of about 70° which was perhaps 3' long; but in centre of broad fan was a fainter narrow straight tail perhaps 6' long. The straight tail was in PA about 75° & the broader fan was symmetrical about it.
Exposure 5 min: LST 19h 11m – 19h 16m (Approx U.T. 22h 45m)
Drove moving with PA 28°12' → 13".25 in 5 minutes — in 2½ minute steps. T = 55° F = 3....8. Comet position 11h 38.7 + 34°
Comet image is strong: Perfectly round coma. Central brighter part 40" D.
← – overall diameter about 90". *Broad fan tail consisting of several well defined rays, about 2' in length – central fainter straight tail about 4' long. There is a particularly faint linear ray about PA 30°, 2' long. Then there is a broad fan about same length PA 70°–110°; one border of this fan is continued as the longer narrow tail in PA 70° about 4' long. There are shorter spikes in PA 0°, 300° & 230°

N.B. Crommelin's Comet was found in Czechoslovakia on Sept 29 around mag 9.0. I was down in Cornwall. I observed it with Lindley's 5"½ on two nights, when it was a fairly easy object. But when I got back to about middle of Oct. comet was getting South & moon & weather prevented any attempt at photography.

Afterwards I examined my plates of Sept 2 & 3 to see if I could see any image in correct position – but nothing is there. It was certainly fainter than mag 13.5, yet it was 10.0 on Sept 29.

August. Away on trip to Italy Aug 3-19. Then during the end of month weather was unfavourable for photography until Sept. 2-3.

Sept 2-3 These plates exposed in attempt to recover C. Commelin.
The Handbook BAA ephemeris was plotted together with ephemerides on extension sheet showing positions ± 10 Δ. This ephemeris is due to Porter & differs from the other one due to Commelin which I gather is very close to Porter's +10 Δ. In this night I therefore exposed on plate centred on Porter's ephemeris, another to include +10 Δ, and a third between the two & well overlapping both.
These plates Kodak Oa-O. Transparency fairly good 5/10.
(1) Exposure 30 min. Including +10 Δ. Approx centre of 4h 35m, δ +68°
L.S.T. 20h 32m – 21h 2m. Stars on moving web 3°.0 ⇒ (P.A 87°)
33".5 / 10 minutes – in 2½ minute steps.
(2) Exposure 25 min. (About midway between Porter's ephemeris & previous plate.)
Approx. centre of 5h 15m, δ + 64°. L.S.T. 21h 51m – 22h 16m.
Stars on moving web 6°.0 ⇒ (P.A. 96°) 36"/10 min – 2½ minute steps.
(3) Exposure 30 min. Mercurochrome Centred on Porter's ephemeris
Approx centre of 5h 40m δ +59° LST 22h 43m – 23h 13m.
Stars on moving web 15°.2 ⇒ (P.A. 105°.2) 37"/10 mins – 2½ minute steps.
N.B. During last 5 mins of this 3rd exposure there was some passing cloud.

Plate measurement. I measured & reduced this plate between Dec 30 & 7. with my new machine (Oxford University Astrographic measuring machine): Comrie's method. Two independent measures 3 stars each gave:— Epoch 1956

B.D 22° 226 α: $1^h\ 20^m\ 13^s.85$ BD 22° 223* α = $1^h\ 20^m\ 13^s.65$

22° 204 δ = 22° 49′ 55″.8 22° 214* δ = 22° 49′ 54″.8

21° [illegible]) 182 (1) 21° 178 (2)

For the two stars* I had no proper motion – So first set is probably the best. The agreement is satisfactory for a start!

1956 Comet Arend.

Nov. 24-25. Owing to being away, bad weather, work & the like was first showing night for a long time & the first opportunity for trying for the new comet Arend discovered on Nov. 8. But to night there was much haze & it very rapidly thickened when I started the exposure. After 20 mins it was no good going on: ——

Nov. 24 Comet Arend. Transp 0-1/10. Oa-O Plate. Exp 20 min L.S.T. $23^h 49^m - 24^h 9^m$. The Plate shows very little & no obvious image of comet. Even when examined later & the exact position of comet was known I cannot be certain of it Plate not helpful.

Nov 25-26. Nov. 25.95. Comet Arend. Transp 4/10 – but much passing cloud. Exposure given 35 min but actually equivalent to 15 min. Plate Kodak Oa-O. T 50° F 3/9. Plate centre was $1^h 20^m 47^s$ +23° 30' Slow moving orb in PA 235°54' ↘ (34'.6') 29".76/20m. 5 min slabs. Cloud finally stopped exposure & there was no opportunity for visual observation. Plate shows small, but sharp image. Est Int. Maj = 11.0. Very strong central part 30" diam. with small & v. faint halo — very quickly condensed. There is a short broad faint tail PA 60°, 2' long. Exposure from LST $2^h 51^m - 3^h 26^m$.

1956.

Dec. 2–3 (Sunday night) Arend's Comet. Evening rather bad, but clouds cleared slightly after 6 p.m. Michael Hendrie here & v. anxious to do something so we went up & started an exposure through gaps. This exposure was nearly finished when sky cleared completely & a second exposure was made in a very good sky.

Plate I. Dec. 2·85 approx Transp 3 & much passing large & cloud. Exposure 45 mins – much reduced & images increased by scattering. Oa–O Screw with moving web, and centred as in Plate II. Very poor plate, comet visible, but not worth keeping – hazy images & fog.

Plate II Dec. 2·9 approx Transp 7/10 – very good Oa–O. Exp. 60m L.S.T. $2^h\,7^m$ – $3^h\,7^m$. T 48°–45°. Centred near $1^h\,4.0^m$ +19° 45' – this was circle reading taken afterwards with comet in centre of field. Screw moving web ⟶ 39° 20 – PA = 23° 40' 10 m Motion = 16″.75 in 2½ minute steps (4″.2).

Comet was observed visually low magnification eyepiece ×130 & Comet eyepiece Not visible in 2' finder. In comet eyepiece & ×130 seen v. small & faint Est mag = 11.0 Tail extending short distance PA 60° – coma small & v. condensed.

Image on plate is strong. Very condensed 30″ central – faint extension to 60″. The head is bullet shaped extending into a tail in PA 60° & 7½ to 8' long, which is as wide as the head & only fans out slightly – fairly broad & quite straight. Unfortunately 1 or 2 faint trails are involved in the head – no intrinsic detail. <u>Est. phot mag. 11·0.</u> Very good star trails.

Dec. 30 This star was measured — six stars — & 3 reductions made.

BD.	7°52	7°59	8°63	$0^h\ 26^m\ 14^s.08$	$+8°\ 28'\ 44''.6$
BD	8°53	8°62	7°52	$14^s.14$	$42''.2$
BD	8°53	8°62	7°57	$14^s.06$	$41''.9$

Dec. 30·7605q Straight Mean $0^h\ 26^m\ 14^s.1$ $+8°\ 28'\ 43''$

(From 1950.0)

Planet & Parker motions from Yale Zone Catalogue.

Dec. 24   First clear night for weeks — but only for about 2 hours. Unfortunately Sigi Dunkley, who is new to the work, did not get the plateholder properly home in its slots & a 15 minute exposure on C/Arend was utterly out of focus.

<u>December 30-31</u>   <u>Comet Arend</u>. High gales & rain all day
<u>Sunday night</u>   but clouds looked like breaking after sunset & I went up to Observatory perhaps on the chance. It did clear & I photographed the comet & had time for a quick visual observation before the clouds & rain returned!

Exposure 15 mins. Transparency 4/10 – but passing cloud during last 5 minutes. Plate Oa – O. Star on comet moving web: 9".90 per 10 minutes in 5 minute steps in PA 210° 48' ↘ (59° 12')
Plate centre (circles) α $0^h 27$; δ 8° 38'   T = 44° – 44°   F/13
L.S.T. $0^h 42^m 20^s \rightarrow 0^h 57^m 20^s$ (accurately timed).
Visual Observation. Comet just visible in 2" finder v. difficult. In 6" elongated & short tail PA 60°, bright central condensation
<u>Est. Mag = 9·5</u>.

On plate strong image of comet. Very dense central part of coma Diam = 30" – with little enveloping fuzz. Tail same width as head, straight & extending 7' in PA 60°. General appearance <u>Bullet-shaped</u>.

Jan 26.27 Plate was measured again

Jan 26.81691 R.A. $0^h\ 16^m\ 5.12^s$. Dec. $+0°\ 57'\ 4''.7$

7 Stars measured	5	BD $+0°$ 27	9	BD $-0°$ 37
	7	$+0°$ 34	10	$+1°$ 28
	8	$+0°$ 28	11	$-0°$ 32
		12	BD $+0°$ 39	

The individual means of which above is straight mean were

	$\Delta\alpha$	$\Delta\delta$
Stars 5,9,7,	5.14 s.	3".6
8,9,7.	5.15	3.4
10,9,7.	5.14	3.3
11,8,12.	5.12	5.5
8,9,12	5.14	5.2
11,5,12	5.09	5.8
10,11,12	5.10	6.4

Altitude $= 21°\ 40'$ Hour Angle $3^h\ 41^m$

7am 6·7 (Sunday night). Very changeable weather. But it cleared about 9.45pm. & I went to Observatory with London Campbell & made a short exposure on Arend Comet although it was almost setting & hardly behind trees. Also the moon had only just set.

C Arend 7am 6·9 Exposure 7·5 minutes Very low & hardly behind trees. ~~Plate~~. Not accurately timed. Approx U.T. = 22h 15m. Kodak Oa-O Towards sea horizon about 2/10. Comet given trail image on plate. Plate centre about 0h 21m + 6° 20'.

Returned with moonlight & very bad weather.

7am 26-27 (Saturday night). C Arend. Went to Observatory at dusk & waited for a clearing. Sky began to clear, but was not very good but as comet was getting low & decided to expose for a short time for a position plate (W.H.S. with me).

C/Arend Exposure 10 mins Transp 3/10 Kod Oa-O
Precise L.S.T. 3h 52m 0s - 4h 2m 0s (counted for clock).
Mid Exp L.S.T. 3h 57m 0s U.T. = 19h 36m 21s. 7am 26·81691.
Movement of comet < 6" in 10 minutes so did not move much.
Centre of plate approx 0h 17m +1° 0'. Plate shows nice image & was measured for position. W.H.S. could not see comet in telescope owing to poor sky. Photo shows: Arend star images, bright comet image with short tail.

* In good light & especially on positions tail reaches to at least $\frac{1}{2}^\circ$ (30')

Feb 3-4 Plate was measured: Feb 3.77870: $0^h 16^m 41^s.18$, $-0^\circ 46' 2''.4$ (1950.0)

Seven Stars measured: BD $-1^\circ 21$ (1) | BD $-1^\circ 27$ (3) | BD $-0^\circ 51$ (5) | BD $-0^\circ 28$ (7)
$-1^\circ 23$ (2) | $-1^\circ 37$ (4) | $-0^\circ 35$ (6) |

Reduction	Stars	α	δ
(1)	7, 1, 5	$41^s.14$	$1''.9$
(2)	2, 6, 4	41.17	$1''.6$
(3)	1, 6, 3	41.24	$3''.6$

Reduction (3) may be less reliable as comet was very close to star 3.

Positions & PMs from Yale Zone Catalogue.

Feb. 6. Mars occulted by Moon just before Moonset: altitude about 6°. Happened to be a very transparent sky. I observed it (naked eye) with M. Hendrie (binoculars) from middle of London Bridge. I saw Mars to within 3 minutes of occult. Hendrie with binoculars observed fading over 2-3 seconds (semi diameter = $3''.4$) & precisely on time.

1957.

Jan 27-28 (Sunday night) C Arend. It only began to clear at dusk & was not good enough to photograph until about 7 o'clock. Altitude & Transparency better than last night: Transp 4/10. Exposure 30 mins. Kodak Oa-O. Drive running with 22".48/40 min. — in 10 minute steps. PA ⌐ 90° True PA = 180°
Precise L.S.T. $3^h\ 17^m\ 0^s$ – $3^h\ 47^m\ 0^s$ (corrected to clock)
Mid Exp = $3^h\ 32^m\ 0^s$ [U.T. = $19^h\ 16^m$ (about)]
Plate centred about $0^h\ 17^m + 0°\ 40'$
Plate shows strong image. Coma on before about 30" bright central condensed heart, & 60" overall diameter. Tail is traced to about 2½' of arc & more shows as a narrow diverging fan slightly curved upwards along its northern edge. P.A ± 60°.
The tail may consist of long fine filaments.??
Comet just visible in 2" finder. Mag est. 8.5.

Feb 3-4 (Sunday night) C Arend Clouds cleared like curtain at dusk so I went to Observatory & got ready & clouds cleared round $18^h\ 30^m$. The young moon 3½ days old was about 15° from comet in sky rather bright & considerable high thin cloud. Transp. Sky 3/10. Drive started using on star (10 on M < 6")
Exposure 3 minutes L.S.T. $3^h\ 31^m\ 58^s$ – $3^h\ 34^m\ 58^s$ (3 mins, corrected for chord error).
Mid Exp L.S.T. $3^h\ 33^m\ 28^s$ – U.T. = $18^h\ 41^m\ 20^s$ = Feb. 3.77870
Centre of plate $0^h\ 19^m\ 8$ – $0°\ 12'$ – on meant guide star & comet.
Good star image — comet quite strong with short tail: central bright part 30" diameter, faint broad halo, tail 3' long PA 45°. Comet image estimated about equal to B.D. −1° 14 vis mag 8.0, Ex A 5. Allowing for greater effect of atmospheric absorption on comet, I put comet at vis. mag 7.5

Feb 10 Occultations

1957 (1) NZC 892 203 B Orionis; Mag 6.6; Diffn dark limb; Moon 10.9 days; PA 66°

~~Observed time of disappearance U.T. $19^h\ 17^m\ 54^s.2$ (corrected for clock error $0^s.3$ slow)~~

~~$\therefore$ U.T. 19~~

Observed time of disappearance L.S.T. $4^h\ 36\ 53.8$ + 0.3 sec clock error

$= 4^h\ 36^m\ 54.2^s$ L.S.T.

$\therefore$ U.T. $19^h\ 17^m\ 4.0$ sec. good quality, Instr. error ± 0.1 sec.

(2.) N.Z.C. 894 χ^1 Orionis Mag 4.6; Diffn. dark limb; Moon 10.9 days; P.A. 68°

Observed time of disappearance L.S.T. $5^h\ 10^m\ 36.0$ (+ 0.3 sec clock error)

$= 5^h\ 10^m\ 36.3$ sec

$\therefore$ U.T. $= 19^h\ 50^m\ 40^s.4$ fair quality, Instr. error ± 0.25 sec.

(attention momentarily diverted at instant of eclipse).

1957.

Feb. 17-18 (Sunday night). Attempts to get last observations of comet before its disappearance into the sunset were spoilt last night by clouds over whole sky coming up at dusk. To-night the same thing nearly happened — but a clear gap appeared along W horizon & just reached the comet at the beginning of astronomical twilight: but it was only partially clear. However I found a suitable (tho' faint) guide star near centre of field & gave 15 minute exposure. Could not drive with moving wire, but kept star in middle of faintly illuminated square — however motion in 15 minutes was only about 15". Exposure 15 mins. L.S.T. 4hrs 44m 2secs — 4hrs 59m 2secs. (± 2secs.) Kodak Oa-O plate. Transparency only about 1-2/10 altitude about 10° only. Images are quite good, but v. weak. However Comet shows central bright part 30" diameter with faint outer halo as before, with trace of elongation towards PA 45° of about 1½'. No time to look for comet visually in finder. The photographic image was compared with stars & appeared about equal to BD -4° 40 — Mag 7.6 vis., Sp A0. Allowing for greater effect on comet of atmospheric absorption I put comet at Visual Mag 7.0

April 23.8 C Arend-Roland. Transparency poor 3/10. Exposure started altitude of 10° only.

X (1) 6" F/4.5 Oa-O c̄ Aviol 2 filter → Exposure 9ᵐ 10ʰ 50ᵐ - 59ᵐ LST

(2) F/3.0 Aldis Oa-E c̄ Minus 8 filter → Exposure 7ᵐ 10ʰ 50ᵐ - 57ᵐ "

For Nos (2) telescope was driven on star about 2° N of comet.

(3) F/3.0 Aldis Oa-E c̄ Minus 5 filter Exposure 17 min 11ʰ 35 - 52ᵐ LST.

very low altitude driven ± 9° N of comet.

Simultaneously with (3) we intended to expose the 6" F/4.5 but unfortunately we forgot to open the shutter!

Whitaker, Siddon & Fiji Dunkley in Observatory. Siddon developed the first 2 plates while I started exposing the second pair. There was much twilight & v. low altitude. After the second pair was exposed the comet was too low & mostly hidden by observatory wall. The Star sent their mobile darkroom down & made enlarged prints of these 3 plates while still wet.

Position of comet was 2ʰ 20ᵐ.3 +38° 59'

On (1) & (2) with comet 2° S of plate center I drove with moving web in 1 minute steps in about PA 58° at about 88"/8 minutes.

Cont). Comet Position was $2^h\ 34^m.0 + 43^\circ\ 15'$ April 24–25

Cameras were driven about 4° North of comet

in PA 58° ↑ at rate of about 96" per 8 minutes (1 inch stars)

April 24-25   Mid 24·8   C/Arend-Roland.
(Wednesday night)   Transparency 4-5/10

X (1) 6" F/4.5 Oa-O with Aviol 2 filter Exposure 35 min.
L.S.T. 11h 4m – 11h 44m – but exposure interrupted for 5 min (11h 20 – 11h 25) while changing plate on F/3 camera.
(2) F/3 Aldis Oa-E with micro 5 filter Exposure 20 min
L.S.T. 11h 4m – 11h 24m.

thrown away
(3) F/4.5 6" Oa-O with No filter Exposure 8 minute Hopeless emulsion
L.S.T. 12h 16m – 12h 20m and 12h 21m – 12h 25m (interrupted).
(4) F/3 Aldis Oa-O and Aviol 2 filter Exposure 9 min.
L.S.T. 12h 16m – 12h 25m.

No(3) with 6" was a bad plate – but despite emulsion faults comet appears.

N.B. Nos. (1) & (2) both show an aeroplane's flashing ~~red~~ light as it almost crossed the head of the comet – the red light is only faintly seen on the Oa-O blue plate but is strong on the Oa-E red plate. Unfortunately the Aviol 2 filter got badly scratched on the F/4.5 6" camera & gives longitudinal streaks on the negatives in region of the head. A new filter was obtained next day & mounted by Siddons in a much improved manner.

April 27-28 – April 27.8 C/Arend. Transparency 5-6/10.
Saturday night.

Two pairs of plates were exposed with the 6" & F/3 cameras.

X (1) 6" F/4.5 Oa-O plate + Ilford 2 (102) filter. Exposure 40 min.
L.S.T. 11h32-12h12m.

(2) F/3 aldis Oa-E + Micro 5 filter. Exposure 26 min.
L.S.T 11h32 - 11h58m.

South

X (3) 6" F/4.5 Oa-O plate – No filter. Exposure 40 min. Bad emulsion
L.S.T. 12h42 - 13h22m.

(4) F/3 aldis Oa-O plate + Ilford 2 (102) filter. Exposure 40 min.
L.S.T. 12h42m - 13h22m.

Unfortunately the emulsion of plate (1) was excessively bad & plate shows very little. The other three plates are good.

April 28-29 (April 28 P.S.) C/Arund. Transparency 7/10.

Sunday nights

Three pairs of plates were exposed with 6" Cooke & F/3 aldis. In addition during the second two sets Siddons Leica was exposed.

(1). 6" F/4·5 Oa-O + avid 2 (102) filter Exposure 60 min.
LST 12h 15m – 13h 15m.

(2) F/3 aldis Oa-E + Micro 5 filter. Exposure 30 min.
LST. 12h 15m – 12h 45m.

(3) 6" F/4·5 Oa-O No filter Exposure 45m.
LST 13h 43m – 14h 28m.

(4) F/3 aldis Oa-O + Avid 2 (102) filter Exposure 60 min.
LST 13h 43 – 14h 43m.

[Also Leica (Pan F + Q filter) 13h 43 – 14h 43m Exposure 60 min]

(5) 6" F/4·5 Oa-O + avid 2 (102) filter Exposure 37 min.
LST. 16h 10m – 16h 47m.

(6) F/3 aldis Oa-E + Micro 5 filter Exposure 37m.
LST. 16h 10m – 16h 47m.

[also Leica (Pan F + Q filter) LST 16h 10m – 16h 47m Exp. 37m]

Approx position of comet $\alpha = 3^h\ 25^m.9$ δ 53° 14'. Guide star about 4° North of comet

Star moving with PA 48°.5

Rate 54".6 / 8 minutes in 1 minute strips.

April 29-30 (about 29·8). Comet Arend-Roland Transp. Very good.
(Monday night).

One long exposure was made with 6" F/4·5 lens which was interrupted for 19 minutes while plate on F/3 aldis was changed. At the same time two exposures were made with the F/3 aldis.

X (1) 6" F/4·5 Oa-O plate No filter. Total Exposure (interrupted) 80 mins.
G.S.T. $12^h\,26^m - 13^h\,6^m$ and $13^h\,25^m - 14^h\,5^m$ (interruption of 19 mins)

(2) F/3 Aldis Oa-E plate Wratten 5 filter. Exposure 40 minutes.
G.S.T. $12^h\,26^m - 13^h\,6^m$.

(3) F/3 aldis Oa-E plate Wratten 5 filter Exposure 49 minutes.
G.S.T. $13^{hm}\,14^m - 14^h\,5^m$.

[In this second aldis plate focus was changed slightly: lens rotated 1/6th of a revolution outwards from plate]

The camera was driven via a star & worm wch: PA 45°·1 Δ 49"·6 or 1·93 R for 8 minutes in 1 minute steps.

Approx. position of comet α $3^h\,39^m·1$; δ + 55° 1'.

April 30.8 (April 30-31, Tuesday night. Comet Arend-Roland. Transp v. good.

I had to go up to London for the night & the following exposures were made by Whitaker & Siddons.

The bother lens was given an exposure of 67 minutes the smaller F/3 lens was stopped sooner after exposure of 40 minutes.

X (1) F/4.5, 6" Oa-O plate No filter Exposure 67 min

U.T. $12^h 46^m - 13^h 53^m$.

(2) F/3 aldis Oa-E plate Minus 5 filter Exposure 40 min

U.T. $12^h 46^m - 13^h 26^m$.

Dist. bin star with moving web: PA 43°.0

$44''.8 = 1.738$ R for 8 minutes in 1 minute steps.

Approx. position of comet:

α $3^h 52^m.6$, δ $+56° 33'$

May 2·9 (May 2-3) Thursday night. Comet Arend-Roland. Transparency 6/10.
Two sets of exposures were given with both cameras.

X (1) 6" Cooke Triplet Oa-O plate No filter Exposure 31 min
(2) F/3 aldis Oa-E plate + Wratten 5 filter Exposure 31 min.
Both plates exposed L.S.T. 12h 49m – 13h 20m.

X (3) 6" Cooke Triplet Oa-O plate No filter Exposure 90 min.
L.S.T. 13h 40m – 15h 10m.
(4) F/3 Aldis Oa-E No filter Exposure 40 min.
L.S.T. 13h 40m – 14h 20m.
(Siddons Leica was also exposed for 90 min simultaneously with 6".)

Both sets of exposures were driven on a star with moving wheel:-
P.A. = 34°·9 ↖; 36"·15 = 1·403 R for 8 minutes in 1 min. steps.
Approx position of comet $\alpha = 4^h 19^m$ $\delta = +58° 54'$

Then 9 plates were driven on a star with moving webs.—

$PA = 22^{\circ}.9$ ↖; $30''.98 = 1.203\,R$ per 8 minutes in 1 minute steps.

