

-0007 ± 7.1 +001 ± 6.7  
-0001 -002

164258 17 57.7 +00 38 6.3 A2p -34.38

24499

10434 42.498 1898.5 +0 37 50.26 1898.2

036  
534

42.522  
9  
531

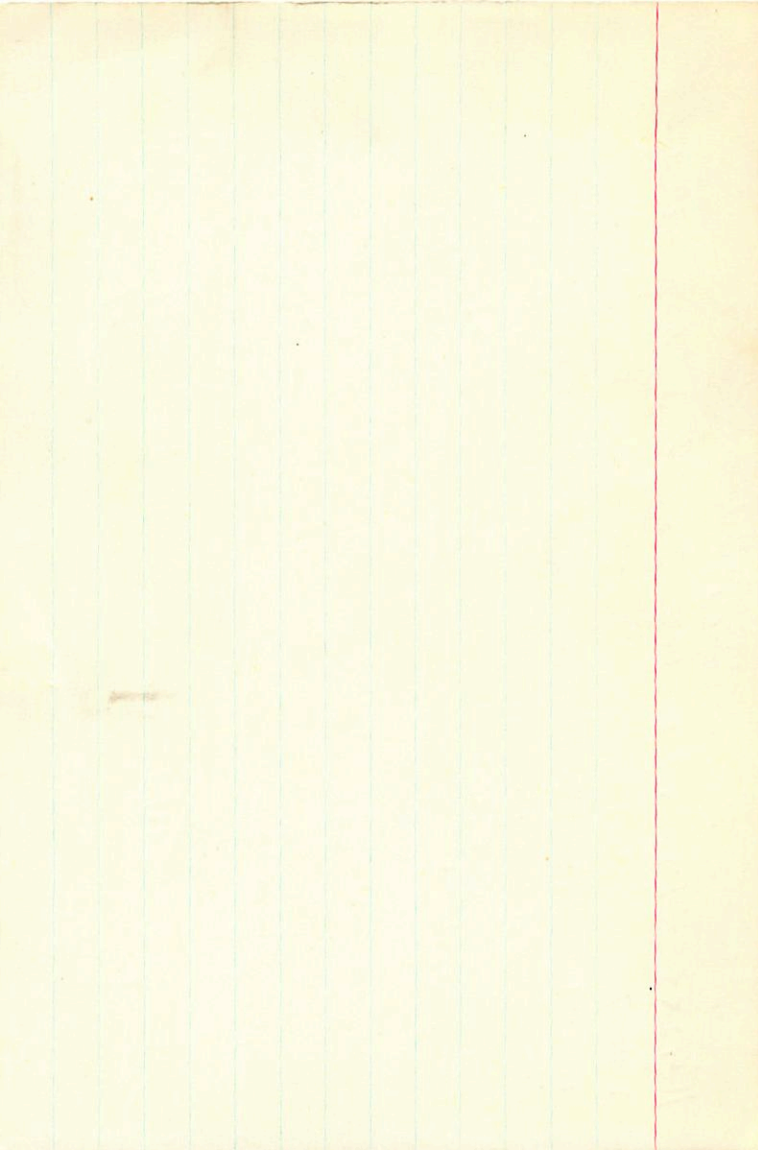
36.7

-05  
50.21

50.23 1934.0  
-10  
50.13

42.580  
530  
-004

50.18 1936.46  
-2  
50.16 0.46  
50.14 35.2  
-07 37.0



93HR

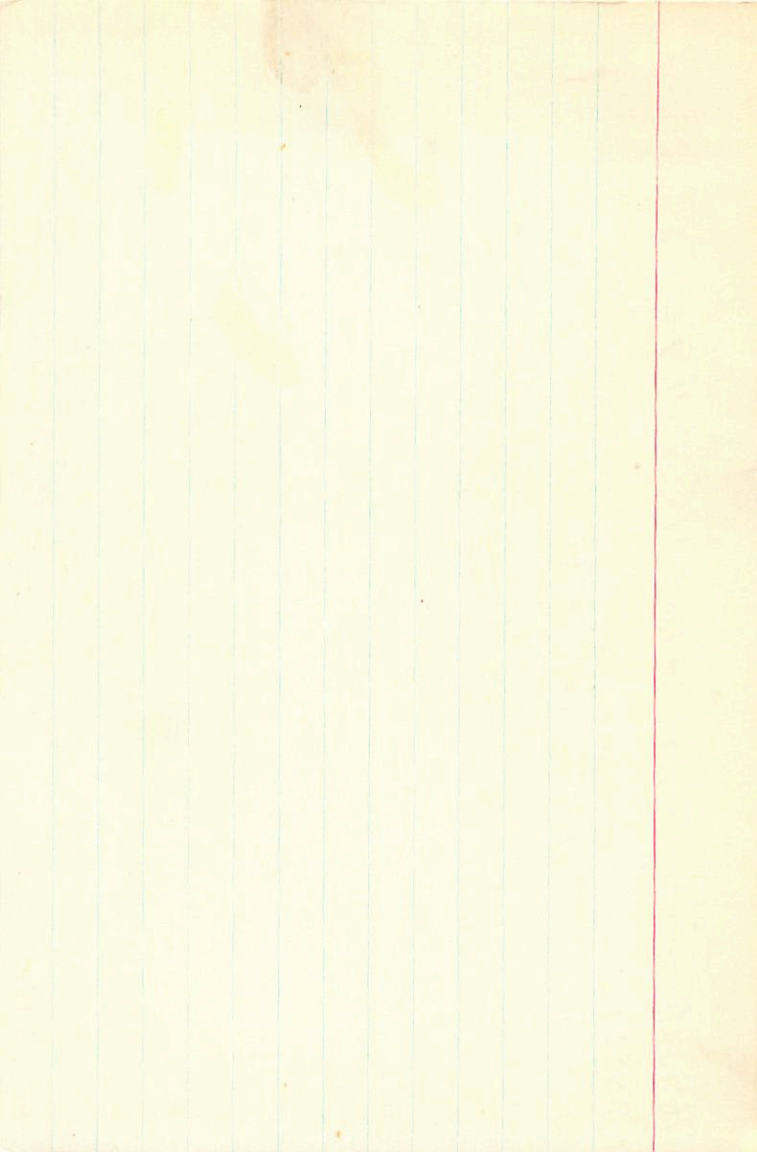
164349 17 57.8 +16 45 4.7 g 68 -23.4a

24502

10437

-0003<sup>48</sup> -014<sup>42</sup> N30

-0003 $\pm$ 2.5 -005 $\pm$ 1.9 BC  $\rightarrow$  N30



-0044 ±6.7 -112 ±5.7  
-0038 -104

164507 17 58.7 +15 06 6.3 65 73.8 8

24522

10449

41.645 1904.9 +15 5 41.52 1903.4

$\frac{198}{843}$

$\frac{8.22}{46.74}$

41.729  
729

43.95 1933.9  
2  
43.93

41.724

$\frac{-4}{720}$   
 $\frac{724}{724}$   
-119

42.85 1939.41

$\frac{-3}{73.3}$

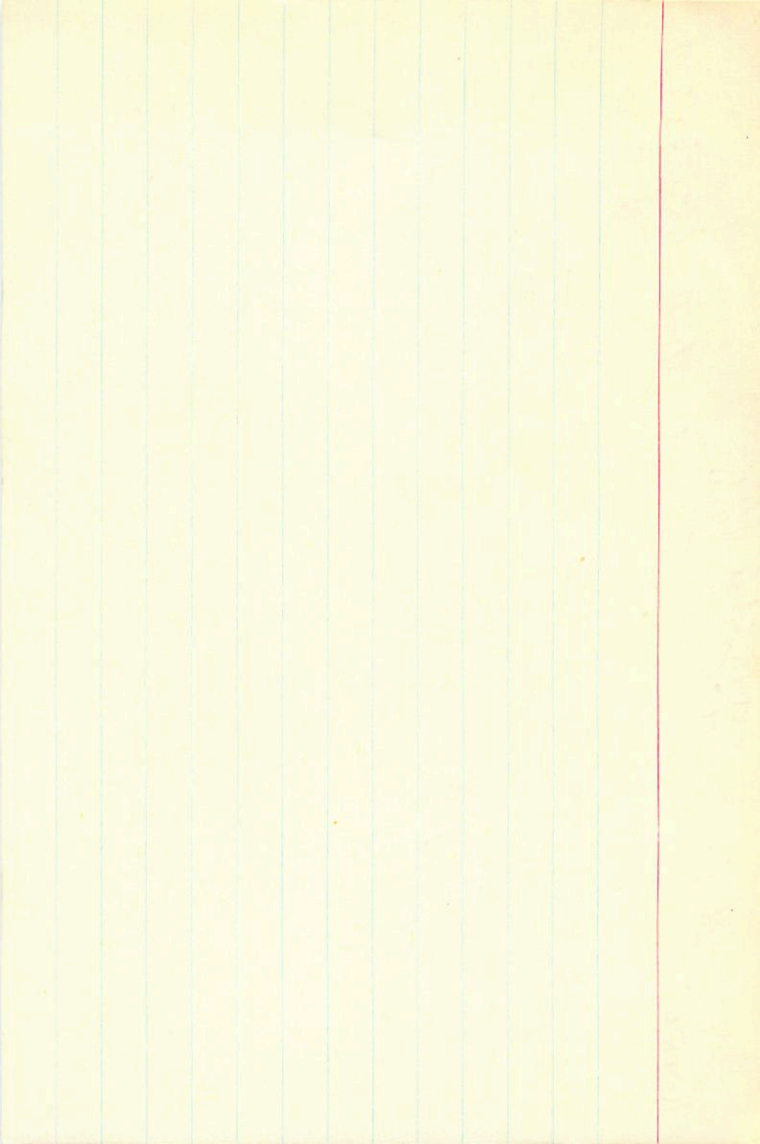
$\frac{42.82}{675}$

36.6

33.2

-3.46

81.7



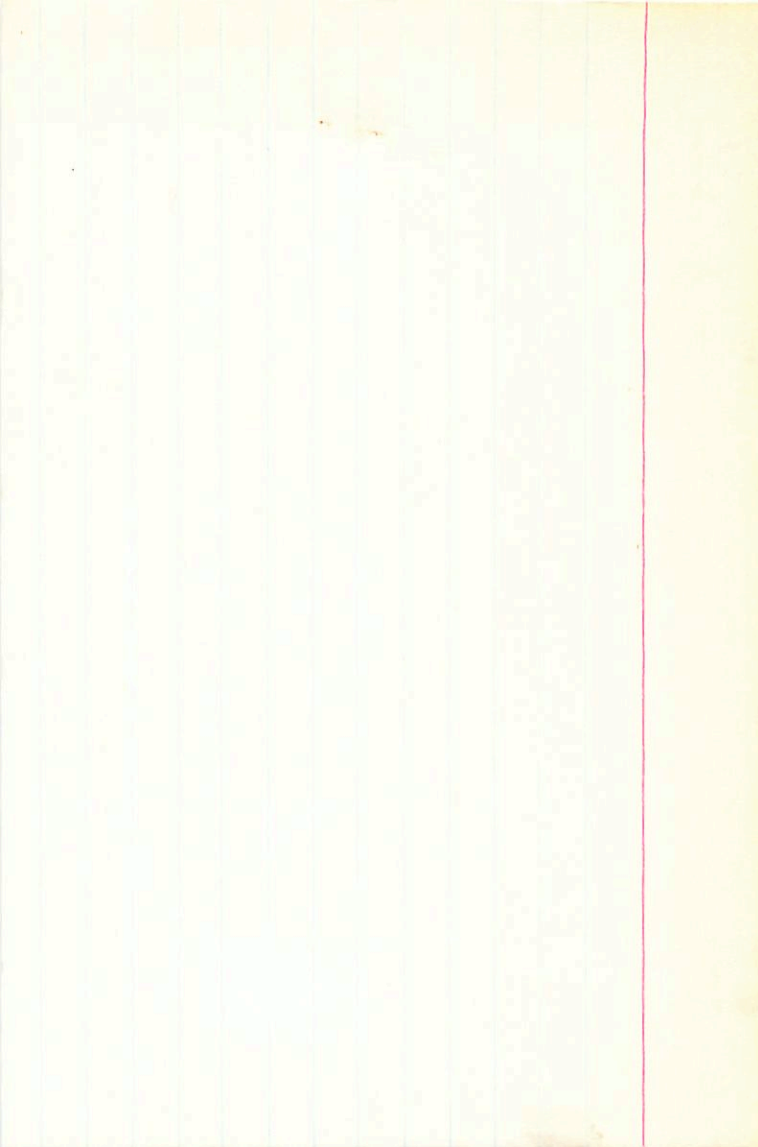
-15.88

6726 17 58.8 +33 14 5.87 5106

-008 -024 00

-2 +1

-010 -020





95 Hz

164669

24539

10461

1051993

24538

18

ARM

173

133

5

30

+0005+2.7  
+0009

17 59.4

$\Delta m = 0.3$

22.551 1884.3

