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EFFECTIVE WAVELENGTHS OF STARS IN THE PLEIADES

FROM PLATES TAKEN AT MOUNT WILSON

BY

EJNAR HERTZSPRUNG

WITH 4 FIGURES AND 1 MAP

D. Kgl. Danske Vidensk. Selsk. Skrifter, naturvidensk. og mathem. Afd., 8. Række, IV. 4.

KØBENHAVN
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BIANCO LUNOS BOGTRYKKERI
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1. Introduction. Instrumental Constants.

The present investigation has mainly been undertaken from the following point of view.

The Pleiades have always been the object of special attention. As a consequence of this a number of old photographs with long exposures of this group is available. These plates have partly been taken with lenses of sufficient focal length to enable a good determination of relative proper motions of faint stars by comparison with more recent plates. Owing to the considerable number of such old photographs the attainable accuracy will perhaps be greater for this group than for any other region of the sky.

It is to be regretted that the determination of absolute proper motions of the fainter stars by connection with the brighter ones of known proper motions is made difficult by the unknown magnitude equation occurring in photographic work of this kind. But just in the group of the Pleiades we may hope through accurate measures to find out, which stars, also among the fainter ones, have a proper motion common to the system and which have not. Of course, a certain arbitrariness will always remain in the separation of these two groups. Determinations of radial velocity would help to distinguish physical members from stars only optically projected on the part of the sky considered. We should then be able to use the stars of supposed common proper motion but of different brightness for the elimination of the magnitude equation.

Once the separation between physical and only optical members of the group is made, the determination of colour equivalents of the same stars will give us: Firstly, the relation between absolute magnitude and colour of the members of this interesting system, and secondly, the relation between apparent magnitude, colour and proper motion of faint stars in a special well observed region of the sky. Therefore I included the Pleiades in my programme for the determination of effective wavelengths with the 60 inch reflector of Mount Wilson. I had the prospect, in this way to get colour-equivalents of as faint stars as occur on the old photographs fit for the determination of relative proper motions.

The conspicuous group of the Pleiades has a diameter of about 2°, while the 60 inch reflector using the full aperture has a field of only about 20′ diameter fit for the determination of effective wavelengths. I have therefore diminished the number of plates necessary to cover the whole group by diaphragming the reflector down to an aperture of 40 inches or 1 meter. In this way the diameter of the efficient field is doubled to about 40′, while on the other hand for stars near the axis 1 magnitude is lost. Still it could be foreseen, that in half an hour of exposure time stars of the 14^{th} magnitude would be reached. — The 68 plates of the programme have all been taken.

The place of the reflector is $7^h 52^m$ W. of Grw., 34° 13′ north latitude and 1730 meter above sea level. Hence the thickness of the atmosphere is ·81 of that at sea level. The focal length of the reflector is 7606 mm, hence 1 mm on the plate is equal to 27″·12.

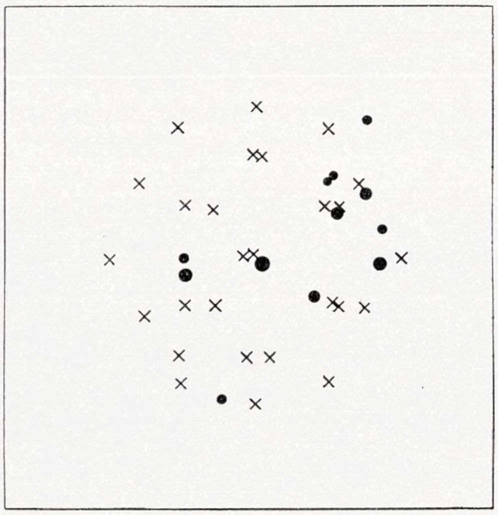

Figure 1.

The grating used consisted of black overspun, stretched rubber wires of a diameter $d = 2·745$ mm separated by intervals $l = 3·255$ mm. The spectra of uneven order are thus practically (if $d = l$ exactly) at their maximum intensity. The constant of the grating, $d + l$, was exactly 6 mm.