Approx position of comet

$\alpha = 4^h\,56^m.8, \quad \delta = +61^{\circ}\,24'$

May 5.9 (May 5-6, Sunday night). Count and Roland. Transf. good
This night a number of comparatively short exposures were given – 5 in all – with both cameras, in hope of detecting internal motions.

(X) (1) 6" Cooke Triplet Oa-O plate No filter Exposure 5 mins.
L.S.T. 13h 1m – 13h 6m.
(2) F/3 aldis Oa-E plate + Minus 5 filter Exp = 6 min LST 13h 1m – 13h 7m.

(X) (3) 6" Cooke Triplet Oa-O plate + Ariel 2 filter Exp. 10 mins.
L.S.T. 13h 29m – 13h 39m.
(4) F/3 aldis Oa-E plate + Minus 5 filter. Exp. 11 min. LST 13h 29m – 13h 40m

X (5) 6" Cooke Triplet Oa-O plate No filter Exp. 20 mins.
L.S.T. 14h 41.5m – 15h 1.5m.
(6) F/3 aldis Oa-E plate + Minus 5 filter Exp. 21 min LST 14h 41.5m – 15h 2.5m

X (7) 6" Cooke Triplet Oa-O plate No filter Exp. 30 min
L.S.T. 15h 35m – 16h 5m.
(8) F/3 aldis Oa-E plate + Minus 5 filter Exp. 30m L.S.T. 15h 35m – 16h 5m
This Aldis plate was continued from LST 16h 15m – 16h 35m (20 min) Total Exp = 50m

X (9) 6" Cooke Triplet Oa-O plate No filter Exp. 20m.
L.S.T 16h 23m – 16h 43m.

May 12·9 (May 12-13, Sunday night). Comet Arend-Roland.
Night before Full Moon Transp v. good 8/10.

In view of the v. good transparency this exposure was made on/with the near full moon — the night before total lunar eclipse. As the comet's motion was almost parallel (within 4°) of the equator the guiding with moving web was done in R.A. only.
Two exposures running concurrently were made, one with the 6" Cooke & one with the F/3 Aldis

(1) 6" Cooke Tilted Oa-O plate + Ardil 2 filter Exposure 10 mins.
L.S.T. $14^h\ 14^m.5 - 14^h\ 24^m.5$

(2) F/3 aldis Oa-E plate + Mino 5 filter Exposure 11 min.
L.S.T. $14^h\ 14^m.0 - 14^h\ 25^m.0$

May 13.9 (May 13-14 Monday night). Comet Strand-Rothrock. Transparency, but passing cloud at first & then rapidly thickening.

During total eclipse of the moon gave an excellent opportunity of getting a long exposure on the comet in the middle of the moonlight period. The total eclipse lasted from $9^h 52^m$ - $11^h 10^m$ U.T. Nautical twilight ended at $9^h 40^m$ & astronomical twilight ended at $10^h 40^m$

It was planned to give a 20 min exp. during the beginning of twilight and when nautical twilight ended; & then 10 mins before astronomical twilight start a 40 minute exposure which would finish shortly before end of twilight. Finally another 20 minute exposure would follow starting 5 min before end of twilight. Unfortunately passing clouds obtained shortly after twilight & showed signs of rapidly worsening so the plan was changed: the first 20 minute exposure was given with only little passing cloud; but the long exposure had to be cut to 25 minutes with much passing cloud; & no third exposure could be given

(X) 1 6" Cooke Triplet Oa-O No filter
2 F/3 aldis Oa-E plus Mims 5 filter
} G.S.T. = $13^h 16^m.5$ - $13^h 36^m.5$ Exposure 20m.

(Y) 3. 6" Cooke Triplet Oa-O No filter
4 F/3 aldis Oa-E plus Mims 5 filter
} G.S.T. = $13^h 50^m$ - $14^h 15^m$ Exp 25^m

Comparison device with moving web P.A 4°.1 ↖ 23".2 per 10 mins in 2½ min Stube.

Approximate position of comet $6^h 17^m.0$ δ +63° 34'

May 19.0 (May 18-19, Saturday night.) Comet Arend-Roland. Transp. 6-7/10

Three exposures were made with the 6" Triplet and 2 with the F/3 Aldis running concurrently with the two later 6" exposures.

(X) 1. 6" Cooke Triplet Oa-O plate No filter
L.S.T. $14^{hm} 15^m$ – $14^h 40^m$ Exposure 25^m (having cloud cut out about 5 min.)

(X) [2 6" Cooke Triplet Oa-O plate No filter] L.S.T. $14^h 50$ – $15^h 40^m$
[3 F/3 ~~[illegible]~~ Aldis Oa-E plate plus Minus 5 filter] Exp. 50 min

(X) [4 6" Cooke Triplet Oa-O plate No filter] L.S.T. $15^h 50^m$ – $16^h 10^m$
[5 F/3 Aldis Oa-E plate plus Minus 5 filter] Exp. 20^m.

The telescope was guided with moving web in PA = $8^\circ.8$ at rate of $16''.4/10$ min in 2½ min steps.

Approx position of comet $\alpha = 6^h 54^m$ $\delta: +63^\circ 22'$

May 20.0 (May 19-20 Sunday night) Comet and Rotland
Transparency 8/10.
One set of exposures was made with the two cameras.

(1) 6" Cooke Triplet Oa-O plate No filter
L.S.T. $14^h 50^m - 15^h 47^m$ Exposure 57 min

(2) F/3 Aldis Oa-E plate + Wratten 5 filter
L.S.T. $14^h 50 - 15^h 40^m$ Exposure 50 min.

The cameras were guided with moving web in PA 6°.0
at rate of 16".15 per 10 minutes in 2½ min. steps.
The approx position of the comet was :-
$\alpha = 7^h 0^m.5$ $\delta = +63° 28'$

May 27.0 (May 26-27 Sunday night). Comet around Rotland. Transparency 7/10.
One set of exposures was given with the two cameras

(1) 6" Cooke Triplet Oa-O plate No filter } L.S.T. $15^h 5^m - 16^h 5^m$
(2) F/3 aldis Oa-E plate + Wratten 5 filter } Exposure 1 hour = 60 m.
(air-craft crossed near the field at $16^h 17^m$ & $16^h 1^m$.)

Cameras were guided with moving web in PA = 12°.5
at rate of 27".00 per 20 min. — in 5 min. steps.
Approx position of comet $\alpha = 7^h 37^m$ $\delta = +62° 47'$.

May 28.0 (May 27-28 Monday night) Comet Arend-Roland. Transp. good.

One set of exposures were given

+ ✓ (1) 6" Cooke Triplet Oa-O plate No filter } L.S.T. $15^h16^m - 16^h16^m$.
? (2) F/3 Aldis Oa-E plate + Micro 5 filter } Exposure = 60 mins.

Camera was driven with guided worm in PA = 14°.0 ↘
at rate of 25".00 in 20 minutes in 5 min. steps.

Approx position of comet $\alpha = 7^h41^m.5$ $\delta = +62°40'$

June 3.0 (June 2-3 Sunday night) Comet Arend Roland. Transparency 7/10.

One set of exposures were given:-

+ ✓ (1) 6" Cooke Triplet Oa-O plate no filter } L.S.T. $16^h55^h - 17^h55^h$
(2) F/3 Aldis Oa-E plate + Micro 5 filter } Expt. = 60 minutes.

Camera was driven with moving worm in PA = 17°.3 ↘
at rate of 20".97 for 20 mins in 5 min steps.

Approx position of comet $\alpha = 8^h5^m.0$ $\delta = +61°56'$.

June 16·0 (June 15-16 Saturday night). Comet Arend Roland. Transp 5/10
At 2 days after Full Moon.

One set of short exposures given because of bright moon. & for this reason the Ariol 2 filter was used with the 6".

(1) 6" Cooke Triplet. Oa-O plate with Ariol 2 filter
L.S.T. $17^h\,20^m - 17^h\,45^m$ Exposure 25 mins.

(2) F/3 aldis Oa-E plate + Wratten 5 filter
L.S.T. $17^h\,20^m - 17^h\,38^m$ Exposure 18 mins.

Cameras were guided with moving web in P.A. 18°5 ↘
at rate of 16'84 per 20 minutes in 5 min steps.
Approx position of comet $\alpha = 8^h\,43^m\cdot3$ $\delta = +60°\,25'$.

June 22·0 (June 21-22 Friday night) Comet Arend-Roland Transparency 6/10.
One set of exposures given with the two cameras

(1) 6" Cooke Triplet Oa-O plate No filter
L.S.T. $17^h\,36^m - 18^h\,11^m$ Exposure 35 mins.

(2) F/3 aldis Oa-E plate + Wratten 5 filter
L.S.T. $17^h\,36 - 18^h\,6^m$ Exposure 30 mins.

Camera drive with moving web in P.A. = 18°3 ↘
at rate of 15'92/20 min in 5 min steps.
Approx position of comet $\alpha = 8^h\,58^m\cdot6$ $\delta = +59°\,47'$.

June 30.0 (June 29-30 Saturday night). Comet Arend Roland Transp. 3/10.

Rather Short Exposure made because of rather poor transparency
6" Cooke Triplet Oa-O plate No filter L.S.T. $18^h 11^m$ – $18^h 51^m$ Exp 40^m

? → v Bad emulsion

not sent

Guided with moving web PA. 20°.3

at rate of 14".38 per 20 mins in 5 min. steps

Approx position of Comet $\alpha = 9^h 16^m.4$ $\delta = +59°3'$

July 2.0 (July 1-2 Monday night) Comet Arend Roland. Transp 4/10
and slight Twilight.

(+) 6" Cooke Triplet Oa-O plate No filter L.S.T. $18^h 24^m.5$ – $19^h 24^m.5$

? → Exposure 60 mins.

Guided with moving web in PA. = 17°20'

at rate of 14".24 per 20 mins in 5 minute steps.

approx position of comet $\alpha = 9^h 20^m.6$ $+58°53'$

Occultation:

1957 (3) ✓ July 6.

28 G Librae Mag 6·7 Disappearance Age of Moon 9·0 days PA 123°.

Predicted U.T. $21^h\ 52^m\ 18^s$.

Durham. Observed L.S.T. $16^h\ 48^m\ 18^s.0$ ± 1·6 sec. est.

Observed corrected L.S.T. = $16^h\ 48^m\ 16^s.4$

∴ Observed corrected U.T. = $21^h\ 52^m\ 23^s.8$

Seeing poor, Observation good quality.

July 6–7 Saturday night. Preparation was made to photograph Arend-Roland – but sky deteriorated & no exposure was made. An occultation (see opposite page) was however observed. During rest of this month weather was bad & no photos were obtained until Aug 3.

Aug 3.0 (August 2–3 Friday night) Arend-Roland Comet Transparency 6/10.
As the comet had not been photographed here for a whole month & was reported to be getting faint, a long exposure was given.
6" Cooke Triplet Oa-O plate No filter L.S.T. $19^h 55^m.5 - 21^h 15^m.5$
Exposure = 80 mins.

Guided with moving web in P.A. 7°.0
at rate of 23".6 per 40 minutes in 10 min. steps
Approx position of comet $\alpha = 10^h 20^m.2$, $\delta = +57°6'$

A good image of comet was got & definite wide tail
This was the last photo I obtained though several other plates were exposed but showed nothing of comet.

1957

Oct 19.9 (Oct 19-20 Saturday night) Comet Arend-Roland Transp 4/10.

This was the first opportunity for photographing for this comet since Aug. 3.

First of all came the interruption due to C/Mrkos & then poor weather.

(1) 6" Cooke Triplet Oa-O plate No filter

L.S.T. $20^h 49^m - 21^h 59^m$ Exposure 70 minutes - but much passing cloud & several interruptions - effective exposure probably ± 40 mins.

Dross with moving web in PA 40° at 6.28 per 10 mins (also close to plate centre) 10 min steps.

Approx position of comet $\alpha = 12^h 26^m.4$ $\delta = +61°8'$ (Eph Mag - 12.5)

Oct. 21.9 (Oct 21-22 Monday night) Comet Arend Roland Transp 6-7/10

Exposure 6" Cooke Triplet Oa-O plate No filter

L.S.T. $20^h 46 - 20^h 50$ + $21^h 15^m - 22^h 21^m$ Exp = 70^{min}

Interruption by cloud just after starting - after that no cloud & v. transp.

Dross with moving web in PA = 40° at 6.28 per 10 min in 10 min. steps.

Approx position of ~~comet~~ circles $12^h 27^m$ + 61° 25'

Ephemeris position of comet $\alpha = 12^h 29^m.6$ + 61° 27'

On neither of these plates could I find any definite image of the comet - so my ~~latter~~ final plate of C/Arend Roland was on Aug 3.0

Occultation

1957 (4) Nov. 3.

25 Psc. Mag 6.2 Disappearance Age of Moon 11½ days P.A. = 121°

Predicted U.T. $19^h\ 1^m\ 42^s$.

Disappearance Observed L.S.T. = $21^h\ 51^m\ 11^s.0$ $+ 0^s.4$ cor.

Corrected Ob. L.S.T. = $21^h\ 51^m\ 11^s.4$

∴ Observed Corrected U.T. = $19^{hr}\ 2^m\ 39^s.9$

(Observation may be in doubt.)

Occultation

1958 (1) March 3

κ Cancri N.Z.C. 1359 Mag 5·1 P.A. 115° Predicted Time $18^h 31^m 0$ U.T.

Brightness Moon age = 13·2 days.

Birmingham Observed L.S.T. $5^h 12^m 45^s.5$ Corr = −9·3 seconds

∴ Corrected Obs. L.S.T. = $5^h 12^m 36^s.2$

= Obs. U.T. = $18^h 31^m 3^s.6$

good observation.

1958.

March 3.75 (March 3-4 Monday night) Comet 1958 d Burnham.
Transit ± 3/10 d close to near full moon
In spite of haze & moonlight I thought it worth trying a short exposure with filter on the recently reported new comet Burnham.

6" Cooke Oa-O plate + Av with 2 filter
L.S.T. 5h 43m — 6h 3m Exposure 20 in
Dome moving west in PA 62° ↖ 11".76/10 mins, in 5 min strips.
Plate badly fogged — only brighter stars (eg mag 5) no comet.
Approx position of Comet α = 16h 1m δ = + 13° 40'

May 13.0 (May 12-13 Monday night) Comet Burnham. Transit good.

6" Cooke Tinfoil Oa-O plate No filter L.S.T. 13h 43m - 14h 13m
Used 15s slow. Exposure = 30 min Mid exposure = 13h 58m 15s corrected. (15.5)

Dome with moving west in P.A. ~~[illegible]~~ 7°.5 ↙
at rate of 24".35 per 10 mins. in 2½ min strips.
Approx position of Comet α 9h 57.0 δ + 28° 12'
The plate shows strong image of comet.

Two plates C Burnham June 9.0 were measured.
In all Seven stars were measured on each plate — actually the same seven stars on each plate. and 3 reductions were made for each plate.

The seven stars were 8 BD 22° 2403 34. BD 21° 2360
7 22° 2402 38. 21° 2364
6 22° 2401 39. 21° 2365
25 21° 2351

The positions were taken from AGK$_2$ & PMs from EBH$_2$

Plate 1. June 8.95743 $\alpha = 11^h 45^m 10^s.25$ $\delta = +21° 43' 34''.4$ (1958.0)

Individual Reductions gave

A	Stars 6, 7, 34	$\alpha = 10^s.19$	$\delta = 35''.7$
B	" 25, 8, 38	$10^s.31$	$33''.3$
C	" 6, 8, 39	$10^s.24$	$34''.2$

Plate 2. June 8.97232 $\alpha = 11^h 45^m 13^s.13$ $\delta = +21° 43' 17''.0$ (1958.0)

Individual reductions gave

A'	Stars 6, 7, 34	$\alpha = 13^s.09$	$\delta = 16''.9$
B'	" 25, 8, 38	$13^s.18$	$17''.4$
C'	" 6, 8, 39	$13^s.11$	$16''.7$

1958

June 9.0 (June 8-9 Sunday night). Comet Burnham. Temp 5-6/10.
Two short exposures were given with 6" for purpose
of measuring position of comet. A longer exposure given later for C du Toit...
(1) 6" Cooke Triplet Oa-O plate No filter
L.S.T. 16h 1m. 0 secs. — 16h 6m 0sec Clock 5.5s fast
Exposure = 5 min. Mid Exposure = 16h 3m 24.5s
(2) 6" Cooke Triplet Oa-O plate. No filter
L.S.T. 16h 20.0 secs – 16h 30m 0 secs. + clock correction
Exposure = 10 min Mid Exposure = 16h 24m 54.5s
Drove both with moving web P.A. 21.3°
at rate of 21.6 per 10 min. in 2½ min. steps.

(3) I was asked to search for Comet du Toit Neujmin Delporte which
had not yet been recovered. This was my first attempt & I started
with a plate at west end of the search region as the comet
is of v. low declination & is approaching the sunset.
6" Cooke Triplet Oa-O No filter
L.S.T. 17h 0m – 17h 24m Exp. 24 min stopped
by increasing cloud. (Equivalent exp. perhaps 15m!)
Drove with fixed web. Plate centred 17h 6m δ –17° 16'
No sign of comet on plate.
No further plates taken, as next week I heard
the comet was now* expected to be further west
& out of my reach. * result of revising elements.

Occultations

1958 (2) ✓ Aug 25 ✱ZC 2871 BD -17° 5699 f.

Mag 7·1 Disappearance Age of Moon 10·8 days P.A. 11°

Predicted U.T. 22h 6m 24s (No a + b correction given).

Disappearance Observed L.S.T. 20h 18m 7s.5 + Clock correction (-0.9 secs)

Observed Corrected L.S.T. 20h 18m 6s.6.

Observed Gr. U.T. = 22h 6m 2s.6 V. good quality.

The star is a faint white + about equal double star

The star observed was the f star + the last to go.

1958 (3) ✓ Sept 21. Z.C. 2826 ρ Sagittarii Mag 4·0 Disapp.

Age of Moon 8·3 days P.A. = 113° Pred. U.T. = 19h 7m 48s.

Disapp. Observed L.S.T. 19h 5m 54s.0 + Corr (= +1.3 secs)

Observed Corrected L.S.T. 19h 5m 55s.3

Observed Corrected U.T. 19hm 7m 52s.7.

1958 (4) ✓ Sept. 22 Z.C. 2969 B Capricorni Mag 3·2 Disapp.

Age of Moon 9·4 days PA = 44°. Predicted U.T. 23h 17m 48s

Disappearance Observed L.S.T. 23h 20m 33s.0 + Corr (+1.0s)

Disappearance Corrected Observed L.S.T. 23h 20m 34s.0

Obs Cor. U.T. = 23h 17m 53s.8

V. good quality Observation

Clouds cleared only a few minutes before and the earlier occultation of 16 B. Cap (6 mins. earlier) was observed by cloud.

1958

July 21.0 (July 20-21 Sunday night) C. Burnham Transp. 5/10.

Exposed on comet with idea of obtaining plate for position measurement. The weather conditions had prevented any plates since June & by now the comet had become much fainter. There was thus some doubt as to what the optimum exposure would be, but I decided on 30 mins.

6" Cooke Triplet Oa-0 plate No filter

LST 18h 2m.0 – 18h 32m.0 clock 16s.2 slow cor = +16 sec.

Exposure = 30 min. Mid Exp = LST 18h 17m 16 sec.

Drove with moving web in P.A. = 27°.0 ↙ at 16".7/10 min in 2½ min. steps.

Approx position of comet α = 13h 43m.5 δ = +7°55'.

(Emulsion very faulty & originally fogged – as a result no sign of comet)

Aug - Sept. Was away in Italy first 3 weeks of August

Before leaving I obtained from the admiralty the loan of a 10" Signalling lamp louvre shutter which I thought might be suitable for timing satellite (Sputnik) photos. A wooden frame for this shutter was made for me by Prof. J. Monro & to this was added by Mr. J. W. Siddons a Bowden cable (with pistol grip) & spring for opening & closing it, also he put onto the spindle (which turns with the louvres) an insulating ~~[illegible]~~ drum with a silver segment to act as a contact maker when the shutter is ~~[illegible]~~ opened to an adjustable extent. This is connected with a chronometer & chronograph (loaned by Edgar Thompson (V.C.L.) & Major Ker (R.E.) & it was found

Plate of C. Burnham Slaughter Oct 12.8 measured.

Stars 1) BD 13°4418   2). BD 12°4365   3) BD 12°4364   4) BD 13°4435
5) BD 13°4439   6) BD 12°4376   7) BD 12°4382   8) BD 13°4450.

Positions were obtained from the Yale Zone Catalogue as well as proper motions; & reductions were made to 1958.0

(1) Stars 2, 5, 7	α $20^h\ 31^m$	$29^s.40$	δ + 13° 25′ 52″.6
(2) Stars 1, 6, 8.		$29^s.31$	53″.5
(3) Stars 3, 4, 7		29.37	52.5

giving Reds. (1) & (3) weight 2 – both having one star in common – & Red. (2) a weight of 3 – all 3 stars being independent – the weighted mean comes out at. $20^h\ 31\ 39^s.35$ + 13° 25′ 53″.0 (1958.0)

but the shutter could be opened & shut (5 times each) per second — one opening or one shutting is thus < 0.1 secs, & I estimate that the actual cut-off (opening or shutting) is of order of 0.02 or 0.01 seconds. This can only be tested by photographing the shutter.
The apparatus was completed & ready by Sept 25 & it is hoped to try it out soon after Oct 10 when I return from 10 days holiday (Sept 27 – Oct 8) in Cornwall.

October 12.8 (night of Sunday–Monday Oct 12–13) Comet Burnham–Slaughter 1958e

Some haze rising off fields but not reaching as high as telescope — except towards end of exposure. Transparency 6-7/10. Oa-O plate No filter

W.H.S. here for week-end — but this was the only clear night we had.
Exposed on Comet L.S.T. 20h 29.0m – 21h 9.0 correction clock 4m05s fast Exposure 40 min
Calculated time of mid exposure = 19h 25m 29s.0 = Oct 12.80937
Guided on star with moving wet in PA 20°.2 ↗ 20″.80 = 0.808R per 40 minutes in 10 minute steps.

The plate is a good one & shows stars probably well below mag 16.0
The comet is well above limit & is estimated at about 14.5 mag. Compared with the short star-trails the comet shows a stellar nucleus — 30″ diameter in which most of the light is, but surrounded by very faint circular halo about 1½ diameter (90″), but two close-by star trails obscure the halo on two sides & make its shape uncertain. Eight stars & the comet were measured & reduced giving:
Oct. 12.80937 $\alpha = 20^h 31^m 29^s.35$, $\delta = +13° 25' 53''.0$ (1958.0)

1958.

Oct. 27. First chance to use new shutter for photographing Sputnik Rocket 3. The rocket appeared several minutes earlier than expected and there was difficulty in getting the apparatus started in time & aligning the telescope onto the object. As a result the trail travelled rather close (but fortunately parallel to) the long side of the plate; & the shutter was not opened in time to catch the first flash of the sputnik which would have been on the plate: only two flashes were secured, & in each of them the cut-off & the opening of the shutter is seen. Due to lack of practice only one of these 4 workings of the shutter is really sharp, one other is fairly sharp & the other two are rather slow.

Rough measures were made of three of the four timed points of the trail. ||Revolution No. is 2339. Longit of Apex 52°E || Cut off:-

1. U.T. 18h 30m 50s.83 ±0s.05   α = 19h 11m 29s   δ = +2° 27'.1   fairly sharp about 0.3mm doubt.

2   18h 30m 51s.26 (probably early) ·49 ———————   vague

3.   18h 30 58.40 ±0s.2   α = 19h 20m 11s   δ = +6° 7'.2   fairly gradual about 1.7 mm.

