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## **Project PHaEDRA - Annie Jump Cannon 13**

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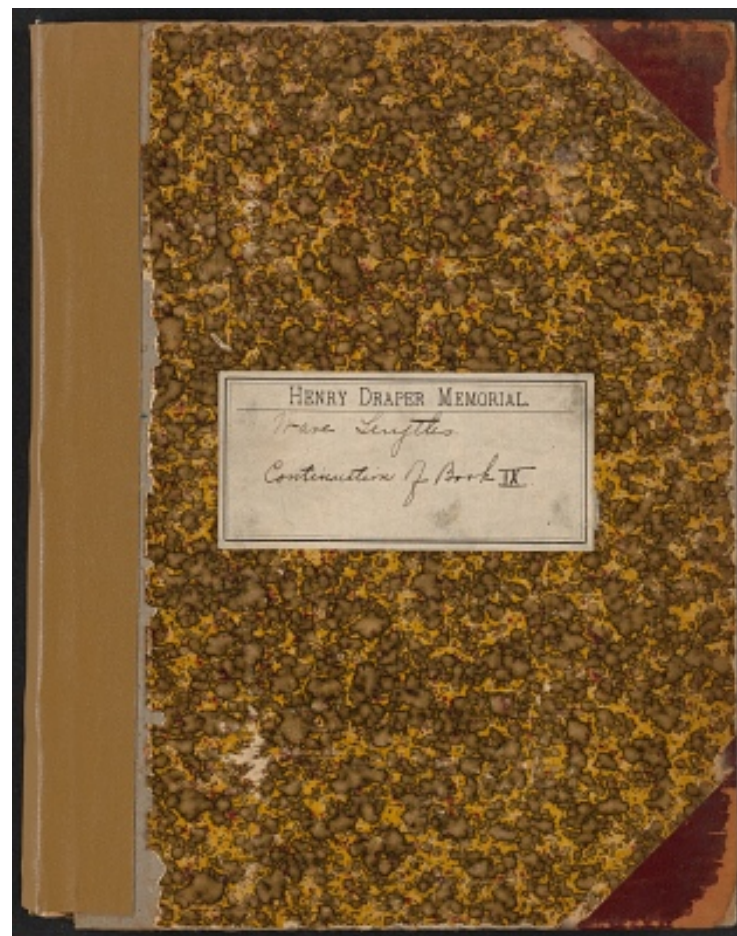
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[[journal cover]]  
[[preprinted label]]  
Henry Draper Memorial  
[[/preprinted]]  
Wave Lengths  
Continuation of Book IX  
[[/label]]



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 2 [[/preprinted]]

June 4, 1901

Nova Persei

C 13158

a= 83169

c= 73856

d=3.44810

x=micron reading

lambda[[subscript]]0[[subscript]]=4861.5

| | | "39" | "39" | end to z | end to z dense | "50" Centre | end to v. |  
Reversed K | H epsilon

(1)=x

|100000|112228|112888|124297|124633|124834|125141|117582|11956  
0|117547

(2)=x-a

|16831|29059|29719|41128|41464|41665|41972|34413|36391|34378

(3)=<sup>^</sup>[(2) + c

[[~~striketrough~~]]x+b[[~~striketrough~~]]|90687|102915|103575|114984|1153  
20|115521|115828|108269|110247|108234

(4)=log(2)|4.22611|4.46328|4.47303|4.61414|4.61767|4.61977|4.62296|  
4.53672|4.56099|4.53628

(5)=[[~~striketrough~~]](x)+ e[[~~striketrough~~]]<sup>^</sup>[d + 4(x)]

|7.67421|7.91138|7.92113|8.06224|8.06577|8.06787|8.07106|7.98482|8.  
00909|7.98438

(6)=log(3)|[[underline]]4.95754[[underline]]|[[underline]]5.01248[[underline]]  
e)|[[underline]]5.01526[[underline]]|[[underline]]5.06064[[underline]]|[[underline]]  
5.06190[[underline]]|[[underline]]5.06266[[underline]]|[[underline]]  
5.06381[[underline]]|[[underline]]5.03450[[underline]]|[[underline]]5.0423  
7[[underline]]|[[underline]]5.03436[[underline]]

(7)=(5)-

(6)|2.71667|2.89890|2.90587|3.00160|3.00387|3.00521|3.00725|2.9503  
2|2.96672|2.95002

8= Nat

no(7)|520.8|792.3|805.1|100<sup>^</sup>[[3]]|[[~~striketrough~~]]6[[~~striketrough~~]]<sup>^</sup>[[7]]|[[~~striketrough~~]]0[[~~striketrough~~]]|1009.0|1012.1|1016.8|891.9|926.2|891.3  
9=lambda[[subscript]]0[[subscript]]-

8|4340.7|4069.2|4056.4|385<sup>^</sup>[[7]]|[[~~striketrough~~]]5[[~~striketrough~~]]<sup>^</sup>[[8]]|[[~~striketrough~~]]5[[~~striketrough~~]]|3852.5|3849.4|3844.7|3969.6|3935.3|39  
70.2

(lambda[[subscript]]0[[subscript]] where dark lines are standards

<sup>^</sup>[[43[[underline]]5[[underline]]8.1]] 4085.1 4072.1 3871.9 3866.6 3863.4  
3858.6 39<sup>^</sup>[[84.7]]|[[~~striketrough~~]]50.1[[~~striketrough~~]]

39<sup>^</sup>[[50.1]]|[[~~striketrough~~]]84.7[[~~striketrough~~]]

Diff. 17.4 15.9 15.7 [[~~striketrough~~]]16.4[[~~striketrough~~]] 14.1 14.0 13.9

15.<sup>^</sup>[[1]]|[[~~striketrough~~]]5[[~~striketrough~~]] 14.8

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[[preprinted]] 4 [[/preprinted]]  
Nov. 20, 1901  
Nova Persei C 13158

a= 83169  
c= 73856  
d=3.44810  
lambda <sub>0</sub> = 4861.5

(1)=x = | 63525 | 64320 | 66969 | 69033 | 72452 | 72820 73107

(2)=x-a | -19644 | -18849 | -16200 | -14136 | -10717 | -10349

(3)=(2)+a | 54212 | 5~~5~~6~~507~~ | 57656 | 59720 | 63139 | 63507

(4)=log(2) | 4.29323n | 4.27529n | 4.20952n | 4.15033n | 4.03007n | 4.01490n 4

(5)=d+(4) | 7.74133n | 7.72339n | 7.65762n | 7.59843n | 7.47817n | 7.46310n

(6)=log(3) | 4.73410 474 ~~824~~ 042 | 4.76084 | 4.77612 | 4.80030 | 4.80282

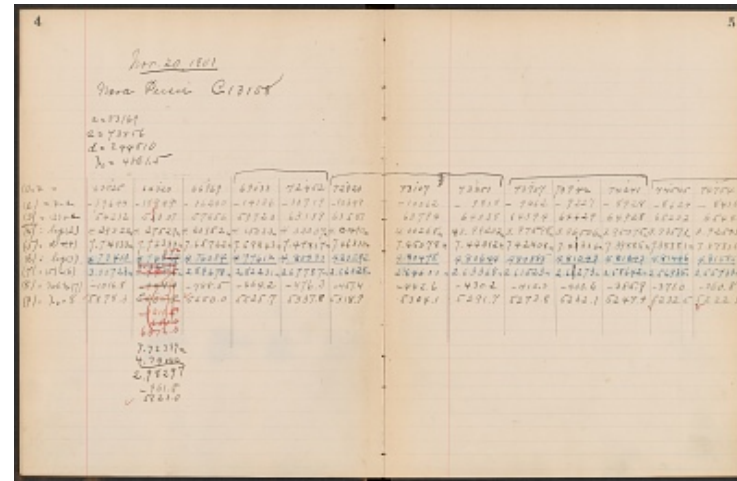
(7) = (5)-(6) | 3.00723n | ~~2.97515n~~ | 2.98297 | 2.89678n | 2.82231n | 2.67787n | 2.66028n

(8)=Nat.No.(7) | -1016.8 | ~~-944.4~~ -961.5 | -788.5 | -664.2 | -476.3 | -457.4

(9)=lambda <sub>0</sub> -8 | 5878.3 | ~~5805.9~~ 5823.0 | 5650.0 | 5525.7 | 5337.8 | 5318.9  
[[end page]]

[[new page]]

[[preprinted]] 5 [[/preprinted]]  
73107 | 73351 | 73707 | 73942 | 74241 | 74545 | 74754  
-10062 | -9818 | -9462 | -9227 | -8928 | -8624 | -8415  
63794 | 64038 | 64394 | 64629 | 64928 | 65232 | 65441  
4.00268n | ~~3.99202n~~ | 3.97598n | 3.96606n | 3.95075n | 3.93571n | 3.92505n  
7.45078n | 7.44012n | 7.42408n | 7.4 ~~3~~ | 7.37315n  
1316n | 7.39885n | 7.38381n | 7.37315n  
4.80478 | 4.80644 | 4.80885 | 4.81043 | 4.81243 | 4.81446 | 4.81585  
2.64600n | 2.63368n | 2.61523n | 2.6 ~~2~~ | 2.55730n  
0273n | 2.58642n | 2.56935n | 2.55730n  
-442.6 | -430.2 | -412.3 | -400.6 | -385.9 | -371.0 | -360.8  
5304.1 | 5291.7 | 5273.8 | 5362.1 | 5247.4 | 5232.5 | 5222.3



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(1)x|75124|75462|75938|76159|7641776586|79078|79247|79395|79608  
|79890|81331|81705  
(2)|\_8045|\_7707|\_7231|\_7010|\_6752|\_6583|\_4091|\_3922|\_3774|\_3561|  
\_3279|\_1838|\_1464  
(3)|65811|66149|66625|66846|67104|67273|69765|69934|70082|70295|  
70577|72018|72392  
(4)|3.90553n|3.88689n|3.85920n|3.84572n|3.82943n|3.81842n|3.61183  
n|3.59351n|3.57680n|3.55157n|3.51574n|3.26435n|3.16554n  
(5)|7.35363n | 7.33499n | 7.30730n | 7.29382n | 7.27753n | 7.26652n |  
7. ~~[[strikethrough]]~~ 2 ~~[[/strikethrough]]~~ 05993n | 7.04161n | 7.02490n |  
6.99967n | 6.96384n | 6.71245n | 6.61364n  
(6)| 4.81830 | 4.82052 | 4.82364 | 4.82508 | 4.82675 | 4.82784 | 4.83364  
| 4.84469 | 4.84561 | 4.84692 | 4.84866 | 4.85744 | 4.85969  
(7)| 2.53533n | 2.51447n | 2.48366n | 2.46874n | 2.45078n | 2.43864n |  
2. ~~[[strikethrough]]~~ 4 ~~[[/strikethrough]]~~ 21629n | 2.19692n | 2.17929n |  
2.15275n | 2.11518n | 1.85501n | 1.75395n  
(8)| -343.0 | -326.9 | -304.5 | -294.3 | -282.3 | -274.6 | ~~[[strikethrough]]~~ -  
260.8 ~~[[/strikethrough]]~~ -164.5 | -157.4 | -151.1 | -142.1 | -130.4 | -71.6 | -  
56.7  
9 | 5204.5 | 5188.4 | 5166.0 | 5155.8 | 5143.8 | 5136.1 | ~~[[strikethrough]]~~  
4697.0 ~~[[/strikethrough]]~~ 5026.0 | 5018.9 | 5012.6 | 5003.6 | 4991.9 |  
4933.1 | 4918.2

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| | | | H beta bright | H beta bright | H beta dark | H beta dark | H beta dark

(1) | 81962 | 82224 | 82939 | 83387 | 83638 | 83876  
(2) | -1207 | -945 | -230 | +218 | +469 | 707  
(3) | 72649 | 72911 | 73626 | 74074 | 74325 | 74563  
(4) | 3.08171n | 2.97543n | 2.36173n | 2.33846 | 2.67117 | 2.84942  
(5) | 6.52981n | 6.42353n | 5.80983n | 5.79656 | 6.11927 | 6.29752  
(6) | 4.86123 | 4.86279 | 4.86703 | 4.86967 | 4.87113 | 4.87252  
(7) | 1.66858n | 1.56074n | 0.94280n | 0.91689 | 1.24814 | 1.42500  
(8) | -46.6 | -36.4 | -8.8 | +8.3 | 17.7 | 26.6  
(9) | 4908.1 | 4897.9 | 4870.3 | 4853.2 | 4843.8 | 4834.9

[[end page]]

[[start page]]

[[preprinted]] 9 [[/preprinted]]

84511 | 84795 | 85390 | 85665 | 87502 | 87720 | 87993  
1342 | 1626 | 2221 | 2496 | 4333 | 4551 | 4824  
75198 | 75482 | 76077 | 76352 | 78189 | 78407 | 78680  
3.12775 | 3.21112 | 3.3465 | ~~4~~ | ~~5~~ |  
3.39724 | 3.63677 | 3.65811 | 3.68341  
6.57585 | 6.65922 | 6.79465 | 6.84534 | 7.08489 | 7.10621 | 7.13151  
4.87621 | 4.87784 | 4.88125 | 4.88282 | 4.89315 | 4.89435 | 4.89586  
1.69964 | 1.78138 | 1.91340 | 1.96252 | 2.19174 | 2.21186 | 2.23565  
50.1 | 60.4 | 81.9 | 91.7 | 155.5 | 162.9 | 172.0  
4811.4 | 4801.1 | 4779.6 | 4769.8 | 4706.0 | 4698.6 | 4689.5

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(1)|88308|88659|88839|89227|89630|89904|90114|90457|90902|91149|  
91425|92647|94588  
(2)|5139|5490|5670|6058|6461|6735|6945|7288|7733|7980|8256|9478|1  
1419  
(3)|78995|79346|79526|79914|80317|80591|80801|81144|81589|81836|  
82112|83334|85275  
(4)|3.71088|3.73957|3.75358|3.78233|3.81030|3.82834|3.84167|3.8626  
1|3.88835|3.90200|3.91677|3.97672|4.05763  
(5)|7.15898|7.18767|7.20168|7.23043|7.25840|7.27644|7.28977|7.3107  
1|7.33645|7.35010|7.364877.42482  
(6)|4.89760|4.89952|4.90057|4.90262|4.90481|4.90629|4.90742|4.9092  
6|4.91163|4.91294|4.91441|4.92082|4.93082  
(7)|2.26138|2.28815|2.30117|2.32781|2.35359|2.37015|2.38235|2.4014  
5|2.42482|2.43716|2.45046|2.50400|2.57491  
(8)|182.5|194.2|200.1|212.7|225.7|234.5|241.2|252.0|266.0|  
273.6|282.1|319.2|375.8  
(9)|4679.8|4667.3|4661.4|4648.8|4635.8|4627.0|4620.3|  
4609.3|4595.5|4587.9|4579.4|4542.3|4485.7

The image shows a photograph of an open manuscript. The left page is numbered '10' and the right page is numbered '11'. Both pages contain handwritten data in cursive script, organized into columns and rows. Some numbers are underlined. The manuscript is bound in the center, and the pages are slightly aged and discolored.

