1902phae.proj...825F

KG
11365
824

Mrs Fleming

Nova Persei.

Reductions.

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KGH 365.824

1002plate.proj : 6/25/01

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Nova Persei.

See plate 9440

" 9439 y

8335-6 check from measures.

Check X & Y through all plates.

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1002phae.proj.:8235:

Orig. & Date.	Enl. meas.	Ref. meas. by Miss L.		Red. this Bk.
I 7958	D9439	22,	174	16
Jan. 25, 1893.	9440	22,	172	26
I 11614	D8335			36
October 11, 1894.	8336			46
I 19305	D8527	22,	170	56
October 17, 1897.	8528	22,	168	66
I 24699	D8529	22,	166	76
March 7, 1900.	8532	22,	166	86
C 13507	D8515			96
Sept. 14, 1901.	8516			106
C 14069	D9463	22,	180	116
October 20, 1902.	9464	22,	182	126
I 29440	D9465	22,	176	136
October 23, 1902.	9467	22,	178	146

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Hagen.	Des.		Angle.	Distance	log sin <	log Dist.	log cos <	log Δ sin <	log Δ cos <
	Arcturus	a	348.4	39.82	9.3034 n	1.6001	9.9910	0.9035 n	1.5911
	"	b	108.0	91.37	9.9782	1.9608	9.4900 n	1.9390	1.4508 n
81=c	"	c	116.8	102.65	9.9506	2.0113	9.6541 n	1.9619	1.6654 n
	"	"	116.6	102.97	9.9514	2.0127	9.6510 n	1.9641	1.6637 n
	"	e	142.7	121.34	9.7825	2.0840	9.9006 n	1.8665	1.9846 n
80=f	"	f	211.1	124.62	9.7131 n	2.0956	9.9326 n	1.8087 n	2.0282 n
	"	"	210.7	124.50	9.7080 n	2.0952	9.9344 n	1.8032 n	2.0296 n
77=i	"	i	63.1	158.16	9.9503	2.1991	9.6556	2.1494	1.8547
	"	"	63.3	159.28	9.9510	2.2022	9.6526	2.1532	1.8548
79=k	"	k	114.5	169.75	9.9590	2.2298	9.6177 n	2.1888	1.8475 n
	"	"	114.4	170.63	9.9594	2.2321	9.6161 n	2.1915	1.8482 n
	"	m	352.2	193.07	9.1326 n	2.2857	9.9960	1.4183 n	2.2817
	"	"	352.7	193.21	9.1040 n	2.2860	9.9965	1.3900 n	2.2825
56=o	"	o	300.4	236.49	9.9358 n	2.3738	9.7042	2.3096 n	2.0780
	"	"	300.6	235.76	9.9349 n	2.3725	9.7068	2.3074 n	2.0793
20=p	"	p	321.6	367.59	9.7932 n	2.5654	9.8941	2.3586 n	2.4595
	e	d	306.7	19.50	9.9041 n	1.2900	9.7764	1.1941 n	1.0664
	i	g	270.0	31.12	0.0000 n	1.4930	—	1.4930 n	1.4930
	i	h	195.0	45.70	9.4130 n	1.6599	9.9849 n	1.0729 n	1.6448 n
	o	j	114.7	72.11	9.9583	1.8580	9.6210 n	1.8163	1.4790 n
78=l	o	l	144.2	61.69	9.7671	1.7902	9.9091 n	1.5573	1.6993 n
	k	m	100.3	21.70	9.9929	1.3365	9.2524 n	1.3294	0.5889 n

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X	Y	
$\Delta \sin < = y$	$\Delta \cos < = x$	
− 8.01	+39.00	
+86.90	−28.24	
+91.60	−46.28	
+92.07	−46.10	
+73.54	−96.52	
−64.37	−106.71	
−63.56	−107.05+	
+141.06	+71.56	
+142.30	+71.58	
+154.45	−70.39	
+155.42	−70.50	
−26.20	+191.30	
−24.55	+191.65	
−203.98	+119.68	
−202.95	+120.03	
−228.33	+288.07	−228.3 +288.1
−15.63	+11.65	d+
−31.12	+ 0	g
−11.83	−44.14	k
+65.51	−30.13	j
+36.08	−50.04	l
+21.35	− 3.88	m

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I 7958 January 25, 1893.

D 9439 Meas. Bk. 22, E.F.L., p. 174.

Hagen	Meas. x	Mean Nova − x	X	n=10 x−X	a=X/100 an	b=Y/100 bn	aa	a bb	sn
20	1703.9	−200.7	−228.3	+27.6	−63.48	+80.04	+5.29	−6.67	+44.16
80	F.								
81	1396.9	+106.3	+91.7	+14.6	+13.14	−7.30	+.81	−.45	+20.44
79	1347.6	+155.6	+154.9	+0.7	+1.05	−.49	+2.25	−1.05	+1.26
77	1347.2	+156.0	+141.6	+14.4	+20.16	+10.08	+1.96	+.98	+44.64
56	1688.7	−185.5	−203.5	+18.0	−36.00	+21.60	+4.00	−2.40	+3.60
78	1655.0	−151.8	−167.4	+15.6	−26.52	+10.92	+2.89	−1.19	0.00
N	1503.0	+0.2		+90.9	+34.35	+122.64	+17.20	+0.98	+114.10 ✓
	1503.2				−126.00	−7.79		−11.76	
N	1503.4	−0.2			−91.65	+114.85		−10.78	

	Meas. y	Mean Nova − y	Y	n' y−Y	an'	bn'	bb	sn'
20	1798.7	+295.7	+288.1	+7.6	−17.48	+22.04	+8.41	+12.16
80	F							
81	2143.3	−48.9	−46.2	−2.7	−2.43	+1.35	.25	−3.78
79	2166.8	−72.4	−70.4	−2.0	−3.00	+1.40	.49	−3.60
77	2031.0	+63.4	+71.6	−8.2	−11.48	−5.74	.49	−25.42
56	1965.5	+128.9	+119.9	+9.0	−18.00	+10.80	1.44	+1.80
78	2014.7	+79.7	+69.8	+9.9	−16.83	+6.93	.49	.00
N	2094.4	0.0		+26.5 ✓	−69.22	+42.52	+11.57	+13.96
	2094.4			−129		−5.74		−32.80
N	2094.4	0.0		+13.6 ✓		+36.78		−18.84 ✓

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I 7958 D 9439 (Star 80 too faint for measurement.)

	aa	ab	ac	as	an	sn
	+17.20	-10.78	-2.2	+4.22	-91.65	
	1.2355	1.0327n	0.3424n	0.6253	1.9621n	
		9.7972n	9.1069n	9.3898		
		0.8299	0.1396	0.4225n	1.7593	
		bb	bc	bs	bn	
-z 1.0501n	-91.65	+11.57	+4.3	+5.09	+114.85	
ac 0.3424n	+24.69	+6.76	+1.38	-2.65	+57.45	
1.3925	+55.20	+4.81	+2.92	+7.74	+57.40	
-y 0.7092n	-11.76	0.6821	0.4654	0.8887	1.7589	
ab 1.0327n	1.0705n		9.7833	0.2066		
1.7419	aa 1.2355		0.2487	0.6720	1.5422	1.9655
	9.8350n		9.4493	9.7322n	1.0690	1.3519n
a = -0.68			cc	cs	cn	sn
1.0501n		+57.40	+6.00	+8.1	+90.9	+114.10
bc 0.4654		-32.78	+.28	-0.54	+11.72	-22.49
1.5155n		+24.62	+5.72	+8.64	+79.18	+136.59
		1.3913	+1.77	+4.70	+34.85	+92.36
		0.6821	+3.95	+3.94	+44.33	+44.23
		0.7092	0.5966		1.6467	1.6457
		b = +5.12			1.0501	1.0491
					c = +11.2	11.2

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				a_n'	S_n'
				-69.22	
				1.8402_n	
				1.6374	
				b_n'	
0.3459_n	-69.22			$+36.78$	
0.3424_n	$+4.88$			$+43.39$	
0.6883	-29.34			-6.61	
0.4347	-93.68			0.8202_n	
1.0327_n	1.9717_n				
1.4674_n	1.2355			0.6035_n	1.0268_n
	0.7362_n			0.9471	1.2300_n
	$f' = -5.45$			c_n'	S_n'
0.3459_n		-6.61		$+13.6$	-18.84
0.4654		-6.48		$+8.85$	-16.98
0.8113_n		-13.09		$+4.75$	-1.86
		1.1168_n		-4.01	-10.64
		0.6821		$+8.76$	$+8.78$
		0.4347_n		0.9425	
		$a' = -2.72$		0.3459	
				$c' = +2.22$	

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$a = -.0068$ $a' = -.0272$
$b = +.0512$ $b' = -.0545$
$c = +11.2$ $c' = +2.2$