4   18h 30 59.14 ±0s.05   α = 19h 20m 50s   δ = +6° 22'.5   v. sharp.

I think with practice the shutter can be worked very quickly by hand & give cut-offs measurable to less than 0.05 secs.

Occultation 1958 No 5. Dec. 28-29 (Sunday - Monday night)

1958 Dec. 29 N.Z.C. 1341 (α Cancri) Mag 4·3

Moon age 18·4 days

attempt was made to observe the Bright Limb Disappearance but a thick thin blanket of cloud partially obscured the moon. Just before occultation the star suddenly became very difficult & there is some doubt as to whether the time of complete disappearance some 7 seconds later was the true occultation. In a clear sky I am sure it would have been easy.

Bright Limb Disappearance U.T. $4^h\ 3^m\ 2^s\cdot5 \pm 0^s\cdot5$ & doubtful. ✓

The reappearance was well observed in clear sky & the star appeared very close to the cross wire placed on the expected place near the terminator

Observed L.S.T. $11^h\ 26^m\ 0^s\cdot5$ + clock corr $-13^s\cdot6$.

" arrival LST $11^h\ 25\ 46^s\cdot9$

Observed Corrected U.T. $4^h\ 59^m\ 44^s\cdot7$ Bright Reapp. ✓

V. good quality $\pm 0^s\cdot25$.

1958

Nov. 3-4 (Monday night) <u>November 3.8</u> C Burnham Slaughter 1958 e.

Exposure 0a-0 Kodak plate No filter. Exposure 35 mins.

<u>LST</u> $21^h 18^m - 21^h 53^m$. Approx UT $18^h30 - 19^h 5^m$

Drove on <u>fixed web</u>. Transp 5/10.

approx plate centre $\alpha = 20^h 21^m$ $\delta = +15°$.

Unfortunately Emulsion was hopelessly faulty — very few stars appear & there is no sign of comet.

Dec. 1.75 Dec 1-2 (night of Monday Tuesday) C Burnham Slaughter 1958 e.

Exposure 30 min Transparency 5/10.

<u>LST</u> $22^h 49^m - 23^h 19^m$.

Drove with moving web: PA 43°.3 ↖↘ 5".67 per 10 minutes.

The emulsion is good & star images excellent. But the faintest stars are not so faint as in plate of Oct 12.8 and I query whether the plate is fully developed. Though it had 7 minutes as usual I think we may have accidentally used rather old developer! Careful search shows no sign of comet which is surprising as comet should have brightened by 0.5 mags.

1954

Jan 4-5 (Sunday night) Jan 4.8 C Burnham-Slaughter 1958e. Transp 6/10.

Exposure 45 minutes Plate Kodak 0a-O. No filter.

Det. $1^h\ 15^m\ 0^s - 2^h\ 0^m\ 0^s$ Central Exp. = $1^h\ 37^m\ 30^s$ L.S.T.

Plate centred $\pm\ 21^h\ 4^m + 25°\ 24'$ = $18^h\ 45^m\ 33^{Secs}$ U.T.

= Jan 4.78163.

Drove on moving web: P.A = 41°.1 ↖ 20 minute motion = 21".14 = 0.821 Revs.

in 5 minute strip = 5".28

Comet appears as small faint rounded image. Central condensed part about 30" in diameter & very doubtful surrounding halo. But central condensed part is not v. dark & difficult to see well in measuring machine. No tail. Total magnitude about 13.0.

Twelve stars were measured - but one was wrongly identified. & Cross reductions were made: the final position was :—

Jan 4.78163 : $\alpha = 21^h\ 4^m\ 34^s.73$ $\delta = +25°\ 22'\ 17".5$ (1959.0)

Occultation No 1. 1959.

March 15. Z.C. 636 55 Tauri m. Mag 6.9 Moon age 6.5 days
Dark limb Disappearance PA 106° Dark limb clearly visible.
Predicted U.T. of Dis was 22h 22m 18 sec.

Seeing was quite steady despite rather low altitude. At disappearance the star was seen very definitely to fade over a period of a few tenths of a second (say 0.3 secs). The star is in Hyades OΣ 79 components 7.0 & 8.8 mags. There was certainly no light-flash; but if the two stars went out within a fraction of a second a seeing disturbance would have blurred the effect into a fade.

Observed L.S.T. of Dis. was 9h 50m 46.0s clock correction 4.1 sec slow.
∴ Obs. Corrected LST was 9h 50m 50.1s or 22h 22m 18.5s U.T.

N.B. v. good quality observation. But some question about clock error — may have been 5.7 secs fast instead of 4.1 secs slow — but the doubt is very slight.

Occult No 2 1959

Mar 21. Z.C. 1410 6 Leonis Mag 5.3 Moon age 12.4 days. Dark limb Disappearance
P.A = 88°. Limb not visible. Predicted U.T. of Disap. was 20h 59m 21s
Seeing good Disappearance instantaneous

Observed L.S.T. of Dis. was 8h 51m 2.8s clock error slow +14.9 sec.
Observed Corrected LST was 8h 51m 17.7 or. 20h 59m 5.4s U.T.

v. good quality observation.

1959

Jan 10–11 (Saturday night) Jan 10.75 Comet Burnham Slaughter (1958c) Transp 4-5/10

Exposure 40 min Plate Kodak Oa-O (No filter)

U.T. $1^h\ 23^m\ 0^s - 2^h\ 3^m\ 0^s$ Mid Expl $1^h\ 43^m\ 0^s$ U.T. = $18^h\ 27^m\ 26^s$ U.T.

Plate centred roughly α $21^h\ 13^m.5$ δ $+27°\ 7'$.

Drove with moving web in PA 41.°1 ⇨ 20 min Motion 23.″32 = .906 R.

in 5 minute steps = 5.″83. Temp = 30° F = 3-16.

Comet appears as small round image (? some distortion of previous plate) centrally condensed part about 30″ diameter — not very dense. Quite tenuous faint halo surrounding. No tail about from ? distortion of central part. Total magnitude perhaps a bit brighter than Jan 4 about 12.5 mag.

Fourteen stars were measured and six reductions made. Final position was:

Jan 10.76905 $21^h\ 13^m\ 33^s.28$ $+27°\ 7'\ 32''.4$ (1959.0)

1959

Feb 1-2 (Sunday night) Feb. 1.8. C. Burnham Slaughter (1958 e) Transf. 3-4/10.

Exposure 30 minutes. Plate Kodak Oa-O No filter.

L.S.T. $3^h 10^m 5^{secs}$ – $3^h 40^m 5^{secs}$ Mid Exposure $3^h 25^m 5^s$ L.S.T.

∴ Mid Exposure occurs $18^{hrs} 42^m$ 45 secs. or Feb 1.77969

Drove with moving web in PA = $40°.8$ ↖ 10 min motion = $15''.57$ = ·605 R

in 2½ minute steps = $3''.89$. Plate centred $21^h 55^m.2$ + $34° 58'$

Temp: 38° → 36° f = 3—14.5

The comet appears as a small roughly circular very diffuse image with a minute central dark point (possibly a plate defect?) ~~unknown~~ The diffuse halo is 60"–90" in diameter but has a very indefinite border. There is not much central condensation except for the minute central spot — ? too small to be real! Integrated Mag perhaps a little brighter than before: round 12.5 mag.

The central spot was measured for position — the halo was too faint & diffuse to set on its centre of gravity.

Ten stars were measured & 5 reductions made: – Final position was

Feb 1.77969 α = $21^h 55^m 16^s.45$ δ = +34° 59' 15".82 (1959.0)

1959

April 4.5 (Saturday night) April 4.8 C Burnham-Knight (1958 e) Transp 5-6/10

Exposure 35 mins Plate Kodak Oa-O (No filter)

L.S.T. $9^h 5^m 15^s - 9^h 40^m 15^s$ Mid Exposure = $9^h 22^m 45^s$

∴ Mid Exposure was U.T. or April 4·

Drove with moving web in PA 1°.5 ⟶ 10 min Motion = 23".30 = 0.905 Revs.

in 2½ minute steps = 5".82 Plate centred roughly $2^h 35^m.6$ + 58° 37'

Temp: 60° → 57° F: 3 — 8

Comet image though minute is very strong - much stronger than previously (except ? Oct.) It is more or less round (? sl. elongated N-S) and about 20" in diameter - and without any of the outer halo suspected earlier & specially noticed on Feb. 1.8.

This actually was the last photograph I got of this comet. Moonlight & bad weather prevented me, & the three plates exposed - May 9, May 25 & June 2 - were taken on such poor nights that nothing was obtained.

Occultation No 3.

May 15 ZC 1440 BD° 2239 Mag 6·7 Bright limb Dark limb

Moons age 8.1 days P.A = 88°

Observed disappearance L.S.T. $14^h\ 5^m\ 8{\cdot}5^s$ sec + corr.

correction = $+17^s{\cdot}6$ (clock slow)

∴ Observed corrected L.S.T. = $14^h\ 5^m\ 26^s{\cdot}1$

∴ Observed corrected U.T. = $22^h\ 36^m\ 22^s{\cdot}5$

good quality observation.

1959.

May 9.9 May 9-10 Saturday night. C Burnham-Slaughter (1958e) Transparency 2-3/10 Seen v. low altitude.

Exposure 30 mins. L.S.T. 13h 25m 6sec + → 13h 55m 6s + cor.

Drove with moving web P.A. = 30°17 10 min Motion = 19".6 = 0.762 R.
in 2½ minute steps = 4".9. Plate roughly centred α = 6h 8m.5 δ = + 51° 7'
Temp = 62° → 63°; Focus F 3...6.

It was such a poor sky that I felt it most unlikely that we would get an image of the comet. However a dense image apparently that of the comet was on the plate close to the expected position. It was much brighter than expected or, if it was the comet, there must have been a very remarkable brightening. There was a delay of 2 weeks before I could measure the plate — & the position found was nearly 10' out — and nothing definite was visible in the correct position. As the image looked so real & unlike a flaw I wrote to Dr. Pajdusakova at Skalnaté-Pleso who sent me a plate taken there at almost exactly the same time. On that plate which went far fainter than mine there was not even a faint star. My image was clearly a flaw & the real comet was too faint to make any impression.

1959

May 25.0 (May 24-25, Sunday night). Comet Burnham Slaughter 1958e. Transp 7/10
(very clear sky but much twilight & full moon rising).

It was only possible to expose for 12½ minutes & the exact time to start was difficult to decide on — the best moment between diminishing twilight & increasing moonlight.

Exp. 12.5 minutes L.S.T. $14^h 25^m 5^s$ — $14^h 37^m 35^s$ + correction

Drive moving w.r.t. PA 35°.6

10 min Motion = 17".68 = 0.685 Revs.

in 2½ min. steps (= 4".42) Temp = 59° F = 3–7

Plate centred $\alpha = 7^h 4^m.9$ $\delta = +45° 0'$.

Plate very much fogged — no sign of comet.

June 2.0 (June 1–2, Monday night) C/Burnham Slaughter (1958e). Transp 3/10
Very poor transp. Passing cloud & much twilight

Plate only exposed because this was about our last chance of getting comet.

Exposure 15 min L.S.T. $15^h 30^m 3^s$ → $15^h 45^m 3^s$ + cor.

Drive moving w.r.t. PA 38°.2

10m Motion = 16".33 = 0.634 Revs. 2½ min steps (= 4".08)

Plate centre α $7^h 27.8$; $\delta = +41° 43'$

Plate much fogged — No sign of comet

T = 56°–55° F = 3–8

June 8.0 (June 7-8 Sunday night) Polar Sequence Transp 6/10.

Photo at midnight — but very considerable twilight.

Exposure 15 mins — starting 5 mins before midnight.

No guiding — plate shows very good images.

Kodak Oa-O plate (delivered mid April & kept in Frig).

June 15.0 (June 14-15 Sunday night) S.A. +15° No 84 Transp 7/10

(twilight & ½ moon setting).

Set on central star $16^h 14.9^m$ + 14°54′ (1959.0)

Drove with moving web in 1 minute steps of 6″ each for 8 minutes

Then moved slightly in RA & gave 8 minute stationary exposure.

The trails are therefore 48″ long & the images (circular)

are near one end of trail — both sets of exposures <u>8 min each</u>.

Kodak Oa-O (same batch as June 8 plate of P. Seq.

The 48″ trails are trailed in R.A.

The intensities of these trails compared with the intensities of their corresponding (circular) star images thus represent the effect of trailing at the rate of 6″ per minute.

1959 July 7. Occultation of Regulus by Venus.

Observed with 6" Cooke x 130.

Observatory opened at noon by Siddons & tube kept in shade. Very transparent sky. When observing started at 13hr 45m seeing only moderate & star quivering quite a bit. Shortly after 14 hours seeing became rapidly better & for 10 minutes before occultation the star image remained perfectly steady. Suddenly it faded very rapidly & completely disappeared. For 2 minutes before disappearance seconds were counted with microphone from sidereal clock. Disappearance occurred at $9^h 17^m$ 30.0 secs + correction. Correction from Time was obtained 20 minutes later & found to be −3.7 secs. (clock 3.7 secs fast). The time L.S.T. was $9^h 17^m$ 26.3 s which was $14^h 20^m 46^s.6$. Appreciable fading noted 1.5 seconds earlier — certainly not more than 2.0 seconds earlier or less than 1.0 seconds earlier. The seeing was then excellent & the times can be relied on. Reappearance not critically observed at bright limb — but star was definitely visible at 14h 30m 7.1 s.

It appeared to me that during the star's rapid fading there was no change in colour — but this negative observation is not very critical.

1954.

Work end July 5 or 6 ? Polar Sequence Exposure 30 min. Transp 6/10
Night twilight. Photo exposed during 30 minutes round midnight.
either July 5.0 or 6.0 ?? No guiding. Image very good
Same type plate as on June 8.0 - last week both 8a-0.

1954.

Comet Alcock I - 1959 e.

Aug 28.9 (night of Friday Aug 28-29). Trans 3 – much tearing cloud with frequent complete interruptions.

Oa-O Kodak Plate. Exposure total 20 minutes but probably equivalent to only about 5 minutes.

Ext. L.S.T. $21^h\ 10^m\ 6^s \rightarrow 21^h\ 30^m\ 0^s$

Plate centre $16^h\ 8^m\ 45^s\ +31^\circ\ 47'$.

Guider with moving coil in PD 40:1 at rate of 34".0 per 10 minutes in 2½ min. steps.

The star images are discontinuous & of varying density (owing to cloud) & are not good for measurement.

The comet gives a stary image

The comet was visible fairly easily in 6" x 130. a large diffuse object with no visible nucleus.

1959. Comet Alcock I 1959 e.

Aug 29.8 (night of Saturday Aug 29-30) Transp good 6/10.

Kodak Oa-O plate Exposure 40 minutes.

L.S.T. $21^h 10^m 4 - 21^h 50^m 2$ (corrected) Mid Exp. = $21^h 30^m 3$ L.S.T. = $23^h 3^m 46$ U.T.

approx plate center: $16^h 13^m.5$ $+30° 55'.4$. Temp 52° F = 8.5

Drove with moving web in P.H. 40°.9 ↙ 33".2/10 min. in 2½ min. steps. Star images are good & the comet is strong. The comet was visible as a very diffuse large object without definite nucleus in 6" x 130. The plate was measured for position — see opposite page.

Aug 31.0 (night of Sunday Aug 30-31) Comets Alcock I & II 1959 e & f

The evening was very largely overcast & no attempt was made to photograph Alcock I. Late in the evening Cuddy phoned news of discovery of Alcock II that same morning near to ζ Cancri & moving towards Sun — Mag. 5. So I got up before sunrise & tried to get comet with 6" — but the trees on East horizon were in the way & the sky was too bright when ζ Cancri was clear them. Unfortunately I had no one to help me bring the 4" into action. It won't be possible to photograph this comet until it comes out on other side of sunset.

Comet Alcock I 1959 e

1959. August 31.9 (night of Monday Aug 31 - Sept. 1) Transp 7/10 — but low
altitude transparency diminishing towards horizon.

Kodak Oa-O plate Exposure 40 mins. LST $20^h 35^m 3^s$ — $21^h 15^m 3^s$ (corrected)

Mid Exposure = $20^h 55^m 3^s$ = $22^h 20^m 14^s$ U.T. = Aug 31.93072

Driven with moving web in PA = 40°.9 ↙ at 33".2/10 min 2½ min steps.

Plate centre approx $16^h 23^m.1$ + 29° 11'.0 . Temp = 60°.

Unfortunately there is considerable fogging of plate (? leak in holder)

but this does not seriously affect the region near the comet.

Comet Alcock I.

1959. Sept 4.9 (night of Friday Sept 4-5). Transparency good ??

Kodak Oa-O plate. Exposure 40 min. Temp 64°-61°; F ... 8.5.

LST $21^h 15^m 3^s$ — $21^h 55^m 3^s$. Mid Exp $21^h 35^m 3^s$ LST = $22^h 44^m 24^s$ U.T.

Plate centre $16^h 45^m.0$ + 23° 44'. Driven with moving web in

PA 46°.8 ↙ 44".0 per 10 min = 1.71 Revs. in 2½ min steps.

Occultation No 4.

Sept 11 Z.C. 2764 (−18°5155) Mag 6·3 Disap dark limb
Moons age 8.8 days P.A. 116

Disappearance (sudden) occurred at 19h 26m 42·0 sm uncorrected LST
& error estimated only ±0·1 secs.

The clock error determined 1½ hours later & checked early next morning
was 4·2 seconds fast. ∴ Corrected LST = 19h 26m 37s·8

Corrected U.T. = 20h 8m 48·3 seconds (± 0·1 sec)

Very good pretty observation (Transp + good seeing)

Occult. No 5. I was in Cornwall & prevented seeing occultation of Aldebaran by Cloud. But J.W Siddons observed it at as Wt. Dewing up of the eyepiece prevented reappearance but Disappearance was observed satisfactorily.

Sept. 23 Z.C. 692 (α Tauri) Mag 1.1 Disappearance Bright limb.
Observed L.S.T was 6h 17m 18s·0. Clock correction obtained
¾ hours later showed it to be −10s·3 (clock fast)
∴ Corrected LST was 6h 17m 7s·7
∴ U.T was 6h 14m 16s·7 J. W. S.

1959 Sept 7.9 Comet Alcock I (night of Monday Sept 7.8) Transparency 5/10.

Ilford Astra Zen Plate T = 65°–62°; F = ... 8.5.

Exposure 40 min LST $20^h 45^m 3^s$ – $21^h 25^m 3^s$ (corrected)

Plate centre $17^h 1^m.4$ + 20° 2'.5

Drove with moving web in PA 47° 45' → 45".4/10 min in 1¼ min steps

Sept. 19 – Oct. 3 away on a holiday in Cornwall – at Truro near Lindleys. Tried to observe occultation of Aldebaran with WMH's 5½" but the sky was cloudy till a few seconds after reappearance. However Siddons observed disappearance at ascot with my 6" – see opposite page.
On October 2 watched the partial eclipse of the sun with pinhole mirror (½" aperture & about 60 foot focus) projecting onto the drawing room wall.

Oct 4·81620 Comet Giacobini Zinner

Plate Measure. The corrected U.T mid exposure was $19^h\ 35^m\ 20^s$

Ten stars were measured. Position & precession from AGK$_2$. No PMs available

Three completely independent reductions were made:

(1)	$17^h\ 26^m\ 32^s\cdot66$	$+10°\ 4'\ 28''\cdot1$	
(2)	32·67	28·4	
(3)	32·61	28·3	

Mean of $17^h\ 26^m\ 32^s\cdot65$ $+10°\ 4'\ 28''\cdot3$ (1959·0) Oct 4·81620

A fourth reduction, in which one of the stars in No. 3 was replaced by a much brighter star, was more discordant (α 32^s·52, δ 28''·1) was discarded – ? large PM.

1959 Oct. 4.8 (night of Oct 4-5 Sunday - Monday)

(1) Alcock II 1959 f Tried to photograph this comet — not seen by anyone since perihelion & orbit only very roughly known. Sky very hazy and altitude less than 10° with considerable twilight. No suitable guide star visible so I let the telescope run without critical guiding. Oa-O Kodak plate Exposure 7 mins. Plate is fogged & shows stars to about 8 mag. at centre of plate — no sign of a comet.

L.S.T. $19^h 40^m - 19^h 47^m$. $\alpha = 13^h 20^m.0$, $\delta + 15° 13'$.

(2) Giacobini-Zinner Transp getting poor — 3/10.

Exposure 20 mins. Kodak Oa-O. L.S.T. $20^h 14\ 4 - 20^h 34^m 2^s$ (+ cor.)

Plate centre $17^h 26.0$ $\delta + 10° 8'$. T = 65° F = ... 6. Clock cor = 18^s fast.

Drove with moving web PA 47°.0 [illegible] 24".1 = 0.936 R/10 mins. $2\frac{1}{2}^m$ steps.

(3) Intended also to expose on Alcock (I) 1959e — but sky clouded over after exposing on Giacobini Zinner.

Oct 5·82224 Comet Giacobini Zinner.

Photo measure. Corrected U.T. mid Exposure = $19^h 44^m 2^s.0$

13 Stars were measured. Positions & precessions from AG K_2.

5 Stars only had PMs in EBL.

Four completely independent reductions were made — in each there were the PM stars.

No. 1	$17^h 29^m 19^s.94$	$+9° 20' 24''.9$	1959·0
No 2	19·92	23·4	
No 3	19·94	23·5	
No 4	19·91	22·6	
Mean	$17^h 29^m 19^s.93$	$+9° 20' 23''.6$	(1959·0) Oct 5·82224

a fifth reduction using the 15th star & 2 stars common to other reductions gave a more discordant result. Because the star in question had the largest PM of all (Yale Cat.) the reduction was discarded (α - $19^s.86$ δ - $22''.2$)

Oct. 25·78377 Comet Giacobini Zinner. Photo measure.

9 stars measured. Three completely independent reductions were made. Also one extra reduction containing all stars with PMs.

No 1	$18^m 45^s$ 17·46	$-12° 18' 46''.7$	1 PM star
No. 2	17·66	48·2	2 " "
No 3	17·61	47·7	1 " "
No 4	17·67	48·3	3 PM stars

Then were given weights in proportion with number of PM stars.

The final figures adopted were:

Oct 25·78377 α $18^m 45^s$ 17·63 δ $-12° 18' 48''.0$ (1959·0 Epoch)

N.B. Yale PMs were available for all stars — but EBL_2 PMs only for 4 stars. The latter were used in preference when available

1959 Oct. 5.875 (night of Oct 5-6 Monday–Tuesday) Comet Giacobini Zinner

Exposure 32.5 mins. Kodak Oa-O plate LST. $20^h 20^m 25.0$ — $20^h 53^m 2^s.0$ + corr

Plate centre α $17^h 29^m.5$ $+9°26'$. T 70°–65° F…4 (correction clock 18.9 secs fast)

Drove with moving web in PA 47°.2 ↙ 25″.38 = 0.986R / 10 mins., $2\frac{1}{2}^m$ steps

Comet Giacobini Zinner.

1959. Oct 25.8 (night of Oct 25-26, Sunday/Monday) Transp 5/10, but low altitude.

Exposure 40 min Kodak Oa-O plate LST $20^h 40^m 2^s$ – $21^h 20^m 1^s$ + corr (18.6 fast.

Corrected LST mid exposure $20^h 59^m 42^s.9$ Plate centre $18^h 46^m$ −12°26′.

T 53°–48° F…10. Drove moving web in PA 49°.4 ↙ at 48″.85 = 1.90 R/10 mins

in $1\frac{1}{4}$ minute steps.