-033  
518

22.552  
553

22.564  $\overline{558}$   
503 + 040

4804

8771

-2162  
9763

+027#2.2  
+024

36 / 5.1

611 ( 5.2 863  
65411

+21 35

1.73  
37.17

22.552

525

38.72  
34  
38.86

525

39.15 1939.31

-24  
38.93  
38.41  
+1.24

-2162  
9763

-33.8

A7 III

ARM - 30.27

-31.05

38.90 1985.8

1434.4

B 71

36.8

57.0

24539

+0004 524  
+0007  
+030319  
+033

23.050 1885.7 +21 35 40.22 1891.2

-039

-1.74

23.011

38.46

23.059

39.75

1933.8

051

39.79

23.041

<sup>30</sup>40.29

1934.31

040  
045

50.9

40.09

73.11

+034

39.94

36.6

+1.48

45.4

JS

R.A. :  
DEC. : 18.000  
PM. R.A. : 21.000  
PM. DEC. : 15.000  
DISTANCE : 38.000  
MODULUS : 2.000  
RAD. VEL. : 100  
-38.000

d1 (U) :  
d2 (U) : 0.097  
d3 (U) : 0.771  
q1 : -0.833  
U : 124.153  
31.419

d1 (V) :  
d2 (V) : 0.493  
d3 (V) : 0.257  
q1 : 0.833  
V : 100.417

R.A. : 18.000  
DEC. : 21.600  
PM. R.A. : 12.000  
PM. DEC. : 33.000  
DISTANCE : 5.000  
MODULUS : 100  
RAD. VEL. : -30.000

q1 (U) : 0.067  
q2 (U) : 0.771  
q3 (U) : -0.633  
dU : 124.122  
U : 31.416

45  
q1 (V) : 0.493  
q2 (V) : 0.527  
q3 (V) : 0.693  
dV : 108.417  
V : -9.240