~~I~~ 7958 D9439

Hagen.	Mean x	Nova-x	ax	by	c	Σ=	Q f.16		O	O-b
20	1703.9	-200.7	+1.4	+15.1	+11.2	+27.7	+27.6	+0.1	-228.8	-0.1
80	F		..			..				
81	1396.9	+106.3	-0.7	-2.5		+8.0	+14.6	-6.6	+98.3	+6.6
79	1347.6	+155.6	-1.1	-3.7		+6.4	+0.7	+5.7	+149.2	-5.7
77	1347.2	+156.0	-1.1	+3.2		+13.3	+14.4	-1.1	+142.7	+1.1
56	16887	-185.5	+1.3	+6.6		+19.1	+18.0	+1.1	-204.6	-1.1
78	1655.0	-151.8	+1.0	+4.1		+16.3	+15.6	+0.7	-168.1	-0.7
Mean x	15032									+7.7
								+7.6		-7.6
								-7.7		+0.1
								15.3		15.3
								6		6 =
								= ±2.55		±2.55

	Mean y	Nova-y	ay	by	c'	Σ	y-Y f.16			
20	1798.7	+295.7	-8.0	+10.9	+2.2	+5.1	+7.6	-2.5	+290.6	+2.5
80	F									
81	2143.3	-48.9	+1.3	-5.8		-2.3	-2.7	+0.4	-46.6	-0.4
79	2166.8	-72.4	+2.0	-8.5		-4.3	-2.0	-2.3	-68.1	
77	2031.0	+63.4	-1.7	-8.5		-8.0	-8.2	+0.2	+71.4	
56	1965.5	+128.9	-3.5	+10.1		+8.8	+9.0	-0.2	+120.1	
78	2014.7	+79.7	-2.2	+8.3		+8.3	+9.9	-1.6	+71.4	
Mean x	2094.4							+9.6		
								-6.6		
								7.2		
								6 = ±1.20		

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$a = -.68$ $\quad a' = -2.72$
$b = +5.12$ $\quad b' = -5.45$
$c = +11.2$ $\quad c' = +2.2$

Hagen	$\frac{X}{100}$	$a\frac{X}{100}$	$b\frac{Y}{100}$	c	Σ	$\frac{b}{0}$ .16	
20	−2.3	+1.6	+14.8	+11.2	+27.6	+27.6	0.0
80	..						
81	+0.9	−0.6	−2.6		+8.0	+14.6	+6.6
79	+1.5	−1.0	−3.6		+6.6	+0.7	−5.9
77	+1.4	−1.0	+3.6		+13.8	+14.4	+0.6
56	−2.0	+1.4	+6.1		+18.7	+18.0	−0.7
78	−1.7	+1.2	+3.6		+16.0	+15.6	−0.4

$\frac{14.2}{6} = \left|\begin{matrix}+7.2\\ -7.0\\ +.2\end{matrix}\right.$

± 2.37

	$\frac{Y}{100}$	$a'\frac{Y}{100}$	$b'\frac{X}{100}$	c'	Σ	$\frac{b}{0}$ .16	
20	+2.9	−7.9	+12.5	+2.2	+6.8	+7.6	+0.8
80							
81	−0.5	+1.4	−4.9		−1.3	−2.7	−1.4
79	−0.7	+1.9	−8.2		−4.1	−2.0	+2.1
77	+0.7	−1.9	−7.6		−7.3	−8.2	−0.9
56	+1.2	−3.3	+10.9		+9.8	+9.0	−0.8
78	+0.7	−1.9	+9.3		+9.6	+9.9	+0.3

$\frac{6.3}{6} = \left|\begin{matrix}+3.2\\ -3.1\\ +0.1\end{matrix}\right.$

± 1.05

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$a = -.0068$ $a' = -.0272$
$b = +.0512$ $b' = -.0545$
$c = +11.2$ $c' = +2.2$

	Mean x Anna - x	Σ f. 20	Corr. x $\bar{x} - \Sigma$
(Mean Anna (1503.2) −20			
20	−200.7	+27.7	−228.4
80			
81	+106.3	+8.0	+98.3
79	+155.6	+6.4	+149.2
77	+156.0	+13.3	+142.7
56	−185.5	+19.1	−204.6
78	−151.8	+16.3	−168.1

				ax	by	c +11.2	Σ	Corr. x
17	D.M. 740	1509.4	− 6.2	00	+56.1		+67.3	−73.5
23	" 733	3114.1	−1610.9	+11.0	−7.0		+15.2	−1626.1
74	—	1268.0	+235.2	−1.6	+4.5		+14.1	+221.1

Anna	1503.0
	1503.4
Remeas.	1495.4
	1494.7
	1494.7

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		Nova-y	Σ p.20	Corr. y − Σ
(Mean Nova 2094.4)				
20		+295.7	+5.1	+290.6
80				
81		−48.9	−2.3	−46.6
79		−72.4	−4.3	−68.1
77		+63.4	−8.0	+71.4
56		+128.9	+8.8	+120.1
78		+79.7	+8.3	+71.4

			a'y	b'x	c'	Σ	
17	999.2	+1095.2	−29.8	+0.3	+2.2	−27.3	+1122.5
23	2230.8	−1364	+3.7	+87.8		+93.7	−230.1
74	2007.2	+~~93~~ 87.2	−2.4	−12.8		−13.0	+100.2

Nova 2094.4
2094.4
2094.7
2094.4
2095.1

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I 7958

D 9440 Measured, Bk. 22, f. 172.

Hagen	Meas. x	Mean Nora − x	X	x − X	a n	b n	s n
20	1738.4	−208.9	−228.3	+19.4	−44.62	+56.26	+31.04 ✓
80	F.						
81	1434.8	+94.7	+91.7	+3.0	+2.70	−1.50	+4.20 ✓
79	1385.5	+144.0	+154.9	−10.9	−16.35	+7.63	−19.62 ✓
77	1385.5	+144.0	+141.6	+2.4	+3.36	+1.68	+7.44 ✓
56	1722.9	−193.4	−203.5	+10.1	−20.20	+12.12	+2.02 ✓
78	1719.1	−189.6	−167.4	−22.2	+37.74	−15.54	00 ✓
N	1529.5			+34.9	+43.80	+77.69	+44.70
N	1529.5			−33.1	−81.17	−17.04	−19.62
				+1.8	−37.37	+60.65	+25.08 ✓
Mean used	1529.5						

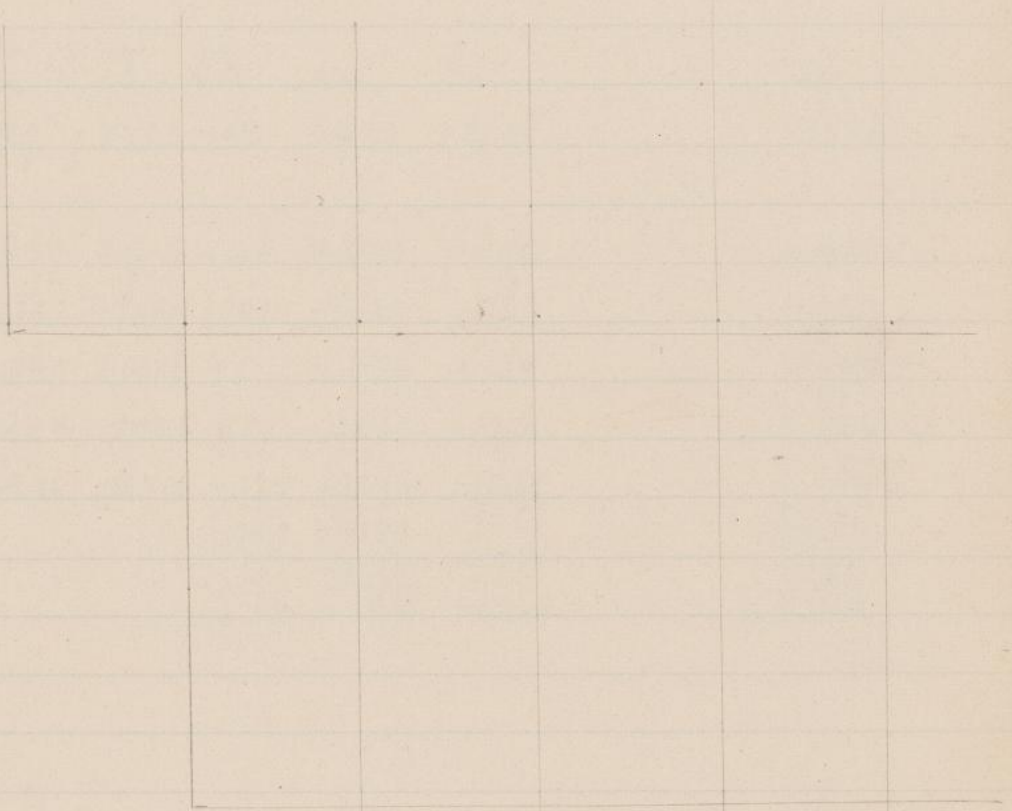
	Meas y	Mean Nora − y	Y	y − Y	a n′	b n′	s n′
20	1749.0	+295.9	+288.1	+7.8	−17.94	+22.62	+12.48 ✓
80	F						
81	2098.2	−53.3	−46.2	−7.1	−6.39	+3.55	−9.94 ✓
79	2117.1	−72.2	−70.4	−1.8	−2.70	+1.26	−3.24 ✓
77	1980.6	+64.3	+71.6	−7.3	−10.22	−5.11	−22.63 ✓
56	1916.2	+128.7	+119.9	+8.8	−17.60	+10.56	+1.76 ✓
78	1961.7	+83.2	+69.8	+13.4	−22.78	+9.38	00 ✓
N	2045.1	−0.2		+30.0	−77.83	+47.37	+14.24
N	2044.7	+0.2		−16.2		−5.11	−35.81
	2044.9			+13.8		+42.26	−21.57 ✓