1959.

Occultation No 6.

Nov. 16 ZC. 692 (α Tauri) Mag 1.1 Moon 15.9 days (1 day after Full Moon)
Disappearance not observed owing to intervention of Trees on horizon.
Reappearance (Dark Limb) PA 242°. Micrometer set to
known region of reappearance.
Reappearance observed L.S.T. $23^h\ 7^m\ 7^s.5$ + cor ($23^s.8$ fast)
∴ cor. LST was $23^h\ 6^m\ 43^s.7$
Cor U.T. of Reappearance was $19^h\ 28^m\ 48^s.4$ ✓
good quality observation.

1960

Occultation No 1.

Jan. 9 An attempt to observe NZC. 618 was spoilt by cloud; but shortly afterwards the sky cleared & disappearance of NZC 627 was well observed.

ZC. 627. Mag 6.8 Age 11.2 days Dark Limb Disappearance. P.A 57°
Observed L.S.T of disappearance $6^h\ 47^m\ 23^s.0$ + cor ($2^s.7$ fast)
Observed Corrected L.S.T. = $6^h\ 47^m\ 20^s.3$
Observed Corrected U.T. = $23^h\ 35^m\ 50^s.3$
good quality observation; but clock error was doubtful to $\pm 0^s.2$ ✓

1959 November & December

Owing to unfavourable weather conditions & also to illness practically no work was done.

1960.

Jan Many attempts were made to photograph Comet Burnham 1959k; but the weather conditions were extremely poor & it was not until Feb. 16.0 that an opportunity came.

By then the comet was very close to the Sunset & it appeared unlikely that it would be possible to photograph it.

Since however the reported magnitude of the comet ranged from 8 to 13 it was thought a trial plate was worth while in case the comet was near the brighter limit.

See over →

1960. Feb. 15·78079 Comet Burnham 1959 h Plate measured.
8 stars measured Positions from Yale Catalogue. PMs from Yale catalogue
except for one star in which a FBS PM was available
One star was elliptical and highly distorted by differential refraction
& was discarded in the reductions.
Two completely independent reductions were made Nos 3 & 4.
No1 Another reduction included two stars common to Nos 3. & 4. but
used the smallest & most symmetrical triangle. Reduction of
contained the third star image & was discarded.

No1	$0^h\ 1^m\ 44^s.02$	$-8°\ 15'\ 21''.2$	(2 stars common to Nos 3 & 4)	
No2	44.03	19.3	(discarded — one third image)	
No3	43.92	21.2	}	These two are wholly
No4.	43.99	20.3	}	independent of one another.

Mean of 1, 3 & 4 gives:—
1960 Feb 15·78079 $\alpha = 0^h\ 1^m\ 43^s.98$ $\delta = -8°\ 15'\ 20''.9$ (1950.0)

1960 Comet Burnham 1959k

Feb. 15·8 (night of 15th–16th Monday–Tuesday) V. transparent 6/10 – but v.v. low alt. & haze.
Exh. 12 minutes Kodak Oa-O plate. also some twilight
L.S.T. 4h 15.0m – 4h 27m 0s + cor. (clock 5.8 sec fast) Mid Exh Cor L.S.T 4h 20m 54s.2
Plate centre α 0h 3m, δ –8° 11′ Drive with stationary work.
(The comet's motion was in fact 9.″13 = 0·36 R/10 min in PA 24°)
The combination haze at the v. low altitude & the slight twilight persisting made it v. difficult. Part of the exposure was reduced by a neighbouring tree. U.T. mid Exposure was 18h 44m 19s.5. Feb. 15·78079.
Estimated integrated Photographic magnitude (after allowing for v. low altitude, about 8° × haze) was > 8·0 mag. This last at a little brighter than the ephemeris prediction, & suggested that magnitude in mid-April might approximate mag. 3·0.

Comet Burnham 1960a.

Feb. 20·9 (night of 20–21 Saturday–Sunday) V. Transp 7/10.
Exposure 40 min Kodak Oa-O plate L.S.T 7h 5m 1sec – 7h 45m 2sec + cor (6·0s fast)
Corrected L.S.T 7h 4m 55s → 7h 44m 56s. Plate centre 3h 50m.1 + 25° 32′
Drive with moving work in PA 61°.5 Δ at 14.″89 = 0·58 R/20 min
in 5 min. strip. Comet reported about 14·0 mag.
There is no sign of comet on plate which is good – it is normally a fairly diffuse object.

1960. Comet Burnham 1959 k.

April. It had been clear from the orbit & the magnitude in the weeks after discovery & confirmed by my photographic magnitude on Feb 15.8 (>8.0), that this comet would be a reasonably bright object around (mag 3.0 - 4.0) during the 10 days round its nearest approach to the earth on April 27. From April 24 it would be very well placed in the sky & there would be no moon of significance until about May 2 or 3. Unfortunately I had long ago arranged to leave for Cornwall on April 23 for 2 weeks & this could not now be postponed. So I arranged with with M.J. Hendrie & H.B. Ridley to come & stay at the Forresters Hotel & with the aid of J.W. Siddons at the Technical College to photograph the comet over some of the apparition in my absence. I also ordered some Oa-O White plates as I felt there was a good chance of a long tail.

I made an attempt to photograph the comet near sunrise on April 18, the first possible date, but it was overcast. On the night of April 22-23 I took the first plate in a very poor sky with the aid of Hendrie. Hendrie & Ridley were here together from 23rd to 28th. They had a moderately poor sky Apr 23-24, completely cloudy on Apr 24-25 & 25-26, but a very good sky on April 26-27. as the forecast was then hopeless they left; but it cleared unexpectedly & Siddons had an even better sky on April 27-28. Thereafter it was cloudy till the moon came & nothing more was got till my plate on May 23 when the comet was much fainter.

1960

April Comet Burnham 1959 k cont.

From April 23 to May 7 I was in Cornwall with the Lindleys at Truro; and it was most exasperating to have practically every one of these 13 nights cloudless & mostly very transparent; while phone calls from assist & photos of such poor weather there.

I was only able to observe the comet with the naked eye & my 2" aluminium Ross binoculars. On each of the nights from April 23-24 till the moon came (about May 3) I estimated N.E quint stars that the integrated magnitude was between 4.0 + 4.5 & generally rather nearer 4.0 — I put it on each night at 4.2±

On the clearest of these nights, throughout these 9 nights, I estimated with the binoculars that the overall diameter of the coma was at least 25' & possibly 30'.

April 23.1 Comet Burnham 1959 k. High thin cloud & haze. Transp 1-2/10
(Friday - Sat. night) I was assisted by M. Hendrie.
Exposure 14m 30sec Oa-O plate. L.S.T. 16h 26m - 16h 40m 30sec (+ cor).
δ move in 1/2 min steps (8") 4 min motion = 63".3 in P.A 74°.7 ∠
Plate centre α = 21h 53m δ = +25° 48'. In spite of very poor sky - high cloud & commencing twilight the comet is strong with considerable straight tail.

1960: Comet Burnham 1959 h.

Night 23-24. (Saturday-Sunday night). Two observers in Cornwall. Observations made by Hendrie (observing) & assisted by Ridley.

(1) Exposure 21 min Oa-O Plate Transparency only Poor

Mon. 24-1 L.S.T. $15^h\ 18^m\ 0^s - 15^h\ 39^m\ 0^s$ (+ cos). Approx U.T. $= 1^h\ 22^m$

Trace with moving web in 1/4 minute steps (5") (2 min Motion = 38".2) PA = 75° 31' ↑ Δ

Approximate position of Comet $\alpha = 21^h\ 45^m$ $\delta = +32°\ 27'$.

(2) Exposure 44 min Oa-O Plate Transparency Fair

Mon 24-1 L.S.T. $16^h\ 14^m\ 0^s - 16^h\ 58^m\ 0^s$ (+ cos) Approx U.T. $= 2^h\ 30^m$.

Trace moving web as above: 1/4 min steps (2 min Motion = 38".2) P.A. 75° 31' ↑ Δ

Approx position $\alpha\ 21^h\ 45^m$ $\delta\ +32°\ 27'$.

April 24-25, & 25-26 were unfortunately overcast & no photographs were obtained.

1960 Comet Burnham 1959 k.

April 26-27 (Tuesday - Wednesday night)

This was a clear night but at first transparency was only fair, then after deteriorating slightly got better & finally quite good. Four plates were exposed but unfortunately the second of these plates was completely spoiled by mistake in putting plate holder into camera: it did not enter the slots & was completely out of focus. Driving by M. Hendrie assisted by Ridley & Siddon.

All the exposures were driven in 1/4 minute steps (6."6) 2 min Motion = 53."2 in P.A 65° 26' ∠. The approx position of comet for midnight: α 20^h 51^m 8 + 58° 47'

Exp. 1) Exp. = 30 min L.S.T 12^h 38 0^s – 13^h 8^m 0^s (+ corr) U.T. approx = 22^h 36^m.
Transp. Fair.

2) Exp: 32 min Spoiled Plate approx U.T. = 0^h 4^m
Transp Fair

3) Exp: 30 min L.S.T. 15^h 32^m 0^s – 16^h 2^m 0^s (+ corr) approx U.T = 1^h 30^m.
Transp = Good

4) Exp = 20 min L.S.T 16^h 55^m 0^s – 17^h 15^m 0^s (+ corr) approx U.T. = 2^h 48^m
(Longer exposure prevented by approach of dawn) Transp Very good

1960. Comet Burnham 1959k.

April 27-28 (Wed.-Thursday night). Owing to hopeless forecast Hendrie & Riddy — who had had to go to London for B.A.A. meeting — decided there was no point in returning to assist. However the sky unexpectedly cleared & Siddons was able to expose a plate in a very perfectly transparent sky. Unfortunately, he misunderstood my phone conversation to him regarding the P.A. of drive & drove the telescope at a very large angle to the comet's actual motion. In spite of the resulting broadening of tail it can be traced to edge of plate, but all but gross detail in the tail is lost.

Exposure <u>26 min.</u> L.S.T. $13^h\ 7^m\ 0^s$ — $13^h\ 33^m\ 0^s$ (+ err)

(Approx U.T. = Apr 27 $23^h\ 59^m$.)

Plate Oa-O. Transp. V.Very good ? 8/10.

Drove in PA in 1/4 min. steps (6".7) <u>26".7 per 1 minute</u>

Comet PA = 54° 37'

1960 Comet Burnham 1959k.

May 23·0 (night of May 22-23 Sunday-Monday). This was my first chance after returning from Cornwall on May 7 to photograph this comet.

Exposure 35 mins L.S.T. $15^h 14^m 2^s$ — $15^h 49^m 2^s$ (+ or) Transp 5/10.

Oa-O Plate. T = 52°-54° F 3···q.

Drove in PA 86°·1 ↓ in 5 minute steps — 20 minute motion = 24″·54.

Plate centre mean $\alpha = 10^h 56^m 2$, $\delta = +32°50'$

May 29·0 (night of May 28-29, Saturday-Sunday). Transp = 7/10.

Comet 1959k. Exposure 30 min L.S.T $16^h 14^m 45 - 16^h 44^m 45^s$ (+ or)

Oa-O Plate T = 60°-53°

Drove in P.A. = 90° ↓ in 5 minute steps. 20 minute motion = 18″·68

Plate centre mean α $10^h 56^m 5$ δ + 30°20'.

1960 Occultation 2.

June 4 ZC. 1830 Mag 6·8. Dark limb Disappearance. Age 10·4 days P.A. 119°

Predicted U.T. $21^h 25^m 6^s$.

Observed L.S.T. $14^h 15^m 33^s.5$ + corr [Corr = $+14^s.5$ clock slow]

∴ Corrected Observed L.S.T = $14^h 15^m 48^s.0$

∴ Corrected Observed U.T. = $21^h 25^m 6^s.1$

V. good quality Occultation. ✓

1960 Occultation 3.

June 6. ZC. 2088 Mag 6·2. Dark limb Disappearance. Age 12·4 days P.A. = 111°

Predicted U.T. $22^h 48^m 36^s$

Observed L.S.T. $15^h 47^m 12^s.0$ + corr [corr = $+14^s.8$ clock slow]

∴ Corrected Observed LST $15^h 47^m 26^s.8$

∴ Corrected Observed U.T = $22^h 48^m 38^s.0$

v. good quality Occultation ✓

1960.

June 26-27 (night of Sunday Monday). Probably last chance to photograph C Burnham 1959k before disappearing into sunset. The altitude was low, there was much twilight & though Transp = 6/10 in zenith there was much haze low down. Starting the exposure was a race between the setting of the comet & the lessening of twilight!

Exp = $16^m.6$ L.S.T. $17^h 10^m 0^s - 17^h 26^m 30^s$

Drove in R.A = $39^\circ.7$ ↙ in 10 minute steps 20 min M = $9''.835$

T = 67° F = 3....5

This was a new batch of Plates received same week. It was dully fogged by twilight & reached only about 9 mag. No sign of comet.

S.P.O. Echo. 1960 August - November.

S.P.O. Echo was launched 1960 Aug 12 the very day I left for Italy. I observed it visually most of the 10 days I was in [illegible] — generally at 2 or 3 apparitions per night. It is a 100-foot diameter plastic bag — I suggested over a year before, inflating a satellite after being put into an orbit to get greater brilliance with great diminution in weight, at a R.S. meeting to Massey! At first the object was of steady brightness & was exactly equal to Vega which it [illegible] passed very closely. But after a few days it began to vary erratically & quickly & in ensuing weeks the variations became much greater — fading to about mag 4 with flashes about 1 mag brighter than Vega. The first chance to photograph Echo with my [illegible] camera shutter & chronograph was on August 29. Improved results were obtained on Sept 3 & Sept 11: and on this last date 22 points on the trail & 36 stars were measured & reduced in duplicate mainly. The results for positions were encouraging. To about 4 degrees from plate center the duplicate reductions agreed to within a few seconds of arc. The main trouble was in the slight vibration in the shutter causing cork-screw trails difficult to measure. Analysis indicated that the positions were correct to about 5" or 8".

On Nov 28 a plate was taken of the S.P.O. going into eclipse — but scattered high cloud made the results indefinite. Apart from the 4 plates above many others were exposed in experiments to improve (1) vibration by cushioning the shutter mounting, by varying the speed, suddenness & frequency of the interruptions & exposures; (2) the timing mechanism; & (3) the sighting of the instrument in order to get the trail running as close as possible to the plate centre.

1960 Comet Candy (1960 n) night of (Friday–Saturday)
Dec. 30. This was first opportunity I had of photographing this comet discovered by Candy near Herstmonceux. He phoned me of its discovery on the evening of Dec 27 shortly after his discovery – but I had already left for London. Unfortunately the positions were phoned & an error occurred in writing them down – so in this first plate of Dec. 30 comet was well away from centre of plate.

Dec. 30.9 approx U.T. 22ʰ 30ᵐ. Moon only 2 days from Full, so I only gave 5 minutes exposure L.S.T. 5ʰ 8ᵐ 0ˢ – 5ʰ 13ᵐ 0ˢ + corr. Transparency 4/10. Plate Oa-O Kodak. Drive fixed rate on stars.

1960 Jan 8 Comet Candy (1960 n) (night of Sunday–Monday) Transp 7/10 v. good. Exposure 33 mins. L.S.T. 4ʰ 35ᵐ 1ˢ – 5ʰ 8ᵐ 1ˢ (+ corr) (corr −1.5ˢ, clock fast) Approx plate centre α = 22ʰ 56ᵐ 50ˢ + 42° 33'. Drive on moving web PA 75°.5 ⊽ in 1 minute stops with intervals of 8 minutes = 42".7 or 1·655 R Plate Oa-O. Temp = 41° → 39° F = 13.5. Very strong image of comet with short faint stubby tail.

See over: copied in error on next page.

1961

Jan 8·9 (night of Sunday–Monday) Comet Candy (1960 n) Transp 7/10
Kodak Oa-O plate. Exposure 33 mins. T = 41°·39° F = 13·5
LST 4h 35m 1s → 5h 8m 1s + cor. (correction = +1·6 secs clock fast)
Centre of plate + α 22h 56 50s δ +42° 33′ (1961·0)
Drove with moving wch on star in PA 75°·5 Y at 42″·7 in 8 minutes
= 1·655 Revs for 8 minutes — in 1 minute stick (5″·3 steps).
Comet clearly visible in 2″ finder — about 7·5–8·0 mag.
Very strong image near centre of plate with trace of tail.

1961. Feb. 4·75 (night of Saturday–Sunday) Comet Candy Transp 6/10
Plate Oa·O Kodak. Exposure 20 minutes — the last 4 or 5 minutes
gradually clouding up to complete Overcast. LST 3h 56m 2s — 4h 16m 2s + cor
Plate centre α 23h 31m·2 δ +13° 12′·5 (1961·0) (cor = −16s·5 clock fast)
Drove with moving wch on star in PA 74°·8 Y at 29″·3 in 20 minutes
= 1·137 Revs. in 20 minutes. 5 minute (7″·2) steps.
Comet easily visible in 2″ finder as fuzzy almost unresolving star of 9·0
mag — probably about mag 9·0–8·5. Strong image v. close to star
centre of tail & several radiating spikes.

Sp. V. Echo 1961. February - August.

Several plates were exposed on Echo in February & March especially on Feb. 18 March 5 & 6. In all these the time signals for the chronographic record were obtained from the existing B.B.C. signal & fed direct into the chronographic by hand. This had 3 disadvantages: (1) the accuracy of the signals are only about .05 sec., (2) the hand tapping at best is accurate to .05, & (3) the signals are very infrequent & may have any choice between 2 consecutive signals & the photograph. Therefore an ex-service short-wave receiver was purchased & a dipole aerial was erected 100 feet long & directed to Rugby. This enables one always to obtain the Rugby MSF signal on 5 megacycles and also the Warren signal on 4.5 megacycles. Pond built me an amplifier which enables these signals to be recorded automatically on the chronograph. One can usually get Rugby & always get Warren to do this but sometimes only occasional signals get through owing to fading or interference. Experiment showed that the time lag in this amplifier was .004 sec at most. Pond also made me a switch with enclosure so that the record by opening & closing of the camera shutter could be done with a very short contact: consequently the signal is recorded at the same shutter phase both in opening & shutting: thus the centre of gravity of the photographic trail will correspond with the point on the time track midway between the opening & shutting signals. Plates were taken on May 7, 12 & onward. In the meanwhile the original RW shutter was altered & constructed in lighter materials & further modifications made to reduce vibration. This new shutter was first used on May 26 & 27 with promising results. After that Seddon constructed a new floating support system for the shutter & this was first used on July 24. The rectangular coordinates of the Crab on the plate were measured. The results were good; but the cut off was too slow so the trails of the points are not good enough.

Aug 6.1. cont. One can see faintly a band stretching towards the Sun for a length of 10' mainly in PA 110° slightly fanning out. Head of comet is near β Aurigae

1961 July.

July 31.1 Comet Stewart Wilson 1961 D. This was the first occasion possible to attempt to photograph this new comet, very close to the sunrise & reported as having a 15° tail or more. It had been discovered from an aeroplane & later photographed by McClure from high altitude in the Rockies. A short exposure was made but the sky was already very bright by the time the object was clear of the trees & the heavily fogged plate showed nothing. As the comet emerged from the Sun we had bad weather and it was not until August 6 that it was possible to make another attempt.

August 6.1 Comet Stewart Wilson 1961 D. (Night of Aug 5-6, Saturday-Sunday) Transp 6/10
But considerable twilight & a mean 0.25 last quarter moon

It was possible to give only 12 minutes exposure. Oa-O plate.

L.S.T. $22^h 15^m 1^{sec} \rightarrow 22^h 27^m 0^s$ (+ w) (w = ± 0.0 sec)

Drove moving web on star in PA 46.5 ↗ 10 minutes intervals of 22.9 or 0.89 Rev.
moving in steps of 2½ mins = 5.7"

Plate centre α: $6^h 0^m$, δ: +44° 0'.

Comet faintly visible in 6" and estimated about mag 8.0

The photograph has a tail fairly thin straight fan about 6° long in about PA 290° - away from sun. The northern part of the fan is the longer, the southern half extends to only about 2°. The striking thing is the remarkably small & faint head for so long a tail. I put photographic mag. of head at about 8.0. The head has a stellar condensation a brighter part, elongated in direction of tail, only 1' across its width, 1' through centre

1961.

Night of Aug 6-7 (Sunday-Monday)

August 7.1 Comet Stewart Wilson 1961 D. L. Transp. good 7/10 but cons. twilight & slight moonlight.

Exposure 20 min Oa-O plate

LST $21^h 52^m 30^s$ to $22^h 12^m 30^s$ + cr (cr = $-0^s.7$ - clock 0.7 sec fast).

Stars ... moving with or star in PA 46°.5 ...

10 minute intervals of 22".9 = 0.89R in 2½ minute ... = 5".7.

Plate center α: $5^h 52^m.7$ δ: +45°5'

Plate shows similar appearance to previous night - but there is less fogging, owing to diminishing moon & diminishing twilight.

Head again unusually small. Stellar central condensation. Coma has a diameter of 1½' for brightest part but faint halo extends to about 2½' diameter. Integrated mag est. 8.0. To night the beard is clearer (better plate) and extends about 15' It is fan shaped: the brightest edge of fan is in PA 85° but extending faintly to about 100° PA. In other words the PA of the beard has diminished since last night by about 20° as 24 hours earlier it was mainly in PA 110°. The tail itself is same as last night: it can be seen stretching to about 7°. The head of comet is still fairly close to β Aurigae & the tail extends beyond Capella.

This was the last plate obtained of this interesting comet. I left for Italy 2 days later & though I tried again on my return Aug. 29 the comet was out of my reach.

1961

August 28.9 C Stewart-Wilson 1961 D. (Night of Monday-Tuesday Aug 28-29)

Transparency good 6/10 Twilight & rising Full moon.

Exposure 10 mins. Oa-0 plate

L.S.T. $19^h 10^m 0^s - 19^h 20^m 0^s$ + wr (wr − 21.3, clock 21.3 s fast)

Drove with moving web on star PA 12° ⇄ With micrometer wires set for 10 minute intervals = 30″.0 = 1.165 Revs. Drove in 2½ min steps = 7″.5.

Plate centre $\alpha = 3^h 20^m$ δ: +58°23′.

Near centre of plate is strong comet-like image of about mag 9.5 This was naturally taken for comet 1961 D & only later after measuring was it found not to be. The position which I measured was: August 28.867706 α $3^h 25^m 31.31$ δ +59° 7′ 17″.3 (1950.0) Later Richter at Sonneberg examined 2 sets of paired plates $\alpha = 3^h$ $\delta = +60°$ Sept 2 & Sept 16. and $\alpha = 1^h$ $\delta = +60°$ Sept 16 & Sept 18 With covering 30° × 30° & found no comet like object brighter than mag 11.0

Presumably my object was a photographic flaw.

Sept 2.9 Candy-Wilson 1961 D. (night of Saturday-Sunday Sept 2-3)

Transp. 4/10 with some passing cloud.

Exposure 15 minutes L.S.T. $22^h 7^m 1^s \rightarrow 22^h 22^m 2^s$ + wr (wr − 14.5 fast)

Drove moving web on star PA 0° ⟶ 10 min interval = 33″.5 = 1.3 Revs.

in 2½ min steps = 8″.4.

Centre of plate $\alpha = 2^h 39^m.5$ δ = +59° 54′

Good plate but no trace of comet.

1961. Sept. 9. (Night of Saturday - Sunday Sept 9-10)

Sept 9.9 Comet Humason 1961 E. Transparency v. good 8/10.