2. Plate Material.

The longest exposure used was 30 min. or 1800 sec. In order to make it possible to measure all stars at about the same intensity of the image further exposures of 570, 180, 57, 18, 6 and 2 sec. were made. The proportion between two consecutive exposures, ($\sqrt{10}$ is nearly equal to 19 : 6), corresponds to a difference in brightness of about 1 magnitude. The four shortest exposures were made successively on the same plate. Each series of exposures therefore consists of 4 plates. The brightest star, Alcyone, was taken as centre of the group. The positions of the centres of the separate fields are shown in Figure 1. The limits of this figure are the same as of the map given at the end of this paper. On each of the $2 \times 7 = 14$ inner fields a series of 4 plates, as indicated above, was exposed. Of the $12 + 1 = 13$ outer fields only one plate of 30 min. exposure time was taken. The programme comprised $4 \times 14 + 12 = 68$ plates. To this was added one duplicate plate. Hence a total number of 69 plates was used. A catalogue of these 69 plates is given in Table 1.

As the diffraction images of higher order, especially of the brighter stars, are rather extended, neighbouring images occasionally overlap in one position of the grating and not in another. Accordingly the grating was used in two different orientations. On 1912 Aug. 10, Sept. 8, 9 and 11 and Oct. 16 the wires of the grating

Table 1.

List of plates.

no. of plates	date	centre of field α (1900) 3h	centre of field δ (1900)	sidereal time of exposure: middle	sidereal time of exposure: duration	efficiency of plate	deviation from mean	correction of I_λ to the zenith	number of measured effective wavelengths
	1912	m	° ′	h m	s	m	m	m	
53	Aug. 10	41·9	+23 50	1 26	1800	8·9	+·1	—·02	306
54	— —	42·0	23 50	1 51	57, 18, 6, 2	6·3, 4·9, 3·8, 2·8	+·5	2	169
78	— 12	40·2	24 6	1 26	1800	9·1	+·3	2	241
79	— —	40·2	24 6	1 50	570	8·2	+·4	2	155
97	Sept. 8	42·6	24 4	1 29	1800	9·1	+·3	2	218
98	— —	42·6	24 4	1 53	570	8·0	+·2	2	134
99	— —	42·6	24 5	2 6	180	6·9	+·1	1	80
100	— —	42·6	24 5	2 13?	57, 18, 6, 2	6·1, 4·9, 4·0, 2·9	+·3	1	112
101	— —	42·6	23 36	2 31	1800	9·1	+·3	0	258
102	— —	42·6	23 36	2 54	570	8·3	+·5	0	180
103	— —	42·6	23 35	3 9	180	7·1	+·3	0	101
104	— —	42·6	23 36	3 15	57, 18, 6, 2	5·9, 4·9, 4·0, 3·0	+·1	0	143
105	— —	41·4	23 20	3 43	1800	9·1	+·3	0	256
106	— —	41·3	23 20	4 7	57, 18, 6, 2	5·5, 4·6, 3·6, 2·0	—·3	0	109
116	— 9	41·4	23 50	0 52	570	8·2	+·4	4	145
117	— —	41·4	23 50	1 2	180	6·8	·0	3	100
118	— —	41·5	24 20	1 11	180	7·1	+·3	2	82
119	— —	41·5	24 21	1 17	57, 18, 6, 2	5·8, 4·5, 3·9, 3·0	·0	2	98
120	— —	41·6	24 21	1 27	570	7·8	·0	2	124
121	— —	41·5	24 21	1 50	1800	9·0	+·2	2	242
122	— —	39·9	23 35	2 14	57, 18, 6, 2	5·8, 4·9, 4·1, 2·8	·0	1	141
123	— —	39·8	23 36	2 21	180	6·9	+·1	1	71
124	— —	39·8	23 36	2 30	570	8·0	+·2	0	130
125	— —	39·8	23 35	2 53	1800	8·9	+·1	0	229
126	— —	39·9	24 5	3 19	570	7·6	—·2	0	140
127	— —	39·8	24 5	3 41	1800	8·8	·0	0	244
128	— —	39·9	24 5	3 59	180	7·2	+·4	0	111
129	— —	39·9	24 6	4 4	57, 18, 6, 2	6·0, 4·9, 3·8, 2·8	+·2	0	184
144	— 11	44·9	23 49	0 14	1800	8·6	—·2	6	205
146	— —	43·3	24 29	1 31	1800	8·9	+·1	2	247
147	— —	43·3	23 12	2 7	1800	8·3	—·5	1	146
162	— 12	41·7	23 51	1 24	1800	8·7	—·1	2	262
163	— —	41·8	23 50	1 48	570	7·4	—·4	2	153
164	— —	41·8	23 50	1 57	57, 18, 6, 18, 2?	5·9, 4·9, 3·8, 4·7, 2·8	+·1	2	205
165	— —	41·7	23 50	2 6	180	6·8	·0	1	98
166	— —	41·7	24 21	2 27	1800	8·8	·0	1	177
167	— —	41·7	24 20	2 49	570	7·7	—·1	0	97
168	— —	41·7	24 21	2 59	180	6·6	—·2	0	58
169	— —	41·7	24 21	3 4	57, 18, 6, 2	5·7, 4·4, 3·5, 2·5	—·1	0	78
170	— —	41·9	23 20	3 24	1800	8·7	—·1	0	198
171	— —	41·8	23 21	3 48	570	7·7	—·1	0	112
172	— —	41·8	23 20	3 58	180	6·7	—·1	0	64
173	— —	41·8	23 21	4 4	57, 18, 6, 2	5·8, 4·8, 3·5, 2·8	·0	0	108
174	— —	40·3	24 6	4 12	180	6·7	—·1	0	74
175	— —	40·3	24 6	4 17	57, 18, 6, 2	5·6, 4·5, 3·8, 2·2	—·2	0	146
215	Oct. 12	40·0	23 36	2 19	180	6·5	—·3	1	58
216	— —	40·0	23 36	2 28	570	7·7	—·1	0	92
217	— —	40·0	23 36	3 4	1800	8·5	—·3	0	166
218	— —	40·1	23 36	3 24	57, 18, 6, 2	5·6, 4·6, 3·6, 2·2	—·2	0	128
219	— —	43·2	23 36	3 40	570	8·3	—·5	0	153
220	— —	43·2	23 35	3 49	180	6·8	·0	0	73