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1902phae.proj..825F

17	1548.5
23	3149.7
74	1310.1
Nova.	1529.5
	1529.5
Remeas.	1532.6
	1533.3
	1531.9

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1902phae.proj..825F

17	949.6
23	2179.6
74	1957.9
	2045.1
	2044.7
	2045.1
	2045.5
	2045.1

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I 11614

D 8335

October 11, 1894.

Hagen	Meas. x	Nova-x	X	$x-X$	$a=\frac{X}{100}$	a_n	b_n	a_a	a_b
20	1663.8	-226.6	-228.3	+1.7	-2.3	-3.91	+4.93	+5.29	-6.67
80	1500.8	-63.6	-64.0	+0.4	-0.6	-.24	-.44	+.36	+.66
81	1341.4	+95.8	+91.7	+4.1	+0.9	+3.69	-2.05	+.81	-.45
79	1281.7	+155.5	+154.9	+0.6	+1.5	+.90	-.42	+2.25	-1.05
77	1298.0	+139.2	+141.6	-2.4	+1.4	-3.36	-1.68	+1.96	+.98
56	1639.6	-202.4	-203.5	+1.1	-2.0	-2.20	+1.32	+4.00	-2.40
78	1600.2	-163.0	-167.4	+4.4	-1.7	-7.48	+3.08	+2.89	-1.19
Σ	14			+12.3	+3.8	+4.59	+9.33	+17.56	+1.64
Σ				-2.4	-6.6	-17.19	-4.59		-11.76
				+9.9	-2.8	-12.60	+4.74		-10.12
Mean adopted	1437.2								

	Meas y	Nova-y	Y	$y-Y$	$b=\frac{Y}{100}$	a_n'	b_n'	b_b
20	1588.2	+282.8	+288.1	-5.3	+2.9	+12.19	-15.37	+8.41
80	1978.3	-107.3	-106.8	-0.5	-1.1	+.30	+.55	1.21
81	1918.2	-47.2	-46.2	-1.0	-0.5	-.90	+.50	.25
79	1938.1	-67.1	-70.4	+3.3	-0.7	+4.95	-2.31	.49
77	1803.3	+67.7	+71.6	-3.9	+0.7	-5.46	-2.73	.49
56	1755.2	+115.8	+119.9	-4.1	+1.2	+8.20	-4.92	1.44
78	1803.0	+68.0	+69.8	-1.8	+0.7	+3.06	-1.26	+.49
Σ				+3.3	+5.5	+28.70	+1.05	+12.78
Σ				-16.6	-2.3	-6.36	-25.59	
				-13.3	+3.2	+22.34	-24.54	
	1871.0						5.	

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s	sn	ck'd by aa+ab+a as	ck'd by ab+bb+b bs	
+1.6	+2.72	-3.68 ✓	+4.64	✓
-0.7	-.28	+.42 ✓	+.77	✓
+1.4	+5.32	+1.26 ✓	-.70	✓
+1.8	+1.08	+2.70 ✓	-1.26	✓
+3.1	-7.44	+4.34 ✓	+2.17	✓
+0.2	+.22	-.40 ✓	+.24	✓
0.0	.00	.00 ✓	.00	✓
+8.1	+9.76	+8.72	+7.82	
-0.7	-7.72	-4.08	-1.96	
+7.4	+2.04	+4.64	+5.86	

sn'	as =	bs =
-8.48	aa +17.56	ab -10.12
+.35	ab -10.12	bb +12.78
-1.40	a -2.8	b +3.2
+5.94	-4.64	+5.86
-12.09	sn =	sn' =
-.82	an	an' +22.34
.00	bn	bn' -25.54
+6.29	n	n' -13.3
-22.79		-16.50
-16.50		

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Hagen	Meas. x	Nova-x	X	$x-X$	$a=\frac{X}{100}$	an	bn	aa	ab
20	1500.8	-226.6	-228.3	+1.7	-2.3	-3.91	+4.93		
80	1337.8	- 63.6	-64.0	+0.4	-0.6	- .24	- .44		
81	1178.8	+ 95.4	+91.7	+3.7	+0.9	+3.33	-1.85		
79	1115.5	+158.7	+154.9	+3.8	+1.5	+5.70	-2.66		
77	1135.0	+139.2	+141.6	-2.4	+1.4	-3.36	-1.68		
56	1476.6	-202.4	-203.5	+1.1	-2.0	-2.20	+1.32		
78	1437.2	-163.0	-167.4	+4.4	-1.7	-7.48	+3.08		
Nr				+15.1	+3.8	+9.03	+9.33	+17.56	-10.12
Nr				-2.4	-6.6	-17.19	-6.63		
Nr				+12.7	-2.8	-8.16	+2.70		

Mean Nr 1274.2

	Meas. y.	Nova-y	Y	$y-Y$	$b=\frac{Y}{100}$	an'	bn'	bb
20	1588.2	+282.4	+288.1	- 5.7	+2.9	+13.11	-16.53	
80	1977.9	-107.3	-106.8	- 0.5	-1.1	+ .30	+ .55	
81	1918.2	- 47.6	-46.2	- 1.4	-0.5	- 1.26	+ .70	
79	1938.5	- 67.9	-70.4	+2.5	-0.7	+3.75	-1.75	
77	1803.0	+ 67.6	+71.6	- 4.0	+0.7	- 5.60	-2.80	
56	1755.2	+115.4	+119.9	- 4.5	+1.2	+9.00	-5.40	
78	1803.0	+ 67.6	+69.8	- 2.2	+0.7	+3.74	-1.54	
Nr				+2.5	+5.5	+29.90	+1.25	+12.78
Nr				-18.3	-2.3	- 6.86	-28.02	
				-15.8	+3.2	+23.04	-26.77	

1870.6

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s	sn	an+bn+n.	as
	+2.72	✓	
	- .28	✗	
	+5.18	✓	
	+6.84	✓	
	-7.44	✓	
	+.22	✓	
	00	✓	
	+14.96	an -8.16	
	-7.72	bn +2.70	
+7.4	+7.24	n +12.7	+4.64
		+7.24	

sn'	an'+bn'+n'	bs
-9.12	✓	
+ .35	✓	
-1.96	✓	
+4.50	✓	
-12.40	✓	
- .90	✓	
.00	✓	
+4.85	an' +23.04	+5.86
-24.38	bn' -26.77	
-19.53	n' -15.8	
	-19.53	

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D 8336 from I 11614

aa	ab	ac	as	an
+17.56	−10.12	−2.8	+4.64	−8.16
				0.9117 n
				0.6723

		bb	bc	bs	bn	
0.2825 n	−8.16	+12.78	+3.2	+5.86	+2.70	
0.4472 n	+5.37				+4.70	
0.7297	−6.87				−2.00	
9.8316	−9.66				0.3010 n	
1.0051 n	0.9850 n					
0.8367 n	1.2445				9.6604	0.3899 n
	9.7405 n				0.1144 n	0.3337 n
a =	−0.55		cc	cs	cn	sn
0.2825 n		−20.0		+7.4	+12.7	+7.24
0.2014		−3.05			−.46	−2.45
0.4839 n		−5.05			+13.16	+9.69
		0.7033 n			+1.30	−2.16
		0.8420			+11.86	+11.85
		9.8613 n			1.0742	
	f =	−0.73			0.2825	
					c = +1.92	