Discovered by Humason on September 1. Reported as mag 16.0 by E. Roemer & of mag. 14 by cutal. In spite of this I thought it worth attempting and found to be ph. mag 11.5 - 12.0.

Exposure 30 mins Oa-O plate L.S.T. $21^h 1^m 33^s \rightarrow 21^h 31^m 33^s$ + or (or -16^s.4 fast) Driver on star with moving web in PA 15° ⇄ Webs at 40 minute interval = 22".20 = 0.864 Revs. in 5 minute steps = 5".55.

Plate centre $0^h 50^m.1$ + 31° 2' Temp = 60° - 55° F 3-7

Comet image is strong.

Sept 9.9 Comet Wirtanen-Wilson 1961 D. Transp. v. good 8/10.

In view of failure to find comet last week a longer exposure in this very clear sky was tried. Exp. 30 mins L.S.T. $22^h 22^m 33^s \rightarrow 22^h 52^m 31^s$ + or (or -16^s.4 fast)

Driver with moving web on star in PA 17° ⇄ Webs at 10 minute intervals = 29".0 = 1.13 Revs in $2\frac{1}{2}^{min}$ steps = 7".2

The plate was extremely good and would have shown a stationary stellar point down to mag. 15.5. But there is no sign of comet.

1961 Oct 7-8 (night of Sat - Sunday Oct 7-8)

Oct 7.8 C. Humason 1961 E. Transparency 5/10.

Returned this evening after 2 weeks in Cornwall.

Exposure 30 min. Plate Oa-O. L.S.T. $23^h 0^m 1^s \rightarrow 23^h 30^m 1^{sec}$ + cr (cr - $25^s.7$ fast)

Drove with moving web on star in P.A. 29°.7

webs at 20 minute intervals = $17''.34$ = 0.674 Revs in 5 min steps = $4''.34$

Plate centre $0^h 25^m$ + 27° 43′ Temp = 55° — 50° F/3-9

Comet was found without much difficulty in 6" though a faint object Mag 11-11.5

C. Humason

Oct. 8.9 (night of Sunday/Monday Oct 8-9) Transparency 6/10.

Exposure 30 mins Oa-O plate L.S.T. $21^h 30^m 1^s$ – $22^h 0^m 1^s$ + cr (cr – $26^s.3$ fast)

Drove with moving web on star in PA 29°.7. Webs at 20 min intervals = $17''.02$ = 0.661 Revs.

in 5 minute steps of $4''.26$

Plate centre $0^h 22^m.0$ + 27° 31′ Temp 55°-54° F= 3-9

~~In view of the strength of the photographic image of last night the comet was looked for in~~ 6" comet ~~and~~, though a faint object, was seen without much difficulty

visual mag. estimated 11.0-11.5

1961. Oct 14-15 (night of Saturday - Sunday)

Oct. 14.9. C. Humason Transit 5/10 low mist.

With wood staying & helped with the exposure. The mist thickened as exposure finished & it was not possible to shoot the comet visually.

Exposure 30 mins L.S.T. $23^h\,53\,1^s \rightarrow 24^h\,23^m\,1^s$ + or (or $-15^s.7$ fast)

Drove on star with moving worb. Orb interval = 20 mins = 17".34 = 0.674 Revs.

Oa-O Watts showing in 5 minute trails = 4".34. PA = 32° ↘

Plate centre $\alpha = 0^h\,14^m$ $\delta = +26°25'$ Temp = 52° F = 3-9.

Oct 14-15 This same night on return from showing our friend of discovery of new comet by Seki visible close to sun in dawn. But fog thickened by morning & then was no chance.

Oct. 23.1 night of Oct 22-23 (Sunday - Monday night) Transit 7/10.

Comet Seki 1961 F But Full Moon was setting & dawn just starting & view of moon & dawn only 7 minutes exposure was given. Comet was easily visible in finder scope 6", and estimated about 5.5 magnitude, allowing for sky brightness. The plate was badly fogged & would have been far better with 2-3 minutes exposure. A short trail is seen despite fog. The nucleus in measuring machine appears double-tailed ? real.

Exp. 7 min L.S.T. $6^h\,50^m\,3 \rightarrow 6^h\,57^m\,1$ + or (or $-2^s.5$ fast)

Drove fixed worb on star Oa-O Watts Temp 43°-45° F 3-12

1961

Oct. 28.8 Comet Humason Oct 28-29 night of Sat.-Sunday. Transparency 5/10

(Oa-O Kodak) There was however a bright auroral display with long streamers during exposure the streamers began to reach up to the zenith & there was a general brightening of sky which was so marked as to make it advisable to cut exposure from intended 30 mins to 25 minutes

This was first exposure on this comet since Oct 14 – owing to moonlight & weather.

Exposure 25 min. L.S.T. $21^h\ 2^m\ 1^s \rightarrow 21^h\ 27^m\ 1^{sec}$ + corr (corr = $+7^s.2$ clock slow)

Drove with moving web on star PA = 38°.7 [illegible] 20 min Motion = $16''.66$ = 0.647 R.

in 5 minute steps = $4''.16$

Centre of plate $\alpha = 23^h\ 57^m$ $\delta = +23°\ 45'$ Temp = 50°–46° F = 3....12.

Oct 29.8 Comet Humason (night of Oct 29-30, Sunday-Monday) Transp. 6/10

Exposure 30 mins. L.S.T. $21^h\ 17^m\ 1^s \rightarrow 21^h\ 47^m\ 5^s$ + corr (corr = $+7^s.3$, clock slow)

Drove with moving web on star PA = 38°.4 20 minute motion = $16''.98$ = 0.660 R

(Oa-O Kodak) in 5 minute steps = $4''.24$

Plate centre $23^h\ 56^m$ $+23°\ 34^m$. Temp = 47°–44° F 3....12.

1961

Oct. 30.9 <u>Comet Humason</u> (night of Oct 30-31, Monday-Tuesday) Transp $3/10$ passing clouds

Exposure 20 mins. L.S.T. $21^h 16^m 1^s \rightarrow 21^h 36^m 0^s$ + cor (cor = $+7^s.2$ clock slow)

Kodak Oa-O. Drove with moving wire on star in PA 39° ↓

with 20 minute motion of $16''.92$ = 0.657 R, in 5 min steps = $4''.23$.

Plate centre $23^h 55^m$ + 23°20′ Temp 45°-45° F3..... 12.

1961. ~~Nov~~ Nov 4.2 <u>Comet Seki 1961 F</u> (night of Nov 3-4 Friday-Saturday.)

(Thin crescent moon 4 days before New Moon α $11^h 35$ δ +5°) Transparency $7/10$

Owing to very close crescent moon only 11 minute exposure was given & that was too much.

Exposure 11 mins (Oa-O Plate) L.S.T. $7^h 52^m 1^s \rightarrow 8^h 3^m 1$ sec. + cor (cor = $+5^s.0$ slow)

Drove moving wire on star in PA 63° ↓ 10 min M = $31''.4$ = 1.22 Rev. 2½ min steps = $7''.9$.

Plate centre α = $11^h 1^m$ δ +7°20′. Temp = 36°-40° F3...15.

1961.

Nov. 4·8 Comet Humason 1961 E. (night of Nov 4-5, Sat-Sunday) Transp $^{3}/_{10}$
high thin cloud increasing – stopped exposure

Oa-O plate - Exposure 11 mins. $20^h 14^m 1^s - 20^h 25^m 1^s$ + cor L.S.T.
(cor = + $5^s.2$ clock slow)

Driven with moving web on star in PA $41°.4$ ↘ 20 min M = $16''.22$ = 0.630 R
in 5 minute steps = $4''.05$.

Note the final step was only 1 min (ie. one quarter of the first two); hence the last 1/3rd of trails will be fainter than the rest, apart from increasing cloud.
Plate centre $23^h 49^m$ + $22° 13'$. Temp 45°-45° F 3.... 15.

1961. Nov. 8·8 Comet Humason 1961 E. night of Nov 8-9 Wednesday Thursday (Transp good?)
Photographed by David Gross, in my absence. His first attempt – the result is an extremely good plate: very well driven & good focus.

Exposure 25 mins (Oa-0 plate) LST $22^h 18^m 1^s - 22^h 43^m 0^s$ + cor (cor + 5·0 slow)
Driven moving web on star PA $42°.4$ 20 min Motion $14''.86$ = 0.58 R
in 5 min steps = $3''.71$.

Plate centre was $23^h 43^m$ + $21° 5'$.

1961.

Nov 25.75 Comet Humason 1961 E night of Nov 25-26 Saturday Sunday

Transp 6/10 Zenith but low fog ? 4-5/10 in Photo area.

Exposure 40 min (Oa-O plate) LST 22h 2m 1s — 22h 42m 1sec + corr

(corr = — clock fast.)

Drew on star with moving web in PA = 51°.5 ↘ 40 min M = 25".68 = 0.998R

in 10 minute steps = 6".42

Plate centre near 23h 30m +17°50' Temp = 45°-42° F3-12.

Attempted to see comet with 6" at end of exposure — but now there was gradually some increase of haze & my failure to see anything of comet was probably because of poor transparency. Plate shows strong image of comet of star about mag 11.0. Central bright part of coma 30" diameter, outer faint coma to approx 2' diameter. The coma is definitely elongated towards PA 70° - but no definite tail.

Nov. 28·8. Comet Humason 1961 E. night of 28-29 Tuesday Wednesday

Photographed by David Lorn in my absence.

Exposure 30 min LST 22h 56m 1s - 23h 26m 0sec + corr (corr - 2s.5 clock fast)

Plate Oa-O. corr. Mid Exp = LST 23h 10m 58s.0.

Drew on star moving web in PA 54°.6 ↘ 10 min. steps 5".805

Plate centre α 23h 28m δ +17°18'

1961.

Dec. 2·75 Comet Humason 1961 E. (night of Dec. 2-3, Sat-Sun night. Transp. 7/10

Plate Oa-O. D. Cross & myself observing. 3 exposures made: (1) 50 min Exp. started by self, but driven for 40 mins by D.C. (2) 2 short 7 minute exposures on the same plate with interval of 24·5 minutes between the mid points of exposures — 1st exposure R.L.W., 2nd exposure D.C. Plate moved in RA — 2nd exposure precedes the 1st exposure

(1). Exposure 50 mins. LST 23h 13m 1s — 24h 3m 1s (+ wr)

Temp 38°-35° F 3-14 Plate center α 23h 26m 36s δ +16°30'

Driven the moving web on star in PA 55°.2 ✓ Rest of 40min = 22".80 = 0.88 R

in steps of 10 min = 5".56.

(2) 2 Exposures of 7 mins each with plate moved ± 7 Revs. of micrometer in RA between exposures. Both exposures driven with stationary web on star. Plate center, Transparency & focus & temperature as above.

Exposure (1) RLW. following image LST 2h 53m 31s → 3h 0m 30s (+ wr)

Exposure (2) D.C. p. image LST 3h 18m 0s → 3h 25m 0s (+ wr)

Occultation 1961 ①

Dec. 16 Z.C. 210 Mag 6·6 Dark limb Disappearance (Age of Moon 11·1 days.
P.A. 92° Observed disappearance L.S.T. $2^h\,46^m\,14^s\cdot3$ + correction
Clock $2\cdot14^{sec.}$ fast ∴ corrected L.S.T. $2^h\,46^m\,12^s\cdot2$
Observed corrected U.T. of disappearance $21^h\,7^m\,42^s\cdot6$
(Predicted U.T. $21^h\,7^m\cdot7$).

Dec 18.

Occultation 1961 $(\frac{2}{3})$ Z.C. 462 Mag 5·9. Dark limb Diffr. Age of Moon 10·9 d. P.A. 57°
This was observed independently by David Cross with 4" Gray, just outside the observatory with ear-phones to the clock. The clock + clock correction are common to both observations. R.L.W. Observed L.S.T. disappearance $1^h\,32^m\,4\cdot0^{sec}$ + cor. Clock $1\cdot62^s$ fast.
Corrected L.S.T. $1^h\,32^m\,2\cdot4$. Observed corrected U.T. = $19^h\,45^m\,53^s\cdot1$ (R.L.W.)
D. Cross gave L.S.T. $1^h\,32^m\,4^s\cdot2$ + cor (0·3 sec late) giving U.T. $19^h\,45^m\,53^s\cdot4$ (D.C.)
(Predicted U.T. $19^h\,45\cdot8^m$)

1961.

Dec. 5.8 C Humason 1961 E (night of Tues-Wed, Dec 5-6) Transp 4/10

Photographed by D. Cross in my absence. Clouds appeared & stopped exposure.

Plate Oa-O. Exposure 10 minutes. LST $24^h 35^m 1^s \rightarrow 24^h 45^m 0^s$ (+ ω)

Drove on star with stationary web as exposure finished with the end of the intended 10 minute stretch. Plate centre $23^h 24^m + 15°40'$

Dec. 6.8 C Humason 1961 E (night of Wed-Thursday Dec 6-7) Transp 6/10.

Photographed by D. Cross in my absence. Plate Oa-O

Exposure 26 minutes LST $2^h 50^m 1^s - 3^h 16^m 0^s$ (+ ω).

Drove with moving web on star in PA 57°.3 ↓ 10 minute motion = 5″.41.

Plate centre $23^h 24^m + 15° 40'$

Occultation 1962 (1) Jan 13 Z.C. 0306 Mag 6.9 Dis. D. Limb. Moon 7.3 d. P.A. 28°

Observed disappearance L.S.T. = $4^h\ 14^m\ 2.1$ sec + or. Clock 1.3 sec slow

∴ Corrected L.S.T. of disappearance = $4^h\ 14^m\ 3.4$ sec.

Corrected U.T. of Disappearance = $20^h\ 45^m\ 13.9$ sec.

(Predicted U.T. = $20^h\ 45.2$ min.)

Occultation 1962 (2)

Jan 14 Z.C. 0444 Mag 6.2 Dis. D Limb. Moon 8.4 d. P.A. 132°.

I was ill & this occultation was observed by David Cross with 6" Cooke. I was present and determined the clock error from the Rugby signals immediately before & after the occultation.

Observed disappearance L.S.T. $5^h\ 29^m\ 0^s.0$ + or. Clock was $4^s.24$ slow

∴ Corrected L.S.T. was $5^h\ 29^m\ 4.24$ sec.

Corrected U.T. of Disappearance = $21^h\ 56^m\ 6^s.5$ (D.C.)

(Predicted U.T. = $21^h\ 56.1^m$)

1961. - 1962

1961 Dec. 27.0 Comet Humason 1961 E (night of Tuesday-Wednesday Dec 26-27) Transp 5/10.
Plate Oa-O Exposure L.S.T. $24^h\ 23^m\ 0^s$ – $24^h\ 51^m\ 45^s$ (+ cr)
– but there was some passing cloud including a 3 minute complete break from $24^h\ 43^m$ - $24^h\ 46^h$. Shows on moving web in PA 83.7 ↘ at rate of 6".1 per 10 minutes. Plate centre: $23^h\ 18^h\ 24^s$ + 12° 34'.5

1962 Jan 7.8 Comet Humason 1961 E (night of Sunday-Monday Jan 7-8) Transp. 4/10.
Plate Oa-O Exposure L.S.T. $1^h\ 45^m\ 3^s$ – $2^h\ 25^m\ 2^s$ + cr
Exposure 40 min. Shows with moving web in PA 84.5 ↘ at rate of 5".22 per 20 minutes – (20-min strips).
Plate centre α. $23^h\ 18^m.0$ δ. + 11° 10'.

Jan 11.9 Reported comet by Mc Clure (night of Thursday-Friday Jan 11-12)
Transp 6/10 for 8 min then gradually clearing up
Exp 20 min (only 8 mins good) LST $6^h\ 29^m\ 1^s$ – $6^h\ 49^m\ 0^s$ + cr
Shows on fixed web. Plate shows no sign of cometary object.

1962.

Comet Humason 1961 E.

February 1st. (night of Thursday-Friday Feb. 1-2) Transp. ? 4-5/10.

Oa-0 Exposure 10 minutes LST $3^h\ 27^m\ 0^s$ — $3^h\ 37^m\ 0^s$ (± appr.)

(Photo S. Cross) 10 minutes motion is $2\frac{1}{2}'$ — so drove on fixed web

Plate centre α $23^h\ 24^m$ $\delta +8^\circ 34'$

March 26-8 Comet Tuttle-Giacobini-Kresak. (night of Monday-Tuesday) Transp 5/10.

Oa-0 plate. Exposure 10 mins L.S.T. $9^h\ 4^m$ - $9^{hm}\ 14^m$ approx.

Drove with fixed web

Plate centre:

Tuttle Giacobini Kresak is well defined object at plate centre. As I had been running a temperature I was not at the Observatory & I asked S. Cross to make the exposure. He did not develop the plate till March 28 when he found a very striking comet-like object within $\frac{1}{2}^\circ$ of the edge of the half plate. This object was of mag. 7-8 with a strong straight tail 15' long in PA 85° - the head round & with its tail of "spring onion" shape. Stevenson & other authorities examined the plate & all agreed it was almost certainly real & not a flaw. But a plate on 29 March showed no sign of it — and though reported as a possible comet in I.A.U. circular no confirmation was obtained. Its approx. position was α $9^{hm}\ 20^m$ $\delta +22^\circ$.

1962

Mar 29·8 ? New comet suspected Mar 26. (night of Friday–Saturday March 29–30)

Transp 6/10.

Oa-O plate Exposure 15 minutes. ~~Start~~ approx U.T 21 hours 0 m.
This was exposed in hope of picking up the cometary object suspected 3 nights before on March 26·8. As there was no indication of any motion on the first plate this plate was centred on the position of the object on March 26 – viz α = 9h 20m δ + 22°.
There was no sign of any comet – ½ plate used.

April 14·8 Comet Seki-Lines (1962 c). When discovered the comet was S of equator (& invisible ~~[illegible]~~ from here). It was due at perihelion on April 1 with a perihelion distance 0·03 & expected to be around Mag – 4 or brighter. It should have become visible (or its tail) from here on morning of Sunday April 1 & thereafter visible in the evenings receding from the sunset. I tried for it in dawn of April 1 & on every succeeding evening but the weather was hopeless. I picked it up in the telescope in bright sky in a gap between clouds for first time on April 13, but clouds prevented trying a photograph. The first plate was taken on April 14 again in gaps of clouds. (April 14–15 Sat–Sun)
Two exposures were made on the same Oa-O plate
(1) Exposure 2 minutes L.S.T. 9h 53m 10s – 9h 55m 10s
(2) Exposure approx 85 sec. 10h 21m 30s – 10h 22m 5s cloud interruption & then 10h 22m 25s – 10h 23m 15s. P.T.O. cont.

1962

April 14·8 cont.) Comet Seki-Lines 1962c. (night of Sat-Sunday Apr 14-15)

The camera was driven directly on the comet's head owing to the cloudy sky & light twilight. The comet was bright in field glasses & the finder with a tail of at least 1° width in the bright sky. In the 6" the head showed well defined circular envelope. Thin appears well on the plate together as well as two owl-ear - like projections.

The camera was centred on the comet fairly closely for the two exposures (on the same plate) α 3h 22m δ +24° 40'. Transparency between clouds low on horizon was only very moderate - varying rapidly.

April 24·8 Comet Seki-Lines (1962c) (night of Apr 24-25 Tuesday-Wednesday).

This was the next possible night after the 14th for showing the comet, owing to the very poor weather.

O.O plates 4 Exposures were made: Transit 6·7/10.

3 Short exposures on one plate & one long exposure on a second plate

(1)	Expt. ½ minute	LST 10h 58m 0s - 10h 58m 30s + corr	Clock was
(2)	" 1 minute	" 11h 3m 0s - 11h 4m 0s + corr	115 secs fast
(3)	" 2 minutes	" 11h 6m 0s - 11h 8m 0s. + corr	∴ corr = - 1.15m
(4)	" 26 mins.	" 11h 39m 0s - 12h 5m 0s. + corr	

The plate with the 3 short exposures had the comets' heads fairly close to the centre (approx α 4h 33m δ +28°). The long exposure plate was lost in the hope of obtaining considerable tail

Cont. P.T.O.

1962

April 24·8 cont. Comet Seki-Lines 1962c.

extension – the plate centre being about α 4h 40m δ + 29° 51'

The short exposures were taken to obtain structure in head

The longer exposure for the tail extension.

April 25·8 Comet Seki-Lines (1962c) (Night of Wed-Thursday April 25-26)

Exposures by D. Cross. Transp 5-6/10.

Oa-O plate Exposure 18 minutes L.S.T. 11h 17m 0s – 11h 35m 0s.

Very bad weather & lack of comets! – no observations.

June 4·0 Comet Honda (1962) (Night of Monday-Tuesday June 3-4) Transp 6/10.

Oa-O plate Exposure 9 min 20 sec. L.S.T. 16h 30m 0s - 16h 39m 20s + 0s (clock 1·0s fast)

Fast moving comet 6"·76 per minute. Drove on moving clock in PA 49° ↘

at rate of 54"·1 per 8 minutes in 1 minute steps. Very transparent but exposure

Plate centred 17h 13·3m, δ + 70° 13' limited by twilight.

1962.

June 5 Comet Honda (1962) (night of June 4-5, Monday-Tuesday) Transp 6-7/10.
Oa-O plate Exposure 17 min U.T. $15^h 44^m 58^s - 16^h 1^m 58^s$ + or. (2 secs slow
(i.e. correction is + 2 secs.) Error with moving arm in PA 55.2 ↘
at rate of 55.2 in 8 minutes in 1 minute steps. Used prism for guiding.
Exposure limited by twilight (about U.T. $23^h 0^m$).
Plate centred α $16^h 54^m 54^s$ δ + 67° 57' T: 50° F = 3--11

June 25.0 Comet Honda (1962) (night of Sunday-Monday June 24-25) Transp 7/10
Oa-O plate Exposure 30 min. U.T. $17^h 10^m.3 - 17^h 40^m 3^s$ + or.
(clock 10.5 secs fast). Error in PA. 81.0 ↘ at rate of 40.5 in 8 min.
using 1 minute steps. A long exposure was wished as the comet is
now faint; in spite of the good transparency the bright twilight
produced bad fogging in the 30 minutes.
Plate centre: α $15^h 6^m.6$ δ + 44° 32'.5

Occultation 1962 (No 3)

Oct 8 Z.C. 3057 Mag 6.7 Dis. Dark limb Moon 10.0 days P.A. 102°.

Observed L.S.T. of disappearance $21^h\ 42^m\ 5^s.5$ + err.

Clock 9.18 secs fast – determined 8 mins after occultation.

∴ Corrected L.S.T. disappearance = $21^h\ 41^m$ 56.3 secs.

Corrected U.T. disappearance = <u>$20^h\ 36^m$ 31.7 secs.</u>

(Predicted UT 20^h 36.4 mins)

Thick haze & stars often difficult – but held perfectly well at critical time.

Sept–Dec. cont. W.M.L. also gave us a small 2" Cooke 4 Shout-power telescope for Comets – on equatorial head & tripod; also a Ring Micrometer by Cooke. W.H.S presented an excellent Cross-Bar Micrometer.

1962

Sept. 2.0 Comet Humason (1961 E)

This comet after being for several months close to the Sun began to emerge at beginning of August when I left for Italy. It was however approaching the equator. I had hoped that during the last week of August it would be sufficiently removed from the Sun & still not too far South to obtain a few last photographs. Unfortunately the weather was hopeless & only on Sept 1 and 2 were there sufficient gaps in the clouds to make a trial search. On Sept 1 a plate was loaded & the telescope directed on the comet but the sky did not clear until the comet had set below the wall of the observatory. On Sept. 2 the sky cleared just as the comet was setting & an exposure was made on spec! Unfortunately it had set by less than 1/2° at start of exposure: Approx time 21hm 44 – 21h 54m. L.S.T.. Nothing of the comet appears on the plate. This is unfortunate as, as Miss Roemer has found, the comet now quite bright is behaving in the oddest way in its changes of shape — as it was obviously doing when we were photographing it at a great distance early in the year.