Table 1 (continued).

no. of plates	date	centre of field		sidereal time of exposure		efficiency of plate	deviation from mean	correction of I_λ to the zenith	number of measured effective wavelengths
		α (1900) 3h	δ (1900)	middle	duration				
	1912	m	° ′	h m	s	m	m	m	
221	Oct. 12	43·2	23 35	3 56	57, 18, 6, 2	5·5, 4·8, 3·9, 2·9	—·3	0	137
222	— —	43·2	23 35	4 14	1800	9·0	+·2	0	232
223	— —	43·2	24 6	4 53	1800	8·5	—·3	1	137
224	— —	43·2	24 5	5 9	180	6·8	·0	1	39
225	— —	43·3	24 3	5 18	570	7·6	—·2	2	92
226	— —	43·2	24 4	5 27	57, 18, 6, 2	5·5, 4·5, 3·1, 2·1	—·3	2	80
243	— 13	39·4	24 12	1 11	1800	8·8	·0	2	183
244	— —	39·3	23 35	1 51	1821	8·9	+·1	2	136
245	— —	41·7	23 5	2 30	1800	8·7	—·2	1	163
246	— —	41·7	24 35	3 10	1800	9·0	+·2	0	203
247	— —	44·1	23 32	3 52	1800	8·5	—·3	0	149
248	— —	44·2	24 12	4 32	1800	8·3	—·5	0	149
305	— 16	40·1	23 12	2 20	1800	8·6	—·2	1	124
306	— —	40·1	24 29	2 54	1800	8·6	—·2	0	172
307	— —	38·5	23 50	3 30	1800	8·6	—·2	0	125
310	— —	41·7	23 20	4 54	570	7·5	—·3	1	88
311	— —	41·7	23 20	5 2	180	6·7	—·1	1	62
312	— —	43·3	23 20	5 28	1800	8·5	—·3	2	100
									9972

were placed parallel to the meridian, so that the diffraction images appear to the east and to the west of the central image, while on Aug. 12, Sept. 12 and Oct. 12 the grating was placed at right angles to this position.