759  
+0002±2.5 -014±2.7  
+0004 -015

164884 17 59.8 -24 17 8.5 dA8 -11.68

24555

10409 .47.160 1401.0 -24 17 1.80 1900.8

010  
150

15.259

31.892

47.151

157

154

47.184

-14

1.172

163  
+013

+69  
1.11

59.62 - 1932.01

382

3.44

1.68

1.76

+1.8

1.5

1.66 1940.04

-4

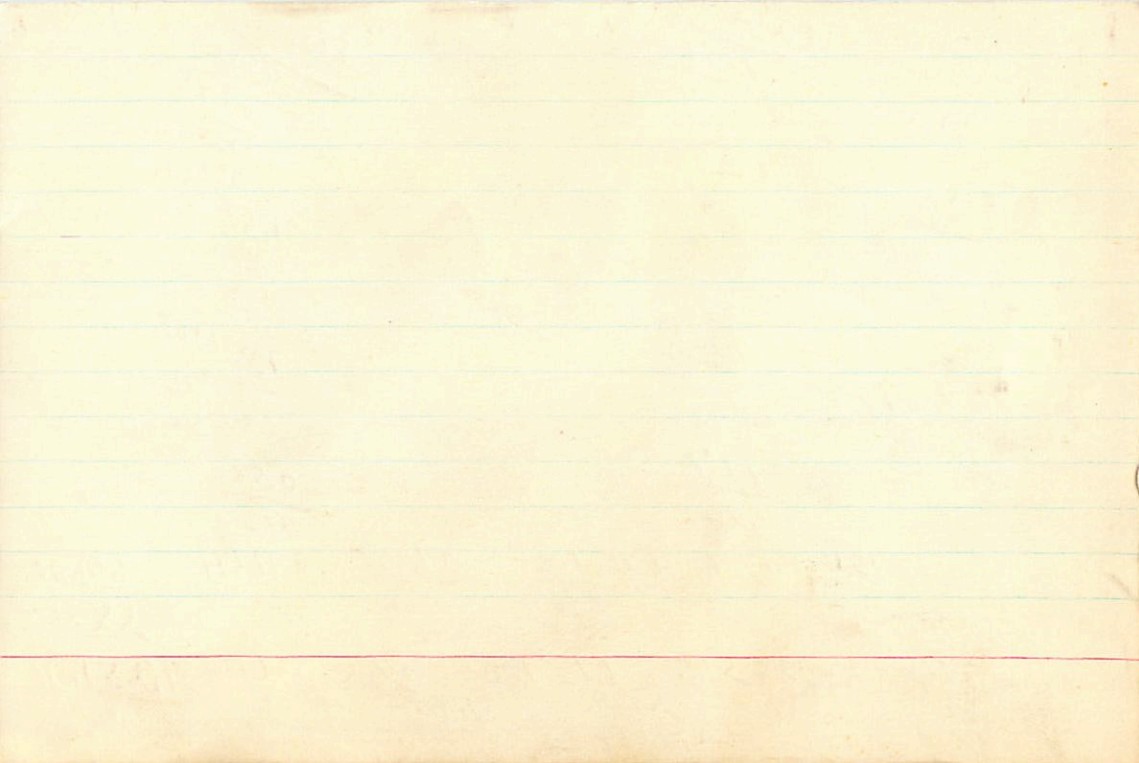
1.70

164  
-1.53

7.05

36.0

35.2



+0016 ± 2.2 -041 ± 1.7  
-0009 -045  
-39-1 (14)

-40.28

+0016 ± 2.2  
-0009

40511005  
164765  
24565

+034-041

.0238

+0016 ± 2.2  
-0009

10479 21473 1405.7  
40511005 -071  
402

+0016-035

+1.95

+0016 ± 2.2  
-0009

59.747  
21.6229  
21.366

+0017-036

53.32

+0016 ± 2.2  
-0009

59.747  
21.6229  
21.366

+027-035

1935.42

54.98  
84.50  
171.10  
55.16  
55.32

59.747  
21.6229  
21.366

+0016-035

1940.45

54.95  
84.50  
171.10  
55.16  
55.32

59.747  
21.6229  
21.366

+0016-035

1940.45

54.95  
84.50  
171.10  
55.16  
55.32

59.747  
21.6229  
21.366

+0016-035

1940.45

54.95  
84.50  
171.10  
55.16  
55.32

59.747  
21.6229  
21.366

Handwritten notes and calculations on lined paper, including various numbers, signs, and some circled or boxed areas.