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| | Br. Space | "25" | "25" | "25" | | "26" | "26" | "26" | | | | |  
(1)|94835|95084|95445|95848|96059|96262|96527|96911|97155|97331|  
97543|97766|97977

(2)|11666|11915|12276|12679|12890|13093|13358|13742|13986|14162|  
14374|14597|14808

(3)|85522|85771|86132|86535|86746|86949|87214|87598|87842|88018|  
88230|88453|88664

(4)|4.06692|4.07609|4.08906|4.10308|4.11025|4.11704|4.12574|4.1380  
5|4.14569|4.15112|4.15758|4.16426|4.17050

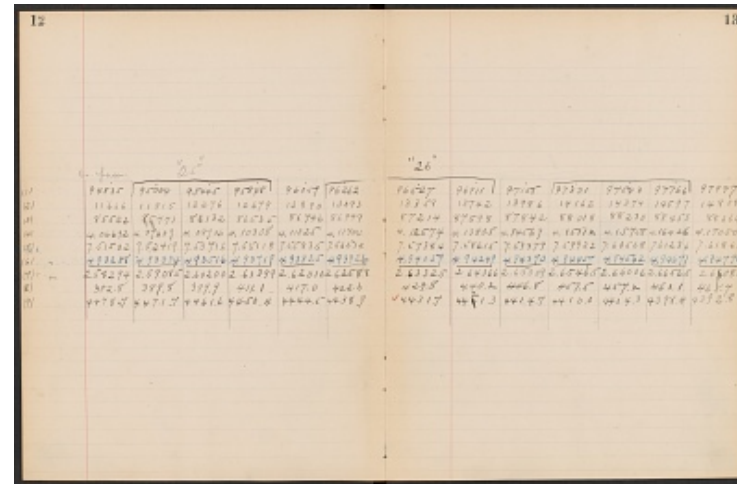
(5)|7.51502|7.52419|7.53716|7.55118|7.55835|7.56514|7.57384|7.5861  
5|7.59379|7.59922|7.60568|7.61236|7.61860

(6)| 4.93208 | 4.93334 | 4.93334 | 4.93516 | 4.93719 | 4.93825 | 4.93825  
| 4.93926 | 4.94059 | 4.94249 | 4.94370 | 4.94457 | 4.94562 | 4.94671 |  
4.94775

(7) | 2.58294 | 2.59085 | 2.60200 | 2.61399 | 2.6 2010 | 2.62588 |  
2.63325 | 2.64366 | 2.65009 | 2.65465 | 2.66006 | 2.66565 | 2.6  
[[~~strikethrough~~]] 6 [[~~strikethrough~~]] 7085

(8) | 382.8 | 389.8 | 399.9 | 411.1 | 417.0 | 422.6 | 429.8 | 440.2 | 446.8 |  
457.5 | 457.2 | 463.1 | 468.7

(9) | 4478.7 | 4471.7 | 4461.6 | 4450.4 | 4444.5 | 4438.9 | 4431.7 | 44  
[[~~strikethrough~~]] 4 [[~~strikethrough~~]] 21.3 | 4414.7 | 4410.0 | 4404.3 |  
4398.4 | 4392.8



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| | | H gamma bright | H gamma bright H gamma dark | H gamma  
dark | H gamma dark | | | | |  
(1) | 98129 | 98861 | 99594 | 100386 | 100693 | 101030 | 101516 |  
101976 | 102155 | 102784 | 102943 | 104175 | 105252  
(2) | 14960 | 15692 | 16425 | 17217 | 17524 | 17861 | 18347 | 18807 |  
18986 | 19615 | 19774 | 21006 | 22083  
(3) | 88816 | 89548 | 90281 | 91073 | 91380 | 91717 | 92203 | 92663 |  
92842 | 93471 | 93630 | 94862 | 95939  
(4) | 4.17493 | 4. ~~20309~~ 19568 }  
4.21551 | 4.23596 | 4.24363 | 4.25191 | 4.26357 | 4.27432 | 4.27843 |  
4.29259 | 4.29609 | 4.32234 | 4.34406  
(5) | 7.62303 | ~~7.65117~~ 7.64378 |  
7.66361 | 7.68406 | 7.69173 | 7.70001 | 7.71167 | 7.72242 | 7.72653 |  
7.74069 | 7.74419 | 7.77044 | 7.79218  
(6) | 4.94849 | ~~4.95206~~ 4.95206 |  
4.95560 | 4.95939 | 4.96085 | 4.96245 | 4.96475 | 4.96691 | 4.96774 |  
4.97068 | 4.97142 | 4.97709 | 4.98200  
(7) | 2.67454 | ~~2.69913~~ 2.69172 |  
2.70801 | 2.7 ~~2467~~ 2.73088 |  
2.73756 | 2.74692 | 2.75551 | 2.75879 | 2.77001 | 2.77277 | 2.79335 |  
2.81016  
(8) | 472.7 | ~~500.2~~ 491.7 | 510.5 | 5  
~~42.8~~ 30.5 | 538.1 | 546.5 | 558.4 | 569.5  
| 573.8 | 5 ~~88.9~~ 592.6 | 621.4 | 645.9  
(9) | 4388.8 | ~~4361.3~~ 4369.8 | 4351.0 |  
4 ~~331.0~~ 4323.4 | 4315.0 | 4303.1 |  
4292.0 | 4287.7 | 42 ~~72.6~~ 4268.9 |  
4240.1 | 4215.6

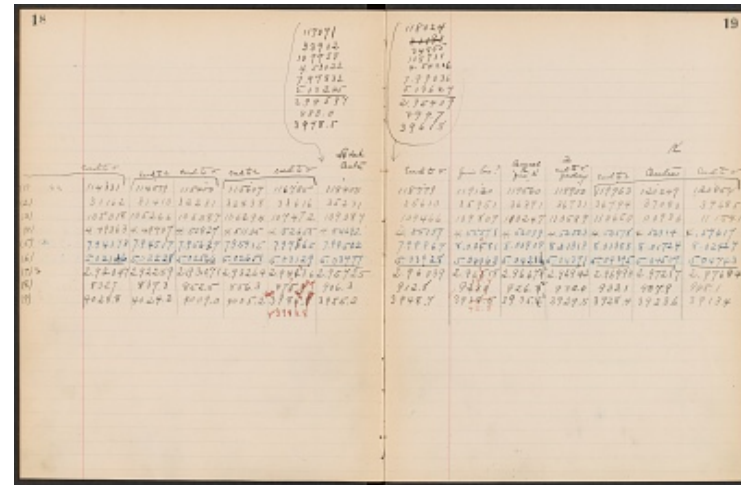
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| | | Br. 3 | | | Br. 1  
] | | Br. H delta | Br. H delta | Br. H delta dark H delta | dark  
 H delta | dark H delta | Br. 2 ] ^[[see p. 2 for  
 line "39"] end to 2  
 (1)|106455|107004|107485|108915|109234|109622|110339|110652|110  
 968|111346|111694|111956|113442  
 (2)|23286|23835|24316|25746|26065|26453|27170|27483|27799|28177|  
 28525|28787|30273  
 (3)|97142|97691|98172|99602|99921|100309|101026|101339|101655|10  
 2033|102381|102643|104129  
 (4)|4.36709|4.37722|4.38589|4.41071|4.41606|4.42247|4.43409|4.4390  
 6|4.44403 | 4.44989 | 4.45920 | 4.48106  
 (5) | 7.81519 | 7.82532 | 7.83399 | 7.85881 | 7.86416 | 7.87051 |  
 7.88219 | 7.88213 | 7.89799 | 7.90333 | 7.90730 | 7.92916  
 (6) | 4.98741 | 4.98985 | 4.99799 | 4.99827 | 4.99966 | 5.00134 |  
 5.00443 | 5.00577 | 5.00874 | 5.01022 | 5.01133 | 5.01757  
 (7) | 2.82778 | 2.83547 | 2.84200 | 2.86054 | 2.86450 | 2.86923 |  
 2.87776 | 2.88139 | 2.88501 | 2.88925 | 2.89311 | 2.89597 | 2.91159  
 (8) | 672.6 | 684.7 | 695.0 | 725.3 | 732.0 | 740.0 | 754.7 | 761.0 | 767.4 |  
 774.9 | 781.8 | 787.0 | 815.8  
 (9) | 4188.9 | 4176.8 | 4166.5 | 4136.2 | 4129.5 | 4121.5 | 4106.8 |  
 4100.5 | 4094.1 | 4086.6 | 4079.7 | 4074.5 | 4045.7

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| end to v | end to r | end to v | end to r | end to v | | H eta dark centre  
| end to v | fine line? | Reversal K "fine" K | 3 end to v fading | end to v  
K centre | end to v  
(1) | 114331 | 114579 | 115400 | 115607 | 116785 | 117071 | 118400 |  
118024 | 118779 | 119120 | 119560 | 119900 | 119963 | 120249 |  
120854  
(2) 31162 | 31410 | 32231 | 32438 | 33616 | 33902 | 35231 | 34855 |  
35610 | 35951 | 36391 | 36731 | 36794 | 37080 | 37685  
(3) | 105018 | 105266 | 106087 | 106294 | 107472 | 107758 | 109087 |  
108711 | 109466 | 109807 | 110247 | 110587 | 110650 | 110936 |  
111541  
(4) | 4.49363 | 4.49707 | 4.50827 | 4.51105 | 4.52655 | 4.53022 |  
4.54692 | 4.54226 | 4.55157 | 4.55571 | 4.56099 | 4.56503 | 4.56578 |  
4.56914 | 4.57617  
(5) | 7.94173 | 7.94517 | 7.95637 | 7.95915 | 7.97 ~~[[/strickethrough]]~~ 3  
~~[[/strickethrough]]~~ 465 | 7.97832 | 7.99502 | 7.99036 | 7.99967 | 8.00  
~~[[/strickethrough]]~~ 5 ~~[[/strickethrough]]~~ 381 | 8.00909 | 8.01313 | 8.01388 |  
8.01724 | 8.02427  
(6) | 5.02126 | 5.02228 | 5.02566 | 5.02651 | 5.03129 | 5.03245 |  
5.03777 | 5.03627 | 5.03928 | 5.04063 | 5.0423 ~~[[/strickethrough]]~~ 6  
~~[[/strickethrough]]~~ 75 | 5.04371 | 5.04395 | 5.04507 | 5.04743  
(7) | 2.92047 | 2.92289 | 2.93071 | 2.93264 | 2.94 ~~[[/strickethrough]]~~ 2  
~~[[/strickethrough]]~~ 336 | 2.94597 | 2.95725 | 2.95409 | 2.96039 | 2.96  
~~[[/strickethrough]]~~ 5 ~~[[/strickethrough]]~~ 318 | 2.9667 ~~[[/strickethrough]]~~ 3  
~~[[/strickethrough]]~~ 2 | 2.96942 | 2.96993 | 2.97217 | 2.97684  
(8) | 832.7 | 837.3 | 852.5 | 856.3 | 87 ~~[[/strickethrough]]~~ 5.1  
~~[[/strickethrough]]~~ 7.7 | 883.0 | 906.3 | 899.7 | 912.8 | 9 ~~[[/strickethrough]]~~  
23.0 ~~[[/strickethrough]]~~ 18.7 | 926. ~~[[/strickethrough]]~~ 3 ~~[[/strickethrough]]~~ 2 |  
932.0 | 933.1 | 937.9 | 948.1  
(9) | 4028.8 | 4024.2 | 4009.0 | 4005.2 | 398 ~~[[/strickethrough]]~~ 5.8  
~~[[/strickethrough]]~~ 3.8 | 3978.5 | 3955.2 | 3961.8 | 3948.7 | 39  
~~[[/strickethrough]]~~ 38.5 ~~[[/strickethrough]]~~ 42.8 | 3935. ~~[[/strickethrough]]~~ 2  
~~[[/strickethrough]]~~ 3 | 3929.5 | 3928.4 | 3923.6 | 3913.4



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 20 & 21 [[/preprinted]]

| Br. 2 | H zeta end to r fading | H zeta end to r | H zeta centre | H zeta  
end to v | Br. 2 | ^[[see p. 2 for reduction of line "50"]] Br. 1 H eta br. | H  
eta dark | H eta dark | H eta dark | H theta | H theta | H theta

(1) | 121216 | 121665 | 122700 | 123134 | 123509 | 123972 | 125577 |  
125928 | 126564 | 127282 | 128195 | 128874 | 129619  
(2) | 38047 | 38496 | 39531 | 39965 | 40340 | 40803 | 42408 | 42759 |  
43395 | 44113 | 45026 | 45705 | 46450  
(3) | 111903 | 112352 | 113387 | 113821 | 114196 | 114659 | 116264 |  
116615 | 117251 | 117969 | 118882 | 119561 | 120306  
(4) | 4.58032 | 4.58542 | 4.59694 | 4.60168 | 4.60574 | 4.61069 |  
4.62745 | 4.63103 | 4.63744 | 4.64457 | 4.65346 | 4.65996 | 4.66699  
(5) | 8.02842 | 8.03352 | 8.04504 | 8.04978 | 8.05384 | 8.05879 |  
8.07555 | 8.07913 | 8.08554 | 8.09267 | 8.10156 | 8.10806 | 8.11509  
(6) | 5.04884 | 5.05058 | 5.05456 | 5.05622 | 5.0765 | 5.05941 | 5.06545  
| 5.06675 | 5.06911 | 5.07177 | 5.07512 | 5.07759 | 5.08029  
(7) | 2.97958 | 2.98294 | 2.99048 | 2.99356 | 2.99619 | 2.99938 |  
3.01010 | 3.01238 | 3.01643 | 3.02090 | 3.02644 | 3.03047 | 3.03480  
(8) | 954.1 | 961.5 | 978.3 | 985.3 | 991.3 | 998.6 | 1023. [[/strikethrough]]  
3 [[/strikethrough]] 5 | 1028.9 | 1038.6 | 1049.3 | 1062.8 | 1072.7 | 1083.4  
(9) | 3907.4 | 3900.0 | 3883.2 | 3876.2 | 3870.2 | 3862.9 | 3838.  
[[/strikethrough]] 2 [[/strikethrough]] 0 | 3832.6 | 3822.9 | 3812.2 | 3798.7 |  
3788.8 | 3778.1

20

21

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 22 [[/preprinted]]

| | H zeta end to r? | H zeta centre?

- (1) | 130663 | 131560
- (2) | 47494 | 48391
- (3) | 121350 | 122247
- (4) | 4.67664 | 4.68476
- (5) | 8.12474 | 8.13286
- (6) | 5.08404 | 5.08724
- (7) | 4.04070 | 3.04562
- (8) | 1098.2 | 1110.8
- (9) | 3763.3 | 3750.7

[[end page]]

[[new page]]

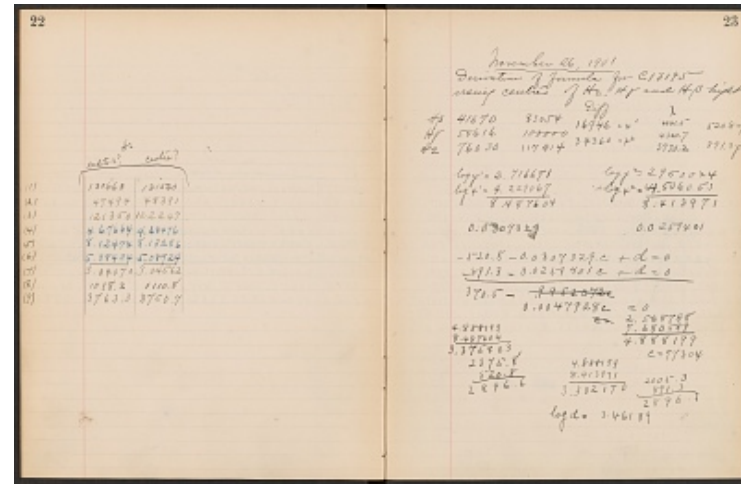
[[preprinted]] 23 [[/preprinted]]

[[underline]] November 26, 1901 [[/underline]]

Derivation of formula for C 13195 using centres of H epsilon, H gamma and H beta bright

| | | Diff | lambda | |  
H beta | 41670 | 83054 | | 4861.5 | |  
| | | 16946 = x <sup>1</sup> | | 520.8 = y  
<sup>1</sup>  
H gamma | 58616 | 100000 | | 4340.7 | |  
| | | 34360 = x <sup>2</sup> | | 891.3 y =  
<sup>2</sup>  
H epsilon | 76030 | 117414 | | 3970.2 | |

[[formula]]