Sept – Dec. No comets were observable at this time; and most of the time I was not well. So no observations were made. W. M. Lindley gave me a very good micrometer box & eyepieces (Cooke) which I fitted onto the position circle of the previous W.H.S. micrometer. This is now an excellent instrument & will be used generally, the T.E.R.P. micrometer being kept in reserve.

1963.

Snow started on Dec. 26 1962 & the observatory was snow bound until Feby 18 1963 when I was able to get to it for the first time. Seldom left the clock wound. The observatory was however in good condition. Both micrometers however lost their worth; & had to be re-worked by Seldom.

Feb. 24 Sunday evening Comet Ikeya 1963a. This comet discovered in Japan in January went rapidly into S. hemisphere, but later came actively north reaching Dec −25° on Feb. 24. Perihelion due to March 21 & estimated to reach about mag 3.0.

I made first attempt Feb. 24 to find it visually. The sky was very hazy & the altitude only about 8° when twilight & we failed to find it (Edgar Thompson & myself).

Feb. 25 Monday evening Comet Ikeya. To night the sky was much less hazy, but still v. poor; & the comet higher Dec −14°. D. Crow was with me & finished it off in finder, in the rare between twilight & altitude, just before setting. In 6" it appeared to be large & v. diffuse object without nucleus & no very marked central condensation, roughly round. Making all allowance for haze & twilight I put it between mag 2.5 & 3.0. Circle readings gave its position as v. close to Marsden's ephemeris $\Delta\alpha = \pm 0'.0$ $\Delta\delta = +8'$ - the comet being slightly north of predicted position. No photographs were attempted.

1963.

Mar 1·75 (Friday evening) Comet Ikeya. Still very hazy & near to Moon 1st 1/4. Owing to the still low altitude & very hazy horizon it was not thought worth journeying to arrest for photography before Friday evening.

This evening a 5 minute exposure was given driving on a star with moving web in PA 83° at rate of 37" per 8 minutes in 1 minute shifts. The plate was heavily fogged. Oa-O plate L.S.T. $5^h 25^m 2^s$ – $5^h 30^m 2^s$ + cor. Plate centre $2^h 9^m$ $-10°0'$)

Mar 2·75 (Saturday evening) Comet Ikeya. Sky much clearer. Comet brighter. Moon. Exposure 2 minute Oa-O plate L.S.T. $5^h 35^m 4^s$ – $5^h 37^m 4^s$ + cor. ~~Plate~~ Centre position $2^h 9^m$ $-8° 26'$ (predicted). Driven fixed web.

Mar 3·75 (Sunday evening) Comet Ikeya. Sky quite good. Moon. V. little twilight. Exposure 1½ min $5^h 42^m 3^s$ – $5^h 43^m 33^s$ + cor. Driven fixed web Plate centre roughly $\alpha\ 2^h 8^m$ $\delta\ -6° 45'$.

1963

Comet Ikeya

March 10.75 Sunday evening (U.H.S. here) Full moon just rising Twilight slight Transp. 6/10

Tonight was hopefully to see the last to this comet. The moon is v. low & the comet about its maximum alt at time of last twilight — & the transparency very good. The next night, if clear & transparency might have been still better — but it was cloudy. Unfortunately though everything was set to photograph the comet at the last moment — about 20 minutes after moonrise & 20 minutes before end of astro-twilight — I had foolishly forgotten to check the shutter — and when we went to open it it was already open! There was no time to refit the plate holder.

Comet Ikeya.

March 16.75 Saturday evening. No moon. Considerable twilight. Transp. 4/10.

Owing to twilight it was impossible to start the exposure until the comet was fairly surrounded by a tree.

Exposure 1½ minutes Oa-O plate. Set $6^h 52^m 4^s \rightarrow 6^h 53^m 34^s$ +45.

During the exposure I kept the cone guided on a star with fixed web, motion being only 2" or less in the time.

Plate centred near comet of which $\alpha = 1^h 54^m.1$, $\delta = +4^\circ 38'$

1963.

March 23 (Saturday - Sunday night). Transparency 5/10.

Comet Alcock 1963 b. (already 3rd comet discovered Mar 19). This was my first night at Observatory since discovery, that was clear. Barry Parsons helping me. A 20 minute exposure was planned and given — & v. good drive on moving work. Like a B.F. I forgot to replace dark slide before moving plate holder & plate was ruined!

March 30.0 night of Friday – Saturday. Transparency 4/10 & Moonlight rather bright, near first quarter.

Comet Alcock

The forecast had been bad & sky cleared unexpectedly — & I had no new plates available as these were still in refrigerator & there was no time to warm them up. But I found an old (unopened box) of 0a-O just over a year old Feb 1962. I gave a 3 minute exposure (because of moonlight).

Exposure 3 min 0a-0 plate — 1 yr old & not in refrigerator

L.S.T. $11^h\ 11^m\ 30^{sec}$ to $11^h\ 14^m\ 30^{sec}$ + or.

Drive on fixed work. Position of comet $\alpha = 19^h\ 22^m$ $\delta = +50^\circ 48'$

Plate is good considering age & comet is faint but clear not far from centre.

1963

C/Alcock.

June 10-11 (night of Monday Tuesday) June 10.9 Transparency 5/10 – but rising Full moon & Twilight.

Exposure 7½ minutes Oa-O plate

L.S.T. $16^h\ 22^m\ 35^s$ — $16^h\ 30^m\ 5^s$. (+ cor 30 sec clock slow).

Drift in PA 66.9 ↘ in 2½ minutes time: 31.9 per 10 minutes = 1.24 Revs/10^m

Comet near plate centre $\alpha = 12^h\ 37^m$ $\delta = +9°\ 32'$

Comet bright with broad fan shaped, very diffuse, tail about 1° long.
Coma almost featureless circular * See observation of June 22.95.

June 22.95 (night of Saturday Sunday June 22-23). Very Transp 7/10+; but comet v. low altitude.

C/Alcock.

Exposure 12½ minutes Oa-O plate L.S.T. $16^h\ 47\ 33^s$ — $17^h\ 0^m\ 6^s$ (+ cor 1.7 sec clock slow).

Drift in PA 75°.0 ↘ in 2½ minutes time: 10 min = 21".3 = 0.82 Revs.

Comet near centre of plate $\alpha = 12^h\ 22^m$, $\delta = -1°\ 58'$.

The comet was photographed with difficulty as it set considerably before the disappearance of twilight; and it was necessary to judge how long one should delay for the sky to grow darker, and yet not long enough for the comet to be obscured by the horizon haze. The resulting plate is heavily fogged but the inner parts of the coma show up well.

The comet was observed visually in 6" before & after the exposure & was seen to be of a very nebulous diffuse character – the smaller after tail being in PA 90°. The plate confirms this & shows that apart from the main central condensation there are 4 somewhat smaller ones lying almost in a straight line in PA 90° at distances of approximately 0'.5, 1'.25, 1'.75 & 2'.25 respectively from the main one. The widest was measured for the position of the main condensation. Clouds prevented further observations on next 2 nights & thereafter comet was too far S.

1963.

Comet Ikeya 1963 a

July 14·0. (night of Saturday Sunday July 13-14). Good Transparency 6/10. But owing to erroneous setting in RA comet is on edge of plate

Exposure 22½ minutes on 0a-0 plate LST $19^h 7^m 30^s - 19^h 30^m 0^s$ (+ corr 3·0 sec, clock slow)

Drove in PA 8·0 ↘ 10 min motion = 23·56 = 0·92 Revs, in 2½ min. steps.

Plate centre about 4° off the comet which was in RA $22^h 26^m$ δ +21°41'

Just the comet is about 9·5 magnitude but easily visible – it was not seen visually (due to RA setting error!). The plate was measured. The comet is about 2 mags. brighter than expected from when last seen in N. hemisphere at beginning of year.

Comet Ikeya 1963a

July 22·0 (night of Sunday-Monday July 21-22). Transp. fair 4-5/10

Exposure 20 minutes (0a-0 plate) LST $18^h 50^m 1^s - 19^h 10^m 1^s$ (– corr 0·4 clock fast)

Drove in PA 6°7 ↘ 10 min motion = 24·89 = 0·96 Revs (in 2½ min steps)

Plate centre near comet α = $21^h 54^m$ δ = +20°20'

Plate is good – Comet only found with difficulty as it was lying on tail of a faint star. This makes measurement useless. Difficult to estimate but I now last comet about mag 11·5 – would not be seen visually

July 23·0 Comet Ikeya 1963a (night of Monday Tuesday July 22-23) Transp. 3/10 (& high drifting cloud)

Exposure 22·5 minutes, 0a-0 plate,

L.S.T. $19^h 7^m 31^s \rightarrow 19^h 30^m 1^s$ (– corr 0·5 clock fast). Drove in PA ↘ 15·5° 20 min motion = 51·0" in 8-2½ minute steps

Plate centre $21^h 47^m$ +19°52'. Comet estimated about Mag 11·5. Very diffuse. This plate was measured.

1963

July 27.0 Direct Photograph of M13. Transp 4/10. Oa-O Plate.

This photograph was taken at request of Cundy of the R.O.; as he wants to get some estimate of the value of an identical lens* with mine at the R.O. being used for astrometry of outlying members of clusters. * This lens as yet unmounted is presumably the 2nd built by the maker by Dennis Taylor to the final 10" Franklin adams lens. The 1st one was a 4" triplet (now with Horton), and this one at the R.O. is a 6" like mine — but almost certainly not nearly so good. Cundy wants to discover more about the distortion of the star images, the covering power, & the speed of my lens. I gave an exposure of 30 minutes L.S.T. $14^h 34^m \rightarrow 20^h 4^m$. The plate I developed & sent to Cundy.

July 28.0 (night of Saturday Sunday 27^h-28^h) Comet Kegler 1963a.

Exposure 10 min. Good Transparency 6/10.

L.S.T. $14^h 17^m 30^s$ — $14^h 27^m 30^s$ (+or or: +1.5 secs (slow)).

Drift in PA = 17.1 ↘ about 25"/10 mins.

Plate centre $\alpha = 21^h 54^m$ $\delta = +20° 20'$.

Comet was estimated as stellar at about 11.5 mag & v. diffuse.

The plate was measured.

Sept. 14.0 Comet Kegler (1963a). (night of Friday Saturday 13-14^h) Transp 3-4/10

Exposure 30 minutes (Oa-O plate) L.S.T. $22^h 25^m 1^s \rightarrow 23^h 5^m 3^s$

Drift in PA 44.2 ↘ 20" M = 17.62 in 5 min steps. (+or +1.0 est)

Careful search of the plate shows no sign of the comet.

1963 Sept 15.0 Comet Kearns Kwee (1963 d) [night] of Saturday Sunday 14-15th)
Exposure 40 minutes (Oa-O plate) Good Transp 7/10.
L.S.T. $24^h 1^m 2^s \rightarrow 24^h 41^m 1^s$ (+cor : + 1.7 secs (clock slow).
Error in RA = 8° 50' ↖ 20 min M = 18.38" in 5 min. steps.
Centre of plate $\alpha = 5^h 30^m$ $\delta = +32° 54'$.
The plate is good, but there is no sign of comet in predicted position
It is clear that the comet, unless diffuse, is well below 13.5 mag.
At first an object was thought to be the comet & was measured — but
the measures showed that this was not the comet & a further search was
made without success.

1963. Oct. 20.8 (night of Sunday Monday 20-21). America Nebula Transp 6/10.
Exposure 30 mins (Oa-O plate)
L.S.T. $12^h 0^m$ — $12^h 30^m$. Telescope guided by Derek Willi
Very good plate. Error on ξ Cygni.

During the rest of the year we had poor weather & I was
unwell a lot of the time. No plates were taken — & in
particular I had no opportunity to try again for comet
Kearns-Kwee 1963d — until 1964. The only work done
was several attempts which failed, owing to clouding up,
to check on the orientation of the polar axis
Finally a successful plate was obtained — see over →

1967. ~~[illegible]~~ Dec. 22. Plate for Checking Polar Axis Orientation.

Plate Kodak Oa-O

Telescope West of Pier. ~~[illegible]~~

The two test exposures separated by 1 hour 2 mins were taken symmetrically about the meridian – the 1st 31 minutes before the meridian & the second 31 minutes past the meridian.

with clock driving 1st Exposure LST $2^h 0^m 45^s \rightarrow 2^h 2^m 45^s$ (2 min)

clock continued driving

until after 2nd Exposure LST $3^h 2^m 45 \rightarrow 3^h 4^m 45^s$ (2 min)

Clock stopped from $3^h 5^m 0^s \rightarrow 3^h 8^m 0^s$.

Trailing Exposure with clock stopped $3^h 8^m 0^s \rightarrow 3^h 11^m 0^s$ (3 min)

Near pole the 2 star images are so perfectly superimposed that one can measure no separation.

At increasing distances from the pole the 2 images begin to separate in <u>hour</u> angle – due to some considerable error in clock rate, as a result of inadequate checking. Where the images are clearly separated due to this error it is seen that they are not everywhere in a straight line with each other & the trail. It was found that they were perfectly in alignment due E & W of the pole, and that the lack of alignment reached a maximum value exactly above & below the pole. Measurement showed that this lack of alignment at its maximum value was about 3.5" of arc. Over a change of hour angle of 15.5° this corresponds with an error in the instrumental pole of 13" only. Unfortunately it is not known

Feb. 3.8 Plate of C. Kearns Kwee measured & position sent to IAU cb.

1963 - 1964.

1963 Dec. 22 cont.

whether the clock was driving too fast or too slow, in other words which is the 1st & which is the 2nd image. The error is purely in azimuth but whether E or W. is not certain. To check visually; but in any case it is too small to be appreciable.

1964 Feb. 3·8 (night of Monday-Tuesday 3-4th) Comet Kearns Kwee 1963d.

Exposure 33 mins (Oa-O plate) Good transparency 6-7/10.

LST $5^{hm}\ 14^{m}\ 1^{s} \rightarrow 5^{h}\ 47^{m}\ 2^{s}$ + cor ($-3^{s}.3$ clock fast)

Comet moving very slowly — so drove with fixed web (20mM = 6".50)

Motion almost due S ↓

Plate centre $\alpha = 6^{h}\ 3^{m}$ $\delta = +29°40'$

Comet is clearly visible close to predicted position. Photographic mag. estimated at 12.5 - 13.0 - i.e. just over 1 mag brighter than predicted. The comet appears to be roughly 20' north of ephemeris - from rough BD estimate. The overall diffuse coma is circular and 2'.5 in diameter. There is a much darker heavily condensed central part 30" in diameter. Coma is round. [Owing to appearance of large periodic error in driving clock comet & star images are slightly pear shaped with a sharp point.]

Feb. 8.5

Plate of Clemens Kern measured & position sent to I.A.U. ck.

1964

Feb. 8·8 (night of Saturday Sunday 8–9th)

(1) Polar Sequence Transp. 3–4/10 improving during exposure

Exposure 30 min on Whole Plate Zenith 700. L.S.T. $4^h 11^m 1^s - 4^h 41^m 1^s$ + ω (+ 3^s·1 clock slow). Telescope East of pier (Exposure from 26 minutes before to 4 minutes after meridian). No guiding – clock driven freely. This was taken primarily as a check on the Axis orientation, & also as a guide for Candy at R.O. on the quality of my lens.

The images are excellent within about 2° of the pole. The smallest images must be considerably less than 6" or ·02 mm. They are perfectly round & there is absolutely no indication of any error in orientation. Also clock drive is good. With the test on P.S. of Dec. 22 one would expect over ½ hour exposure a displacement of ± 2" which I doubt would be detectable.

Plate is being sent to Candy at R.O.

(2) Comet Kearns Kwee (1963 d.) Transparency fairly good 5–6/10.

Exposure 20 minutes Kodak (Oa–O) plate. L.S.T. $6^h 51^m 1 \to 7^h 11^m 1^s + \omega$ (+ $3·1^s$ clock slow) Drove on fixed web. Motion only 6"·5 in 20 min PA 60°

Plate center $6^h 5^m$ $\delta + 29° 6'$

Comet as before – but smaller because of poorer sky & shorter exposure. – estimated 12·5 – 13·0 mag. About 20' north of χ Aurigae.

Mar 9.0 Plate of Kearns Kwee measured for position & sent to IAU ch.

1964.

March 9.0 (March 8-9 Sunday-Monday night). Comet Kearns Kwee (1963d)

Plate Oa-O Exposure 30 mins Transp. V. good 7/10 Temp 36°-34°.

L.S.T. exposure 7^h 35^m 3^s → 8^h 5^m 0^s + cor.

Drove on star with moving wel 20 minute motion = 12".64 in PA (21°.5 ↙) i.e. 291°.5

Plate centred near α = 6^h 25^m.6 δ = +26° 27'.5 (1964)

Owing to high altitude used small st.L prism on micrometer eyepiece.

First examination of plate showed no comet; but on examining plate with v. low power glass I noticed a faint star with faint surrounding fuzz. Higher power showed that this image which was stellar was quite circular — unlike the short trails of the stars. The object was just below the limit of the Franklin Adams Chart, so I consulted the Palomar atlas which confirmed that the object was not a star. Photographic mag. was estimated as 14.0 – 14.5 So it had dropped about 1.5 mags since the two exposures in Feb. (I have since heard that Elizabeth Roemer obtained a plate the same night Mar. 9 & estimated photo mag at 15.0) The diameter of the central condensed coma is less than 10" (in fact stellar) & the diameter of faint surrounding halo is about 1' in diameter. The comet is thus still, according to me, about half a mag. brighter than predicted

The weather continued bad & no further plates of this comet were obtained.

1964.

April 13. Photographed M35 (Gamma Cam) for Candy at R.O.
Plate Zeiss 700 (several years old) Exposure 30 min. Transp good 6/10
but bad seeing

UT 10h 32m – 11h 2m.

The plate was good (despite its age) & the guiding was of good quality.
After development I sent it to Candy; also asked it for testing
possibility of using a similar lens at the R.O. for astrometric work.
[Franco Carboni had arrived from Italy a few days earlier & this was
the first night in the Observatory.]

April to June — the weather was generally bad; I was in London for
2 weeks, Apr 25 – May 9; & there was no chance to observe; and
any occultations there were were unobservable for cloud.

However some work was done in the Observatory: the worm & driving circle
were thoroughly cleaned, & the clock drive adjusted for level; the escapement
of the sidereal clock was adjusted & the interval between odd & even seconds,
which had recently increased to 0.04 or 0.05 seconds, reduced to about 0.01s;
Four eyepieces were presented by W.M.L. together with a 3-way quick-change
nose-piece. This was also cleaned & tested & found to be excellent.
(1) Comet Eyepiece 2".33 F.L. (2) 3 monocentric eyepieces of
0".54, 0".29 & 0".18 F.L. — all by Cooke. Just previously W.H.S.
presented an excellent eyepiece by Dall 0".92. The magnifications were as follows:—

2".33 × 34	0".54 × 148	
0".92 × 87	0".29 × 276	0".18 × 444

1964.

June 7. (night of June 7-8, Sunday-Monday)

Doing the work before June 3-6 I left Siddons to Bake 3 Zenith 700 Plates (old mes) for 72 hours @ 51° C. Tonight I exposed one of them on the Palm Sequence. It is hoped to expose a plate, unbaked & from the same batch, for the same time tomorrow night.

Baked Zenith 700. Exposure 27 minutes Transit good 6/10 Light twilight. Telescope due S. of pier at start of exposure Declin 90° 0'.
L.S.T. = 16h 6m — 16h 33m. Mid Exposure UT = 23h 18min

Weather prevented the unbaked Zenith 700 being exposed — so about a week after exposure the June 7 plates were developed. Predictably no stars other than Palm showed on it; so it is clear that as regards old Zenith 700 Baking has a bad effect.

June 16·2 (night of June 15-16, Monday Tuesday). New Comet. Transit 6/10.
Comet Tomita-Gerber-Honda 1964 c. 3 Reports give mag. 6·0
Although success was extremely doubtful an attempt was made to photograph this comet visually with 6". The position was uncertain so I swept over a large arc. However by the time it was above my head N.E. bearing (± 10°) the sky was too bright — so nothing was seen.

July 5 11h 15 — 11h 35 U.T. Check on Palm Sequence.
1st Exposure 18h 3m·5 → 18h 6m·0 LST (Exposure 2·5 min). Drive Started 10min E of pier
2nd Exposure 18h 23·0 → 18h 25m·5 LST (Exposure 2·5 min) Finished 9½min W of pier

(1964,1)

Occultation Z.C. 2097 Dark limb Disappearance Mag 7.1

July 17 Observed L.S.T. $17^h\ 34^m\ 35^s.5$ + corr. (Clock $17^s.2$ fast)

Corrected LST $17^h\ 34^m\ 18^s.3$

∴ Disappearance Observed was $19^h\ 53^m\ 53^s.2$ U.T. (Int & NA Office)

Predicted U.T $21^h\ 53^m\ 48^s$ O-C = $+5^s.2$

1964

Focus 3-7 Temp 60°-56°

August 29.8 (night of Saturday-Sunday) Transparency good 6/10.

I heard of the discovery of Comet Everhart 1964 h on return from Italy on Aug 28

Comet Everhart 1964 h. Exposure 22^m 36^s Oa-O plate Clock error 38^s.6 fast

Clock error 38.6 secs fast.

LST 19^h 5^m 1^s — 19^h 27^m 37^s + cor. Drove on moving web at

rate of 39".30 in 20 minutes in 2½ minute steps, in PA 226° 8'

i.e. 63°52'. Plate centred approx 15^h 52^m + 13°10'.

Comet appears as intense perfectly circular object. Mag

The Plate was measured 9 Stars — 6 with PMs — Yale Catalogue positions except

for 3 stars without PMs with AGK2 positions. Final position adopted:

Aug 29.865214 α = 15^h 50^m 45^s.73 δ = + 13° 8' 58".4 (1950.0). I.A.U. Circular

Temp 60°-55° Focus 7, Exp 1 & 2; Temp 55°. Focus 9, Exp 3

Aug 30.9 (night of Sunday-Monday) Transparency 5/10. Plate Oa-O

Comet Everhart 1964 h. Three exposures were made — a longer one by myself & 2 shorter ones by Franco Carloni. In all three Plate centre = 15^h 53^m + 13°46'

(1) L.S.T. 19^h 27^m 31^s — 19^h 47^m 31^s + cor (clock error 37^s.9 fast) Exp = 20^min Drove moving web at rate of 37".0 in 20 minutes in 2.5 minute steps in P.A. 27° 44', i.e. 62°16' Rem

(2) LST 20^h 12^m 30^s — 20^h 22^m 30^s + cor (37^s.9 Fast) Exp 10 min } Telescope driven by

(3) LST 20^h 37^m 30^s — 20^h 47^m 30^s + cor (37^s.9 Fast) Exposure 10 min } F. Carloni.

(Unfortunately owing to a misunderstanding F.C. drove 90° out in P.A — (in PA 117°44') for both these plates). On all plates Comet intense round image as on previous night Mag =

The Three plates were measured & reduced by RHW giving final results

Aug 30.87714	15^h 52^m 11^s.78	+ 13° 48' 44".2 (1950.0)	I.A.U. Circular
30.904865	15 52 14.33	+ 13 49 47.6 (1950.0)	
30.922.178	15 52 15.60	+ 13 50 28.4 (1950.0	

1964

Focus 3-q Temp 56° 56°

Augt 31·9 (night of Monday-Tuesday) Oa-O plate Transparency 7/10.