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			a_n'	
			+23.04	
			1.3624	
			1.1230 n	
~~0.16~~			f_n'	
0.1645	+23.04		-26.77	
0.4472 n	-4.09		-13.27	
0.6117 n	-16.27		-13.50	
0.2063	+2.68		1.1303 n	
1.0051 n	0.4281			
1.2114 n	1.2445		0.4897 n	1.2192 n
	~~1.6726~~		0.5651 n	0.7844
	9.1836		c_n'	s_n'
	$f' = +0.15$			
0.1645		-13.50	-15.8	-19.53
0.2014		+2.32	-3.09	-16.56
0.3659		-11.18	-12.71	-2.97
		1.0483 n	-3.67	+6.09
		0.8420	-9.04	-9.06
		0.2063 n	0.9562 n	
		$a' = -1.61$	0.1645	
			$c' = -1.46$	

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a −.0055 a' −.0161
b −.0073 b' +.0015
c +1.9 c' −1.5

I 11614 D8336

Hagen.	Area-x	ax	by	c	Σ	x−Σ	O	C	O−C
							x	X	
20	−226.6	+1.2	−2.1	+1.9	+1.0	−227.6		−228.3	+0.7
80	−63.6	+0.3	+0.8		+3.0	−66.6		−64.0	−2.6
81	+95.4	−0.5	+0.3		+1.7	+93.7		+91.7	+2.0
79	+158.7	−0.9	+0.5		+1.5	+157.2		+154.9	+2.3
77	+139.2	−0.8	−0.5		+0.6	+138.6		+141.6	−3.0
56	−202.4	+1.1	−0.8		+2.2	−204.6		−203.5	−1.1
78	−163.0	+0.9	−0.5		+2.3	−165.3		−167.4	+2.1

+7.1
−6.7
−0.4
13.8
7
±1.97

	Area-y	ay	b'x	c'	Σ	y−Σ	O	C	O−C
							y	Y	
20	+282.4	−4.5	−0.3	−1.5	−6.3	+288.7		+288.1	+0.6
80	−107.3	+1.7	−0.1		+0.1	−107.4		−106.8	−0.6
81	−47.6	+0.8	+0.1		−0.6	−47.0		−46.2	−0.8
79	−67.9	+1.1	+0.2		−0.2	−67.7		−70.4	+2.7
77	+67.6	−1.1	+0.2		−2.4	+70.0		+71.6	−1.6
56	+115.4	−1.9	−0.3		−3.7	+119.1		+119.9	−0.8
78	+67.6	−1.1	−0.2		−2.8	+70.4		+69.8	+0.6

+3.9
−3.8
+0.1
7.7
7
±1.10

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			b	0	
				1.746	
$a\frac{X}{100}$	$f\frac{Y}{100}$	c	Σ	$x-X$	0-b
+1.3	-2.1	+1.9	+1.1	+1.7	+0.6
+0.3	+0.8		+3.0	+0.4	-2.6
-0.5	+0.4		+1.8	+3.7	+1.9
-0.8	+0.5		+1.6	+3.8	+2.2
-0.8	-0.5		+0.6	-2.4	-3.0
+1.1	-0.9		+2.1	+1.1	-1.0
+0.9	-0.5		+2.3	+4.4	+2.1
					+6.8
					-6.6
					+0.2
					13.4 =
					7
					±01.91

			b	0	0-b
$a'\frac{Y}{100}$	$f'\frac{X}{100}$	c'	Σ	$y-Y$	
-4.7	-0.3	-1.5	-6.5	-5.7	+0.8
+1.8	-0.1		+0.2	-0.5	-0.7
+0.8	+0.1		-0.6	-1.4	-0.8
+1.1	+0.2		-0.2	+2.5	+2.7
-1.1	+0.2		-2.4	-4.0	-1.6
-1.9	-0.3		-3.7	-4.5	-0.8
-1.1	-0.3		-2.9	-2.2	+0.7
					+4.2
					-3.9
					+0.3
					8.1 =
					7
					±1.16

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I 11614 D 8336

(Nova 1274.2)

	751	69.6	+1204.6	-6.6	+7.8	+1.9	+3.1	+1201.5
	749	169.4	+1104.8	-6.1	+3.7		-0.5	+1105.3
	748	268.3	+1005.9	-5.5	-8.8		-12.4	+1018.3
	744	715.7	+ 558.5	-3.1	-5.9		- 7.1	+ 565.6
	742	880.7	+ 393.5	-2.2	-13.0		-13.3	+ 406.8
	?	809.0	+465.2	-2.6	-3.8		- 4.5	+ 469.7
42a		864.4	+409.8	-2.3	-0.2		- 0.6	+ 410.4
42		888.2	+386.0	-2.1	-0.1		- 0.3	+ 386.3
68		916.3	+357.9	-2.0	-0.6		-0.7	+ 358.6
74a		1047.6	+226.6	-1.2	-0.9		-0.2	+226.8
74		1055.6	+218.6	-1.2	-0.7		0.0	+218.6
77a		1127.1	+147.1	-0.8	-0.8		+0.3	+146.8
79a		1139.0	+135.2	-0.7	+0,5		+1.7	+133.5
Xa		1242.3	+ 31.9	-0.2	-0.7		+1.0	+ 30.9
54a		1457.0	-182.8	+1.0	+1.3		+4.2	- 187.0
54		1492.9	-218.7	+1.2	+1.7		+4.8	-223.5
49		1532.7	-258.5	+1.4	+0.7		+4.0	-262.5
	739	1500.8	-226.6	+1.2	-2.1		+1.0	-227.6
17	740	1353.4	- 79.2	+0.4	-8.0		-5.7	- 73.5
	737?	2983.8	-1709.6	+9.4	+4.2		+15.5	-1725.1
	731	3107.0	-1832.8	+10.1	-2.1		+9.9	-1842.7
	730	3162.7	-1888.5	+10.4	-12.2		+ 0.1	-1888.6
	728	3329.6	-2055.4	+11.3	-12.5		+ 0.7	-2056.1
	729	3325.7	-2051.5	+11.3	-11.2		+ 2.0	-2053.5
	726?	3580.0	-2305.8	+12.7	- 6.7		+ 7.9	-2313.7
23	733	— — —						

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(Nra 1870.6)

2936.0	−1065.4	+17.2	+1.8	−1.5	+17.5	−1082.9
2371.0	− 500.4	+ 8.1	+1.7		+ 8.3	− 508.7
665.9	+1204.7	−19.4	+1.5		−19.4	+1224.1
1067.4	+ 803.2	−12.9	+0.8		−13.6	+ 816.8
85.4	+1785.2	−28.7	+0.6		−29.6	+1814.8
1354.1	+ 516.5	− 8.3	+0.7		− 9.1	+ 525.6
1847.1	+ 23.5	− 0.4	+0.6		− 1.3	+ 24.8
1862.6	+ 8.0	− 0.1	+0.6		− 1.0	+ 9.0
1783.0	+ 87.6	− 1.4	+0.5		− 2.4	+ 90.0
1743.2	+127.4	− 2.1	+0.3		− 3.3	+130.7
1775.1	+ 95.5	− 1.5	+0.3		− 2.7	+ 98.2
1757.6	+113.0	− 1.8	+0.2		− 3.1	+116.1
1938.1	− 67.5	+ 1.1	+0.2		− 0.2	− 67.3
1775.1	+ 95.5	− 1.5	0.0		− 3.0	+ 98.5
2053.3	−182.7	+ 2.9	− 0.3		+ 1.1	−183.8
2109.0	−238.4	+ 3.8	− 0.3		+ 2.0	−240.4
1966.0	− 95.4	+ 1.5	− 0.4		− 0.4	− 95.0
1588.2	+282.4	− 4.5	− 0.3		− 6.3	+288.7
781.2	+1089.4	−17.5	− 0.1		−19.1	+1108.5
2443.0	− 572.4	+ 9.2	− 2.6		+ 5.1	− 577.5
1584.2	+286.8 (4)	− 4.5 (6)	− 2.5 (2.7)		− 8.8	+295.2
200.8	+1670.2 (69.8)	−26.2 (9)	− 3.6 (2.8)		−31.2	+1701.0
153.8 (4)	+1718.0 (7.2)	−27.6	− 3.9 (3.1)		−32.2	+1749.4
336.0	+1535.0 (4.6)	−24.7	− 3.9 (3.1)		−29.3	+1563.9
948.2	+ 918.5 (922.4)	−14.9	− 4.4 (3.15)		−19.9	+ 942.3
952.5						

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1902phae.proj..825F

I 19305 October 17, 1897.

D 8527 Mean. Bk. 22, p. 170.