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November 26, 1901

Nora Persei C13195

a=83054  
c=77304  
logd=3.46189  
lambda[[subscript]]0[[subscript]]=4861.5

comet=41384  
Orig measure  
[[strikethrough]]22262[[strikethrough]]24492|24677|24858|25258|26235  
|26611|26774|26873|26985|27127|27327|  
(1)(x)|[[strikethrough]]63646[[strikethrough]]65876|66061|66242|66642|  
67619|67995|68158|68257|68369|68511|68711|  
(2)=x-a[[strikethrough]]-[[strikethrough]]20592[[/strikethrough]]-  
19[[strikethrough]]2822[[/strikethrough]]17178|-16993|-16812|-16412|-  
15435|-15059|-14896|-14797|-14685|-14543|-14343|  
(3)=(2)+c[[strikethrough]]56896[[strikethrough]]60126|60311|60492|608  
92|61869|62245|62408|62507|62619|62761|62961|  
(4)=log(2)|[[strikethrough]]4.30980n[[strikethrough]]4.23497n|4.23027n|  
4.22562n|4.21516n|4.18851n|4.17780n|4.17307n|4.17017n|4.16687n|4.  
16265n|4.15664n|  
(5)=a+(x)  
[[strikethrough]]7.77169n[[strikethrough]]7.69686n|7.69216n|7.68751n|  
7.67705n|7.65040n|7.63969n|7.63496n|7.63206n|7.62876n|7.62454n|7.  
61853n|  
6=log(3)|[[strikethrough]]4.75508[[/strikethrough]]4.7508[[/strikethrough]]  
4.74906[[/strikethrough]]4.78040[[/strikethrough]]4.78170[[/strikethrough]]4.78456[[/strikethrough]]  
4.79147[[/strikethrough]]4.79410[[/strikethrough]]4.79524[[/strikethrough]]4.79593[[/strikethrough]]  
4.79671[[/strikethrough]]4.79697[[/strikethrough]]4.79907[[/strikethrough]]  
(7)=(5)-(6)|  
[[strikethrough]]3.01661n[[strikethrough]]2.91780n|2.91176n|2.90581n|  
2.89249n|2.85893n|2.84559n|2.83972n|2.83613n|2.83205n|2.82685n|2.  
81946n|  
(8)=Nat.No.(7)|[[strikethrough]]-1039.0[[strikethrough]]-827.6|-816.1|-  
805.0|-780.7|-722.7|-700.8|-691.4|-685.7|-679.3|-671.2|-659.9|  
(9)=lambda[[subscript]]0[[subscript]]-  
8|[[strikethrough]]5900.5[[strikethrough]]5689.1|5677.6|5666.5|5642.2|5  
584.2|5562.3|5552.9|5547.2|5540.8|5532.7|5521.4|

63646  
-19408 ^[[5691.4^[[+2.3]]5679.9^[[+2.3]]5668.8^[[+2.3]]]]  
57896  
4.28798  
7.74987  
[[underlined]]4.76265[[underlined]]  
2.98722

[[strikethrough]]771.3[[strikethrough]]  
-971.0 ^[[5837.8]]  
[[symbol-tick]]5832.5 ^[[+5.3]]

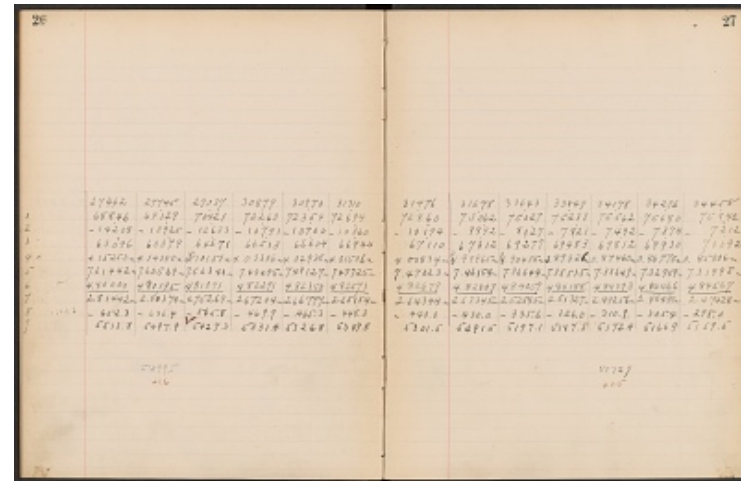
~~62841~~62841  
~~-~~  
<sup>2</sup>~~2~~~~0213~~-20213  
<sup>5342.5</sup>~~5342.5~~~~2.3~~~~1.7~~  
~~67091~~67091  
~~4.00916n~~4.00916n  
~~7.47105n~~7.47105n  
~~4.82667~~4.82667~~4.75657~~4.75657  
~~2.64438n~~2.64438n  
~~-440.9~~440.9  
~~1625.5~~1625.5  
~~5887.0~~5887.0

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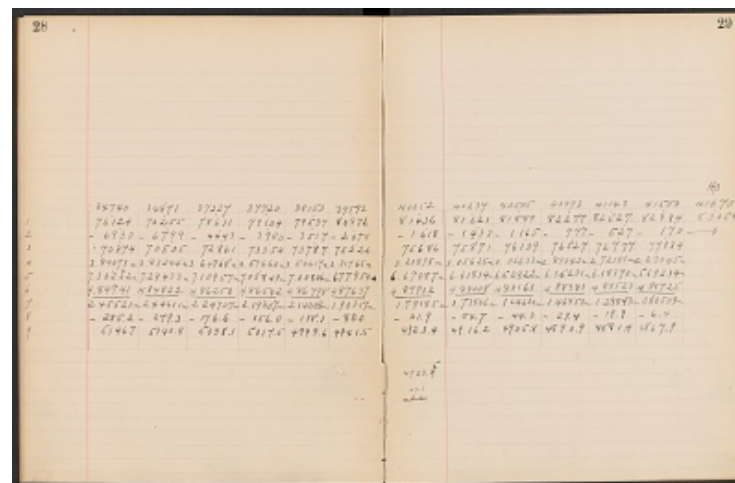
[[preprinted]] 26 & 27 [[/preprinted]]  
 | 27462 | 27745 | 29037 | 30879 | 30970 | 31310 | 31476 | 31678 |  
 33643 | 33849 | 34178 | 34296 | 34458  
 1 | 68846 | 69129 | 70421 | 72263 | 72354 | 72694 | 72860 | 73062 |  
 75027 | 75233 | 75562 | 75680 | 75842  
 2 | -14208 | -13925 | -12633 | -10700 | -10360 | -10194 | -9992 | -8027 | -  
 7821 | -7492 | -7374 | -7212  
 3 | 63096 | 63379 | 64671 | 66513 | 66513 | 66604 | 66944 | 67110 |  
 67312 | 69277 | 69483 | 69812 | 69930 | 70092  
 4 | 4.15253n | 4.14380n | 4.10151n | 4.03306n | 4.02938n | 4.01536n |  
 4.00834n | ~~4~~ ~~4~~ 3.99965n |  
~~3.86770n~~ | 3.85806n  
 5 | 7.61442n | 7.60569n | 7.56340n | 7.49495n | 7.49127n | 7.47425n |  
 7.47023n | 7.46154n | 7.36644n | 7.35515n | 7.33649n | 7.32959n |  
 7.31995n  
 6 | 4.80000 | 4.80195 | 4.81071 | 4.82291 | 4.82350 | 4.82571 | 4.82679 |  
 4.82809 | 4.84059 | 4.84188 | 4.84393 | 4.84466 | 4.84567  
 7 | 2.81442n | 2.80374n | 2.75269n | 2.67204n | 2.66777n | 2.65154n |  
 2.64344n | 2.63345n | 2.52585n | 2.51327n | 2.49256n | 2.48493n |  
 2.47428n  
 8 | -652.3 | -636.4 | -565.8 | -469.9 | -465.3 | -448.3 | -440.0 | -430.0 | -  
 335.6 | -326.0 | -310.9 | -305.4 | -298.0  
 9 | 5513.8 | 5487.9 | 5427.3 | 5331.4 | 5326.8 | 5309.8 | 5301.5 | 5291.5 |  
 5197.1 | 5187.5 | 5172.4 | 5166.9 | 5159.5

| | 5499.5 | | | | | 5112.9 | | |  
 | | +1.6 | | | | | +0.5 | | |



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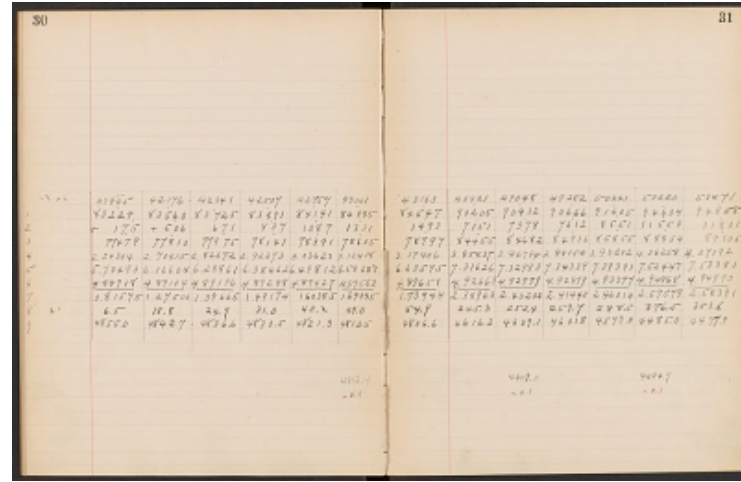
| 34740 | 34871 | 37227 | 37720 | 38153 | 39592 | 40052 | 40237 |  
 40505 | 40893 | 41143 | 41500 | 41670 |  
 1 | 76124 | 76255 | 78611 | 79104 | 79537 | 80876 | 81436 | 81621 |  
 81889 | 82277 | 82527 | 82884 | 83054 |  
 2 | -6930 | -6799 | -4443 | -3950 | -3517 | -2078 | -1618 | -1433 | -1165 | -  
 777 | -527 | -170 | ~~[[strikethrough]]~~ 0 ~~[[strikethrough]]~~ |  
 3 | 70374 | 70505 | 72861 | 73354 | 73787 | 75226 | 75686 | 75871 |  
 76139 | 76527 | 76777 | 77134 | |  
 4 | 3.84073n | 3.83244n | 3.64768n | 3.59660n | 3.54617n | 3.31765n |  
 3.20898n | 3.15625n | 3.06633n | 2.89042n | 2.72181n | 2.23045n |  
 5 | 7.30262n | 7.29433n | 7.10957n | 7.05849n | 7.00806n | 6.77954n |  
 6.67087n | 6.61814n | 6.52822n | 6.35231n | 6.18370n | 5.69234n | |  
 6 | 4.84741 | 4.84822 | 4.86250 | 4.86542 | 4.86798 | 4.87637 | 4.87902 |  
 4.88008 | 4.88161 | 4.88381 | 4.88523 | 4.88725 | |  
 7 | 2.45521n | 2.44611n | 2.24707n | 2.19307n | 2.14008n | 1.90317n |  
 1.79185n | 1.73806n | 1.64661n | 1.46850n | 1.29847n | 0.080509n |  
 8 | -285.2 | -279.3 | -176.6 | -156.0 | -138.1 | -80.0 | -61.9 | -54.7 | -44.3 |  
 -29.4 | -19.9 | -6.4 | |  
 9 | 5146.7 | 5140.8 | 5038.1 | 5017.5 | 4999.6 | 4941.5 | 4923.4 | 4916.2 |  
 4905.8 | 4890.9 | 48814.4 | 4867.9 | |



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| 47845 | 42176 | 42341 | 42507 | 42757 | 43001 | 43163 | 48821 |  
49048 | 49282 | 50221 | 53220 | 53471  
1 | 83229 | 83560 | 83725 | 83891 | 84141 | 84385 | 84547 | 90205 |  
90432 | 90666 | 91605 | 94604 | 94855  
2 | +175 | +506 | 671 | 837 | 1087 | 1331 | 1493 | 7151 | 7378 | 7612 |  
8551 | 11550 | 11801  
3 | 77479 | 77810 | 77975 | 78141 | 78391 | 78635 | 78797 | 84455 |  
84682 | 84916 | 85855 | 88854 | 89105  
4 | 2.24304 | 2.700415 | 2.82672 | 2.92273 | 3.03623 | 3.12418 | 3.17406 |  
3.85437 | 3.86794 | 3.88150 | 3.93202 | 4.06258 | 4.07192  
5 | 5.70493 | 6.16604 | 6.28861 | 6.38462 | 6.49812 | 6.58607 | 6.63595 |  
7.31626 | 7.32983 | 7.34339 | 7.39391 | 7.52447 | 7.53381  
6 | 4.88918 | 4.89104 | 4.89196 | 4.89288 | 4.89427 | 4.89562 | 4.89651 |  
4.92663 | 4.92779 | 4.92899 | 4.93377 | 4.94868 | 4.94990  
7 | 0.81575 | 1.27500 | 1.39665 | 1.49174 | 1.60385 | 1.69045 | 1.73944 |  
2.38963 | 2.40204 | 2.41440 | 2.46014 | 2.57579 | 2.58391  
8 | 6.5 | 18.8 | 24.9 | 31.0 | 40.2 | 49.0 | 54.9 | 245.3 | 252.3 | 252.4 |  
259.7 | 288.5 | 376.5 | 383.6 |  
9 | 4855.0 | 4842.7 | 4836.6 | 4830.5 | 4821.3 | 4812.5 | 4806.6 | 4616.2 |  
4609.1 | 4601.8 | 4573.0 | 4485.0 | 4477.9  
| | | | | 4812.4 | | | 4609.0 | | | 4484.9 | |  
| | | | | -0.1 | | | -0.1 | | | -0.1 | |

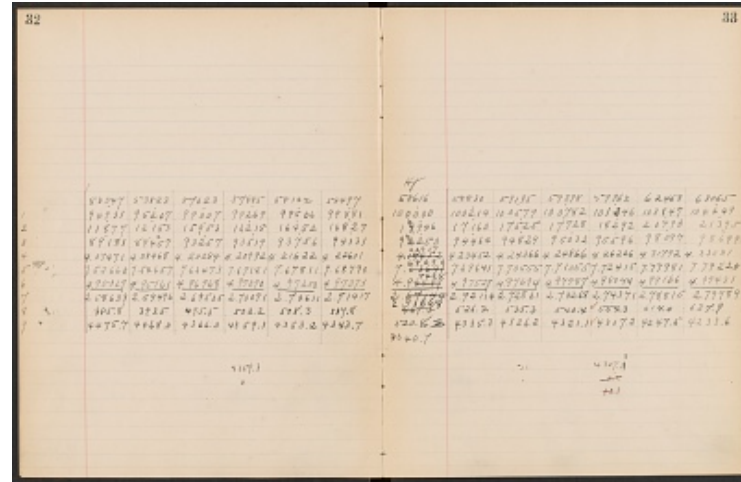


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[[preprinted]] 32 & 33 [[/preprinted]]  
| | | | | | H gamma | | | | |

| | 53547 | 53823 | 57623 | 57885 | 58122 | 58497 | 58616 | 58830 | 59195 |  
59398 | 59962 | 62463 | 63065  
1 | 94931 | 95207 | 99007 | 99269 | 99506 | 99881 | 100000 | 100214 |  
100579 | 100782 | 101346 | 103847 | 104449 |  
2 | 11877 | 12153 | 15953 | 16215 | 16452 | 16827 |  
1 | ~~7~~ | ~~6946~~ | 17160 | 17525 | 17728 | 18292 |  
20793 | 21395 |  
3 | 89181 | 89457 | 93257 | 93519 | 93756 | 94131 |  
9 | ~~2~~ | ~~4250~~ | 94464 | 94829 | 95032 | 95596 |  
98097 | 98699 |  
4 | 4.07471 | 4.08468 | 4.20284 | 4.20992 | 4.21622 |  
4.22601 | 4. ~~17452~~ | ~~22907~~ | 4.23452 |  
4.24366 | 4.24866 | 4.26226 | 4.31792 | 4.33031 |  
5 | 7.53660 | 7.54657 | 7.66473 | 7.67181 | 7.67811 | 7.68790 |  
7. ~~63641~~ | ~~69096~~ | 7.69641 | 7.70555 |  
7.71055 | 7.72415 | 7.77981 | 7.79220 |  
6  
| 4.95027 | 4.95161 | 4.96968 | 4.97090 | 4.97200 | 4.97373 | 4.97527 | 4.97694 | 4.97787 | 4.98044 | 4.99431 |  
7 | 2.58633 | 2.59496 | 2.69505 | 2.70091 | 2.70611 | 2.71417 |  
2. ~~67144~~ | ~~71668~~ | 2.72114 | 2.72861 |  
2.73268 | 2.74371 | 2.78815 | 2.79789  
8  
| 385.8 | 393.5 | 495.5 | 502.2 | 508.3 | 517.8 | ~~469.3~~ | ~~526.2~~ | 535.3 | 540.4 | 554.3 | 614.0 | 627.9 |  
9 | 4475.7 | 4468.0 | 4366.0 | 4359.3 | 4353.2 | 4343.7 | 4340.7 |  
520.8 | ~~2~~ | ~~4335.3~~ | 4326.2 |  
4321.1 | 4307.2 | 4247.5 | 4233.6 |  
4340.7