-1 0  
~~141 550 +024-041 -40.2 006 +6 -194~~

024 006 0 0 114 028 -39.8 0 +40 0235

+5 +41 -2

+35 -17 -12

+6 +41 -4

02

+4 +41 0

03

+36 -16 -10

+2 +41 +3

55

+37 -15 +8



2 Alph 18 00.4 -05 11 d1=3 +0.26

HR 47334

1.5 5.34  
6.04

+0.24 -0.16

AOS 11005

3.2

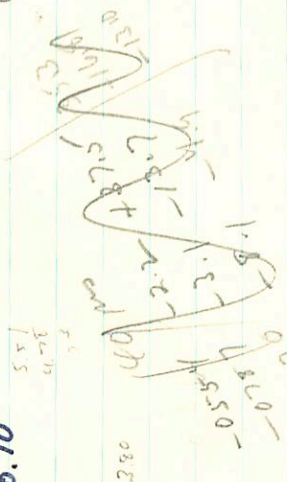
4.78 +0.39 +1.60  
4.79 +0.88 +0.5

$\Delta m = 0.70$

$\Delta m = 0.70$

5.24 10.35  
5.94 10.45

5.24 5.59  
5.94 6.39



10001

10001

10001

165281  
24612

18

02.0

+30

23

6.7

F7

+1.78

$-0042 \pm 6.5$   $-271 \pm 5.4$

-41

-289

10521

58.971

1909.6

+30

22

39.05

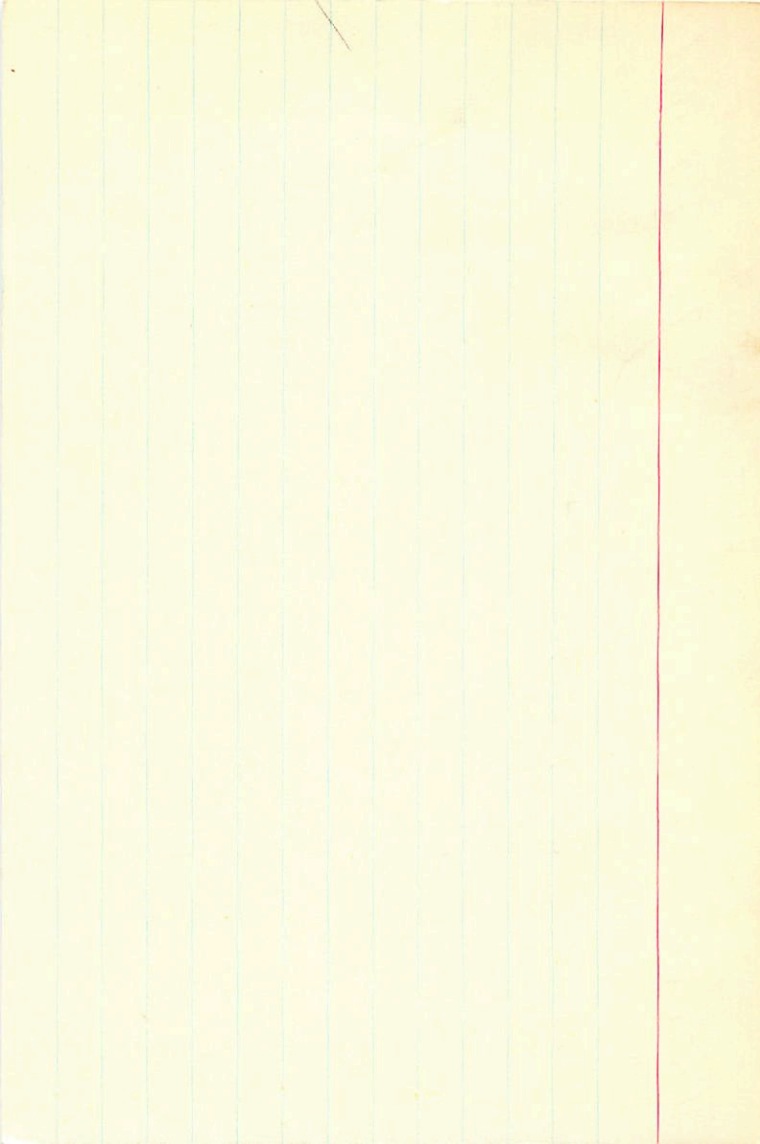
1407.6

170  
59, 141

11.49  
50.57

5-9.05  
16  
066

44.3 1930.4  
-32  
43, 98



6740

18 023 -64 33

-007 -052

$\rho_r = -24$

CC 24641

1/10/16

2006ph

$\Delta m = 1.70$

87.95 } Standard

4.551 } A.S. 57 97 1952

~~186~~  
186

0.195(86)

$\pi$   
0.193

$m_1$

+5.07

+7.48

$m(II)$

+5.05

+6.25

$m(0)$  log

0.96

0.70

$\lambda$

-0.2

-0.155

$\nu$

-7

-20

$w$

-19

2.9

00.4

4.28

3.87

5.95

5.26

21

02

0.81

0.26

1.15

0.44

$\rho = -0.22a$

$\pm 0.0173 - 1.096$

Band 51

Low E. Dubaut

1.70

$a^2/\rho^2 = 1.221 \times 10^{-2}$

$m_1 + m_2 = 1.76$

(4)