Hagen	Meas. x	Mean Nora − x	X	$x-\overset{n}{X}$	$a=\frac{X}{100}$	a_n	b_n
20	1814.9	−230.5	−228.3	−2.2		+5.06	−6.38
80	1647.9	−63.5	−64.0	+0.5		−.30	−.55
81	1492.9	+91.5	+91.7	−0.2		−.18	+.10
79	1434.0	+150.4	+154.9	−4.5		−6.75	+3.15
77	1445.9	+138.5	+141.6	−3.1		−4.34	−2.17
56	1787.8	−203.4	−203.5	+0.1		−.20	+.12
78	1755.2	−170.8	−167.4	−3.4		+5.78	−2.38
				+0.6		+10.84	+3.37
				−13.4		−11.77	−11.48
Nr	1584.6	−0.2		−12.8	−2.8	−.93	−8.11
Nr	1584.2	+0.2					
Mean	1584.4						

	Meas. y	Mean Nora − y	Y	$y-\overset{n'}{Y}$	$b=\frac{Y}{100}$	$a_{n'}$	$b_{n'}$
20	1529.1	+285.8	+288.1	−2.3		+5.29	−6.67
80	1922.6	−107.7	−106.8	−0.9		+.54	+.99
81	1859.1	−44.2	−46.2	+2.0		+1.80	−1.00
79	1882.4	−67.5	−70.4	+2.9		+4.35	−2.03
77	1739.7	+75.2	+71.6	+3.6		+5.04	+2.52
56	1695.7	+119.2	+119.9	−0.7		+1.40	−.84
78	1743.2	+71.7	+69.8	+1.9		−3.23	+1.33
				+10.4		+18.42	+4.84
				−3.9		−3.23	−10.54
Nr	1814.9			+6.5	+3.2	+15.19	−5.70
Nr	1814.9						
Mean	1814.9						

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1902phae..proj...825F

Sw

-3.52 ✓
- 35 ✓
- .28 ✓
-8.10 ✓
-9.61 ✓
+.02 ✓
.00 ✓
+.02
-21.86
-21.84 ✓

Sw'

-3.68 ✓
+ .63 ✓
+2.80 ✓
+5.22 ✓
+11.16 ✓
- .14 ✓
.00 ✓
+19.81
- 3.82
+15.99 ✓

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1902phae.proj..825F

I 19305 D 8527

			aw	
			-0.93	
			9.9685n	
			9.7291	
			hw	
0.2486	-0.93		-8.11	
0.4472n	-4.96		+.54	
0.6958n	-8.49		-8.65	
9.9237	-14.38		0.9370n	
1.0051n	1.1577n		0.2964n	1.0259n
0.9288n	1.2445		9.1712	9.3905n
	9.9132n			
	a= -0.82		cw	sw
0.2486		-8.65	-12.8	-21.84
0.2014		+2.82	+.15	-.25
0.4500		-5.83	-12.95	-21.59
		0.7657n	-1.98	-10.62
		0.8420	-10.97	-10.97
		9.9237n	1.0403n	
		b= -0.84	0.2486n	
			c= -1.77	

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1902phae..proj...825F

				$a n'$	
				$+15.19$	
				1.1815	
				$0.9421 n$	
				$b n'$	
$0.1232 n$	$+15.19$			-5.70	
$0.4472 n$	$+3.72$			-8.75	
0.5704	$+1.37$			$+3.05$	
$9.1311 n$	$+20.28$			0.4843	
$1.0051 n$	$1.3.071$				
0.1362	1.2445			9.8437	0.5732
	0.0626			$0.3842 n$	0.6035
	$b' = +1.16$			$c n'$	$s n'$
$0.1232 n$		$+3.05$		$+6.5$	$+15.99$
0.2014		-2.11		-2.42	$+4.01$
$0.3246 n$		$+0.94$		$+8.92$	$+11.98$
		9.9731		$+.70$	$+3.74$
		0.8420		$+8.22$	$+8.24$
		9.1311		0.9149	0.9159
		$a' = +0.14$		0.1232	0.1242
				$c' = +1.33$	$+0.1.33$

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1902phae.proj..825F

a −.0082 a′ +.0014
b* −.0084 b′ +.0116
c −1.8 c′ +1.3

I 19305 D 8527

Hagen	Nova-x	ax	by	c	Σ	x−Σ	O / X	O−b
20	−230.5	+1.9	−2.4	−1.8	−2.3	−228.2	−228.3	+0.1
80	−63.5	+0.5	+0.9		−0.4	−63.1	−64.0	+0.9
81	+91.5	−0.8	+0.4		−2.2	+93.7	+91.7	+2.0
79	+150.4	−1.2	+0.6		−2.4	+152.8	+154.9	−2.1
77	+138.5	−1.1	−0.6		−3.5	+142.0	+141.6	+0.4
56	−203.4	+1.7	−1.0		−1.1	−202.3	−203.5	+1.2
78	−170.8	+1.4	−0.6		−1.0	−169.8	−167.4	−2.4

+4.6
−4.5
9.1 = 7
±1.30

	Nova-y	ay′	b′y	c′	Σ	y−Σ	I	O−b
20	+285.8	+0.4	−2.7	+1.3	−1.0	+286.8	+288.1	−1.3
80	−107.7	−0.2	−0.7		+0.4	−108.1	−106.8	−1.3
81	−44.2	−0.1	+1.1		+2.3	−46.5	−46.2	−0.3
79	−67.5	−0.1	+1.7		+2.9	−70.4	−70.4	0.0
77	+75.2	+0.1	+1.6		+3.0	+72.2	+71.6	+0.6
56	+119.2	+0.2	−2.4		−0.9	+120.1	+119.9	+0.2
78	+71.7	+0.1	−2.0		−0.6	+72.3	+69.8	+2.5

+3.3
−2.9
+0.4
6.2 = 9
±0.89

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1902phae..proj...825E

	$a\frac{X}{100}$	$b\frac{Y}{100}$	c	b Σ	O 1.56 x-X	O-b
20	+1.9	-2.4	-1.8	-2.3	-2.2	+0.1
80	+0.5	+0.9		-0.4	+0.5	+0.9
81	-0.7	+0.4		-2.1	-0.2	+1.9
79	-1.2	+0.6		-2.4	-4.5	-2.1
77	-1.1	-0.6		-3.5	-3.1	+0.4
56	+1.6	-1.0		-1.2	+0.1	+1.3
78	+1.4	-0.6		-1.0	-3.4	-2.4

+4.6
−4.5
+0.1
−9.1 =
7
±1.30

	$a'\frac{Y}{100}$	$b'\frac{X}{100}$	c'	b Σ	O y-Y	O-b
20	+0.4	-2.7	+1.3	-1.0	-2.3	-1.3
80	-0.2	-0.7		+0.4	-0.9	-1.3
81	-0.1	+1.0		+2.2	+2.0	-0.2
79	-0.1	+1.7		+2.9	+2.9	0.0
77	+0.1	+1.6		+3.0	+3.6	+0.6
56	+0.2	-2.3		-0.8	-0.7	+0.1
78	+0.1	-2.0		-0.6	+1.9	+2.5

+3.2
−2.8
+0.4
6.0 =
7
±0.86

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1902phae.proj..825F

a -.0082 a' +.0014
b -.0084 b' +.0116
c -1.8 c' +1.3

~~19305~~ D8527

Meas. x Nova-x ax by c Σ x-Σ

Hagen DM

17	740	1664.6	-80.2	+0.7	-9.2	-1.8	-10.3	-69.9	17
23	733	3198.3	-1613.9	+13.2	+1.9		+13.3	-1627.2	23
74	—	1370.1	+214.3	-1.8	-0.8		-4.4	+218.7	74

(Mean Nr 1584.4)

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1902phae.proj..825F

17		718.5	+1096.4	+1.5	-0.9	+1.3	+1.9	+1094.5
23		2037.1	-222.2	-0.3	-18.7		-17.7	- 204.5
74		1715.4	+ 99.5	+0.1	+2.5		+ 3.9	+ 95.6
	(Mean Jr | 1814.9)						

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1902phae.proj..825F

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1902phae.proj..005F

I 19305

D 8528 Meas. Bk. 22, p. 168.

