Visual Binary Program

1. (Each night) Fixing of the zeropoint.

A. Equatorial star (7-8 mag.) allow it to drift along ~~micrometer~~ Fixed thread. Add 90° to zero point.

Arbitrary choice of γ_A or γ_B referring to the side of pier telescope is on

Stop Driving Mechanism

2. Calibration of micrometer:

Choose a 7-9 mag star about to transit. Start about 15 min before transit (for a star about 5° from the N pole) (i.e 15 readings before transit and 15 after transit across meridian). Set micrometer screw on 0, near edge of the field, (use low power eyepiece) and allow star to transit micrometer thread. Note TIME, advance 1 rev. and note time of 2nd transit

Repeat across the field of view.

Data sheet

Date ——

parallel (scale reading before 90°)

LST (to 1/10 of the hour)

Star Name

1.	P.A.	(Seperation)	(Sepa
2.	P.A.	(' ')	' (
3.	P.A.	(")	(")
4.	P.A.	mean	- mean
		( )	- ( )

(Mean P.A.)

(Zero reading)

2 Double Distance

( ) × R = ρ_0''

Power (Eye-piece)

seeing (1-5)

notes

Separations

Micrometer Thread = B

Fixed Thread = A

Fig. I:

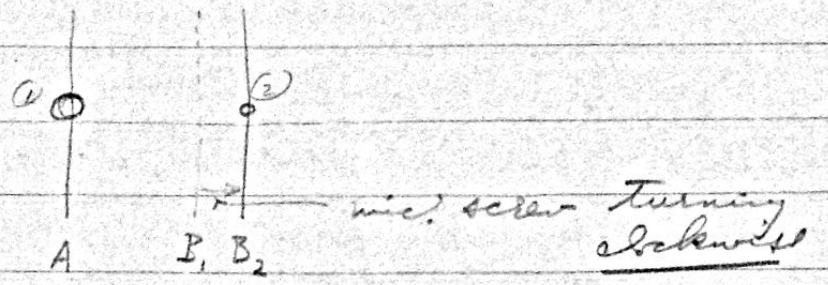


Fig II:

Turning Box screw

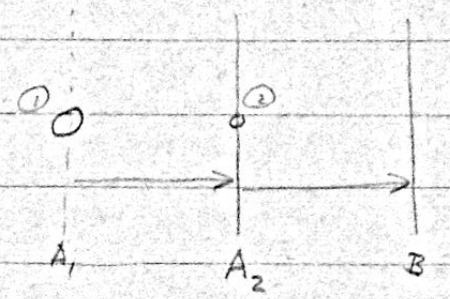
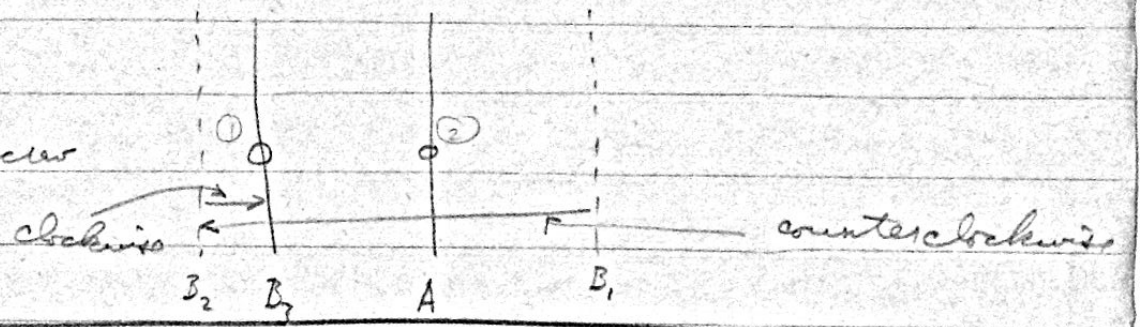


Fig III

Turning Micrometer screw



Or

Fig I(a)

mic screw

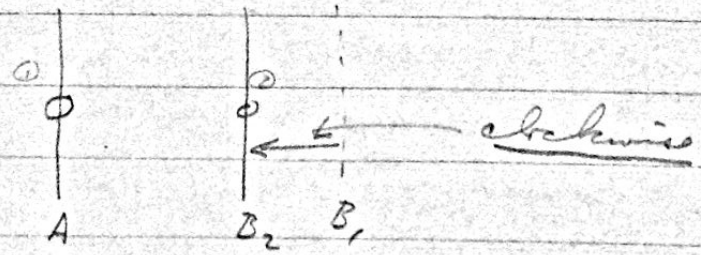


Fig II(a)