$\rho^2 = 77.176 \times 10^{-2}$

$\rho^3 = 94258$

$\rho^3 = 9.1890 \times 10^{-3}$

356

079

2/11/5

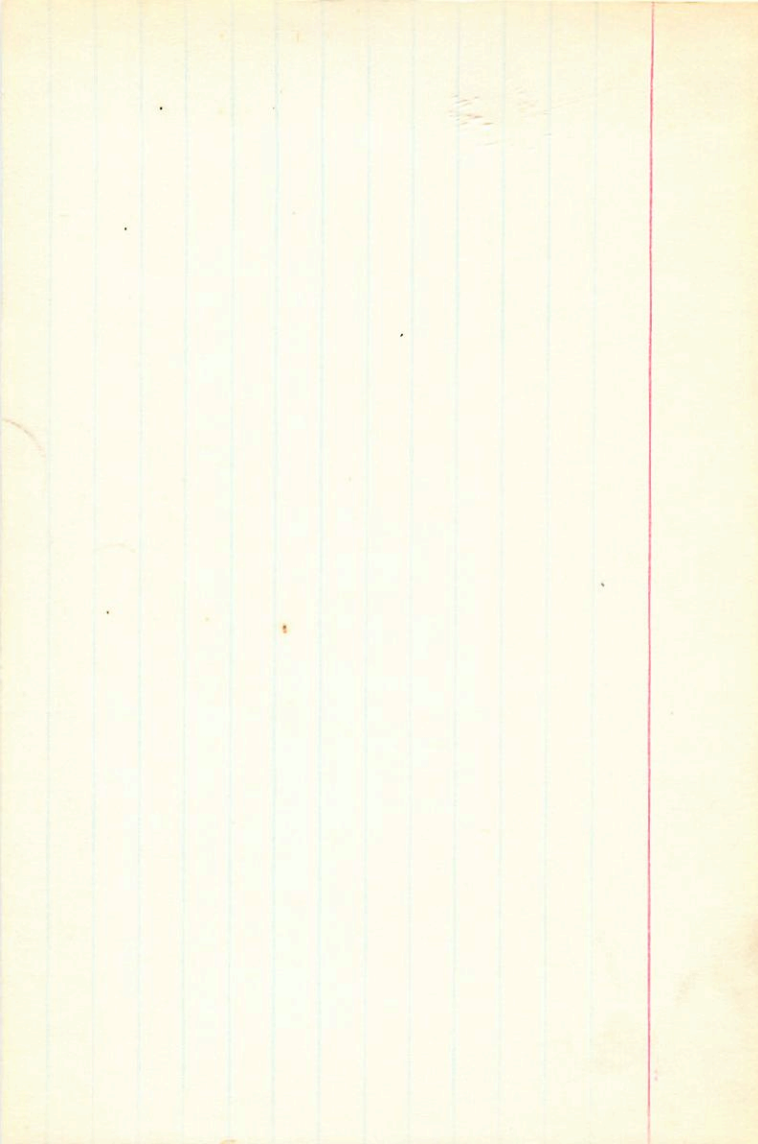
46

4.89

428

145

573



165567

18 031 440 03 ✓

6764

440.3276

319 164 464 2641



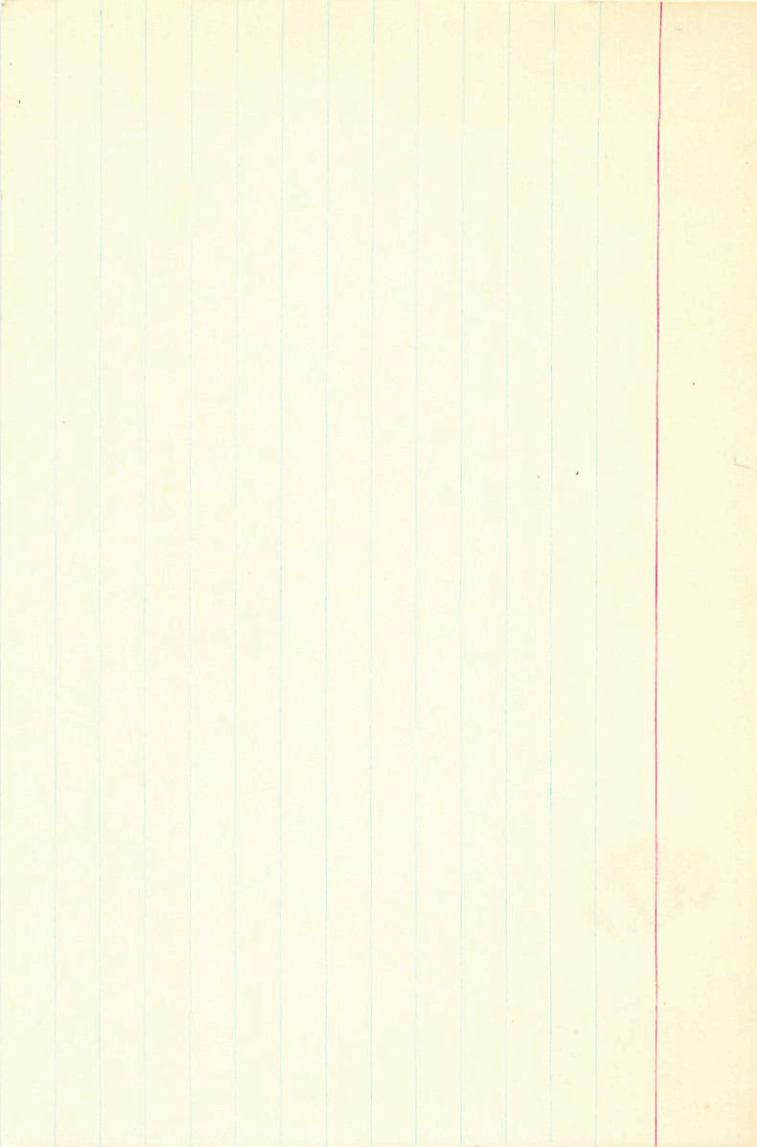
$$+0008 \pm 6.7 \quad +005 \pm 7.8$$

$$165524 \quad 18 \quad 03.4 \quad +21 \quad 38 \quad 6.4 \quad g \quad 1123 \quad -32.58$$
$$24654$$

$$10842 \quad 22.839 \quad 1895.5 \quad +21 \quad 38 \quad 28.70 \quad 1896.7$$

$$\begin{array}{r} -044 \\ \hline 22.795 \\ 22.798 \\ \hline 22.797 \end{array}$$
$$\begin{array}{r} -027 \\ \hline 28.43 \\ 27.86 \quad 1934.2 \\ +4 \\ \hline 27.95 \end{array}$$

$$\begin{array}{r} 22.797 \\ \hline 22.799 \\ \hline 22.798 \\ +003 \end{array}$$
$$\begin{array}{r} 28.11 \quad 1928.44 \\ -24 \\ \hline 27.87 \\ \hline 27.91 \\ -052 \end{array}$$



$$5.79 + 0.96 + 2.10 + 2.41 + 0.92 + 4.9 - 0.35 = 3.4$$

$$+ 0.98 - 0.37$$

$$165438 \quad 18 \quad 03.6 \quad -4 \quad 45 \quad 5.9 \quad 29 \quad 11 \quad -18.58$$