Hagen	Meas. x	Mean Nova - x	X-X	n x-X	a	an	bn
20	1799.0	-229.1		-0.8		+1.84	-2.32
80	1632.4	-62.5		+1.5		-0.90	-1.65
81	1477.0	+92.9		+1.2		+1.08	-0.60
79	1417.2	+152.7		-2.2		-3.30	+1.54
77	1430.0	+139.9		-1.7		-2.38	-1.19
56	1775.1	-205.2		-1.7		+3.40	-2.04
78	1739.3	-169.4		-2.0		+3.40	-1.40
Nr	1569.9	0.0		+2.7		+9.72	+1.54
Nr	1569.9	0.0		-8.4		-6.58	-9.20
Mean	1569.9			-5.7		+3.14	-7.66

	Meas. y	Mean Nova - y	Y	n' y-Y	a'	b'
20	1552.6	+286.1		-2.0	+4.60	-5.80
80	1946.1	-107.4		-0.6	+0.36	+0.66
81	1883.0	-44.3		+1.9	+1.71	-0.95
79	1906.4	-67.7		+2.7	+4.05	-1.89
77	1763.2	+75.5		+3.9	+5.46	+2.73
56	1719.6	+119.1		-0.8	+1.60	-0.96
78	1771.2	+67.5		-2.3	+3.91	-1.61
Nr	1838.7	0.0		+8.5	+21.69	+3.39
Nr	1838.7	0.0		-5.7		-11.21
Mean	1838.7			+2.8		-7.82

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1902phae.proj..825F

Sw

-1.28 ✓
-1.05 ✓
+1.68 ✓
-3.96 ✓
-5.27 ✓
- .34 ✓
.00
+1.68
-11.90
-1022 ✓

Sw'

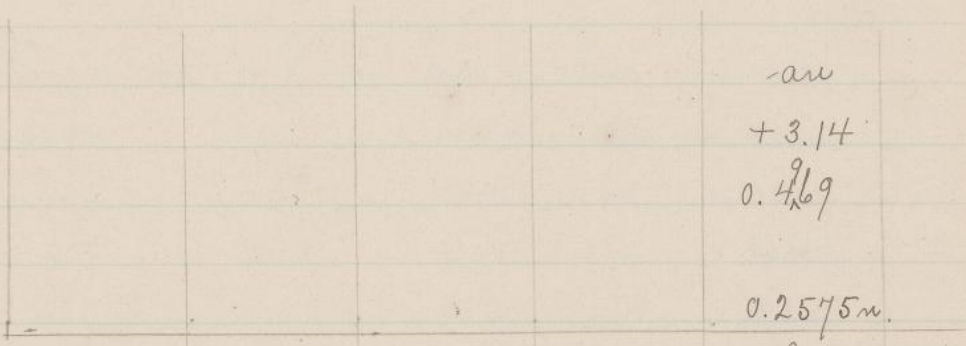
-3.20 ✓
+ .42 ✓
+2.66 ✓
+4.86 ✓
+12.09 ✓
-.16 ✓
.00 ✓
+20.03
- 3.36
+16.67 ✓

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1902phae.proj...825F

58

E 19305 D 8528



			$-a_M$	
			$+3.14$	
			$0.4\overset{9}{\times}69$	
			0.2575_M	
	l		b_M	
9.7949	$+3.14$		-7.66	
0.4472_M	-1.75		-1.81	
0.2421_M	-7.08		-5.85	
9.8446	-5.69		0.7672_M	
1.0051_M	0.7551_M			
0.8497	1.2445		0.1266_M	0.8561_M
	9.5106		9.6996_M	9.9189
9.7949	$a=-0.32$		c_M	s_M
0.2014		-5.85	-5.7	-10.22
9.9963		$+.99$	-1.34	-7.18
		-4.86	-3.36	-3.04
		0.6866_M	$-.50$	$+.83$
		0.8420	-3.86	-3.87
		9.8446_M	0.5866_M	
		$f=+0.70$	9.7949_M	
			$c=-0.62$	

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1902phae.proj...825F

					a_u'	
					+21.69	
					1.3363	
					1.0969n	
					b_u'	
9.9235n	+21.69				-7.82	
0.4472n	+2.35				-12.50	
0.3707	+4.88				+4.68	
9.6830n	+28.92				0.6702	
1.0051n	1.4612					
0.6881	-1.2445				0.0296	0.7591
	0.2167				0.5390n	0.7583
9.9235n	f'=+1.65				c_u'	s_u'
0.2014		+4.68			+2.8	+16.67
0.1249n		-1.33			+1.07	+5.74
		+3.35			+1.73	+10.93
		0.5250			-3.46	+5.73
		0.8420			+5.19	+5.20
		9.6830			0.7152	
		a' = +0.48			9.9235	
					+0.84	

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1902phae.proj.825F

a −.0032 a′ +.0048
b +.0070 b′ +.0165
c −0.6 c′ +0.8

~~I~~ 19305 D 8528

Hagen	Nova-x	ax	by	c	Σ	x−Σ	O X	O−b
20	−229.1	+0.7	+2.0	−0.6	+2.1	−231.2	−228.3	−2.9
80	− 62.5	+0.2	−0.8		−1.2	− 61.3	−64.0	+2.7
81	+ 92.9	−0.3	−0.3		−1.2	+ 94.1	+91.7	+2.4
79	+ 152.7	−0.5	−0.5		−1.6	+154.3	+154.9	−0.6
77	+139.9	−0.4	+0.5		−0.5	+140.4	+141.6	−1.2
56	− 205.2	+0.7	+0.8		+0.9	−206.1	−203.5	−2.6
78	− 169.4	+0.5	+0.5		+0.4	−169.8	−167.4	−2.4
								+5.1
								−9.7

	Nova-y	a′y	b′x	c′	Σ	y−Σ	O I	Ob
20	+286.1	+1.4	−3.8	+0.8	−1.6	+288.7	+288.1	+0.6
80	−107.4	−0.5	−1.0		−0.7	−106.7	−106.8	+0.1
81	− 44.3	−0.2	+1.5		+2.1	− 46.4	− 46.2	−0.2
79	− 67.7	−0.3	+2.5		+3.0	− 70.7	− 70.4	−0.3
77	+ 75.5	+0.4	+2.3		+3.5	+ 72.0	+ 71.6	+0.4
56	+119.1	+0.6	−3.4		−2.0	+121.1	+119.9	+1.2
78	+ 67.5	+0.3	−2.8		−1.7	+ 69.2	+ 69.8	−0.6
								+2.3
								−1.1

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1902phae.proj..825F

	$a'\frac{X}{100}$	$f'\frac{X}{100}$	c'	Σ'	b	$y-Y$	O	$O-b$
20	+1.4	-3.8	+0.8	-1.6		-2.0		-0.4
80	-0.8	-1.0		-0.7		-0.6		+0.1
81	-0.2	+1.5		+2.1		+1.9		-0.2
79	-0.3	+2.5		+3.0		+2.7		-0.3
77	+0.3	+2.3		+3.4		+3.9		+0.5
56	+0.6	-3.3		-1.9		-0.8		+1.1
78	+0.3	-2.8		-1.7		-2.3		-0.6

+1.7
−1.5
+0.2

3.2 / 7 =

±.46

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1902phae.proj..825F

17 16547
23 31844
74 13545

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1902phae.proj..825F

17 742.3
23 2061.4
74 1739.4

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1902phae.proj..825F

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1902phac.proj..625F

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1902phae.proj..825F

I 24699 March 7, 1900.

D 8529 Meas. Bk. 22, p. 166.

Hagen	Meas. x	Mean Nova − x	x − X̄	a_n	b_n	s_n	s_n authority
20	1655.1	−226.5	+1.8	−4.14	+5.22	+2.88	✓
80	1491.7	− 63.1	+0.9	− .54	−0.99	−0.63	✓
81	1337.8	+ 90.8	−0.9	− .81	+ .45	−1.26	✓
79	1274.2	+154.4	−0.5	− .75	+ .35	− .90	✓
77	1286.1	+142.5	+0.9	+1.26	+ .63	+2.79	✓
56	1632.4	−203.8	−0.3	+ .60	− .36	− .06	✓
78	1592.2	−163.6	+3.8	− 6.46	+2.66	.00	✓
Nr	1428.8	− 0.2	+7.4	+ 1.86	+9.31	+5.67	
Nr	1428.4	+0.2	− 1.7	− 12.70	− 1.35	− 2.85	
			+5.7	−10.84	+7.96	+2.82	

Mean Nr 1428.6

	Meas. y	Mean Nova − y	y − Ȳ	a_n'	b_n'	s_n'	
20	1405.3	+286.8	−1.3	+2.99	−3.77	−2.08	✓
80	1803.0	−110.9	−4.1	+2.46	+4.51	+2.87	✓
81	1735.7	− 43.6	+2.6	+2.34	−1.30	+3.64	✓
79	1763.2	− 71.1	−0.7	−1.05	+ .49	−1.26	✓
77	1616.1	+ 76.0	+4.4	+6.16	+3.08	+13.64	✓
56	1573.1	+119.0	−0.9	+1.80	−1.08	− .18	✓
78	1620.0	+ 72.1	+2.3	− 3.91	+1.61	.00	✓
Nr	1692.5		+9.3	+15.75	+ 9.69	+20.15	
Nr	1691.7		− 7.0	− 4.96	− 6.15	− 3.52	
			+2.3	+10.79	+3.54	+16.63	