0  
4307. ~~0~~ | ~~0.2~~  
+0.1  
58616 | 58830 | 59195 | 59398 | 59962 | 62463

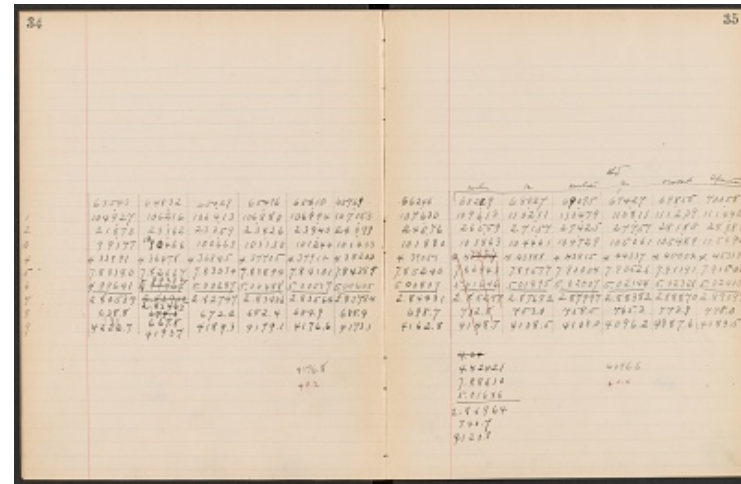


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[[preprinted]] 34 & 35 [[/preprinted]]

| | | | | | | red | r | H delta centre | r | violet | separation

| 63543 | 64832 | 65029 | 65496 | 65610 | 65669 | 66246 | 68229 | 68827 |  
69095 | 69427 | 69855 | 70058  
1 | 104927 | 106216 | 106413 | 106880 | 106994 | 107153 | 107630 |  
109613 | 110211 | 110479 | 110811 | 111239 | 111442  
2 | 21873 | 23162 | 23359 | 23826 | 23940 | 24099 | 24576 | 26559 |  
27157 | 27425 | 27757 | 28185 | 28388  
3 | 99177 | ~~9~~ 100466 | 100663 | 101130  
| 101244 | 101403 | 101880 | 103863 | 104461 | 104729 | 105061 |  
105489 | 105692  
4 | 4.33991 | 4.36478 | 4.36845 | 4.37705 | 4.37912 | 4.38200 | 4.39051 |  
~~4.40754~~ ~~4.42421~~ | 4.43388 | 4.43815 |  
4.44337 | 4.45002 | 4.45313  
5 | 7.80180 | 7.82667 | 7.83034 | 7.83894 | 7.84101 | 7.84389 | 7.85240 |  
~~7.86943~~ ~~7.88610~~ | 7.89577 | 7.90004 |  
7.90526 | 7.91191 | 7.91502  
6 | 4.99641 | ~~4.99767~~ 5.00202 |  
5.00287 | 5.00488 | 5.00537 | 5.00605 | 5.00809 | ~~5.01646~~  
5.01646 ~~5.01895~~ | 5.02007 | 5.02144 |  
5.02321 | 5.02405  
7 | 2.80539 | ~~2.82900~~ 2.82465 |  
2.82747 | 2.83406 | 2.83564 | 2.83784 | 2.84431 | ~~2.85297~~  
2.85297 ~~2.86964~~ | 2.87682 | 2.87997 | 2.88382 |  
2.88870 | 2.89097  
8 | 638.8 | ~~674.5~~ 667.8 | 672.2 | 682.4 |  
684.9 | 688.4 | 698.7 | ~~712.8~~ 740.7 |  
753.0 | 758.5 | 765.3 | 773.9 | 778.0  
9 | 4222.7 | 4193.7 | 4189.3 | 4179.1 | 4176.6 | 4173.1 | 4162.8 |  
~~4148.7~~ 4120.8 | 4108.5 | 4103.0 |  
4096.2 | 4087.6 | 4083.5



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H delta | | | | | | | | | | H epsilon br. | | |  
centre dark | violet dark | | | | | | | | | | centre | Reversal H zeta | R | |  
70109 | 70372 | 71221 | 71524 | 71868 | 74837 | 75075 | 75660 |  
75931 | 76030 | 76454 | 76736  
1 | 111493 | 111756 | 112605 | 112908 | 113252 | 116221 | 116459 |  
117044 | 117315 | 117414 | 117542 | 117838 | 118120  
2 | 28439 | 28702 | 29551 | 29854 | 30198 | 33167 | 33405 | 33990 |  
34261 | 34360 | 34488 | 34784 | 35066  
3 | 105743 | 106006 | 106855 | 107158 | 107502 | 110471 |  
1107~~[[strikethrough]]~~5~~[[strikethrough]]~~09 | 111294 | 111565 | 111664 |  
111792 | 112088 | 112370  
4 | 4.45391 | 4.45791 | 4.47057 | 4.47500 | 4.47998 | 4.52071 | 4.52381 |  
4.53135 | 4.53480 | 4.5605 | 4.53767 | 4.54138 | 4.54489  
5 | 7.91580 | 7.91980 | 7.93246 | 7.93689 | 7.94187 | 7.98260 | 7.98570 |  
7.99324 | 7.99669 | 7.99794 | 7.99956 | 8.00327 | 8.00678  
6 | 5.02425 | 5.02533 |  
5.02879 | 5.03002 |  
5.03142 | 5.04324 |  
5.04418 | 5.04648 |  
5.04753 | 5.04792 |  
5.04841 | 5.04956 |  
5.05065 |  
7 | 2.89155 | 2.89447 | 2.90369 | 2.90687 | 2.91045 | 2.93936 | 2.94152 |  
2.94676 | 2.94916 | 2.95002 | 2.95115 | 2.95371 | 2.95613  
8 | 779.0 | 784.3 | 801.1 | 807.0 | 813.7 | 869.7 | 874.0 | 884.6 | 889.5 |  
891.3 | 893.6 | 898.9 | 903.9  
9 | 4082.5 | 4077.2 | 4060.4 | 4054.5 | 4047.8 | 3991.8 | 3987.5 | 3976.9 |  
3972.0 | 3970.2 | 3967.9 | 3962.6 | 3957.6  
  
| 4082.9 | | | 4055.0 | | | 3977.6 | | | 3968.6 | | |  
| + 0.4 | | | + 0.5 | | | + 0.7 | | | + 0.7 | | |

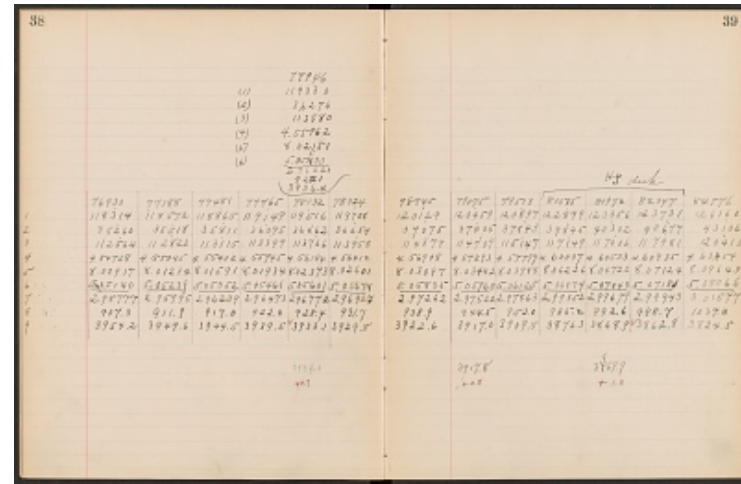
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[[preprinted]] 38 & 39 [[/preprinted]]

77946  
(1) | 119330  
(2) | 36276  
(3) | 113580  
(4) | 4.55962  
(5) | 8.02151  
(6) | 5.05~~4~~530  
2.96621  
925.1  
3936.4

| 76930 | 77188 | 77481 | 77765 | 78132 | 78324 | 78745 | 79075 |  
79513 | 81575 | 8197 | 82347 | 84776  
1 | 118314 | 118572 | 118865 | 119149 | 119516 | 119708 | 120129 |  
120459 | 120897 | 122899 | 123356 | 123731 | 126160  
2 | 35260 | 35518 | 35811 | 36095 | 36462 | 36654 | 37075 | 37405 |  
37843 | 39845 | 40302 | 40677 | 43106  
3 | 112564 | 112822 | 113115 | 113399 | 113766 | 113958 | 114379 |  
114709 | 115147 | 117149 | 117981 | 120410  
4 | 4.54728 | 4.55045 | 4.55402 | 4.55745 | 4.56184 | 4.56412 | 4.56908 |  
4.57293 | 4.57799 | 4.60037 | 4.60533 | 4.60935 | 4.63454  
5 | 8.00917 | 8.01234 | 8.01591 | 8.01934 | 8.02373 | 8.02601 | 8.03097 |  
8.03482 | 8.03988 | 8.06226 | 8.06722 | 8.07124 | 8.09643  
6 | 5.05140  
5.05239 | 5.05352  
5.05461 | 5.05601  
5.05674 | 5.05835  
5.05960  
5.06125 | 5.06874  
5.07043  
5.07181 | 5.08066  
7 | 2.95777 | 2.95995 | 2.96239 | 2.96473 | 2.96772 | 2.96927 | 2.97262 |  
2.97522 | 2.97863 | 2.99352 | 2.99679 | 2.99943 | 3.01577  
8 | 907.3 | 911.9 | 917.0 | 922.0 | 928.4 | 931.7 | 938.9 | 944.5 | 952.0 |  
985.2 | 992.6 | 998.7 | 1037.0  
9 | 3954.2 | 3949.6 | 3944.5 | 3939.5 | 3933.1 | 3929.8 | 3922.6 | 3917.0 |  
3909.5 | 3876.3 | 3868.9 | 3862.8 | 3824.5

||| 3934.0 ||| 3917.8 ||| 3~~9~~869.9 ||  
||| + 0.9 ||| + 0.8 ||| + 1.0 |||



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 42 [[/preprinted]]  
Dec. 8, 1902 C 10158

[[strikethrough]]

a = 83169

c = 73471

d = 3.44626

lambda [[subscript]] 0 [[/subscript]] = 4861.5

Rev H epsilon | "50" centre | rev. K | "39" |

117582 | 124834 | 119560 | 112228 | 125141

34413 | 41665 | 36391 | 29059 | 41972

107884 | 115136 | 109862 | 102530 | 115443

7.98298 | 8.06603 | 8.00725 | 7.90954 | 8.06922

5.03296 | 5.06121 | 5.04085 | 5.01085 | 5.06237

2.95002 | 3.00482 | 3.96640 | 2.89869 | 3.00685

891.3 | 1011.2 | 925.6 | 791.9 | 1015.9

3970.2 | 3850.3 | 3935.9 | 4069.6 | 3845.6

[[/strikethrough]]

[[end page]]

[[new page]]

[[preprinted]] 43 [[/preprinted]]

[[underline]] Jan. 20, 1903 [[underline]]

Derivation of formulas for C 13151, meas. in Bk. 17, p. 149

Centres of dark H beta, H gamma and H epsilon used as standards.

| | Meas. | Diff | lambda

H beta | 80768 | 19232 = x [[superscript]] 1 [[/superscript]] | |

| | | 4861.5 - 520.8 = y [[superscript]] 1 [[/superscript]]

H gamma | 100.000 | 39206 = x [[superscript]] 2 [[/superscript]] | |

| | | 4340.7 - 891.3 = y [[superscript]] 2 [[/superscript]]

H epsilon | 119974 | | 397.2

log y [[superscript]] 1 [[/superscript]] = 2.716671 log y [[superscript]] 2

[[/superscript]] = 2.950024

log x [[superscript]] 1 [[/superscript]] = 4.284024 log x [[superscript]] 2

[[/superscript]] = 4.593352

8.432647 8.356672

-0.0270799 - 0.0227338

-520.8 - 0.0270799c + d = 0

[[underline]]-891.3 - 0.0227338c + d = 0[[/underline]]

370.5 - 0.0043461c = 0

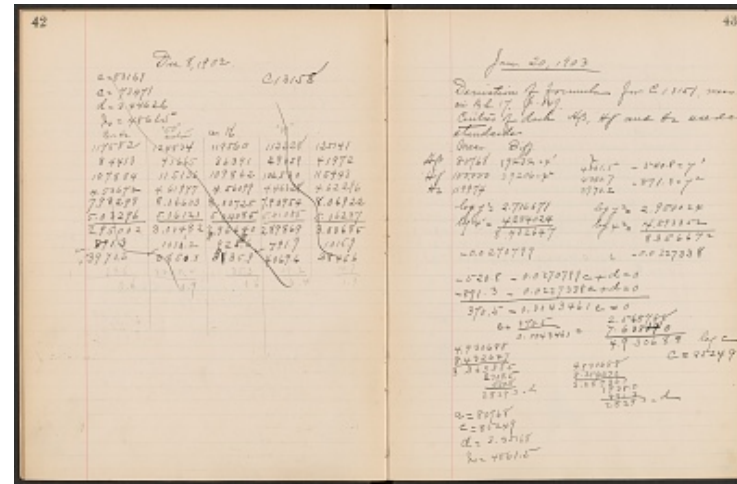
[[equation]]

a = 80768

c = 85249

d = 3.45168

lambda [[subscript]] 0 [[/subscript]] = 4861.5



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 44 & 45 [[/preprinted]]

Jan. 20, 1903.

Trial of the preceding formula C 13151

a = 80768

~~b~~ ~~c~~ = 85249

d = 3.45168

lambda <sub>0</sub> = 4861.5

1 (x) | 119974 | 60199 | 60934 | 61365 | 61692 | 66465 | 67154 | 68764 |  
78978 | 80060 | ~~80768~~ | ~~85467~~  
2 (x-a) | 39206 | -20569 | -19834 | -19403 | -19076 | -14303 | -13614 | -  
12004 | -1790 | -708 | | +4699  
3 (2)+c | 124455 | 64 ~~5~~ | ~~680~~ | 65415 |  
~~61365~~ | ~~65846~~ | ~~61692~~  
~~66173~~ | ~~66465~~ | 70946 |  
~~67154~~ | ~~71635~~ | ~~68764~~  
~~73245~~ | ~~78978~~ | ~~83459~~ |  
~~80060~~ | ~~84541~~ | | 89948  
(4) log(2) | 4.59335 | 4.31321n | 4.29741n | 4.28787n | 4.28049n |  
4.15543n | 4.13399n | 4.07933n | 3.25285n | 2.85003n | | 3.67201  
(5) d+4 | 8.04503 | 7.76489n | 7.74909n | 7.73955n | 7.73217n |  
7.60711n | 7.58567n | 7.53101n | 6.70453n | 6.30171n | | 7.12369  
(6) log(3) | 5.09501 | 4.81077 | 4.81568 | 4.81 ~~522~~  
~~853~~ | 4.82068 | 4.85093 | 4.85513 | 4.86478 | 4.92147 |  
4.92707 | | 4.95399  
(7) (5)-(6) | 2.95002 | 2.95412n | 2.9 ~~2~~ | ~~2102n~~ | 2.91149n |  
3341n | 2.9 ~~2433~~ | ~~2102n~~ | 2.91149n |  
2.75618n | 2.73054n | 2.66623n | 1.78306n | 1.37464n | | 2.1  
~~7~~ | ~~6970~~  
(8) | 891.3 | -899.7 | -8 ~~38.3~~ | ~~57.8~~ |  
~~-840.0~~ | ~~-833.7~~ | -815.6 | -570.4 | -537.7 |  
-463.7 | -60.7 | -23.7 | | ~~151.2~~ | ~~147.8~~  
| | 4861.5 | ~~3961.8~~ | ~~5761.2~~ |  
~~5699.8~~ | ~~5719.3~~ | 5695.2 | 5677.1 |  
5431.9 | 5399.2 | 5325.2 | 4922.2 | 4885.2 | | ~~4710.3~~  
~~4713.7~~

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 46 & 47 [[/preprinted]]