24660

$$10507 \quad 35,360 \quad 1909.1 \quad -4 \quad 45 \quad 24.76 \quad 1907.4$$

$$-374$$

$$\underline{34,984}$$

$$15,667$$

$$19,600$$

$$35,265$$

$$\underline{272}$$

$$-271$$

$$25$$

$$35,279$$

$$-4$$

$$\underline{275}$$

$$263$$

$$+279$$

$$+279$$

28.3

$$+1.49$$

$$\underline{23.27}$$

$$30.87 \quad 1934.63$$

$$+4.91$$

$$\underline{25.92}$$

$$1.41$$

$$\underline{14.7}$$

$$24.76$$

$$\underline{24.31}$$

$$41.75$$

$$37.4$$

$$\underline{30.0}$$

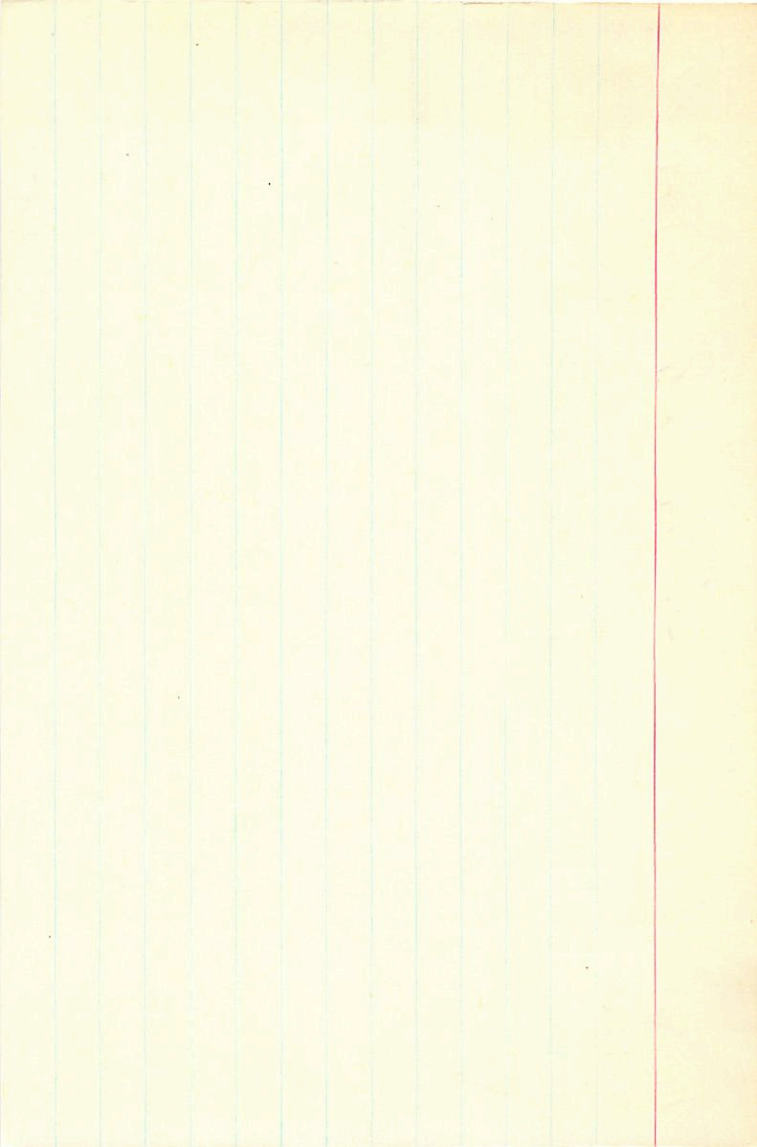
$$24.50 \quad 1940.12$$

$$+6$$

$$\underline{24.44}$$

$$24.38$$

$$-1.11$$



165271

18 03.7 -46 54

-88.1 c, (4)

G-C24663

~~2.64 + 6.35 cup~~

2.65 + 0.65 B-SID cup

+90 -41 +17 .020  
+86 +4 +17 .030

-039 ±12 -102 ±10 GC  
-036 ±8 -114 ±8 CP  
-037 -105

106116  
144259

-0037 ± 12.2  
-0041  
-102 ± 9.5  
-161

41.205 - 19023 -46 54 14.37 1855.1

176  
381

48.758

52.523

41.205  
283

571

440  
220  
161

39.7

41.180  
11  
169

5.14

9.18

18.09 1927.62

3.46

14.11  
14.12 992 8387

13.44

12.05  
11.94

15.90 1956.35  
42.9

15.83  
19.87

5.78  
13.94  
476

165069 18 03.7 -42 23 F -51.815%

-8.1 +0.43 Cope

-007 -215 CP

- 3 -7

+18 +14

+008 -211 →

7<sup>9</sup>  
2<sup>4</sup>5<sup>4</sup>  
10<sup>2</sup>

384  
192  
577



40/41 dia  
16.6866  
24669  
10550  
AOS11061

18 03.9 +80 00  
+0155<sup>40</sup> +123<sup>41</sup> N30  
+0160 ± 1.1 +121 ± 1.4 BC → N30

B Sp. B. P = 11 d  
5.8 dFG +10 4.3  
6.2 dFS +3.9 2

5.68 +0.50 -0.01  
6.04 +0.51 -0.01  
18.05  
+80  
242  
6.05  
326 072 713  
336 161 400 (1)  
124  
3.0  
+4  
5.69  
313 156 419  
333 154 415 (1)