The plates of the same exposure time do not all show images of the same intensity owing to differences in the transparency or quietness of the air or sensibility of the plates. To get a measure of the efficiency of the different plates, I have estimated on each plate the magnitude at which the spectra of the second order had a certain arbitrary intensity. The efficiencies thus found are given in stellar magnitudes (the zero point being arbitrary) for each plate separately in Table 1. Compared with the longest exposure of 1800^{s} the exposures of 570^{s}, 180^{s} and 57^{s} are in the mean respectively $^{m}{\cdot}975 \pm {}^{m}{\cdot}054$ (m.e.), $1^{m}{\cdot}973 \pm {}^{m}{\cdot}060$ and $3^{m}{\cdot}054 \pm {}^{m}{\cdot}079$ less efficient. That is to say, that the proportion of exposure time chosen, $\sqrt{10}$, practically corresponds to one magnitude. Hence for the plates used in this investigation the exponent p in the formula of Schwarzschild

$$\text{intensity of photographic image} = f\,(\text{intensity of light} \times \text{exposure time}^{p})$$

is found to be $\cdot 80 \pm \cdot 02$ (m. e.).

The mean efficiency of a plate is thus $8^{m}{\cdot}8 + \log(t/1800)$, where t is the exposure time in seconds. The deviations of the single plates from this formula are given in Table 1. The mean square $^{m^2}{\cdot}062 = (\pm {}^{m}{\cdot}25)^2$ of these deviations gives a measure for the dispersion of the apparent sensibility of the plates. The relative small efficiency of the later plates is striking.

The exposures have all been made by opening and closing the plateholder. For this reason the shortest exposure time, 2^s, was rather uncertain and the different parts of the plate were not exposed exactly alike. But this circumstance is of no importance in the present case, because the intensity of each star image was estimated independently when the effective wavelength was measured.

3. The Measuring of the Plates.

The plates have been measured by the writer at Potsdam in the time from 1915 March 17 to Aug. 25. For this purpose the same Toepfer machine was used which has served for the measuring of my photographs of double stars (Potsdam Publ. Nr. 75). By this machine the displacement of the whole plate is measured micrometrically, which gives a guarantee for the constancy of the screw value.

The rectangular coördinates of the stars on each plate were noted to $^1/_{10}$ of a mm. The diameter of the central star image was estimated to $^1/_{100}$ of a mm by the aid of a double wire in the focal plane of the objective of the microscope.

On each plate the effective wavelengths were measured within a field, the diameter of which was 1°. This is a somewhat greater field than indicated above as fit for use and the star images near the border are rather unsharp. But in the present case, where several overlapping plates are available, the possible systematic differences between stars near to and far from the centre of the plate will to a great extent be compensated by taking the mean of the different plates, as usually the same star will on some plates be near to and on others far from the centre. Only the stars more than about 1° distant from Alcyone make an exception to this rule. — In other cases, where only plates with a common centre are available, it is not to be recommended to use a field greater than 40′ in diameter, when the reflector is diaphragmed down to an aperture of 1 meter.

The general appearance of the images is shown in Figure 2 for some stars of different brightness (Alcyone and neighbouring stars). The distance between the two spectra on each side of the central image was measured as between two star images. When the spectra were unsymmetrical it was aimed to place the wire in such a way that the area of the spectral image was cut into two equal parts. The setting was read to $\frac{1}{2}\mu$ corresponding to about $2\,Å$ in the spectra of the first order or about $^{m}.01$ in the colour index.

When the thickness d of the wires of the grating is equal to the spare width l between them, all spectra of even order disappear, while, as stated above, those of uneven order are at their maximum intensity. For the grating here used d is only approximately equal to l. Hence the spectra of the second order also make their appearance in the images of bright stars. In fact we have $d = 2.745$ mm and $l = 3.255$ mm. Corresponding to the proportion $^l/_d = 1.118$ the central image is calculated to be $1^{m}\cdot33$ and the spectra of the first, second and third order respectively $2^{m}\cdot51$, $6^{m}\cdot88$ and $5^{m}\cdot05$ fainter than the star image as taken without the grating placed in front of the reflector. Owing to the oblong figure of the spectra the loss in limiting magnitude is still somewhat greater especially for the spectra of higher order. Here we are chiefly interested in the spectra of the first order, because they have the greatest intensity and the main point is to reach as faint stars