(1) | 87132 | 87915 | 88891 | 90489 | 91225 | 92102 | 92867 | 94027 |  
94456 | 95915 | 96730 | 97885 | 98890  
(2) | +6364 | +7147 | +8123 | +9721 | 10457 | 11334 | 12099 | 13299 |  
13259 | 13688 | 15147 | 15962 | 17117 | 18122  
(3) | 91613 | 92396 | 93372 | 94970 | 95706 | 96583 | 97348 | 98508 |  
98937 | 100396 | 101211 | 102366 | 103371  
(4) | 3.80373 | 3.85412 | 3.90972 | 3.98771 | 4.01941 | 4.05435 |  
4.08275 | 4.12251 | 4.13634 | 4.18033 | 4.20309 | 4.23343 | 4.25821  
(5) | 7.25541 | 7.30580 | 7.36140 | 7.43939 | 7.47109 | 7.50606 |  
7.53443 | 7.57419 | 7.58802 | 7.63201 | 7.65477 | 7.68511 | 7.70989  
(6) | 4.96196 | 4.96565 | 4.97022 | 4.97759 | 4.98094 | 4.98490 |  
4.98833 | 4.99347 | 4.99536 | 5.00172 | 5.00523 | 5.01016 | 5.01440  
(7) | 2.29345 | 2.34015 | 2.39118 | 2.46180 | 2.49015 | 2.52116 |  
2.54610 | 2.58072 | 2.59266 | 2.63029 | 2.64954 | 2.67495 | 2.69549  
(8) | 196.5 | 218.8 | 246.1 | 289.6 | 309.1 | 332.0 | 351.6 | 380.8 | 391.4 |  
426.9 | 446.2 | 473.1 | 496.0  
| | 4665.0 | 4642.7 | 4615.4 | 4571.9 | 4552.4 | 4529.5 | 4509.9 | 4480.7  
| 4 ~~[[/strikethrough]]~~ 5 ~~[[/strikethrough]]~~ 470.1 | 4434.6 | 4415.3 | 4388.4 |  
4365.5

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 48 [[/preprinted]]

[[six column table]]

100000	10344	109349	11065	112067	113481
19232	22709	28581	29927	31299	32718
104481	107958	113830	115176	116548	117962
4.28402	4.35620	4.45608	4.47606	4.49553	4.51472
7.73570	7.80788	7.90776	7.92774	7.94721	7.96640
5.01903	5.03325	5.0562	<del>6</del>	<del>5</del>	5.06136
5.06650	5.07174				

[[dividing line across each column]]

2.71667	2.77463	2.8515	<del>0</del>	<del>1</del>	2.86638
2.88071	2.89466				
520.8	595.1	710.4	735.1	759.8	784.6
4340.7	4266.4	<input checked="" type="checkbox"/>	4151.1	4126.4	4101.7  4076.9

[[end table]]

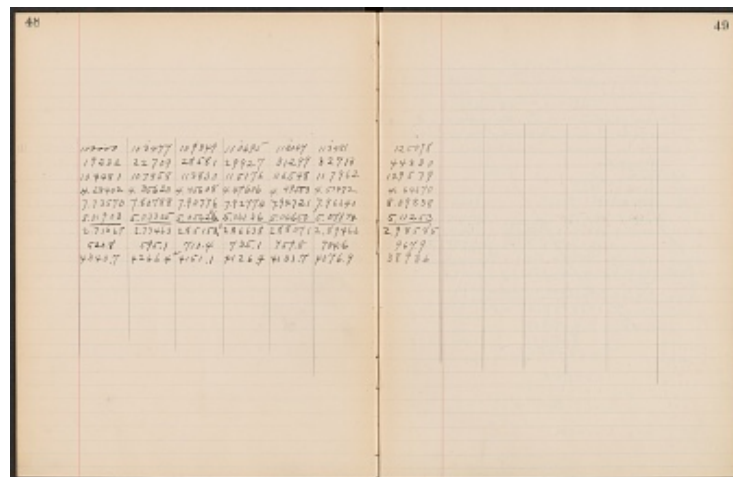
[[end page]]

[[start page]]

[[preprinted]] 49 [[/preprinted]]

[[one column table]]

125098
44330
129579
4.64670
8.09838
5.11253
[[dividing line]]
2.98585
967.9
3893.6



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 50 [[/preprinted]]  
[[underline]] February 7, 1903 [[/underline]]

[[margin]] This is incorrect since the reversed line is H (calcium) instead of H epsilon(hydrogen) A.J.C. Feb 27, 1903 [[/margin]]

[[strikethrough]]  
Derivation of formula for reducing measures of C 13195. See p. 23 where centre of bright H epsilon was used instead of the reversed H epsilon which could be much more accurately measured.

H beta | 83054 | |  
| | | 1.6946 = x <sup>1</sup> <sup>1</sup>  
H gamma | 100000 | |  
| | | 3.4488 = x <sup>2</sup> <sup>2</sup>  
H epsilon | 117542 | |  
log x <sup>1</sup> <sup>1</sup> = 4.5376680 log y <sup>2</sup> <sup>2</sup>  
[[/superscript]] = 2.950024  
4.537668  
8.412356

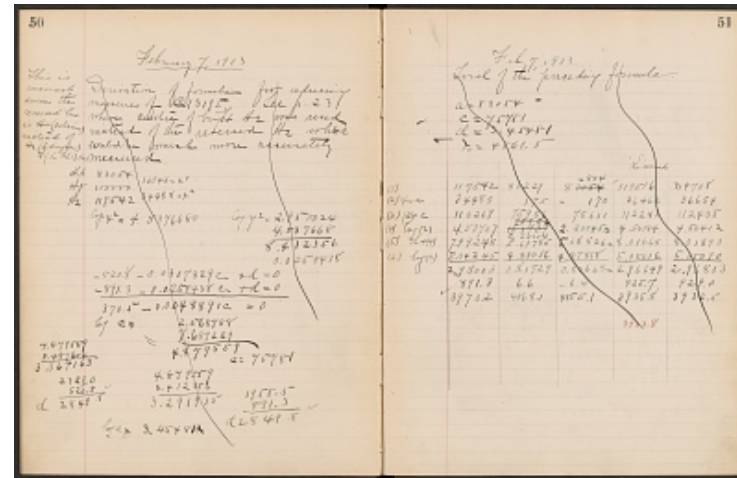
[[formula]]  
[[/strikethrough]]  
[[end page]]

[[new page]]  
[[preprinted]] 51 [[/preprinted]]  
Feb. 7, 1903

[[strikethrough]]  
Trial of the preceding formula

a = 83054  
c = 75781  
d = 3.45481  
lambda <sub>0</sub> = 4861.5

| | | | K reversed | |  
(1) | 117542 | 83229 | 8 ~~3054~~ ~~2884~~ |  
119516 | 719708  
(2) x-a | 34488 | 175 | -170 | 36462 | 36654  
(3) (2)+c | 110269 | 75956 | 75611 | 112243 | 112435  
(4) log (2) | 4.53767 | ~~151737~~ 75956 ~~112435~~  
2.24304 | 2.23045n | 4.56184 | 4.56412  
(5) d+(4) | 7.99248 | 5.69785 | 5.68526n | 8.01665 | 8.01893  
(6) log (3) | 5.04245 | 4.88056 | 4.87858 | 5.05016 | 5.05090  
2.95003 | 2.81729 | 0.80668n | 2.96649 | 2.96803  
891.3 | 6.6 | -6.4 | 925.7 | 929.0  
3970.2 | 4868.1 | 4855.1 | 3935.8 | 3932.5  
3903.8 |  
[[/strikethrough]]



[[preprinted]] 52 [[/preprinted]]  
Feb. 9, 1903. C 13195

[[striketrough]]  
Considering H gamma = original meas. 58497 (reversed line)

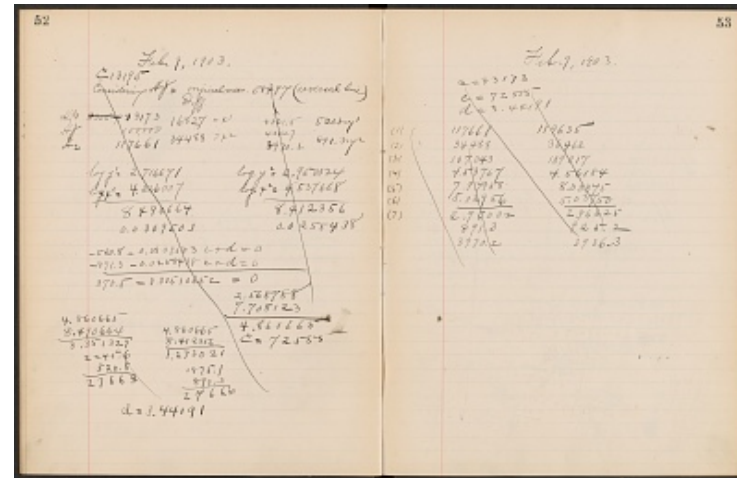
| | | Diff. | | |  
H beta | [[striketrough]] 83054 [[/striketrough]] 83173 | 16827 = x  
[[superscript]] 1 [[/superscript]] | 4861.5 | 520.8 = y [[superscript]] 1  
[[/superscript]]  
H gamma | 100000 | | |  
| | | 34488 = x [[superscript]] 2 [[/superscript]] | 4340.7 | |  
H epsilon | 117661 | | 3970.2 | 891.3 = y [[superscript]] 2 [[/superscript]]

[[formula]]  
d = 3.44191  
[[/striketrough]]  
[[end page]]

[[new page]]  
[[preprinted]] 53 [[/preprinted]]  
Feb. 9, 1903

[[striketrough]]  
a = 83173  
c = 72555  
d = 3.44191

(1) | 117661 | 119635  
(2) | 34488 | 36462  
(3) | 107043 | 109017  
(4) | 4.53767 | 4.56184  
(5) | 7.97958 | 8.00375  
(6) | 5.02956 | 5.03750  
(7) | 2.95002 | 2.96625  
| 891.3 | 925.2  
| 3970.2 | 3936.3  
[[/striketrough]]



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 54 [[/preprinted]]  
 [[underline]] Feb. 28, 1903 [[/underline]]  
 C 13195

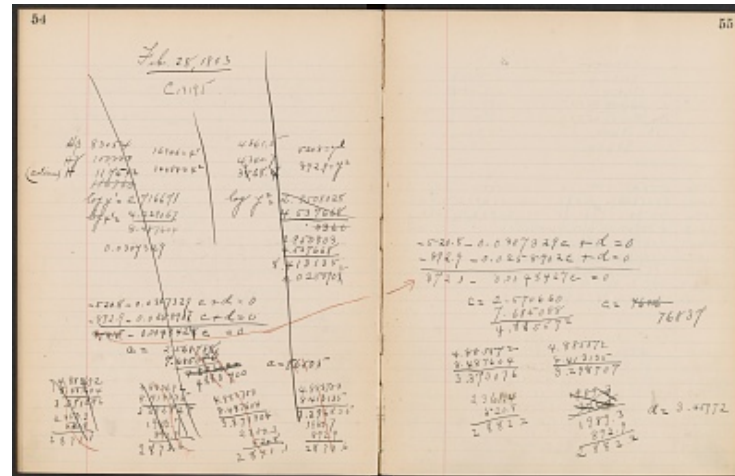
[[/strikethrough]]  
 H beta | 83054 | | 4861.5 | |  
 | | | 16946 = x [[superscript]] 1 [[/superscript]] | | 5208 = y  
 [[superscript]] 1 [[/superscript]]  
 H gamma | 100000 | | 4340.7 | |  
 | | | 3488 = x [[superscript]] 2 [[/superscript]] | | 892.9 = y  
 [[superscript]] 2 [[/superscript]]  
 (calcium) H | [[/strikethrough]] 11670 [[/strikethrough]] 117542 | | 3  
 [[/strikethrough]] 8 [[/strikethrough]] 968. [[/strikethrough]] 4  
 [[/strikethrough]] g | |

log y [[superscript]] 1 [[/superscript]] = 2.71667 log y [[superscript]] 2  
 [[/superscript]] = [[/strikethrough]] 2.9598028 [[/strikethrough]]  
 log x [[superscript]] 1 [[/superscript]] = 4.229067 [[/strikethrough]]  
 4.537668 [[/strikethrough]]  
 8.487604 [[/strikethrough]] 0360 [[/strikethrough]]

0.0307329 2.950803  
 4.507668  
 8.413135  
 0.025890 [[/strikethrough]] 1 [[/strikethrough]] 2  
 [[formula]]

[[/strikethrough]]  
 [[end page]]

[[new page]]  
 [[preprinted]] 55 [[/preprinted]]  
 [[formula]]



Project PHaEDRA - Annie Jump Cannon 13  
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56[printed page number]

March 24, 1903

a=83054      c=~~13158~~<sup>13195</sup>  
c=~~76306~~<sup>76837</sup>      76837  
~~log~~<sup>log</sup>~~alpha~~<sup>alpha</sup>=3.45972  
lambda<sub>0</sub>=4861.5

- (1) psi | ~~117542~~ | 119516 | 100000~~117542~~
- (2) psi-a | ~~34488~~ | 36462 | 16946~~34488~~
- (3) (2)+c | ~~110794~~ | 112768 | 93252~~110794~~
- (4) log(2) | ~~4.53767~~ | 4.56184~~4.53767~~
- (5) alpha+(4) | ~~7.99739~~ | 8.02156~~7.99739~~
- (6) log(3) | ~~5.04452~~ | 5.05218~~5.04452~~
- (7) (5)-(6) | ~~2.95287~~ | 2.96938~~2.95287~~
- (8) Nat. no. (7) | ~~897.2~~ | 931.9~~897.2~~
- (9) lambda<sub>0</sub> | ~~3929.6~~ | 3964.3 | 3929.6~~3929.6~~

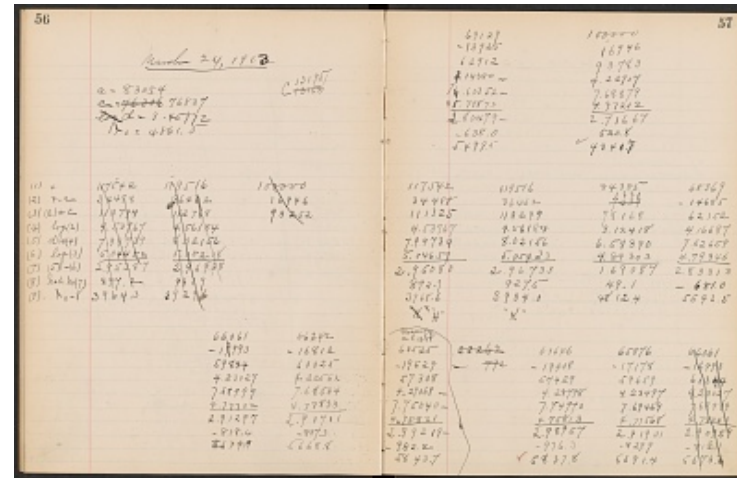
66061 | 66242  
-1~~13925~~ | 7~~6993~~ | =16812  
59844 | 60025  
4.23027 | 4.22562  
7.68999 | 7.68534  
4.77702 | 4.77833  
2.91297 | 2.90701  
-818.4 | -807.3  
5679.9 | 5668.8  
[end page]

[new page]  
[preprinted] 57 [preprinted]

69129 | 100000  
-13925 | 16946  
62912 | 93783  
4.14380n | 4.22907  
~~6~~<sup>7.60352n</sup> | 7.68879  
~~5~~<sup>4.79873</sup> | 4.97212  
2.80479n | 2.71667  
-638.0 | 520.8  
5499.5 | 4340.7

117542 | 119516 | 84385 | 68369  
34488 | 36462 | ~~7439~~ | 1331 | -14685  
111325 | 113299 | 78168 | 62152  
4.53767 | 4.56184 | 3.12418 | 4.16687  
7.99739 | 8.02156 | 6.58390 | 7.62659  
5.04659 | 5.05423 | 4.89303 | 4.79346  
2.95080 | 2.96733 | 1.69087 | 2.83313  
892.9 | 927.5 | 49.1 | -681.0  
3968.6 | 3934.0 | 4812.4 | 5542.5  
~~"K"~~ | ~~"K"~~ | "H" | "K" | |

~~22262~~  
-792~~22262~~



Measures of D on C 13158 | | | |  
68525 | 63646 | 65876 | ~~66061~~  
-19529 | -19408 | -17178 | ~~-16993~~  
57308 | 57429 | 59659 | ~~60344~~  
4.29068n | 4.28798 | 4.23497 | ~~4.23027~~  
7.75040n | 7.74770 | 7.69469 | ~~7.68999~~  
4.75821 | 4.75813 | 4.77568 | ~~4.78040~~  
2.99219n | 2.98957 | 2.91901 | ~~2.90959~~  
-982.2 | -976.3 | -829.9 | ~~-812.1~~  
5843.7 | 5837.8 | 5691.4 | ~~5673.6~~

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 58 [[/preprinted]]  
 [[underline]] March 30, 1903 [[/underline]]  
 Derivation of formula for C 13168 measured in C.S.M. 17, 184.