Comet Everhart 1964h. Two exposures were made — one of 20 minutes by RMW. and one of 10 minutes by F. Cachoni. In both, the plate was centred on $\alpha = 15^h 54^m$ $\delta = +14° 23'$; and in both the drive was on a moving axis at rate of 35·76 in 20 minutes in 2½ minute steps in P.A. = 228° 57' i.e. Δ 61° 3'. On this occasion F.C. drove correctly! Both plates again show the comet as an intense & perfectly circular image well condensed. Mag =

(1) G.S.T. $19^h 30^m 1^s - 19^h 50^m 1^s$ + ws. (clock 37·4 fast) Exp. 20 min RMW

(2) L.S.T. $20^h 10^m 0^s - 20^h 20^m 0^s$ + ws (clock 37·4 fast) Exp. 10 min F.C.

These two plates were measured & reduced (RMW) giving the following positions:—

Aug 31·876179	$15^h 53^m 37^s·29$	+14° 26' 47"·0	(1950·0)	I.A.V. Cicalas
Aug 31·900407	15 53 39·26	+14 27 43·2	(1950·0)	Nº

Focus 3-q Temp 62° Moon 1st quarter

Sept 12·9 (night of Saturday-Sunday) Oa-O plate Transparency 6/10.

Comet Everhart 1964h (F.C. had to return to Italy unexpectedly & for these next two days a friend of his is helping me temporarily — quite untrained.)

This was the first night possible for photographing this comet since Aug 31. Owing to considerable moonlight — one day before 1st quarter — only a short exposure could be given. L.S.T. $20^h 2^m 1^s \rightarrow 20^h 7^m 1^s$ + ws (clock 46·4 fast) Exp. 5 min. Owing to shortness of exposure & drive on a fixed axis: Plate centre $16^h 12^m +20° 50'$ Apart from the effects of a short exposure the comet was of similar appearance to that in August. Mag estimated 9·0–9·5 photog. The plate was measured & reduced:—

Sept 12·860279 $16^h 10^m 53^s·65$ +20° 50' 8"·1 (1950·0) I.A.V. Cicalas

No. 1888

1964.

Focus 3-7 Temp 62°

Sept. 13·9 (night of Sunday-Monday) Plate 0a·0 1st Quarter Moon. Transp 5/10
Comet Everhart 1964 h. again became of moonlight only short exposure possible.
L.S.T. $20^h\ 0^m\ 9^s \rightarrow 20^h\ 4^m\ 9^s$ + cor (clock 46·0 secs fast). Exposure 4 min
again because of short exposure I drove with fixed worm. Plate being
centred on $\alpha = 16^h\ 13^m$ $\delta = +21°\ 17'$. Image of comet same as on
previous night — perfectly circular & well condensed. The plate was measured & reduced:-

Sept 13·855916 $16^h\ 12^m\ 21^s.37$ $+21°\ 17'\ 9''.7$ (1950·0) I.A.U Circ No 1888

[Away in Cornwall for 2 weeks returning Oct. 3.] Mag est. 9·0-9·5 photo.

Focus 3-9 Temp 54°.

Oct. 3·9 (night of Saturday-Sunday) Plate 0a-0 Transparency v. poor 3/10
Comet Everhart 1964 h. (Maurice Zgorman helped me in the Observatory)
This was first exposure possible since Sept 13 being away in Cornwall for 2 weeks
till to-night. Owing to poor transparency only 15 minute exposure given:-
L.S.T. $21^h\ 21^m\ 1^s \rightarrow 21^h\ 36^m\ 1^s$ + cor (clock slow ± 28·9) Exp = 15m.
Comet image again quite circular & well condensed Mag est 10·0-10·5 phot.
I drove with moving worm at rate of 24''48 in 20 min in 5 minute steps in
P.A. 49° 44' (i.e. 40° 16' ↖). The plate was centred on $16^h\ 45^m$ $+28°\ 44'$
The plate was measured and reduced giving:-

Oct. 3·861989 $16^h\ 43^m\ 49^s.74$ $+28°\ 40'\ 57''.9$ (1950·0)

I.A.U Circ No. 1888

1964

October 10·9 (night of Saturday-Sunday) Plate Oa-O Transp 6/10.
Comet Everhart 1964 h. Focus 3-12 Temp 45°-44° 5 day Moon just set.

Owing to slight residual moonlight only comparatively short exposure given.
L.S.T. $21^h\ 35^m\ 30^s$ — $21^h\ 50^m\ 30^s$ + cor (clock $0^s.2$ slow) Expr. 15 min.
Drove on moving web 12".24 in 10 minutes (5 minute steps) in
P.A. 53° 25' (i.e 36° 35' ↖→) Plate centre at $16^h 57^m$ + 30° 51'
Comet image again perfectly circular and well condensed. Mag est. 10·0-10·5 phot.
The plate was measured & reduced giving :—

Oct. 10·852570 $16^h 56^m\ 3^s.98$ + 30° 47' 47".8 (1950·0) I.A.U Circ. 1888

Oct. 12·9 (night of Monday-Tuesday) Plate Oa-O Transp 5/10 (1st Quarter Moon)
Comet Everhart 1964 h

Owing to some moonlight only a 10 minute exposure was given.
L.S.T. $21^h\ 6^m\ 0^s$ — $21^h\ 16^m\ 3^s$ + cor (clock $4^s.0$ fast).
Drove on moving web 12".23 in 10 mins (5 minute steps) in
P.A. 53° 43' (i.e. 36° 17' ↖→). Plate centred at $17^h 0^m$ + 31° 26'
Image of comet as before perfectly circular & well condensed. Mag. 10-10·5 photo
The measurements & reductions gave :—

Oct. 12·824915 $16^h 59^m\ 39^s.71$ + 31° 22' 0".6 (1950·0)

I.A.U. Circ. 1888

1964.

Nov. 7·8 (night of Saturday-Sunday) 0a-0 plate Transp 4-5/10 – passing cloud.
Comet Everhart 1964 h. Focus = 3·12 T = 43°.
Owing to passing cloud only 15 minute exposure given.
L.S.T. $22^h 24^m 1^s \rightarrow 22^h 39^m 3^s$ + corr (clock $0^s.9$ slow)
Drive with moving web 26″.88 in 20 minutes in 5 minute steps,
in P.A. 60° 55′ (i.e. 29°.5 ↖) Plate centred $17^h 55$ +38° 28′
The comet image through much haziness is easily seen with naked eye on plate
– but it has become much more diffuse than in October & is extremely
difficult to measure in the measuring machine. Mag est. 11·5-12·0 phot.
Measurements & Reductions of 9 stars gave :-
Nov 7·80974 $17^h 54^m 5^s.93$ + 38° 21′ 21″.1 (1950.0)
Though the measurements of the 3 sets of 3 stars each gave excellent agreement
I very much doubt whether the comet position is reliable owing to its
v. diffuse appearance.

Nov. 8·8 (night of Sunday-Monday) 0a-0 plate Transp 6/10. ~~Focus 3·12~~ T. = 43°
Comet Everhart 1964 h. L.S.T. $21^h 41^m 1^s \rightarrow 22^h 1^m 2^s$ + corr (clock $0^s.7$ slow)
Drive with moving web 27″.0 in 20 min in 5 min. steps in PA 61° (i.e 29°.0 ↖)
Plate centre = $17^h 58^m$ +38° 44′ Exposure 20 min. Comet image again very
diffuse & v. difficult to measure Mag est.: 11·5–12·0 photog.
Plate measured & reductions of 8 stars (9th star discarded) gave :-
Nov. 8·77895 $17^h 56^m 26^s.91$ + 38° 36′ 35″.5 (1950.0).
Again, though the various reductions agreed v. well, I doubt whether
the comet position is reliable.

(1964.2)

Occultation

Nov. 9 Z.C. 2809 Mag 4.9 Dark Limb Disappearance P.A. 88°.

Observed in bright twilight. Star was found by setting micrometer wire at calculated distance from terminator in correct P.A.. Once found the star was very obvious + easy to observe.

Observed L.S.T. disappearance $19^h\ 58^m\ 57^s.8$ + wr (clock $0^s.4$ slow)

Corrected L.S.T. $19^h\ 58^m\ 58^s.2$

∴ Observed Disappearance was $16^{hrs}\ 45^m\ 59^s.9$ U.T.

Predicted U.T. was $16^h\ 45^m\ 54^s$ O-C = $+5^s.9$ (Sent to N.A.O.)

(Disappearance quite normal + sudden. Observation high quality.)

(1964.3)

Occultation

Nov. 21 Z.C. 0916 Mag 4.3 Reappearance Dark Limb P.A. 247°.

The position of reappearance on dark limb was precisely located by setting the micrometer wire at the calculated P.A. + distance from the terminator. Observed Reappearance L.S.T. $0^h\ 12^m\ 9^s.0$ + wr (clock $17^s.9$ fast)

Corrected L.S.T. Reappearance = $0^h\ 11^m\ 51^s.14$

∴ Observed Reappearance was $20^{hrs}\ 11^m\ 0^s.5$ U.T.

Predicted U.T. of Reappearance = $20^h\ 10^m\ 57^s$ O-C = $+3^s.5$

(Observation was of good quality)

N.B. Though I attempted to observe the Disappearance of this star somewhat earlier, it was made impossible by the low altitude of the moon + an occulting Tree.

1964

Nov. 9.8 (night of Monday-Tuesday) 0a-0 plate Transp 5/10 – but
Low Haze & much scattered light.

Comet Everhart 1964 h. Form B-18 Temp 40°–40°.
L.S.T. $21^h\ 40^m\ 1^s \rightarrow 22^h\ 0^m\ 1^s$ + corr (clock $0^s.4$ slow) Exposure 20 min.
Drove with moving web 27.16 for 20 min (5 min strip) in P.A. 61° 15' (i.e. 28° 45' ↖)
Plate centred at $18^{hr}\ 0^m$ + 39° 0'
Comet image to naked eye is extremely diffuse & much larger than last night.
With it is obvious to the naked-eye on the plate it is so extremely vague in the measuring machine that it was quite impossible to measure
Mag-est. 11.5-12.0 photog.

December 28.9 (night of Monday-Tuesday) Plate 0a-0 Transp 4/10.
Comet Everhart 1964 h. Form 3-16 Temp 30°–27°.
This was the first occasion for 2 weeks that weather permitted a further attempt to photograph this comet – but even so the transparency was by no means first rate
L.S.T. $24^h\ 35^m\ 1^s \rightarrow 1^h\ 5^m\ 1^s$ + corr (clock ± $6^s.0$ fast) Exp. 30 min.
Drove with moving web 30.24 for 20 mins in 5 min strips, in P.A. 69° 30'
(i.e. 20° 30' ↖). Plate centred on $20^h\ 30^m\ 42^s$ + 50° 58'
Despite v. careful search no trace of comet was found. Assuming that the comet was at least as diffuse as it was on Nov 9, it is estimated that its magnitude to-night cannot be brighter than 13.5.

1965

Focus 3–16 Temp 34°–32°.

Jan 2·8 (Saturday – Sunday night) Plate Oa–O Transparency 5/10.

Comet Everhart. Owing to somewhat better transparency it was decided to make another attempt to get the comet. A 35 minute Exposure was made L.S.T. 1h 8m 1s → 1h 43m 4s + wr (clock ± 4s.0 Fast) Exp = 35 mins. Drove with moving web 30″.24 in 20 mins in 5 minute steps in PA. 70°0′ (i.e. 20° ⟵). Still no sign of comet after careful search. Must be less than mag 13.5 ph.

Plate centre ± 20h 48m.7 + 52° 2′.

Jan 3·8 (Sunday – Monday night. Plate Oa–O Transp. 6/10 Focus 3–16

Comet Everhart 1964h. Temp = 32°–32°

Still better transparency so yet another attempt.

L.S.T 1h 6m 1s → 1h 41m 1s + wr (clock 3s.0 fast) Exp. = 35 mins.

Drove with moving web 30″.24 in 20 mins (5 minute steps) in PA 70° (i.e. ⟵ 20°)

Plate centre 20h 52m 20s + 52° 15′.

Careful search shows no sign of comet. Less than Mag 13.5.

Jan 24·9 An I.A.U. telegram announced the discovery of a new comet by Bester of Mag 8.0 giving daily motion. On the first opportunity a quick visual search was made, and, as that showed nothing, 2 plates were exposed – driving with moving web on the calculated position. The plates were both centred on 6h 15m 30s + 5° 30′ & the web was moved 5″.22 per 10 mins in 5 min steps in PA 113° 30′ (i.e. 23° 30′ ↗) Two exposures were made, the first of 15 minutes by myself, &

1965 (1)

Occultation

April 5. ZC.0614 Mag 5.7 Dark limb Disappearance P.A. 39°

The occultation occurred behind a 3½ day old moon, and therefore at a very considerable distance from the bright limb, & only 1 hr. after sunset in fairly bright twilight. However with the bright earth light the dark limb was fairly easily visible & the star was readily picked up without having to set on it with the micrometer eye.

I observed it with the 6", and John Urquhart Thompson observed it independently in the finder using the extra eye-piece.

Observation with 6" by RMW

L.S.T. of Disappearance $8^h 41^m 17^s.2$ + wr (Clock $5^s.66$ Slow)

∴ Corrected LST of Dis = $8^h 41^m 22^s.86$

∴ Observed Disappearance was at $19^h 48^m 20^s.9$ U.T.

Sent to N.A.O.

[Predicted Dis. $19^h 48^m 20^s$

O-C = $+0^s.9$]

The disappearance was perfectly normal & the observation of high quality.

N.B. J.U.T's independent observation of disappearance was

L.S.T. $8^h 41^m 17^s.0$ + wr i.e. $0^s.2$ earlier than mine.

A good confirmation. This was his first occultation!

1965

Jan 24·9 Continued "Comet" Berton. (night of Sunday-Monday)
the second by John Sergeant Thompson, who was helping me, 10 minutes.
(1) L.S.T. $4^h 16^m 2^s \rightarrow 4^h 31^m 3^s$ + corr. Oa-O Plate Transp 4/10.
Clock 2·8 secs slow Exposure 15 minutes R.W.
(2) L.S.T. $5^h 18^m 1^s \rightarrow 5^h 28^m 1^s$ + corr Oa-O Plate Transp 3-4/10
Clock error 2·8 secs slow Exposure 10 mins by J. U.T.
Careful examination of the two plates showed no trace of any
cometary object above 12·5 mag in predicted position & certainly
no comet as bright as 11·5 mag within 4° radius of prediction.
If the object Berton was real it was clearly a minor planet.
This was afterwards found to be the case.

Jan 31·9 (night of Sunday-Monday.) Oa-O Plate Transp 6/10.
A reasonably good sky for once! So a plate was exposed on
the Pole with 5 graduated exposures. The plate was moved
through 4' of arc between each exposure. The exposures given were:—
(1) $6^{min}\,45^s$, (2) $2^m\,15^s$, (3) 45^s, (4) 15^s, and (5) 5^{secs}.
In other words each exposure was 1/3rd the length of the previous one.

During February March & April the weather was extremely bad; a chart for
an occultation planned on April 5 (see opposite page) no observations were
made. Moreover No comet bright enough to be photographed was discovered.

1965.(2) Aug 9.

Occultation Z.C. 2337. Mag. 6.4 Dark limb Disappearance. P.A 64° Age Moon 10.7 days.
Sky quite overcast, but a few small gaps low in West & South so I went to Observatory on chance. Twenty minutes before Moon came out in a fleecy gap for about 3 minutes – just time to find the star (seen v. faintly through thin cloud) & set it in square of micrometer webs. After that no clearance in cloud until 1½ minutes before occultation. Star faint & very bad seeing but about 30 seconds before occultation the star became brighter & seeing improved; and the disappearance was observed under moderate conditions.
Between 21h 22m 0 25m U.T. 3 weak time signals were got giving clock error between 5.04 & 5.08 sec fast; and at 21h 33m an accurate coincidence was got giving Clock error 5.050 sec fast
Observed L.S.T. disappearance was 16h 25m 41s.5 + wr (clock 5.05 fast.)
∴ corrected LST = 16h 25m 36s.45
∴ U.T. (corrected) of disappearance was 21h 17m 46s.92
The estimated error (large because of large – faint star – & poor seeing) < 0s.5
[Predicted U.T = 21h 17m 44s.1 ∴ O-C = +2.8 sec]

Occultation 1965 3(a) and (4a) Observed at Ashtead with 6" by Stuart McNeil.
Nov. 4 Z.C. 3480 Mag 7.3 Dark limb Disappearance. P.A. 33° age Moon 11.3 days.
Time of Dis. L.S.T. 22h 57m 47s.25 + wr Clock fast wr = −1.28 sec.
Corrected LST = 22h 57m 49s.97
U.T = 20h 4m 54s.9 Pred = 20h 4m 46
O-C = +8s.7.

1965

July 9. Still no comets within reach to photograph after a search for. Weather also hopeless for any form of photography. To night however I observed an occultation – see the next page.

Occultation 1965 3a and 4a cont.

November 4. Z.C. 3484. Mag 6.8 Dark limb Disappearance. PA 78° age of Moon 11.3

Time of disappearance LST 0^h 20 $8^s.0$ + corr (Clock fast corr = −1.28)

corrected LST 0^h 20^m $6^s.72$

U.T. = <u>21^h 27^m 2.20 secs</u> Predicted 21^h 27^m 0^s

O−C = + $2^{sec}.2$

Occultation 1965. 5a Observed 6" refr Stuart McNeil.

December 2. Z.C. 3536 Mag. 4.7 Dis. dark limb PA 89° Age of Moon 9.6d.

Time of disappearance LST 23^{hr} 18^m 10.0 secs + corr (Clock Fast: corr $-3^s.42$)

Corrected LST 23^h 18^m $6^s.58$

U.T. = <u>18^h 35^m $6^s.7$</u> Predicted = 18^h 35^m 0^s.

O−C = +6.7 sec.

These last 3 occultations 3a 4a & 5a were observed by Stuart McNeil as I was in London (during week). The observations are therefore probably good – but there is some little doubt as to clock errors in time signal determinations.

1965.

Comet Alcock (1965h) & Comet Ikeya Seki (1965 f.)

In August I fell over in the observatory and broke my left hip — in same place as I did several years ago. I was out of action in hospital until mid September when we went to Cornwall for 2 weeks. Just before leaving I heard of discovery of Ikeya Seki but owing to its low declination & proximity to Sun observation was impossible. However on September 27, our second night in Cornwall, the position was such that it might be just visible in dim twilight before sunrise and I searched the region with my 2" Comet Seeker by Cooke. But just before the position rose above my horizon (about 3°-5°) the twilight had brightened so that 6 mag stars were no longer visible — and comet was predicted about 6 mag. After that its position deteriorated & no further attempt was worth making. This comet which reached ± mag −10 about Oct 20 was never seen by me. It was never above our horizon except during Sun-up; and on the 3 or 4 days after perihelion when it would have been visible during daytime there was persistent thick haze & all attempts to see it failed.

Just after the report of Comet Ikeya-Seki, while still in Cornwall, Comet Alcock was found. For over a week the night skies were cloudy & then the moon came & numerous attempts to pick it up in the 2" Comet Seeker failed. It was not until the moon had gone and I was back at [illegible] that I was able to start photographing this comet. Six plates of this comet were taken between Oct 15 and October 25.

1965

Comet Alcock 1965 h

Oct.15 (night of Friday-Saturday 15h-16h). Oa-O Plate 6" Triplet Transp. 5/10.

Oct.15.76 Exposure 15.5 minutes — stopped by Cloud LST 20h 22m 30s — 20h 38m 0s ± + corr.
Drive with moving coil 34".25/10 minutes = 1.33 Revs/10 min [2½ minute steps in PA 43° 43'.
[Clock Fast ± 5.38 secs] Transp. 53° → 50°: F = 10. Plate centre α = 18h 11m δ = +19° 20'

Oct. 16.75 (night of Sat-Sunday 16-17) Comet Alcock. Oa-O Plate Transp. 6/10.
Two exposures were made one by R.L.W. and one by Stuart McNeil.
(1) Exp 21½ min. R.L.W. LST 20h 20m 5s → 20 41 20s + corr
Drive moving coil 34".25 = 1.33 Revs/10 minutes in 2½ min steps. PA 43° 43'

(2) Exp. 22.5 min S.McN LST 21h 15m 0s → 21h 37m 30s + corr Drive as in previous exposure. In both cases Field centred α = 18h 16m δ = +18° 21'
In Exp (1) Plate Transp 6/10, but in Exp (2) S.McN. Transp 4/10.
Temperature during both exposures falling from 49° – 46° F = 11. Cloud = [redacted] Fast

1965.

Oct. 17.75. Comet Alcock (night of Sun–Monday 17^{th}–18^{th}) Oa-O Plate Transp 4/10
Exposure 32.5 min (RHW) LST $20^h\ 20^m\ 5^s \rightarrow 20^h\ 52^m\ 35^s$ + corr (clock 4.8 fast)
Drove with moving web 34".25 = 1.33 Revs/10 min in 2½ min steps, PA 43° 43' ↙
Plate centred α $18^h\ 20^m$ δ +17°23'. Temp: 52°–50° F = 11

Oct 23.75 Comet Alcock (night of Sat–Sunday 23–24^{th}) Oa-O Plate Transp 4–5/10.
(RLW) Exposure 32.5 min LST $20^h\ 30^m\ 5^s \rightarrow 21^h\ 2^m\ 35^s$ + corr ~~([illegible] fast)~~
(Clock slow 0.4 secs). Drove moving web 35".8 = 1.39 Revs/10 min in 2½ m steps
in PA. 43° 40' ↙. Plate centred at α = $18^h\ 46^m$ δ = +11° 30'.
Temp 47°–47° F = 12.

Oct 25.75 Comet Alcock. (night of Mon–Tuesday 25^{th} 26^{th}) Oa-O Plate Transp* 5/10
Exposure 30 mins (S. McNeil) LST $20^h\ 45^m\ 0^s.5 \rightarrow 21^h\ 15^m\ 0^s.5$ + corr
(clock fast 1.0 secs) Drove on moving web 35".8 = 1.39 Revs/10 min in 1¼ min steps.
in PA 43° 46' ↙. Plate centred α: $18^h\ 54^m$ δ: +9° 30'.
Temp = 56°–52° F = 8

* much scattered sky light!

Occultation

1966 (1) Feb. 28. Z.C. 0734 Mag 6.6 PA = 120° Dis. Dark limb. Moon age = 8.4d.

R.L.W observed Time of Disappearance L.S.T. $5^h\ 33\ 46^s.0$ + corr (Clock fast = $4^s.26$)

corrected L.S.T. = $5^h\ 33^m\ 41^s.74$ Pred U.T. = $19^h\ 3^m\ 42$

U.T. = $19^h\ 3^m\ 40^s.2$ O-C = − 1.8 s.

The star was first seen in a cloudless sky - but just before occultation passing clouds periodically dimmed the star but no where nearly obliterated it. The disappearance was in fact well seen & the observation was of best quality ± 0.15 seconds.

The occultation was also attempted by S. McNeil with the 4" & outside microphones. But for him with the smaller instrument the star was obscured by cloud a few seconds before disappearance.

Occultation 1966 2a 3a and 4a observed by S. McNeil during my absence in London.

Mar 11 (2a) ZC 2118 Dis. Bright limb Mag 2.9 P.A. 162° Age of Moon 18.6d.

Observed R. = L.S.T. $11^h\ 33^m\ 16^s.25$ + corr (clock Fast = 0.88 sec).

corrected LST $11^h\ 33^m\ 15^s.37$ Pred U.T. = $0^h\ 23^m\ 3^s.0$

S. McN ∴ U.T. = 0 22 55.8 ∴ O-C = $-7^s.2$

Mar 11 (3a) ZC 2118 Rough Dark limb Mag 2.9 PA = 259° Moon 18.6d.