4/6

R.A. : 18.020  
DEC. : 80.000  
PM. R.A. : 242.000  
PM. DEC. : 124.000  
DISTANCE : 4.000  
MODULUS : 43  
RAD. VEL. : 4.000

p1 (U) : 0.078  
p2 (U) : 0.943  
p3 (U) : 0.322  
qu : 269.269  
U : 37.239

p1 (V) : 0.487  
p2 (V) : -0.321  
p3 (V) : 0.813  
qu : -21.422  
V : -2.218

p1 (W) : -0.870  
p2 (W) : -0.024  
p3 (W) : 0.484  
qu : 228.280

R.A. : 18.050  
DEC. : 80.000  
PM. R.A. : 242.000  
PM. DEC. : 124.000  
DISTANCE : 4.000  
MODULUS : 63  
RAD. VEL. : 4.000

q1 (U) : 0.078  
q2 (U) : 0.943  
q3 (U) : 0.325  
dU : 569.599  
U : 37.239

q1 (V) : 0.487  
q2 (V) : -0.321  
q3 (V) : 0.813  
dV : -91.422  
V : -2.518

q1 (W) : -0.870  
q2 (W) : -0.094  
q3 (W) : 0.484  
-228.780

6771

~~14 20.3~~

18 050 29 33

125977

80998

(225)  
 10708 + 1000 ~  
 - 598 + 80. ~

11.71

11.60

3240 283

270

7868 8148 0934  
 -9580 9623 0376  
 1430

47

981.31

973.2

966.1

960.2

954.3

948.4

942.5

936.6

930.7

924.8

918.9

912.0

906.1

900.2

894.3

888.4

R.A. : 18.100  
DEC. : 9.550  
R.A. : 0.000  
DEC. : 0.000  
DISTANCE : 0.000  
PARALLAX : 0.000  
PROPER MOTION : 10  
RADIAL VELOCITY : 0.000

1 (U) : 0.090  
2 (U) : 0.621  
3 (U) : -0.778  
dU : 0.000  
U : 0.000

11 (U) : 0.481  
12 (U) : 0.657  
13 (U) : 0.580  
dV :



DPS 11060 18 04.2 121 26

" " -031 -052 -22.6 wooded  
3000'

+0804	+7706	-636	-0126	-1888	-2014	-60
+483	+527	+700	-0710	-1249	-2009	-60
-872	+367	+324	+1281	-0905	+0376	+7.1

+14.4	+8.4
-15.8	-21.8
-7.3	-6.2

10.400

166207 18 05.7 +50 49 -52180(4)

GC24714

6.12

1500L

W10574

-0010<sup>13</sup> +102<sup>20</sup> N30

-003 7099 6-6

HR 2790

-009 7102- N30

-006 7103

080  
-1 025 775 632 -008 +103 -52.1 -005 -44 295  
308

-008 080 000 -035 379 -36.1 -0.9 +36.1

-0.4 65.1 -6.3

-3 +72 -14 01

-2.0 -33.2 -10.1  
3.7 -12.1 -6.3

$\boxed{+56 -44 -17}$  01

-0.4 59.6 -9.2

-4.2 +74.0 -13.5

-2.0 -30.3 -14.7  
3.6 -11.0 -9.2

$\boxed{+58.4 -45.3 -14.7}$

-4.1 +67.7 -14.6 012  
 $\boxed{+50.0 -47.0 -15.6}$

+0020 ± 113  
+0015  
-135-29.5  
-120

165696 18 05.8 -45- 57

-29.3 ± 0.86, (4)

24716

7.33 + 0.49 15FD

446526 1501.5  
- 097  
429

-45- 56 4447 1848.2  
6.99

+031-1731 4900

3748

53.138  
51.3486  
49.4401  
-1172  
472

5201 1930.64

4351  
4203  
41.12  
41.36

-1 0 -718 696 +031 -131 -25.3 094 +21 -431  
031094 00 147 445 -20.4 0 +20 03

$$+5 +35 +7$$

$$\boxed{+34 -8 -7}$$

$$+6 +38 +4$$

$$\boxed{+36 -10 -9}$$

3 55  
186  
72

025

165753

24729

18

$+0015 \pm 7.8$   
 $+0003$

06.1

$+18$

44

57

$-33$

$10 \sqrt{V}$

$-0.7 \pm 0.8 (, 15)$

$-0.37 \pm 5.1$

$-0.17$

7.02 + 1.11

8.006 1898.8

$\frac{-0.77}{7.929}$

-44

57

18.94

1889.5

2.24

$\frac{2.24}{16.70}$

17.781

50.172

$\frac{7.950}{-1.14}$

1939

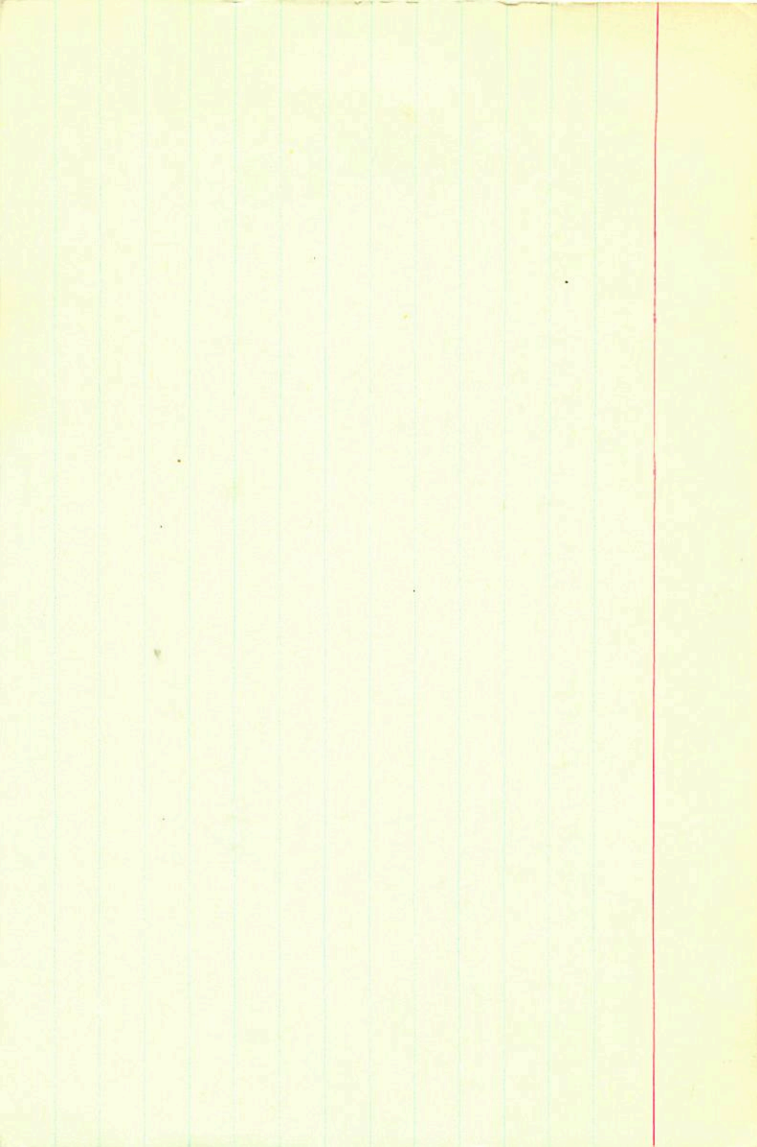
28.68 1928.61

9.40

$\frac{9.40}{17.12}$

17.12

$\frac{17.12}{17.16}$



165259 (625)