H beta | 83123 | | 4861.5 | |  
 | | 16877 =  $x^{[1]}$  | | -520.8 =  $y^{[1]}$   
 H gamma | 100000 | | 4340.7 | |  
~~reversed H~~ | 117651 | | 3968.6 | | ~~[[/del]]~~  
 | | 36488 =  $x^{[2]}$  | | -927.7 =  $y^{[2]}$   
 K | 119611 | | 3933.8 | |

$\log y^{[1]} = 2.716671$   $\log y^{[2]} = 2.967408$   
 $\log x^{[1]} = 4.227295$   $\log x^{[2]} = 4.562150$   
 8.489376 8.405258  
 -0.030858 ~~[[/del]]~~ 5 ~~[[/del]]~~ 6 -0.0254248

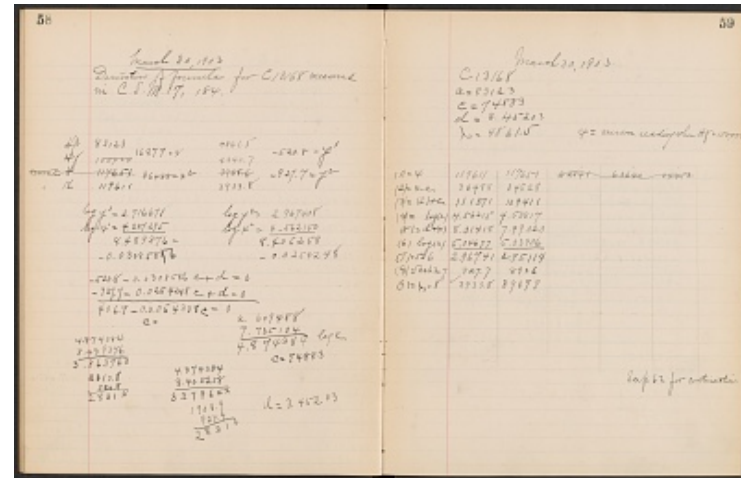
[[equation]]  
 [[end page]]

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 [[preprinted]] 59 [[/preprinted]]  
 March 30, 1903  
 C 13168

a = 83123  
 c = 74883  
 d = 3.45203  
 $\lambda_{[0]}$  = 4861.5  
 x = micron reading when H gamma = 100,000

(1) = x | 11911 | 117651 | ~~[[/del]]~~ 62841 | 63640 | 64453  
~~[[/del]]~~  
 (2) = x-a | 36488 | 34528  
 (3) = (2)+c | 111371 | 109411  
 (4) =  $\log(2)$  | 4.56215 | 4.53817  
 (5) = d+(4) | 8.01418 | 7.99020  
 (6) =  $\log(3)$  | 5.04677 | 5.03906  
 (7) = 5-6 | 2.96741 | 2.95114  
 (8) = Nat. No. 7 | 927.7 | 893.6  
 (9) =  $\lambda_{[0]}$  -8 | 3933.8 | 3967.9

See p. 62 for continuation



Project PHaEDRA - Annie Jump Cannon 13  
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March 30, 1903

C 13168

H beta | 83123 | | 4861.5 | |  
| | | 16877 = x <sup>1</sup> | | -520.8 =  
y <sup>1</sup> | |  
H gamma | 100000 | | 4340.7 | |  
| | | 34028 = x <sup>2</sup> | | -892.9 = y  
H | 117651 | | 3968.6 | |

log y <sup>1</sup> = 2.716671 log y <sup>2</sup>  
<sup>1</sup> = 2.950803  
log x <sup>1</sup> = 4.1227295 log x <sup>2</sup>  
<sup>1</sup> = 4.538171  
see p. 88 8.412632n  
-0.0258602

[[equation]]  
d = 3.44994

[[end page]]  
[[start page]]

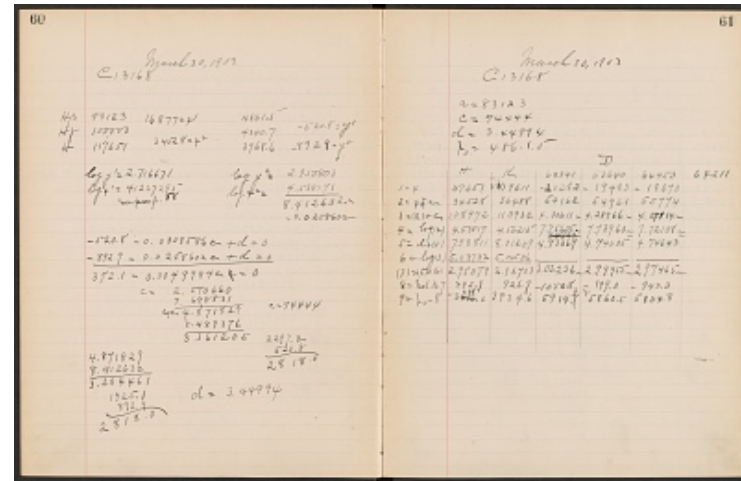
[[preprinted]] 61 [[/preprinted]]

March 30, 1903

C 13168

a = 83123  
c = 74444  
d = 3.44994  
lambda <sub>0</sub> = 4861.5

| | | | D | | |  
| | H | K | 62841 | 63640 | 64453 | 64211  
1 = x | 47651 | 119611 | -20282 | -19483 | -18670 | |  
2 = x-a | 34528 | 36488 | 54162 | 54961 | 55774 | |  
3 = (2)+c | 108972 | 110932 | 4.30611n | 4.28966n | 4.27114n | |  
4 = log(2) | 4.53817 | 4.56215 | 7.75605n | 7.73960n | 7.72108n | |  
5 = d+(4) | 7.98811 | 8.01209 | 4.73369 | 4.74005 | 4.74643 | |  
6 = log(3) | 5.03732 | 5.04506 | | | |  
7 = (5)-(6) | 2.95079 | 2.96703 | 3.02236n | 2.99955n | 2.97465n | |  
8 = Nat. No. 7 | 892.9 | 926.9 | -1052.8 | -999.0 | -943.3 | |  
9 = lambda <sub>0</sub> -8 | 3 ~~686~~  
~~968.6~~ | 3934.6 | 5914. ~~7~~  
~~5860.5~~ | 5804.8 | |



[[preprinted]] 62 & 63 [[/preprinted]]

Br. band | Br. band cent. | Br. band max? | Br. band | | end to r. |  
reversal? | centre | max? | end to v. | "5" | ~~Cont. sp. Br.~~  
~~band~~ | ~~Cont. sp. Br. band~~  
~~64738~~ | ~~65965~~ | ~~66526~~ | ~~67133~~ | ~~67340~~ | ~~67781~~ | ~~68412~~ | ~~68576~~ | ~~68976~~ |  
~~69258~~ | ~~69336~~ | ~~69336~~ | ~~69336~~ | ~~69439~~ | ~~69697~~ | ~~69844~~ |  
~~-18385~~ | ~~-17158~~ | ~~-16597~~ | ~~-15990~~ | ~~15783~~ | ~~-15342~~ | ~~-14711~~ | ~~-14547~~ |  
~~-14147~~ | ~~-13865~~ | ~~-13787~~ | ~~-13787~~ | ~~-13684~~ | ~~-13279~~ |  
~~56059~~ | ~~57286~~ | ~~57847~~ | ~~58454~~ | ~~58661~~ | ~~59102~~ | ~~59733~~ | ~~59897~~ | ~~60297~~ |  
~~60579~~ | ~~61096~~ | ~~60657~~ | ~~60760~~ | ~~61018~~ | ~~61165~~ |  
~~4.26446n~~ | ~~4.23447n~~ | ~~4.22003n~~ | ~~4.20385n~~ | ~~4.19819n~~ | ~~4.18588n~~ |  
~~4.16764n~~ | ~~4.16277n~~ | ~~4.15066n~~ | ~~4.14192n~~ | ~~4.13947n~~ | ~~4.13621n~~ |  
~~4.12791n~~ | ~~4.12317n~~ |  
~~7.71440n~~ | ~~7.68441n~~ | ~~7.66997n~~ | ~~7.65379n~~ | ~~7.64813n~~ | ~~7.63582n~~ |  
~~7.61758n~~ | ~~7.61271n~~ | ~~7.60060n~~ | ~~7.59186n~~ | ~~7.58941n~~ | ~~7.58615n~~ |  
~~7.57785n~~ | ~~7.57311n~~ |  
~~4.74865~~ | ~~4.75805~~ | ~~4.76228~~ | ~~4.76681~~ | ~~4.76835~~ | ~~4.77160~~ | ~~4.77621~~ |  
~~4.77741~~ | ~~4.78030~~ | ~~4.78232~~ | ~~4.78601~~ | ~~4.78288~~ | ~~4.78362~~ |  
~~4.78546~~ | ~~4.78650~~ |  
~~2.96575n~~ | ~~2.92636n~~ | ~~2.90769n~~ | ~~2.88698n~~ | ~~2.87978n~~ | ~~2.86422n~~ |  
~~2.84137n~~ | ~~2.83530n~~ | ~~2.82030n~~ | ~~2.80954n~~ | ~~2.80549n~~ |  
~~2.80653n~~ | ~~2.80253n~~ | ~~2.79239n~~ | ~~2.78661n~~ |  
~~-924.2~~ | ~~-844.0~~ | ~~-808.5~~ | ~~-770.9~~ | ~~-758.2~~ | ~~-731.5~~ | ~~-694.0~~ | ~~-684.4~~ | ~~-661.1~~ |  
~~-645.0~~ | ~~-639.0~~ | ~~-634.6~~ | ~~-620.0~~ |  
~~5785.7~~ | ~~5705.5~~ | ~~5670.0~~ | ~~5632.4~~ | ~~5619.7~~ | ~~5593.0~~ | ~~5555.5~~ | ~~5545.9~~ |  
~~5542.6~~ | ~~5506.5~~ | ~~5500.5~~ | ~~5502.0~~ |  
~~5496.1~~ | ~~5481.5~~ |  
~~5473.3~~ |

The image shows two pages of a handwritten astronomical data table, numbered 62 and 63. The pages contain columns of numbers and some text, likely representing celestial coordinates or measurements. The handwriting is in ink on aged paper. The table is organized into several columns, with some headings in italics. The data appears to be a list of values, possibly related to the coordinates of a star or a set of observations. The numbers are written in a clear, legible hand, and the overall layout is structured and organized.

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[[preprinted]] 64 & 65 [[/preprinted]]

| | Br. band | Br. band | Br. band | Br. line ? | Br. line ? | "6" | Br. band to red | Br. band cent. & max? | br. band r | br band to violet | "7" | Br. red | Br. cent.

70149 | 70485 | 70825 | 71159 | 71722 | 7 ~~[[strikethrough]]~~ 9  
~~[[/strikethrough]]~~ 2188 | 72371 | 72512 | 72700 | 72942 | 73169 | 73315 | 73518 | 73706

-12974 | -12638 | -12298 | -11964 | -11401 | -10935 | -10752 | -10611 | -10423 | -10181 | -9954 | -9808 | -9605 | -9417

61470 | 61806 | 62146 | 62480 | 63043 | 63509 | 63692 | 63833 | 64021 | 64263 | 64490 | 64636 | 64839 | 65027

4.11307n | 4.10168n | 4.08983n | 4.07788n | 4.05694n | 4.03882n | 4.03149n | 4.02576n | 4.01799n | 4.00779n | ~~[[strikethrough]]~~ 4

~~[[/strikethrough]]~~ 3.99800n | 3.99158n | ~~[[strikethrough]]~~ 4  
~~[[/strikethrough]]~~ 3.98250n | ~~[[strikethrough]]~~ 4 ~~[[/strikethrough]]~~ 3.97391n

2.77435n | 2.76059n | 2.74636n | 2.73208n | 2.70724n | 2.68592n | 2.67735n | 2.67065n | 2.66161n | 2.64977n | 2.63845n | 2.63105n | 2.62056n | 2.61076n

-594.8 | -576.2 | -557.6 | -539.6 | -509.6 | -485.2 | -475.7 | -468.4 | -458.8 | -446.4 | -435.0 | -427.6 | -417.4 | -408.1

5456.3 | 5437.7 | 5419.1 | 5401.1 | 5371.1 | 5346.7 | 5337.2 | 5329.9 | 5320.3 | 5307.9 | 5296.5 | 5296.5 | 5289.1 | 5278.9 | 5269.6

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 66 & 67 [[/preprinted]]

violet | "8" | Br. band | Br. band | Br. band | Line "9" | red end | reversal ?  
| Centre | reversal? | end to v | "b" | reversal | 8b

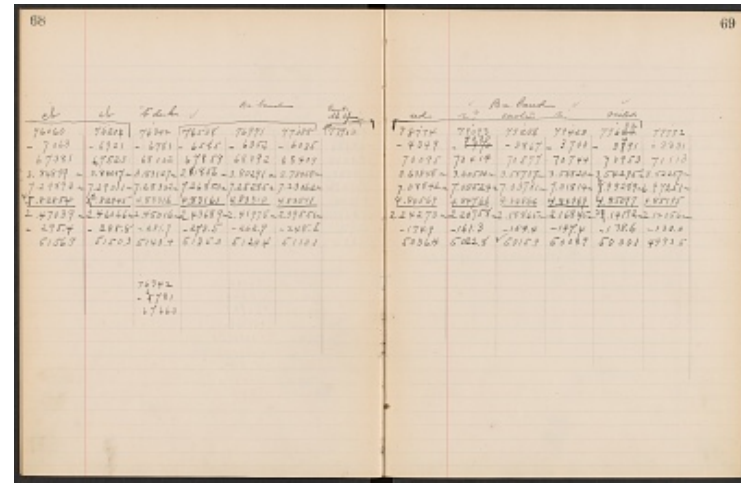
73916 | 74052 | 74259 | 74503 | 74778 | ~~74956~~  
~~74956~~ | 75133 | ~~75367~~ | ~~75366~~ | 75427 | 75528  
75676 | 75752  
-9207 | -9071 | -8864 | -8620 | -8345 | ~~-8167~~  
~~-8167~~ | -7990 | ~~-7756~~ | ~~-7757~~ | 243  
~~757~~ | -7696 | ~~158651~~ | ~~687~~ | 66748 |  
67288 | 66997 | 67073  
3.96412n | 3.95766n | 3.94763n | 3.93551n | 3.92143n | ~~3.91206n~~ | ~~3.91206n~~ | 3.90255n | ~~3.88964n~~ | ~~3.88964n~~ | 3.88969n  
~~3.88969n~~ | 3.88969n | 3.88627n | 3.88053n | 3.87198n | 3.86753n  
7.41406n | 7.40760n | 7.39757n | 7.38545n | 7.37137n | ~~7.36409n~~ | ~~7.36200n~~ | 7.35249n | ~~7.33958n~~ | ~~7.33958n~~ | 7.34531 | ~~7.33963n~~ | ~~7.33969n~~ | 7.33621n | 7.33256n | 7.32192n | 7.31747n  
4.81449 | 4.81540 | 4.81677 | 4.81838 | 4.82019 | ~~4.82423~~ | ~~4.82423~~ | 4.82136 | 4.82252 | ~~4.82423~~ | 4.82423  
~~4.82423~~ | 4.82423 | ~~4.82423~~ | 5 | ~~4.82423~~ | 4.82794 |  
4.82606 | 4.82655  
2.59957n | 2.59220n | 2.5 | ~~7~~ | ~~8080n~~ |  
2.56707n | 2.55118n | ~~2.53986n~~ | ~~2.52997n~~ | ~~2.52997n~~ | 2.42473n | ~~2.52193n~~ | ~~2.52193n~~ | 2.50276n | ~~2.51559n~~ | 2.51177n |  
~~2.50462n~~ | 2.49586n | 2.49092n  
-397.7 | -391.0 | ~~-372.2~~ | ~~-380.9~~ | -369.0 |  
-355.8 | ~~-346.6~~ | ~~-347.2~~ | -338.8 |  
~~-265.9~~ | ~~-332.6~~ | ~~-318.2~~  
~~-327.8~~ | -324.9 | ~~-32.0~~ |  
-319.6 | -313.2 | -309.7  
5259.2 | 5252.5 | ~~5233.7~~ | ~~5242.4~~ |  
5230.5 | 5217.3 | ~~5208.1~~ | ~~5208.7~~ |  
5200.3 | ~~5127.4~~ | ~~5194.1~~ |  
~~5179.7~~ | ~~5189.3~~ | 5186.4 |  
~~4893.5~~ | ~~5181.1~~ | 5174.7 | 5171.2 |