Observed R. = LST $12^h\ 22^m\ 15.25$ sec + corr (clock fast − 0.885)

corrected LST $12^h\ 22^m\ 14^s.37$ Predicted U.T. = $1^h\ 11^m\ 45^s$

S. McN ∴ U.T. = $1^h\ 11^m\ 46.8$ (O-C = + 1.8 s.)

Cont. the page

1965 — 1966

1965 November ~~and December~~. Comet Alcock. Several plates exposed on good nights with exposures 30 to 45 minutes failed to show any sign of the comet.

1966 Occultations continued

Mar 11 1966 (4a) Z.C. 2117 Reapp. D. limb Mag 5.3 PA = 263° Moon: 18.6 d.

Observed R = LST $12^h 15^m 56.0$ s. + corr (clock fast; corr − 0.88 s)

Corrected LST = $12^h 15^m 55.12$ s   Predicted UT = $1^h 5^m 24$

S.McN. ∴ U.T. = $1^h 5^m 28.6$ O−C = + 4.6 s.

The quality of the observations is difficult to assess. I have not yet had opportunity of observing an occultation with S McN (with 4" & 6" refractors).

1966 Occultation May 4 ZC. 2118 Mag 2.9. Reapp. Dark limb (Moon 14.1^d.) PA = 299°

(5a) (S.McN. observed it as I was away) 6". Pred U.T. = $21^h 35^m 22^s$

LST Observed R = $12^h 22^m 1.5^s$ + corr   Clock ~~fast~~ Slow 17.13^s

LST Corr. R = $12^h 22^m 18.63^s$

∴ U.T. Reapp. = $21^h 35^m 36.1$ good quality (O−C = $+14^s$)

Occultation 1966 (6a & 6b)

May 23 Z.C. 1094 Mag 6.9. D.D. Moon 3.4^d P.A. = 100°

Predicted U.T. = $20^h 57^m 0^s$

Observed by RHW & S.McNeil (W. with 6"; McN with 4")

RHW Observed LST = $12^h 58^m 29^s.0$ + cor
SMcN " " = 12 58 28.5 cor
{ Clock $4^s.42$ slow
cor = + $4^s.42$ }

Corrected LST $12^h 58^m 33^s.4$ RHW
12 58 32.9 SMcN.

∴ Corrected U.T. of disappearance:

$20^h 57^m$ 2.6 RHW good quality
$20^h 57^m$ 2.1 SMcN. fair* quality

O–C = + $2^s.6$ W; = + $2^s.1$ McN

* star near edge of field at disappearance
This will in future be corrected by putting
star near centre to field say 45 secs beforehand.

May 27 Occultation 1966 7a & 7b.

Z.C. 1612 Mag 7.3 D.D. Moon $7^d.5$ P.A. = 116° Pred U.T. = $21^h 46^m 22$

Observed RHW 6" & SMcN 4"

Observed LST = $14^h 3^m$ 37.8 RHW + cor
14 3 37.8 SMcN + cor
} Clock $4^s.42$ slow
cor = + $4^s.42$

Corrected LST $14^h 3^m 42^s.22$ (W & McN)

∴ Corrected U.T Dis. = $21^h 46^m 17^s.1$ W and McN

both good quality O–C = – $4^s.9$

Occultation 1966 (8a, 8b)

May 28 Z.C. 1733. Mag = 5.2 D.D. Moon 8.5 PA = 173° Pred UT = 22h 41m 6s

Observed RNW with 6" + SMcN with 4"

Observed LST 15h 2m 21.3s W. + cor Clock 4.33s slow

15 2 21.5 McN + cor cor = +4.33

Corrected LST 15 2 25.63 W

15 2 25.83 McN

∴ U.T Dis. = 22m 40 55.0 W
22 40 55.2 McN
} both good quality.

(O-C. = −11.0s W; = −10.8s McN)

May 30 Occult. (9a, 9b)

Z.C. 1962. Mag = 5.2 D.D. Moon 10.5 PA = 123° Pred U.T. = 21h 56m 6s

Observed RNW 6" + SMcN 4"

Observed LST 14h 25 13.9 RNW + cor Clock 6.11s slow.

14 25 14.0 SMcN + cor cor = +6.11s

Corrected Obs LST 14h 25m 20.01s RNW

14 25 20.11 SMcN

∴ Corrected U.T. Dis. = 21h 56m 3.6s RNW
= 21 56 3.7 SMcN
} good quality.

(O-C = −2.4s W; = −2.3s McN)

1966 Occultation (10 & 10½)

June 27 Z.C. 2053 Mag 4.6 S.D. Moon 9.d1 PA = 166° Pred. U.T. = 22h 18m 6s

Observed by RKW 6", S.McN. 4"

Observed L.S.T. 16h 37m 48.0 RKW. + corr Clock 9.s30 fast

16 37 48.5 S.McN. + corr corr = −9.s30

Observed Corrected L.S.T. 16h 37 38.s70 RKW

16 37 39.20 S.McN

∴ Corrected U.T. Dis. was 22h 17m 55.s1 RKW good quality

22 17 55.6 S.McN ½ fair quality

* Considerable wind causing vibration of 4".

(O-C = −10.s9 W ; = −10.s4 McN.)

1966 Occultation (11½)

July 25 ZC 2136 Mag. 6·8 D.D. Moon P.A 119° Pred U.T. 21h 44m 58s

Observed by S.McN 6". — passing thin cloud obscured star for RKW write 4"

NA +1".26 Observed L.S.T (S.McN) 17h 55m 2.s5 Clock 3.s62 Fast

" corrected LST 17h 54m 58.s9

∴ Corrected UT Dis was 21h 44m 57.s1 (S.McN) good quality

(O-C = −0.s9)

1966

Aug 14.9 Comet Kilston (1966 b) (night of Sun–Mon. 14–15th) Oa–O plates 6" Triplet.

Transp. 5–6 — but sky was rather bright

Comet was easily found in 6" & estimated visual mag was 10.5. The coma appeared slightly elongated, relatively to the central condensation, in a S/p direction. i.e more or less towards Sun.

Two exposures were made. Each of them was driven on moving web at $17''.48$ in 20 minutes in 1/4 (5 minute) steps — in PA 90° $\top_s$

The approximate plate centres were $\alpha = 17^h\ 56^m.7$ $\delta = +19°23'$ (1966.6).

Plate (i) Exposure 15 mins LST $19^h\ 1^m\ 30$ – $19^h\ 16^m\ 30^s$ + ωz. (R.L.W.)

Plate (ii) Exposure 40 min L.S.T $19^h\ 42^m\ 30^s$ – $20^h\ 22^m\ 30^s$ + ωz (S.McN.)

Clock error = $-1^s.5$ (Fast)

The photographic magnitude was estimated at 10.0.

On the 2nd, long exposure plate, the coma appears essentially circular into a diameter of its outer fainter parts of ± 2'. It is heavily condensed towards centre and this brightest region is ± 0'.5 in diameter. No sign of any tail.

The 1st, short exposure, plate was measured for position. 9 stars were measured & 3 independent reductions made. The position was taken from the first two as the 3rd, which differed by $2''.1$ in δ, was from a much larger Δ.

April 14.902852 $\alpha = 17^h\ 55^m\ 34^s.87$; $\delta = +19°22'\ 32''.5$ (1950.0)

(LST $19^h\ 8^m\ 58^s.5$. U.T. = $21^h\ 40^m\ 6^s.4$)

C. Kilston Aug 15.9. Plate measurements.

On the two plates the same 9 stars were measured & 3 independent reductions made. In each case the mean of the 3 reductions was taken as the position of the comet.

(1) Aug 15.888721 (V.T. $21^h\ 19^m\ 45^s.5$ − L.S.T $18^h\ 52^m\ 30^s.8$) Range
$\alpha = 17^h\ 55^m\ 52^s.15$ $\delta = +19°\ 1'\ 23''.0$ (1950.0) $\alpha: {}^s.06$ $\delta: 1''.0$

(2) Aug 15.907072 (U.T. $21^h\ 46^m\ 11^s.1$ − LST $19^h\ 19^m\ 0^s.8$) Range
$\alpha = 17^h\ 55^m\ 52^s.74$ $\delta = +19°\ 0'\ 54''.2$ (1950.0) $\alpha = {}^s.05$ $\delta = ''.2$

C Kilston Aug 17.9. Plate measurements.

Nine stars were measured and 3 independent reductions made. The mean of the 3 reductions gave the adopted position:—

Aug 17.900026 (U.T. $21^h\ 36^m\ 2^s.5$) (LST not employed)
$\alpha = 17^h\ 56^m\ 32^s.28$ $\delta = +18°\ 17'\ 40''.1$ (1950.0

Range:-
$\alpha = 0^s.13$ $\delta = 0''.9$.

1966

August 15.9
Comet Kilston 1966(6) (night of Mon-Tues. 15th, 16th) Oa-O Plate 6" Triplet.
Transparency 4.5 (1st plate), 5-6 2nd plate. T = 56° F.8
Two plates were exposed, 5 min & 10 min. exposures. In view of no interesting physical features on last night's plates, the exposures were made primarily for position
Both plates driven on a fixed web (The motion of comet was 8"/10 minutes 7 45 ...)
and were centred on $\alpha = 17^h 56^m.4$ $\delta = +19° 2'$ approx.
Plate (1) 5m exposure LST $18^h 50^m 1^s - 18^h 55^m 1^m$ + corr (R.L.W.) Transp 4.5.
Plate (2) 10m Exposure LST $19^h 14^m 1^s - 19^h 24^m 1^m$ + corr (S.McN.) Transp 5-6.
In 6" comet was easy [& visually appeared as yesterday Mag vis. = 10.5
Clock error $-0^s.2$ (Fast)

On the two plates the photographic mag was estimated at Mag ph = 10.0
again the comet appeared as perfectly circular with strong condensation.

Aug 17.9
Comet Kilston (1966.6) (night of Wed-Thurs. 17th 18th) Oa-O plate 6" Triplet.
I was away in London. The plate was exposed by S McNeill. Transp ?6-7
The plate was driven on a fixed web
Exposure 6 min. U.T. $21^h 33^m 3^s - 21^h 39^m 2^s$. (using Narrow Pipe for timing).
The plate is very good showing practically no fog.
Coma as before about 40" central part. There is now a very definite short thick straight "tail" 1'.5 in length in a Sp direction.
This corresponds with the elongation of coma noted visually on Aug 14.9
and is in the direction towards the Sun. Photographic mag 9.5

Aug. 19.9. C. Kilston. Plate measurements.

Nine stars were measured and 3 independent reductions were made. The mean of the 3 reductions gave the adopted position:

Aug 19.888489 (U.T. = 21h 19m 25s.5)

α = 17h 57m 17s.92 δ = +17° 33′ 50″.3 (1950.0)

Range

α = 0s.16 δ = 1″.4

Aug 19.9 C. Burton Plate measurements.

Nine stars were measured and 3 independent reductions made. The mean of the 3 reductions gave the adopted mean position:-

Aug. 19.993068 (U.T. 23h 50m 1s.0 − GST 21h 38m 57s.1)

α = 0h 48m 20s.71 δ = −1° 9′ 45″.0 (1950.0)

Range:

α = 0s.10 δ = 1″.8

N.B. This turned out to be the 1st accurate position of the comet to be obtained — the result to be got was by Marsden at U.S. Naval Observatory Washington on Aug 23.3 & 24.3

1966

Aug. 19·9 (night of Fri-Sat $19^h,20^m$) Oc. O Photo Cook 6" Triplet

① C. Kilston (1966f) Transit G

Visually comet was slightly brighter than previously in 6" — Est Vis mag 9·5-10·0

Exposure 10 min UT $21^h\,14^m\,41^s$ — $21^h\,24^m\,41^s$ + or. Chronometer Block error $-15^s.5$ (fast).

Plate centre $17^h\,57^m.5$ $+17°\,31'$ Exposed by RHW during on Fixed Web.

The plate is good with little or no fog. The image of the coma is again essentially circular — no elongation or tail. Brightest part 40".

Photographic mag. est 9.5

② C Berbon (1966 c). This comet was discovered by Berbon Aug 15 on Palomar 48" plates. A hasty look for the comet with 6" visually showed nothing strong, so without further delay a plate was exposed with 6" Triplet — S. McNeill.

Exposure 15 min UT $21^h\,31^m\,41^s$ — $21^h\,45^m\,41^s$ + or Chron error = $16^{sec}.0$ Slow.

S.McN. (Driven on fixed web.)

The plate is only moderately keyed. The comet shows a highly condensed central coma of 20' diameter, surrounded by very faint outer coma ± 2' diameter. No irregularities noted. Est mag photographic = 12.0

Plate centre $\alpha = 0^h\,51^m.5$ $\delta = -1°\,0'$.

Sept 4·8 C Kilston Plate measurements.

Nine stars were measured & 3 independent reductions made. Unfortunately in the 3rd reduction no proper motion could be found for one of the stars BD 11°3370

The means of the 1st 2 reductions were taken as adopted position:

Sept 4·848876 $\alpha = 18^h\ 7^m\ 4^s.91$ $\delta = +11°\ 30'\ 39''.8$ (1950·0)

(U.T. $= 20^h\ 22^m\ 22^s.9$)

Range $\alpha = ^s.08$ $\delta = ''.5$

(The 3rd reduction departed from mean by $\alpha = -^s.1$, $\delta = 2''.3$)

Sept 8·9 C Kilston Plate measurements

Nine stars were measured on both plates – but because one of the stars was a close double & difficult to measure, only 2 reductions were used for the adopted position.

Plate (1)

Sept 8·858758 $\alpha = 18^h\ 10^m\ 30^s.98$ $\delta = +9°\ 58'\ 33''.4$ (1950)

(L.S.T. $19^h\ 43^m\ 52^s.2$ U.T. $20^h\ 36^m\ 36^s.5$)

Range $\alpha = ^s.07$ $\delta = 1''.5$

Plate (4)

Sept ~~8·870877~~ 8·871571* $\alpha = 18^h\ 10^m\ 31^s.63$ $\delta = +9°\ 58'\ 12''.0$ (1950·0)

(L.S.T. $20^h\ 2^m\ 22^s.2$) (U.T. $20^h\ 55^m\ 3^s.7$)

Range $\alpha = ^s.02$ $\delta = ''.3$

(Count wrong on this second plate v. faint & difficult to measure.)

(* wrongly reported to I.A.V. Circ. 1976 as 8·870877)

1966.

Sept 4.9 (night of Sun.-Mon 4th-5th) Oa-O plate 6" Triplet.

Comet Kilston 1966 (b) Transp 6 Slight Twilight & faint moonlight.

The comet was easy visually in 6". Vis Mag est. 9.5

Exposure 5 mins LST $19^h 11^m 30^s - 19^h 16^m 30^s$ + cor* (S. McNeil)

driven on fixed web. *Clock error $-10^s.1$ (fast)

Plate Centre $\alpha = 18^h 8^m.1$ $\delta = +11° 26'$

Image of comet as before. Photo mag est. 9.5 No elongation or tail.

Sept. 8.9 (night of Thurs-Fri, 8th 9th) Oa-O plates 6" Triplet.

Comet Kilston Transparency 4-5. (T 57°-58° F 8)

Two plates were exposed each of 3 mins. exposure driving on Fixed web.

(1) Exposure 3 mins LST $19^h 42^m 30 - 19^h 45^m 30^s$ + cor (S. McNeill.)

(2) Exposure 3 mins LST $20^h 1^m 0^s - 20^h 4^m 0^s$ + cor (R.L.W.) Clock error $-7^s.8$ Fast

Both plates were centred on $\alpha = 18^h 11^m.6$ $\delta = +9° 54'$

The comet was easy visually in 6" — unchanged Mag vis 9.5

The comet images on the two short exposure plates also were

unchanged — Photographic mag. = 9.5.

On the 2nd plate the comet & star images were fainter than on plate 1

This may have been due to differences in their development, as I had

to get someone else to do this for me!

Sept. 12.9. C. Kitchin plate measured

Nine stars were measured & 3 independent reductions made.

The mean of the 3 reductions gave the adopted position:

Sept. 12.861749 (L.S.T. $20^h\ 3^m\ 57^s.6$. U.T $20^h\ 40^m\ 55^s.1$)

$\alpha = 18^h\ 14^m\ 19^s.45$ $\delta = +8°\ 27'\ 22''.8$ (1950.0)

Range $\alpha = {}^s.13$ $\delta = {}''.8$

Sept. 12.9 C Barlow plate measured

Nine stars were measured & 3 independent reductions made.

The mean of the 3 reductions gave the adopted place

Sept 12.965981 (LST $22^h\ 34^m\ 27^s.9$ UT = $23^h\ 11^m\ 0^s.8$)

$\alpha = 0^h\ 44^m\ 10^s.51$ $\delta = -7°\ 42'\ 34''.4$ (1950.0)

Range $\alpha = {}^s.07$ $\delta = {}''.3$

1966.

Sept. 12·9 (night of Mon - Tues. 12-13th) Oa-O Plate 6" Tiplet.

(1) C. Kilston 1966 b. Transh. 5-6.

Comet observed visually in 6" as before. Vis. mag 9·5

Exposure 6 min L.S.T. $20^h 1^m 1^s - 20^h 7^m 1^s$ + cor (R.L.W.) Clock error $-3^s 4$ Fast

Driven on fixed web. Plate centre α $18^h 13^m 4$ δ + 8°23'

Comet on plate as before - no irregularities Ph Mag 9·5

(2) C. Barbon 1966 c.

Owing to low altitude of this comet & the very hazy skies or poor weather this was the first opportunity to photograph it since Aug. 19·9.

Again we found it impossible to see any sign of the comet visually in 6".

Exposure 15 min LST $22^h 27^m 1^s - 22^h 42^m 1^s$ + cor (S. McNally) Clock error $-3^s 1$ Fast.

The plate was driven on a fixed web & centred at α = $0^h 45^m 0$ δ = −7°36'

The comet image is faint but clear - highly condensed and similar to appearance on Aug 19·9. Phot. Mag. c.a. 12·0

Sept 16·8 Comet Ikeya-Everhart 1966 d - discovered Tokyo Sept 8.

Comet in bright twilight sky & considerable haze. The comet was searched visually by S. McN 6" & by me 4" - but nothing could be seen.

A plate was exposed centred on α $13^h 42^m 8$ δ + 17°55'. 4 minute exposure LST $19^h 33^m 30^s - 19^h 37^m 30^s$ (S. McN) but no definite image of comet obtained.

Sept. 19·8 C Kilston Plate measurements.

Nine stars were measured & 3 independent reductions made.

The means of the 3 reductions gave the adopted positions :—

Sept 19·857224 $\alpha = 18^h\ 21^m\ 50^s.78$ $\delta = +5°\ 51'\ 4''.2$ (1950·0)

(U.T. $20^h\ 34^m\ 24^s.2$ Range $\alpha = ^s.07$ $\delta = 1''.6$

L.S.T. = $20^h\ 25^m\ 1^s.5$

1966

~~[illegible]~~

Sept 17-19   <u>Comet Ikeya-Everhart</u> 1966 d.

The weather continued bad with only occasional hazy gaps in the clouds. On each evening a visual search however was made with 6" & 4" but nothing could be seen.

Sept. 19.8 (night of Mon Tues 19-20th)

<u>Comet Ikeya Everhart.</u> This was the first occasion (since Sept 16.8) on which the conditions, though pretty bad, made an attempted exposure worth while. In addition S.McN suspected visually with 6" a diffuse object — but he could not be certain of it.

A plate was exposed 6 min Exp. LST $19^h 46^m 0^s$ — $19^h 52^m 0^s$ + cor centred on $13^h 55.2^m$ + 16° 27' by S.McN. But again <u>no</u> sign of comet on plate.

Sept. 19.8 (night of Mon-Tues. 19-20th)   Oa-O plate   6" Triplet.

Comet Kilston 1966 b.   Transp 4

Visually the comet was unchanged. <u>Mag vis 9.5</u>

Exposure 4 min LST $20^h 23^m 1^s$ — $20^h 27^m 1^s$ + cor. (S.McN.) Clock error + 0.5^s <u>slow</u>

Drove on fixed wt. Plate centre $18^h 23^m.0$ + 5° 47'

The comet is a small highly condensed spot on the plate.

Phot Mag. 9.5

Comet Barbon 1966 c. A plate was exposed for 15 mins by S.McN. Plate centre was ~~[illegible]~~ $0^h 42^m.0$, −9° 25'.5. LST $22^h 15^m 30^s.0$ — $22^h 30^m 30^s$ + cor. (+0.5s slow) But the low S. Declination, poor transparency & light resulted in <u>no</u> <u>comet image</u>.

Occultation 1966 (11a, 12b)

Lyr. 24 Z.C.3052 Mag 6·2 D.D Moon 10·1 P.A. 103° Pred U.T. 21h 2m 39s

NA +0"·75 (W) Observed by RLW 6", and SM·N 4".

Observed LST 21h 12m 59s·0 RLW Clock − 0s·48 fast.

NA +0"·65 (McN) " " 21 12 59·25 SM·N

∴ Observed Gr. LST 21 12 58·5 (W)

21 12 58·8 (McN)

∴ Corrected U.T. Disappearance was

21h 2m 33s·8 (W) O-C − 5s·2

21h 2m 34s·1 (McN) O-C − 4s·9

Both good quality.

Occultation 1966 (12a)

Lyr. 20 ZC 0076 Mag 5·9 D.D Moon 8·6 P.A 91° Pred UT 17h 42m 41s

Observed by RLW 6" Observed LST 23h 35m 40s·0 + Gr Clock + 0s·4 Slow

NA = +0"·23 ∴ Gr. Obs. LST 23h 35m 40s·4

∴ Observed Corrected UT Dis. was:-

17h 42m 48s·2 O-C + 7s·1

good quality.

1966

Oct. 16.8 Comet Kilston 1966 b (night of Sun–Mon, 16–17th) On-O plate 6" Tiplet
Transp. 5. T 57°–58°, F 8

The comet had not been observed for nearly a month, owing to poor skies, and was getting low in altitude. Visually it was easy in 6"; but was estimated to be very slightly fainter than last seen — Mag vis 10.0

Exposure 8 min. LST $20^h 35^m 1^s$ — $20\ 43^m\ 1^s.5$ + w (S. McNeil) Clock error $-6^s.4$ Fast

Guided on fixed web. Plate centre $\alpha = 19^h 1^m.0$ $\delta = -3° 1'$

Plate measurements C Kilston Oct 16.8.

Nine stars were measured in 3 independent reductions made. Since 1 & 2 reds. agreed in α and 2 & 3 reds. in δ, the means of 1 & 2 were adopted for α, & of 2 & 3 for δ:—

Oct. 16.793123 $\alpha = 18^h 59^m 36^s.26$; $\delta = -3° 2' 1''.8$ (1950.0)

(LST $20^h 38^m 54^s.8$. UT = $19^h 2^m 5^s.8$) range $\alpha = {}^s.00$ $\delta = ''.1$

Taking straight mean for the 3 reductions we get $\alpha = 36^s.16$, $\delta = 1''.3$

range $\alpha = {}^s.25$ $\delta = 1''.7$

Nov. 15.0. Comet Rudnicki (1966 e). discovered California Oct. 15 Mag 12.5.

Poor skies prevented any attempt on this comet until Nov. 15.0

Unfortunately there was a gross defect in emulsion obscuring all central parts of plate×. The comet was already in S Dec & travelling Southwards & was no longer within reach when the next suitable night turned up.

This plate was centred at $\alpha = 1^h 20^m.8$ $\delta = -6° 17'$ and given a 15 minute exposure.