18 062 -23 41 F81E-E +14.1 4C

F01016

411 386  
+12.5

5.84 +0.47 (1.62)

6.0 } 2.5  
9.1 }

-0158 -248 430

-0142 -232 66 →

-0135 -240

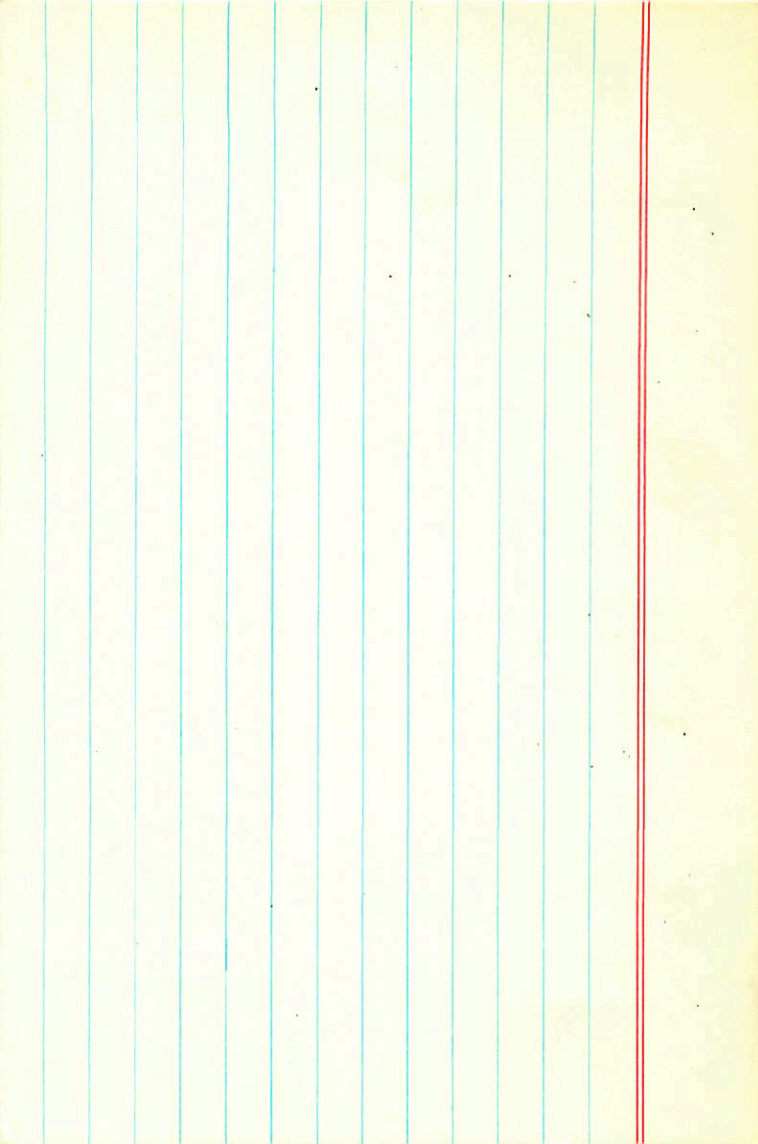
-057

307 -79405 2670

869

(494)





166181

7686

18 06.3

+29

41

65V

+100 -20 AG123

43

-13.4 kbit

+125 -35 x  
-5 -2

+20 -037  
+2 +1

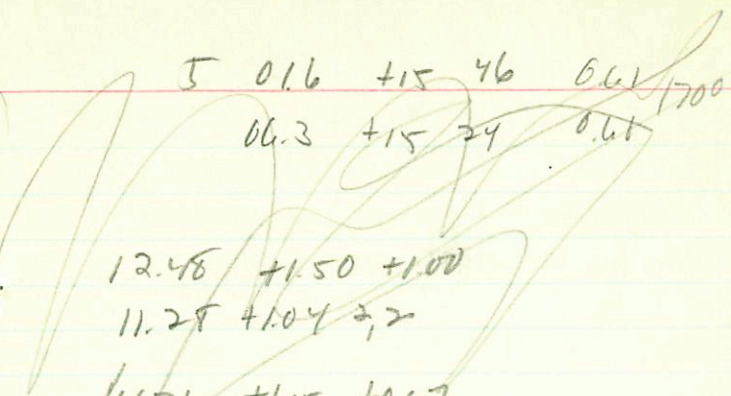
+122 -034

+111 -027  
+4 0

+115 -027

R388  
G85-10  
-44

10.58  
105  
9.55  
880



5 0.16 +15 46 0.61 / 1700 15.6 +1  
06.3 +15 24 0.61 13.9 +2

12.48 +1.50 +1.00

11.28 +1.04 2,2

14.76 +1.15 +0.67

14.10 +0.46 2,2

38  
72  
13.62  
13.10

85



18.100  
29.700  
130.000  
-27.000  
4.300  
72  
-13.400

0.090  
0.851  
-0.517  
-59.964  
2.580

0.481  
0.417  
0.771  
208.889  
4.799

-0.072  
0.310

166253

18

08.3

+41 43

7.7

g m4 -16.86

24733

10589

16.719

+41 42

37.26

1908.8

~~021~~  
688

+ 6 -44 00000 2.02  
+ 6 -36 00000 39.28  
+ 6 -

~~200~~  
200

29.64  
~~47.95~~  
16.914  
720  
~~127~~ 1105

17.8

26.4  
12.00  
38.80  
35.12  
38.76

19263

~~28.85~~  
19.06

16.66  
~~18~~  
6

+014

38.51

1930.4

~~33~~  
38.47  
8.1