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[[preprinted]] 68 & 69 [[/preprinted]]

cb | sb | "b" dark | Br. band | Br. band | Br. band | Cent. dk space | Br.  
band red | Br. band r? | Br. band centre | Br. band r | Br. band violet |  
76060 | 76202 | 76342 | 76538 | 76771 | 77088 | 77903 | 78774 | 79093 |  
79256 | 79423 | 796 | ~~23~~ | ~~32~~ | 79792  
-7063 | -6921 | -6781 | -6585 | -6352 | -6035 | | -4349 | -  
~~5970~~ | ~~-4030~~ | -3867 | -3700 | 3  
~~7~~ | ~~491~~ | -3331  
67381 | 67523 | 68102 | 67859 | 68092 | 68409 | | 70095 | 70414 |  
70577 | 70744 | 70953 | 71113  
3.84899n | 3.84017n | 3.83129n | 3.81856n | 3.80291n | 3.78068n | |  
3.63848n | 3.60530n | 3.58737n | 3.56820n | 3.54295n | 3.52257nn | |  
7.29893n | 7.29011n | 7.28332n | 7.26850n | 7.25285n | 7.23062n | |  
7.08842n | 7.05524n | 7.03731n | 7.01814n | ~~7~~  
~~6.99289n~~ | 6.97251n  
~~5~~ | ~~4.82854~~ | ~~5~~  
~~4.82945~~ | ~~4.83316~~ | ~~4.83161~~ | ~~4.83310~~ | ~~4.83511~~ | |  
4.84569 | 4.84766 | 4.84866 | 4.84969 | 4.85097 | 4.85195  
2.47039n | 2.46066n | 2.45016n | 2.43689n | 2.41975n | 1.39551n | |  
2.24273n | 2.20758n | 2.18865n | 2.16845n | ~~3~~  
~~2.14192n~~ | 2.12056n  
-295.4 | -288.8 | -281.9 | -273.5 | -262.9 | -248.6 | | -174.9 | -161.3 | -  
154.4 | -147.4 | -138.6 | -132.0  
5156.9 | 5150.3 | 5143.4 | 5135.0 | 5124.4 | 5110.1 | | 5036.4 | 5022.8 |  
5015.9 | 5008.9 | 5000.1 | 4993.5



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[[preprinted]] 70 & 71 [[/preprinted]]

Cont. sp.? | Cont. sp.? | Cont. sp.? | Br. band red | Br. band r | Br. Band  
cent. | Br. band r | Br. band violet | | H beta Br. red | H beta Br. max.? |  
H beta Br. r | H beta Br. centre  
79990 | 80497 | 81102 | 81121 | 81404 | 81567 | 81742 | 81962 | 82117 |  
82467 | 82768 | 82933 | 83123  
| | | -2002 | -1719 | -1556 | -1381 | -1261 | -1006 | -656 | -355 | -190  
| | | 72442 | 72725 | 72888 | 73063 | 73183 | 73438 | 73788 | 74089  
74254 | |  
3.30146n | 3.23528n | 3.19201n | 3.14019n | 3.10072n | 3.00260n |  
2.81690n | 2.55023n | 2.27875n | |  
| | | 6.75140n | 6.68522n | 6.64195n | 6.59013n | 6.55066n |  
6.45245n | 6.26684n | 6.00017n | 5.72869n | |  
| | | 4.85999 | 4.86168 | 4.86266 | 4.86370 | 4.86441 | 4.86592 |  
4.86799 | 4.86975 | 4.87072 | |  
| | | 1.89141n | 1.82354n | 1.76929n | 1.72643n | 1.68625n |  
1.58662n | 1.39885n | 1.13042n | 0.85797n | |  
| | | -77.9 | -66.6 | -58.8 | -53.3 | -48.6 | -38.6 | -25.1 | -13.5 | -7.2 | |  
| | | 4 ~~[[/del]]~~ 939.4 | 4928.1 | 4920.3 |  
4914.8 | 4910.1 | 4900.1 | 4886.6 | 4875.0 | 4868.7 | |

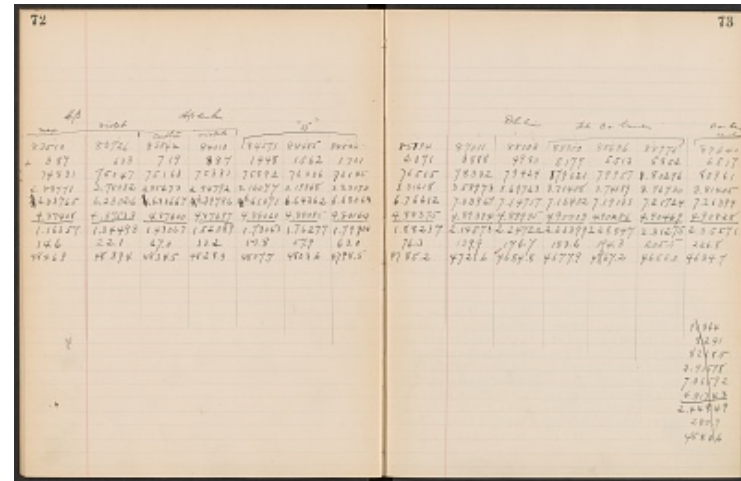
The image shows two pages of a handwritten notebook, numbered 70 and 71. The pages are filled with dense, handwritten numbers, likely representing astronomical data. The handwriting is in dark ink on aged, slightly yellowed paper. The numbers are organized in columns, with some headers or labels written in a smaller, cursive script at the top of each page. The overall appearance is that of a field notebook or a data log from a scientific expedition.

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[[preprinted]] 72 & 73 [[/preprinted]]

H beta max. | H beta violet | H beta dark centre | H beta dark violet | "15"  
| "15" | "15" | | Dk line | Ft. Br. band | Ft. Br. band | Ft. Br. band | Br.  
band red

83510 | 83726 | 83842 | 84010 | 84571 | 84685 | 84824 | 85794 | 87011 |  
88103 | 88300 | 88636 | 88975 | 89640  
+387 | 603 | 719 | 887 | 1448 | 1562 | 1701 | 2071 | 3888 | 4980 | 5177 |  
5513 | 5852 | 6517  
74831 | 75047 | 75163 | 75331 | 75892 | 76006 | 76145 | 76515 | 78332 |  
79424 | 79621 | 79957 | 80296 | 80961  
2.58771 | 2.78032 | 2.85673 | 2.94792 | 3.16077 | 3.19368 | 3.23070 |  
3.31618 | 3.58973 | 3.69723 | 3.71408 | 3.74139 | 3.76730 | 3.81405  
[[/strikethrough]] 4 [[/strikethrough]] 6.03765 | 6.23026 | [[/strikethrough]] 4  
[[/strikethrough]] 6.30667 | [[/strikethrough]] 4 [[/strikethrough]] 6.39786 |  
[[/strikethrough]] 4 [[/strikethrough]] 6.61071 | 6.64362 | 6.68064 |  
6.76612 | 7.03967 | 7.14717 | 7.16502 | 7.19133 | 7.21724 | 7.26399  
4.87408 | 4.87533 | 4.87600 | 4.87697 | 4.88020 | 4.88085 | 4.88164 |  
4.88375 | 4.89394 | 4.89995 | 4.90003 | 4.90286 | 4.90469 | 4.90828  
1.16357 | 1.34493 | 1.43067 | 1.52089 | 1.73051 | 1.76277 | 1.79900 |  
1.88237 | 2.14573 | 2.24722 | 2.26399 | 2.28847 | 2.31275 | 2.35571  
14.6 | 22.1 | 27.0 | 33.2 | 53.8 | 57.9 | 63.0 | 76.3 | 139.9 | 176.7 | 183.6 |  
194.3 | 205.5 | 226.8  
4846.9 | 4839.4 | 4834.5 | 4828.3 | 4807.7 | 4803.6 | 4798.5 | 4785.2 |  
4721.6 | 4684.8 | 4677.9 | 4 [[/strikethrough]] 7 [[/strikethrough]] 667.2 |  
4656.0 | 4634.7 [[/strikethrough]] 41364  
8241  
82685  
3.91598  
7.36592  
4.91743  
2.44849  
280.9  
4580.6 [[/strikethrough]]



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 74 & 75 [[/preprinted]]

centre | r? | violet | "21" | "25" | Dk line "26" split up DK line | Br. band  
89968 | 90027 | 90317 | 90340 | 90631 | 90983 | 9 | ~~90983~~ | 4  
~~5309~~ | 95437 | 95583 | 95959 | 96711 | 97142 | 97416 |  
6845 | 6904 | 7194 | 7217 | 7508 | 7860 | 1 | ~~1~~ |  
~~2186~~ | 12314 | 12460 | 12836 | 13588 | 14019 | 14293  
81289 | 81348 | 81638 | 81661 | 81952 | 82304 | 8 | ~~8~~ |  
~~6630~~ | 86758 | 86904 | 87280 | 88032 | 88463 | 88737  
3.83537 | 3.83910 | 3.85697 | 3.85836 | 3.87552 | 3.89542 |  
~~4.04867~~ | ~~4.08586~~ | 4.09040 | 4.09552 |  
4.10843 | 4.13316 | 4.14672 | 4.15512  
7.28531 | 7.28904 | 7.30691 | 7.30830 | 7.32546 | 7.34536 |  
~~7.49861~~ | ~~7.53580~~ | 7.54034 | 7.54546 |  
7.55837 | 7.58310 | 7.59666 | 7.60506  
4.91003 | 4.91035 | 4.91189 | 4.91201 | 4.91356 | 4.91542 |  
~~4.93263~~ | ~~4.93767~~ | 4.93831 | 4.93904 |  
4.94091 | 4.94464 | 4.94676 | 4.94810  
2.37528 | 2.37869 | 2.39502 | 2.39629 | 2.41190 | 2.42994 |  
~~2.56598~~ | ~~2.59813~~ | 2.60203 | 2.60642 |  
2.61746 | 2.63846 | 2.64990 | 2.65696  
237.3 | 239.2 | 248.3 | 249.1 | 258.2 | 269.1 | ~~368.1~~  
~~396.4~~ | 400.0 | 404.0 | 414.4 | 435.0 | 446.6 | 453.9  
4624.2 | 4622.3 | 4613.2 | 4612.4 | 4603.3 | 4592.4 | ~~4493.4~~  
~~4465.1~~ | 4461.5 | 4457.5 | 4447.1 | 4426.5 |  
4414.9 | 4407.6

| Br. band | | | Br. band | Br. band | Br. band | Br. | Br. | Br. | Br. | Br. |  
Br. band | |  
91504 | 94976 | 94642 | 91008 | 91364 | 91843 | 94830 | 94334 | 93890 |  
93415 | 92583 | 91633 | 93161  
8381 | 11853 | 11519 | 7885 | ~~759~~ | ~~8241~~  
| 8720 | 11707 | 11211 | 10767 | 10292 | 9460 | 8510 | 10038  
82825 | 86297 | 85963 | 82329 | 82685 | 83164 | 86151 | 85655 | 85211 |  
84736 | 83904 | 82954 | 84482  
3.92330 | 4.07383 | 4.06141 | 3.89680 | 3.91598 | 3.94052 | 4.06845 |  
4.04964 | 4.03209 | 4.01250 | 3.97589 | 3.92993 | 4.00165  
7.37324 | 7.52377 | 7.51135 | 7.34674 | 7.36592 | 7.39046 | 7.51839 |  
7.49958 | 7.48203 | 7.46244 | 7.42583 | 7.37987 | 7.45159  
4.91816 | 4.93600 | 4.93431 | 4.91555 | 4.91743 | 4.91994 | 4.93526 |  
4.93275 | 4.93050 | 4.92807 | 4.92378 | 4.91884 | 4.92676  
2.45508 | 2.58777 | 2.57704 | 2.43119 | 2.44849 | 2.47052 | 2.58313 |  
2.56683 | 2.55153 | 2.53437 | 2.50205 | 2.46103 | 2.52483  
285.2 | 387.9 | 377.6 | 269.9 | 280.9 | 295.5 | 382.9 | 368.8 | 356.1 |  
342.3 | 317.7 | 289.1 | 334.8  
4576.3 | 4473.6 | 4483.9 | 4591.6 | 4580.6 | 4566.0 | 4478.6 | 4492.7 |  
4505.4 | 4519.2 | 4 | ~~4~~ | ~~543.8~~ | 4572.4 |  
4526.7

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 80 & 81 [[/preprinted]]

Br. red | Dk. | H delta | centre | br. line? | br. line? | violet | H delta centre  
dark | H delta violet | "39" | "39" | "39"

108699 | 109281 | ~~109706~~ | ~~110013~~ | ~~110606~~  
~~111097~~ | ~~111251~~ | 111495 | 111711 | 12838 | 112971 | 113150  
25576 | 26158 | ~~26583~~ | ~~26890~~ | ~~27483~~  
~~27974~~ | ~~28128~~ | ~~28372~~ | ~~28588~~ | ~~29715~~ | ~~29848~~ | ~~30027~~  
100020 | 1 | ~~00602~~ | ~~101027~~ | ~~101334~~ | ~~101927~~ | ~~102418~~  
~~102572~~ | ~~102816~~ | ~~103032~~ | ~~104159~~ | ~~104292~~ | ~~104471~~  
4.40783 | 4.41760 | ~~4.42460~~ | ~~4.42959~~ | ~~4.43906~~  
~~4.44675~~ | ~~4.44914~~ | ~~4.45289~~ | ~~4.45618~~ | ~~4.47298~~ | ~~4.7492~~ | ~~4.47751~~  
7.85777 | 7.86754 | ~~7.87454~~ | ~~7.88900~~ | ~~7.89669~~ | ~~7.94908~~ | ~~7.89908~~ | ~~7.90283~~ | ~~7.90612~~ |  
7.92292 | 7.92486 | 7.92745  
5.00009 | 5.00261 | ~~5.00444~~ | ~~5.04663~~ | ~~5.00829~~  
~~5.01037~~ | ~~5.05143~~ | ~~5.01103~~ | ~~5.05237~~ | ~~5.01206~~ | ~~5.05320~~  
~~5.01297~~ | ~~5.05751~~ | ~~5.01770~~ | ~~5.05802~~ | ~~5.01825~~ |  
~~5.05868~~ | ~~5.01899~~ | ~~2.85768~~ | ~~2.86493~~ | ~~2.87010~~ | ~~2.83290~~ | ~~2.88071~~  
~~2.88632~~ | ~~2.84765~~ | ~~2.88805~~ | ~~2.85046~~ | ~~2.89077~~ | ~~2.85292~~  
~~2.89315~~ | ~~2.86541~~ | ~~2.90522~~ | ~~2.86684~~ | ~~2.90661~~ |  
~~2.86876~~ | ~~2.90846~~ | ~~720.6~~ | ~~732.7~~ | ~~741.5~~ | ~~680.6~~ | ~~747.8~~ | ~~759.8~~ | ~~769.7~~ | ~~790.0~~  
~~772.8~~ | ~~708.7~~ | ~~777.6~~ | ~~712.7~~ | ~~781.9~~ | ~~733.5~~ | ~~803.9~~ | ~~735.9~~ | ~~806.5~~ |  
~~739.2~~ | ~~810.0~~ | ~~4140.9~~ | ~~4128.8~~ | ~~4120.0~~ | ~~4180.9~~ | ~~4113.7~~ | ~~4102.7~~  
~~4091.8~~ | ~~4157.4~~ | ~~4088.7~~ | ~~4152.8~~ | ~~4083.9~~ | ~~4148.8~~ | ~~4079.6~~ | ~~4128.0~~ | ~~4057.6~~ |  
~~4125.6~~ | ~~4055.0~~ | ~~4122.3~~ | ~~4051.5~~

H delta remeasured  
end to red | r | centre | end to violet

110412 | 110768 | 110939 | 111286  
27289 | 27645 | 27816 | 28163  
101733 | 102089 | 102260 | 102607  
4.43599 | 4.44162 | 4.44429 | 4.44968  
7.88593 | 7.89156 | 7.89423 | 7.89962  
5.00746 | 5.00998 | 5.00971 | 5.001118  
2.87847 | 2.88158 | 2.88452 | 2.88844  
757.6 | 761.3 | 766.5 | 773.5  
4103.9 | 4100.2 | 4095.0 | 4088.0