Box screw

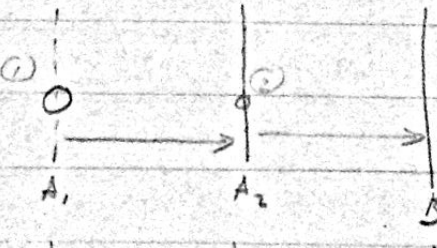
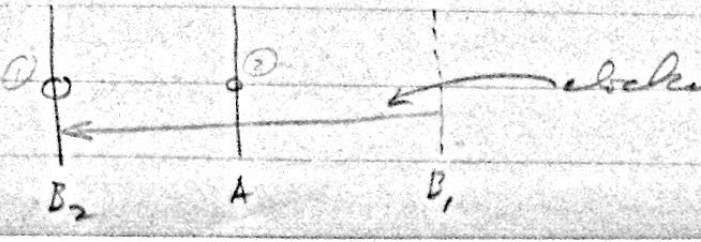


Fig III (a)

mic screw



Star: 30 H Caml. Calibration of Filar Micrometer RGT-2WH.

$\alpha = 10^h 25^m 53^s.50 = T_o$
$\delta = +82° 47' 01".99 \pm 10"$
} Am. Eph 1956

9-10 March '56

Rate of chron = 2s.35/hr (losing)

n	m	Sidereal Chronometer	C	Corr.	LST = T_n	$(T_{n+23} - T_n)^{(m,s)}$	$(T'-T)^{(0,1s)}$	$(T'-T)''$	$(T'-T)_{cos\delta}$	R
1	35.000	$10^h 16^m 53^s.5$		+15s.0	$10^h 17^m 08^s.5$	+ 09m 26s.3		2° 21' 35"	8495"	
2	37	10 17 19		15.0	17 34	- 09 25.9		2° 21' 29"	8489"	
3	39	10 17 42.5		15.0	17 57.5	- 9 25.9		2 21 29	8489	
4	41	10 18 6.		15.0	18 21	- 9 27.4		2 21 57.	8511	
5	43	10 18 30		15.0	18 45	- 9 27.9		2 21 59	8519	
6	45	10 18 52		15.0	19 07	- 9 30.4		2 22 36	8556	
7	47	10 19 21		15.1	19 36.1	- 9 26.8		2 21 42	8502	
8	49	10 19 45.5		15.1	20 00.6	- 9 27.8		2 21 57	8517	
9	51	10 20 9.5		15.1	20 24.6	- 9 27.9		2 21 59	8519	
10	53	10 20 34.5		15.1	20 49.6	- 9 30.9		2 22 44	8564	
11	55	10 20 59.5		15.1	21 14.6	- 9 25.9		2 21 29	8489	
12	57	10 21 23.5		15.1	21 38.6	- 9 26.4		2 21 36	8496	
13	59	10 21 48.5		15.2	22 03.7	- 9 26.8		2 21 42	8502	
14	61	10 22 12.5		15.2	22 27.7	- 9 27.3		2 21 50	8510	
15	63	10 22 37.25		15.2	22 53.0	- 9 27.1		2 21 47	8507	
16	65	10 23 02.5		15.2	23 17.7	- 9 26.4		2 21 36	8496	
17	67	10 23 28		15.2	23 43.2	- 9 26.4		2 21 36	8496	
18	69	10 23 51		15.2	24 06.2	- 9 27.4		2 21 51	8511	
19	71	10 24 20		15.3	24 35.3	- 9 23.3		2 20 50	8450	
20	73	10 24 39		15.3	24 54.3	- 9 30.8		2 22 42	8562	
21	75	10 25 5		15.3	25 20.3	- 9 27.4		2 21 51	8511	
22	77	10 25 30		15.3	25 45.3	- 9 26.4		2 21 36	8496	
23	79	10 25 54.5		15.3	26 09.8	- 9 28.9		2 22 14	8534	
24	81	10 26 19.5		15.3	26 34.8	-		mean	8509".6 → 10 69" → 23".24	
25	83	10 26 44.5		15.4	26 59.9	-				
26	85	10 27 8		15.4	27 23.4	-				
27	87	10 27 33		15.4	27 48.4	-				
28	89	10 27 57.5		15.4	28 12.9	-				
29	91	28 22		15.4	28 37.4	-				
30	93	28 47.5		15.4	29 02.9	-				
31	95	29 13		15.4	29 28.4	-				
32	97	29 37		15.5	29 52.5	-				
33	99	30 05		15.5	30 20.5	-				
34	101	30 25		15.5	30 40.5	-				
35	103	30 49.5		15.5	31 05.0	-				
36	105	31 15		15.5	31 30.5	-				

R is the value of 1 rotation of the micrometer screw.