Nova Mean 1692.1

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1902phae.proj..825F

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1902phae.proj..8255

			aw		
			−10.84		
			1.0351n		
			0.7957		
			bw		
9.7622n	−10.84		+7.96		
0.4472n	+1.62		+6.25		
0.2094	+1.15		+1.71		
9.0556n	−8.07		0.2330		
1.0051n	0.9069n		9.5924	0.3219	
0.0607	1.2445				
	9.6624n		0.2378	0.4571n	
9.7622n	a=−0.46		cw	sw	
0.2014		+1.71	+5.7	+2.82	
9.9636n		−.92	+1.73	−2.86	
		+.79	+3.97	+5.68	
		9.8976	+.39	+2.10	
		0.8420	+3.58	+3.58	
		9.0556	0.5539		
		B=+0.11	9.7622		
			c=+0.58		

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1902phae..proj...8255

				a_n'	
				+10.79	
				1.0331	
				0.7937n	
				b_n'	
9.4587n	+10.79			+3.54	
0.4472n	+ .80			−6.22	
9.9059	+13.55			+9.76	
0.1269n	+25.14				
1.0051n	1.4004				
1.1320	1.2445				
	0.1559				
	b' = +1.43				
				c_n'	s_n'
9.4587n		+9.77		+2.3	+16.63
0.2014		−.46		−1.72	+ 2.85
9.6601n		+9.31		+4.02	+13.78
		0.9689		+2.24	+11.99
		0.8420		+ 1.78	+ 1.79
		0.1269		0.2504	
		a' = +1.34		9.4587	
				c' = +0.29	

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1902phae.proj..825F

a -.0046 a' +.0134
b +.0011 b' +0143
c +0.6 c' +0.3

I 24699 D8529

Hagen	Nova-x	ax	by	c	Σ	x-Σ	X	x-X
20	-226.5	+1.0	+0.3	+0.6	+1.9	-228.4	-228.3	-0.1
80	-63.1	+0.3	-0.1		+0.8	-63.9	-64.0	+0.1
81	+90.8	-0.4	00		+0.2	+90.6	+91.7	-1.1
79	+154.4	-0.7	-0.1		-0.2	+154.6	+154.9	-0.3
77	+142.5	-0.7	+0.1		0.0	+142.5	+141.6	+0.9
56	-203.8	+0.9	+0.1		+1.6	-205.4	-203.5	-1.9
78	-163.6	+0.8	+0.1		+1.5	-165.1	-167.4	+2.3

+3.3
-3.4
-0.1
6.7 =
7
±0.96

	Nova-y	a'y	b'x	c'	Σ	y-Σ	Y	y-Y
20	+286.8	+3.8	-3.2	+0.3	+0.9	+285.9	+288.1	-2.2
80	-110.9	-1.5	-0.9		-2.1	-108.8	-106.8	-2.0
81	-43.6	-0.6	+1.3		+1.0	-44.6	-46.2	+1.6
79	-71.1	-1.0	+2.2		+1.5	-72.6	-70.4	-2.2
77	+76.0	+1.0	+2.0		+3.3	+72.7	+71.6	+1.1
56	+119.0	+1.6	-2.9		-1.0	+120.0	+119.9	+0.1
78	+72.1	+1.0	-2.3		-1.0	+73.1	+69.8	+3.3

+6.1
-6.4
-0.3
12.5 =
7
±1.79

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1902phae.proj..825F

	$a\frac{X}{100}$	$f\frac{Y}{100}$	c	$\sum$ (b)	(O) $x-X$	O-b
20	+1.1	+0.3	+0.6	+2.0	+1.8	-0.2
80	+0.3	-0.1		+0.8	+0.9	+0.1
81	-0.4	-0.1		+0.1	-0.9	-1.0
79	-0.7	-0.1		-0.2	-0.5	-0.3
77	-0.6	+0.1		+0.1	+0.9	+0.8
56	+0.9	+0.1		+1.6	-0.3	-1.9
78	+0.8	+0.1		+1.5	+3.8	+2.3
						+3.2
						-3.4
						-0.2
						6.6 =
						7
						±0.94

	$a'\frac{Y}{100}$	$f'\frac{X}{100}$	c'	$\sum$ (b)	(O) $y-Y$	O-b
20	+3.9	-3.3	+0.3	+0.9	-1.3	-2.2
80	-1.5	-0.9		-2.1	-4.1	-2.0
81	-0.7	+1.3		+0.9	+2.6	+1.7
79	-0.9	+2.1		+1.5	-0.7	-2.2
77	+0.9	+2.0		+3.2	+4.4	+1.2
56	+1.6	-2.9		-1.0	-0.9	+0.1
78	+0.9	-2.4		-1.2	+2.3	+3.5
						+6.5
						-6.4
						+0.1
						12.9 =
						7
						±1.84

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1902phae.proj..825F

L 24699 D8529

Meas.x

Hagen DM.

17	740	1493.3	- 64.7	+0.3	+1.2	+0.6	+2.1	- 66.8
23	733	3042.9	-1614.3	+7.4	-0.2		+7.8	-1622.1
74	—	1213.4	+ 215.2	-1.0	+0.1		-0.3	+ 215.5
Mean x.		1428.6						

Star meas. wrongly
for 80 1469.0

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1902phae..proj...825F

17	590.3	+1101.8	+14.8	-0.9 +0.3	+14.2	+1087.6
23	1914.6	-222.5	-3.0	-23.1	-25.8	-196.7
74	1591.8	+100.3	+1.3	+3.1	+4.7	+95.6
	(1692.1)					

17834

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I 24699.

D 8532 Meas. Bk. 22, p. 166

Hagen.	Meas. x	Mean Nova - x	*X	x - X̄	a_n	f_n	s_n
20	1686.9	-229.5		-1.2	+2.76	-3.48	-1.92 ✓
80	1520.7	-63.3		+0.7	-0.42	-0.77	-.49 ✓
81	1369.7	+87.7		-4.0	-3.60	+2.00	-5.60 ✓
79	1304.8	+152.6		-2.3	-3.45	+1.61	-4.14 ✓
77	1314.3	+143.1		+1.5	+2.10	+1.05	+4.65 ✓
56	1663.0	-205.6		-2.1	+4.20	-2.52	-.42 ✓
78	1624.0	-166.6		+0.8	-1.36	+0.56	.00 ✓
				+30	+9.06	+5.22	+4.65
				-9.6	-8.83	-6.77	-12.57
M	1457.8	-0.4		-6.6	+0.23	-1.55	-7.92
M	1457.0	+0.4					
Mean M	1457.4						

	Meas. y	Mean Nova - y	y - Ȳ	a_n'	f_n'	s_n'
20	1277.7	+287.0	-1.1	+2.53	-3.19	-1.76 ✓
80	1671.8	-107.1	-0.3	+.18	+.33	+.21 ✓
81	1608.9	-44.2	+2.0	+1.80	-1.00	+2.80 ✓
79	1636.0	-71.3	-0.9	-1.35	+0.63	-1.62 ✓
77	1493.7	+71.0	-0.6	-.84	-.42	-1.86 ✓
56	1446.7	+118.0	-1.9	+3.80	-2.28	-.38 ✓
78	1493.3	+71.4	+1.6	-2.72	+1.12	.00 ✓
			+3.6	+8.31	+2.08	+3.01
			-4.8	-4.91	-6.89	-5.62
M	1565.1	-0.4	-1.2	+3.40	-4.81	-2.61
M	1564.3	+0.4				
Mean	1564.7					

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I 24699 D8532

				a_n	
				+0.23	
				9.3617	
				9.1223n	
				b_n	
0.0035	+0.23			-1.55	
0.4472n	-2.82			-.13	
0.4507n	+.26			-1.42	
8.4133n	-2.33			0.1523n	
1.0051n	0.3674n				
9.4184	1.2445			9.5117n	0.2412n
	9.1229n			8.5644n	8.7837
	a_5=-0.13			c_n	s_n
0.0035		-1.42		-6.6	-7.92
0.2014		+1.60		-.04	+.06
0.2049		+0.18		-6.56	-7.98
		9.2553		-.32	-1.74
		0.8420		-6.24	-6.24
		8.4133		0.7952n	
		b_5= +.03		0.0035n	
				c_5=-1.01	

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1902phae..proj..825F

			a_{II}'		
			+3.40		
			0.5315		
			0.2921n		
			b_{II}'		
7.2083	+3.40		−4.81		
0.4472n	.00		−1.96		
7.6555n	−4.15		−2.85		
9.6128	−0.75		0.4548n		
1.0051n	9.8751n				
0.6179n	−1.2445		9.8142n	0.5437n	
	8.6306n		9.7342n	9.9535	
	b'=−.04		c_{II}'	s_{II}'	
7.2083		−2.85	−1.2	−2.61	
0.2014		.00	−.54	+.90	
7.4097			−0.66	−3.51	
		0.4548n	−.65	−3.50	
		0.8420	−0.01	−0.01	
		9.6128n	8.0000n		
		a'= −0.41	7.2083n		
			c'=−0.002		