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 82 & 83 [[/preprinted]]

red | H epsilon br. reversal double? | H epsilon br. reversal double? | H  
epsilon br. centre | H epsilon br reversed H (See p. 61) | H epsilon br. r?  
| H epsilon br. violet | H epsilon dark centre | H epsilon dark violet | K red  
| K r? | K centre | K reversed K (see p. 61) | K r?  
116763 | 116990 | 117102 | 117402 | 117651 | 117836 | 118198 |  
118507 | 118879 | 118945 | 119215 | 119391 | 119611 | 119845  
33640 | 33867 | 33979 | 34279 | 34528 | 34713 | 35075 | 35384 | 35756 |  
35822 | 36092 | 36268 | | 36722  
108084 | 108311 | 108423 | 108723 | 108972 | 109157 | 109519 |  
109828 | 110200 | 110266 | 110536 | 110712 | | 111166  
4.52686 | 4.52978 | 4.53121 | 4.53503 | 4.53817 | 4.54049 | 4.54500 |  
4.54881 | 4.55335 | 4.55415 | 4.55741 | 4.55952 | | 4.56493  
7.97680 | 7.97972 | 7.98115 | 7.98497 | 7.98811 | 7.99043 | 7.99494 |  
7.99875 | 8.00329 | 8.00409 | 8.00735 | 8.00946 | | 8.01487  
5.03377 | 5.03467 | 5.03512 | 5.03632 | 5.03732 | 5.03805 | 5.03949 |  
5.04171 | 5.04218 | 5.04245 | 5.04350 | 5.04420 | | 5.04597  
2.94303 | 2.94505 | 2.94603 | 2.94865 | 2.95079 | 2.95238 | 2.95545 |  
2.95704 | 2.96111 | 2.96164 | 2.96385 | 2.96526 | | 2.96890  
877.1 | 881.1 | 883.1 | 888.5 | 892.9 | 896.1 | 902.5 | 905.8 | 914.3 |  
915.5 | 920.1 | 923.1 | | 930.9  
3984.4 | 3980.4 | 3978.4 | 3973.0 | 3968.6 | 3965.4 | 3959.0 | 3955.7 |  
3947.2 | 3946.0 | 3941.4 | 3938.4 | | 3930.6

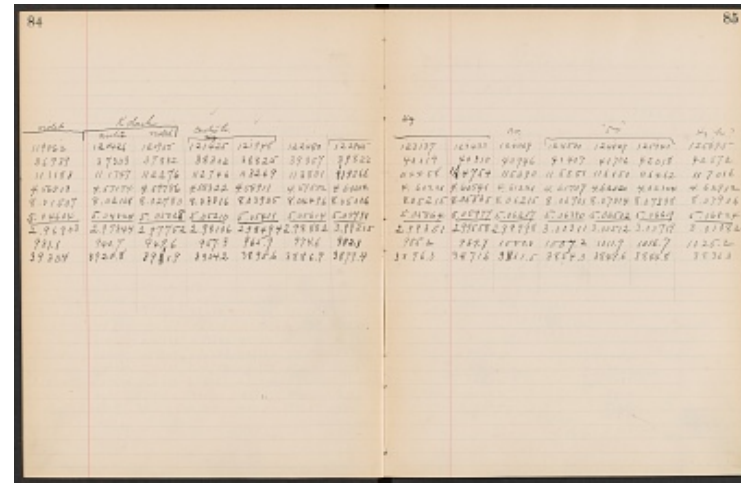
| | | Not seen distinctly | | | |  
113654 | 114188 | 114698 | 115217 | 115726 | 116078 | 116559  
30531 | 31065 | 31575 | 32094 | 32603 | 32955 | 33436  
104975 | 105509 | 106019 | 106538 | 107047 | 107399 | 107880  
4.48474 | 4.49227 | 4.49934 | 4.50642 | 4.51326 | 4.51792 | 4.52421  
7.93468 | 7.94221 | 7.94928 | 7.95636 | 7.96320 | 7.96786 | 7.97415  
5. ~~[[strikethrough]]~~ 06060 ~~[[/strikethrough]]~~ 02109 | 5. ~~[[strikethrough]]~~  
06262 ~~[[/strikethrough]]~~ 02329 | 5.02539 | 5.02750 | 5.02958 | 5.03100 |  
5.03294  
2.91359 | 2.91892 | 2.92389 | 2.92886 | 2.93362 | 2.93686 | 2.94121  
819.6 | 829.7 | 839.2 | 848.9 | 858.3 | 864.7 | 873.4  
4041.9 | 4031.8 | 4022.3 | 4012.4 | 4003.2 | 3996.8 | 3988.1

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[[preprinted]] 84 & 85 [[/preprinted]]

violet | K dark centre | K dark violet | centre br. | centre br. | | H zeta | H  
zeta | H zeta | Br. | "50" | "50" | "50" | H eta br.?  
119862 | 120426 | 120955 | 121425 | 121948 | 122480 | 122945 |  
123137 | 123433 | 124069 | 124530 | 124829 | 125141 | 125695  
36739 | 37303 | 37832 | 38302 | 38825 | 39357 | 39822 | 40014 | 40310 |  
40946 | 41407 | 41706 | 42018 | 42572  
111183 | 111747 | 112276 | 112746 | 113269 | 113801 | ~~114332~~  
4 ~~114865~~ | 114266 | 114458 | ~~114650~~ | 4 ~~114865~~  
114754 | 115390 | 115851 | 116150 | 116462 | 117016  
4.56513 | 4.57174 | 4.57786 | 4.58322 | 4.58911 | 4.59502 | 4.60012 |  
4.60221 | 4.60541 | 4.61221 | 4.61707 | 4.62020 | 4.62344 | 4.62912  
8.01507 | 8.02168 | 8.02780 | 8.03316 | 8.03905 | 8.04496 | 8.05006 |  
8.05215 | 8.05535 | 8.06215 | 8.06701 | 8.07014 | 8.07338 | 8.07906  
5.04604 | 5.04824 | 5.05028 | 5.05210 | 5.05411 | 5.05614 | 5.05791 |  
5.05864 | 5.05977 | 5.06217 | 5.06390 | 5.06502 | 5.06619 | 5.06824  
2.96903 | 2.97344 | 2.97752 | 2.98106 | 2.98494 | 2.98882 | 2.99215 |  
2.99351 | 2.99558 | 2.99998 | 3.00311 | 3.00512 | 3.00719 | 3.01082  
931.1 | 940.7 | 949.6 | 957.3 | 965.9 | 974.6 | 982.1 | 985.2 | 989.9 |  
1000.0 | 1007.2 | 1011.9 | 1016.7 | 1025.2  
3930.4 | 3920.8 | 39 ~~114865~~ | 3 ~~114865~~ | 11.9 | 3904.2 |  
3895.6 | 3886.9 | 3879.4 | 3876.3 | 3871.6 | 3861.5 | 3854.3 | 3849.6 |  
3844.8 | 3836.3



Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 86 [[/preprinted]]

H eta | H eta | H eta | H theta | H iota

126179 | 126640 | 127152 | 128776 | 130901  
43056 | 43517 | 44029 | 45853 | 47778  
117500 | 117961 | 118473 | 120297 | 122222  
4.63403 | 4.63866 | 4.64374 | 4.66137 | 4.67923  
8.08397 | 8.08860 | 8.09 ~~8~~ ~~368~~ |  
8.11131 | 8.12917  
5.07004 | 5.07173 | 5.07362 | 5. ~~07996~~ ~~715~~  
08026 | 5.08 ~~026~~ ~~715~~  
3.01393 | 3.01687 | 3.02006 | 3.03105 | 3.04202  
1032.6 | 1039.6 | 1047.3 | 1074.1 | 1101.6  
3828.9 | 3821.9 | 3814.2 | 3787.4 | 3759.9

[[end page]]  
[[start page]]

[[preprinted]] 87 [[/preprinted]]

[[underline]] April 14, 1903 [[/underline]]

C 13158

H beta | 83169 | 16831 = x <sup>1</sup> 4861.5 -  
520.8 = y <sup>1</sup>  
H gamma 100,000 | | 4340.7 | -892.9 = y <sup>2</sup>  
<sup>2</sup>  
H | 117582 | 34413 = x <sup>2</sup> | 8968.6

log y <sup>1</sup> See p. 41 log y <sup>2</sup>  
<sup>2</sup> = 2.950803  
log x <sup>1</sup> " " log x <sup>2</sup>  
<sup>2</sup> = 4.536722  
8.414081  
-0.0259466

[[equation]]

log d = 345106

86

$H_\beta$	$H_\gamma$	$H$
126179	43056	117500
126640	43517	117961
127152	44029	118473
128776	45853	120297
130901	47778	122222

87

April 14, 1903

C 13158

$H_\beta$  83169 | 16831 = x <sup>1</sup> 4861.5 -  
520.8 = y <sup>1</sup>  
 $H_\gamma$  100,000 | | 4340.7 | -892.9 = y <sup>2</sup>  
<sup>2</sup>  
H | 117582 | 34413 = x <sup>2</sup> | 8968.6

log y <sup>1</sup> See p. 41 log y <sup>2</sup>  
<sup>2</sup> = 2.950803  
log x <sup>1</sup> " " log x <sup>2</sup>  
<sup>2</sup> = 4.536722  
8.414081  
-0.0259466

log d = 345106

Project PHaEDRA - Annie Jump Cannon 13  
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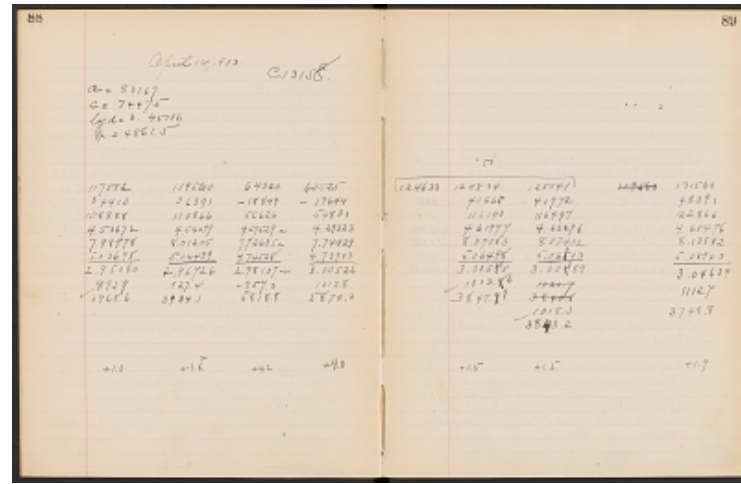
[[preprinted]] 88 & 89 [[/preprinted]]

April 14, 1903 C 13158

a = 83169  
c = 74475  
log d = 8.45106  
lambda = 4861.5

| | | | "50" | "50" | "50" | |  
117582 | 119560 | 64320 | 63525 | 124633 | 124834 | 125141 |  
[[/strikethrough]] 119560 [[/strikethrough]] 131560  
34413 | 36391 | -18849 | -19644 | | 41665 | 41972 | 48391  
108888 | 110866 | 55626 | 54831 | | 116140 | 116447 | 122866  
4.53672 | 4.56099 | 4.27529n | 4.29323 | | 4.61977 | 4.62296 | 4.68476  
7.98778 | 8.01205 | 7.72635n | 7.74429 | | 8.07083 | 8.07402 | 8.13582  
5.03698 | 5.04479 | 4.74528 | 4.73903 | | 5.06498 | 5.06  
[[/strikethrough]] 5 [[/strikethrough]] 613 | 5.08943  
2.95080 | 2.96726 | 2.98107n | 3.00526 | | 3.005 [[/strikethrough]] 9  
[[/strikethrough]] 85 | 3.00 [[/strikethrough]] 8 [[/strikethrough]] 789 |  
3.04639  
892.9 | 927.4 | -957.3 | 1012.8 | | 1013. [[/strikethrough]] 8  
[[/strikethrough]] 6 | [[/strikethrough]] 1020.7 [[/strikethrough]] 1018.3 |  
1112.7  
3968.6 | 3934.1 | 5818.8 | 5874.3 | | 3847. [[/strikethrough]] 7  
[[/strikethrough]] 9 | [[/strikethrough]] 3840.8 [[/strikethrough]] 3843.2 |  
3748.8

+1.0 | +1. [[/strikethrough]] 1 [[/strikethrough]] 2 | +4.2 | +4.0 | | +1.5 |  
+1.5 | +1.9



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[[preprinted]] 90 & 91 [[/preprinted]]

110652 | 111346 | 107004 | 100693 | 95445 | 90457 | 84511 | 79247 |  
75462 | 73942  
27483 | 28177 | 23835 | 17524 | 12276 | 7288 | 1342 | -3922 | -7707 | -  
9227  
101958 | 102652 | 98310 | 91999 | 86751 | 81763 | 75817 | 70553 |  
66768 | 65248  
4.43906 | 4.44989 | 4.37722 | 4.24363 | 4.08906 | 3.86261 | 3.12775 |  
3.59351n | 3.88689n | 3.96506n  
7.89012 | 7.90095 | 7.82828 | 7.69469 | 7.54012 | 7.31367 | 6.57881 |  
7.04457n | 7.33795n | 7.41612n  
5.00842 | 5.01137 | 4.99260 | 4.96378 | 4.93827 | 4.91256 | 4.87977 |  
4.84852 | 4.82457 | 4.81457  
2.88170 | 2.88958 | 2.83568 | 2.73091 | 2.60185 | 2.40111 | 1.69904 |  
2.19605n | 2.51338n | 2.60155n  
761.6 | 775.5 | 685.0 | 538. ~~1~~ ~~2~~ | 399.8 |  
251.8 | 500.1 | -157.0 | -326.1 | -399.5  
[[~~3~~]] 4099.9 | 4086.0 | 4176.5 | 4323.3 |  
4461.7 | 4609.7 | 4811. ~~4~~ ~~5~~ | 5018.5 |  
5187.6 | 5261.0

69033  
-14136  
60339  
4.15033n  
7.60139n  
4.78060  
2.82079n  
[[~~-66.2~~]] -661.9  
[[~~4927.7~~]] 5523.4

7.13447  
4.89927  
2.23520  
171.9  
4689.6

87993  
+4824  
[[~~69651~~]] 79299  
3.68341 ~~n~~  
7.13447 ~~n~~  
4.84293  
2.29154  
+195.7  
[[~~5057.2~~]] 4665.8

66969 | 72452 | 76159  
-16200 | -10717 | -7010  
58275 | 63758 | 67465  
4.20951n | 4.03007n | 3.84572  
7.66057n | 7.48113n | 7.29678  
4.76548 | 4.80453 | 4.82908  
2.89509n | 2.67660n | 2.46770  
-785.4 | -474.9 | -293.6  
5646.9 | 5336.4 | 5155.1

The image shows a photograph of an open manuscript with two pages, 90 and 91, visible. The pages contain handwritten astronomical data in cursive script. The data is organized into columns, with some entries crossed out with a single stroke. The ink is dark, and the paper shows signs of age and wear. The manuscript appears to be a record of celestial observations or calculations, possibly related to the Smithsonian Institution's historical astronomical work.

Project PHaEDRA - Annie Jump Cannon 13  
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[[preprinted]] 92 & 93 [[/preprinted]]

[[underline]] April 15, 1903 [[/underline]]

C 13195

Certain lines reduced by formulas of p. 56, to get correction for lambdas red.  
by formula of p. 56

a = 83054

c = 76837

d = 3.45972

lambda <sub>0</sub> = 4861.5

127122	123356	120459	117044	112908	111493	110811	
106994	101346						
44068	40302	37405	33990	29854	28439	27757	23940
120905	117139	114242	110827	106691	105276	104594	
100777	95129						
4.64412	4.60533	4.57293	4.53135	4.47500	4.45391	4.44337	
4.37912	4.26226						
8.10384	8.06505	8.03265	7.99107	7.93472	7.91363	7.90309	
7.83884	7.72198						
5.08244	5.06870	5.05783	5.04465	5.02812	5.02233	5.01951	
5.00336	<del>5</del>						
3.02140	2.99635	2.97482	2.94642	2.90660	2.89130	2.88358	
2.83548	2.74367						
1050.5	991.6	943.7	883.9	806.5	778.6	764.9	684.7
554.2							
3811.0	3869.9	3917.8	3977.6	4055.0	4082.9	4096.6	4176.8
4307.3							

Project PHaEDRA - Annie Jump Cannon 13  
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## Smithsonian Institution

*Harvard-Smithsonian Center for Astrophysics*

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