#	m	Chronometer	Corr	LST = T
37	107	$10^h 31^m 39^s.5$	$+16^s.5$	$10^h 31^m 55^s.0$ -
38	109	32 4.5	+15.6	32 20.1 -
39	111	32 28.5	+15.6	32 44.1 -
40	113	32 54	+15.6	33 09.6 -
41	115	33 18	+15.6	33 33.6 -
42	117	33 43	+15.6	33 58.6 -
43	119	34 9.5	+15.6	34 25.1 -
44	121	34 32	+15.7	34 47.7 -
45	123	34 56	+15.7	35 11.7 -
46	125	35 23	+15.7	35 38.7 -

$\sin[(m'-m)R] = [\sin(T'-T_0) - \sin(T-T_0)]\cos\delta$

Now, $T-T_0$ is always small (max 9^m45^s) so that we can take $\sin(T-T_0) = T-T_0$, $\sin[(m'-m)R] = (m'-m)R$; maximum error is 1 part in 4 places.

$\therefore (m'-m)R = [T'-T]''\cos\delta$

$\delta = +82°47'$

$\cos\delta = 0.12562$

12" FRIDAY, 11 MAY 1956
$8^h 0^m$ U.T.
MAG. = 240x (3/4" EYEPIECE)
SEEING = 3
PARALLEL = 136°.01
OBSERVER: MAST

STAR: AGC 10703 Σ 2912

POSITION ANGLE:

92.15°
91.70
91.65
91.20
MEAN 91.67
− 46.01 (PARALLEL − 90°)
55.66

P.A. = 55°.66

SEPARATION

16.525
16.515
16.525
16.528
MEAN 16.523

17.631
17.640
17.639
17.660
17.642
16.523
2 | 1.119
~~23.84~~
.559
×23.26

ρ 12".98

12" FRIDAY, MAY 11, 1956
7h30m U.T.
MAG. = 240x (3/4" EYEP.)
SEEING = 3
PARALLEL = 136°.01
OBSERVER: MAST

STAR: A.G.C. 9580 Σ1931

POSITION ANGLE:

214.60
214.00
214.60
214.65
MEAN 214.46
ZERO PT - 46.01 (PARALLEL - 90°)
168.45

P.A. = 168°.45

SEPARATION:

17.680 16.502
17.675 16.520
17.688 16.497
17.692 16.495
MEAN 17.684 -16.503
+17.684
211.181
.590
x 23.24

ρ = 13".70

12" Sd. May 19, 1956

Parallel 317°6'
Sid. time 13h 00 min
Magnification 7, 0.75 aperture
Seeing about 3 to 4
Notes: good separation
Observer: Miller, T.W.

Star: A.G.C. # 9580 Σ 1931

Position angle

217° 42'
216° 0'
216° 42'
215° 12'
4 | 864° 96'
216° 24' Mean
Zero pt -47° 6'
169° 18'

P.A. = 169° 18'

Separation

	18.390	17.110
	18.360	17.100
	18.434	17.090
3	55.184	3 | 51.300
	18.395	17.100 Mean
	-17.100	
2	1.295	
	0.648	
	X 23.24	

P = 15.10

March 10 1956

Clock Errors for pacemeter Calibration

8	10	
3	14	
4^h	56^m	
$\pm 5^h$		

11	35	25^s
03	13	47
8	21	38

Sidereal clock gained $1^s.9$ sec in $8^h\ 21^h.5$

or $\frac{1.9}{8.358} = 0^s.23$/hr. (sidereal interval)

Thus at CST $8^h\ 10^m$ error was $+1^m\ 24^s.1$

at LST $10^h\ 50^m$ error was $+1^m\ 24^s.6$

∴ LSC $8\ 09\ 00.0$

$-1\ 24.1$

LST $8^h\ 07^m\ 35^s.9$

chron $8\ 07\ 26.0$

LST $8\ 07\ 35.9$

∴ Error chron = $9^s.9$ slow

at LST 8 07 35.9

LSC $10\ 55\ 00.0$

-error $-1\ 24.6$

LST → $10^h\ 53^m\ 35^s.4$

~~chron~~ $10\ 53\ 19.0$

LST $10\ 53\ 35.4$

Error chron $16^s.4$ slow

∴ rate of chron = $\frac{6^s.5}{24^h.766} = 2^s.35$/hour ~~losing~~