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1902phae.proj..825F

a −.0013 a′ −.0041
b +.0003 b′ −.0004
c −1.0 c′ 0.0

~~I~~ 24699 D8532

Hagen	Nova-x	ax	by	c	Σ	x−Σ	O−b
						−228.9	
20	−229.5	+0.3	+0.1	−1.0	−0.6	~~−230.1~~	−0.6
80	−63.3	+0.1	0.0		−0.9	−62.4	+1.6
81	+87.7	−0.1	0.0		−1.1	+88.8	−2.9
79	+152.6	−0.2	0.0		−1.2	+153.8	−1.1
77	+143.1	−0.2	0.0		−1.2	+144.3	+2.7
56	−205.6	+0.3	0.0		−0.7	−204.9	−1.4
78	−166.6	+0.2	0.0		−0.8	−165.8	+1.6
							+5.9
							−6.0
							−0.1
							11.9 =
							7
							±1.70

	Nova-y	a′y	b′x	c′	Σ	y−Σ	O−b
20	+287.0	−1.2	+0.1	0.0	−1.1	+288.1	0.0
80	−107.1	+0.4	0.0		+0.4	−107.5	−0.7
81	−44.2	+0.2	0.0		+0.2	−44.4	+1.8
79	−71.3	+0.3	−0.1		+0.2	−71.5	−1.1
77	+71.0	−0.3	−0.1		−0.4	+71.4	−0.2
56	+118.0	−0.5	+0.1		−0.4	+118.4	−1.5
78	+71.4	−0.3	+0.1		−0.2	+71.6	+1.8
							+3.6
							−3.5
							+0.1
							7.1 =
							7
							±1.01

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1902phae.proj..825F

$a\frac{X}{100}$	$f\frac{X}{100}$	c	Σ b	O $x-X$	O-b
+0.3	+0.1	7.0	-0.6	-1.2	-0.6
+0.1	0.0		-0.9	+0.7	+1.6
-0.1	-0.0		-1.1	-4.0	-2.9
-0.2	0.0		-1.2	-2.3	-1.1
-0.2	0.0		-1.2	+1.5	+2.7
+0.3	0.0		-0.7	-2.1	-1.4
+0.2	0.0		-0.8	+0.8	+1.6

+5.9
-6.0
-0.1
11.9 =
7
±1.70

$a'\frac{Y}{100}$	$f'\frac{X}{100}$	c'	Σ	y-Y	O-b
-1.2	+0.1	0.0	-1.1	-1.1	0.0
+0.4	0.0		+0.4	-0.3	-0.7
+0.2	0.0		+0.2	+2.0	+1.8
+0.3	-0.1		+0.2	-0.9	-1.1
-0.3	-0.1		-0.4	-0.6	-0.2
-0.5	+0.1		-0.4	-1.9	-1.5
-0.3	+0.1		-0.2	+1.6	+1.8

+3.6
-3.5
+0.1
7.1 =
7
±1.01

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1902phae.proj..825F

I 24699 D 8532

Meas x

Hagen DM

17	740	1536.6	-79.2	+0.1	+0.3	-1.0	-0.6	-78.6
23	733	3070.3	∓1612.9	+2.1	-0.1		+1.0	-1613.9
74	—	1242.3	+215.1	-0.3	0.0		-1.3	+216.4
(Meanx		1457.4)						

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1902phae.proj..825F

17	471.1	+1093.6	-4.5	0.0	0.0	-4.5	+1098.1
23	1783.8	-219.1	+0.9	+0.6		+1.5	-220.6
74	1469.0	+95.7	-0.4	-0.1		-0.5	+96.2
Nr. Mean	1564.7						

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1902phae.proj..825F

B 13507 Sept. 14, 1901.

D 8515.

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1902phae.proj..gerr

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1902phae.proj..8255

D 8516

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1902phae.proj..825F

C 14069

October 20, 1902.

D 9463

Meas. Bk. 22, p. 180.

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1902phae.proj..825F

126

C 14069

D 9464.

Meas. Bk. 22, f. 182.

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1902phae.proj..825F

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1902phae.proj..825F

I 29440 October 23, 1902.

D 9465 Mean. Pk. 22, p. 176.

Hagen.	Meas. x	Mean Pr − x	X	x − X	aw	fw	sw
20	1639.6	−226.5	−228.3	+1.8	−4.14	+5.22	+2.88 ✓
80	1476.6	−63.5	−64.0	+0.5	−.30	−.55	−.35 ✓
81	1318.7	+94.4	+91.7	+2.7	+2.43	−1.35	+3.78 ✓
79	1256.6	+156.5	+154.9	+1.6	+2.40	−1.12	+2.88 ✓
77	1270.6	+142.5	+141.6	+0.9	+1.26	+.63	+2.79 ✓
56	1614.9	−201.8	−203.5	+1.7	−3.40	+2.04	+.34 ✓
78	1580.2	−167.1	−167.4	+0.3	−.51	+.21	.00 ✓
					+6.09	+8.10	+12.67
Pr	1412.9			+9.5	−8.35	−3.02	−.35
Pr	1413.3				−2.26	+5.08	+12.32 ✓
Mean Pr	1413.1						

	Meas. y	Mean Pr − y	Y	y − Y	a′w	f′w	s′w
20	2824.7	+286.6	+288.1	−1.5	+3.45	−4.35	−2.40 ✓
80	3218.3[2]	−106.9	−106.8	−0.1	+.06	+.11	+.07 ✓
81	3158.7	−47.4	−46.2	−1.2	−1.08	+.60	−1.68 ✓
79	3182.4	−71.1	−70.4	−0.7	−1.05	+.49	−1.26 ✓
77	3041.7	+69.6	+71.6	−2.0	−2.80	−1.40	−6.20 ✓
56	2991.7	+119.6	+119.9	−0.3	+.60	−.36	−.06 ✓
78	3040.1	+71.2	+69.8	+1.4	−2.38	+.98	.00 ✓
				+1.4 ✓	+4.11	+2.18	+.07
Pr	3111.7			−5.8 ✓	−7.31	−6.11	−11.60
Pr	3110.9			−4.4 ✓	−3.20	−3.93	−11.53 ✓
Mean Pr	3111.3						

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1902phae..proj..825F

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1902phae.proj..825F

D 9465

				aw		
				−2.26		
				0.3541 n		
				0.1147		
				bw		
0.1263 n	−2.26			+5.08		
0.4472 n	+3.75			+1.30		
0.5735	+2.40			+3.78		
9.3755 n	+3.89			0.5775		
1.0051 n	0.5899					
0.3806	1.2445			9.9369	0.6664	
	9.3454			9.5568 n	9.7761 n	
0.1263 n	a = +0.22			cw	gw	
0.2014		+3.78		+9.5	+12.32	
0.3277 n		−2.13		+.36	−.60	
		+1.65		+9.14	+12.92	
		0.2175		+.86	+4.64	
		0.8420		+9.28	+8.28	
		9.3755		0.9180		
		b = +.24		0.1263		
				c = +1.34		

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1902phae.proj..825F

a_{II}'

-3.20

0.505_n

0.2657

b_{II}'

-3.93

$+1.84$

-5.77

0.7612_n

0.1206_n 0.8501_n

9.7078 9.9271_n

c_{II}' s_{II}'

-4.4 -11.53

$+.51$ $-.84$

-4.91 -10.69

-1.32 -7.08

-3.59 -3.61

0.555_n

9.7634_n

$c'\beta' = -0.58$

9.7634 -3.20

0.4472_n -1.62

0.2106_n -7.06

9.8437 -11.88

1.0051_n 1.0749_n

0.8488_n 1.2445

9.8304_n

9.7634 $\beta' = -0.68$

0.2014

9.9648

-5.77

$+.92$

-4.85

0.6857_n

8437

9.8437_n

$a' = -0.70$

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1902phae.proj..825F

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1902phae.proj..825F

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1902phae.proj..825F

D9463

17	1480.5
23	3027.4
74	1194.7

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1902phae.proj..825F

17 2018.1
23 3317.7
74 3018.6

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1902phae.proj..8pcr

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1902phae..proj..825F

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1902phae.proj..825F

I 29440

D9467 Meas. Bk. 22, 178.

Hagen	Meas. x
20	1731.3
80	1567.5
81	1412.5
79	1346.6
77	1361.7
56	1703.6
78	1668.2
Ar	1504.8
Ar	1504.8
Mean Ar	1504.8

	Meas. y
20	2808.7
80	3202.4
81	3142.3
79	3166.5
77	3023.6
56	2975.7
78	3024.3
Ar	3099.0
Ar	3099.0
Mean Ar	3099.0

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1902phae.proj..825F

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