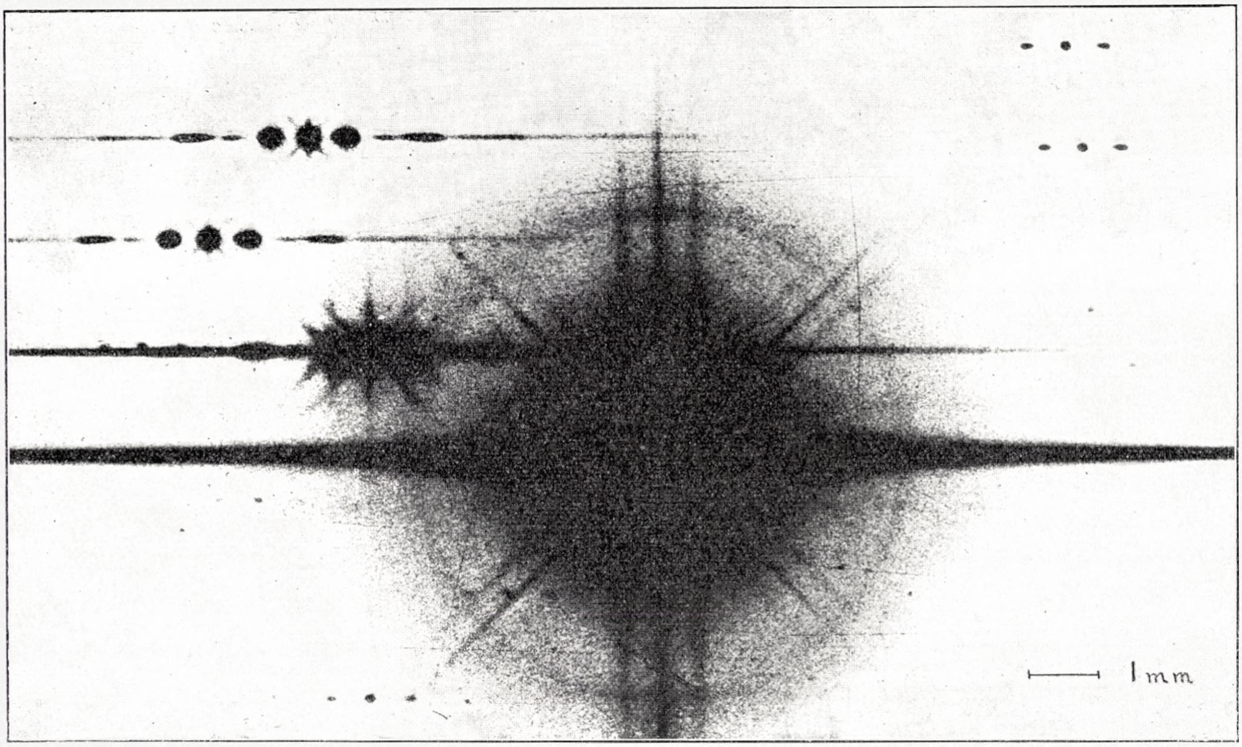

Figure 2.

as possible. The oblongness of the spectra of the first order varies sensibly with the seeing. The better the seeing is, the more oblong the spectra will appear. In the main we may say, that with the same exposure time the spectra of the first order reach about 3^{m} less far than the stars taken without grating. Generally speaking we must choose the constant, $d+l$, of the grating by weighing the different points of view against each other. The smaller the constant of the grating is, the farther the spectra will be separated from each other and the same accuracy in measuring will consequently give a greater accuracy of the effective wavelength. But at the same time the spectra will get more oblong and less fit for accurate pointing, and possible systematic errors, caused by the unsymmetrical figure — varying with the definition — of the spectra, will be of more importance. Besides, the spectrum fades out through its increased size, while we just want to reach as faint stars as possible. Partly to throw some light on these considerations I have measured not only the spectra of the first but also of the second and third order.

On each spectrum only one pointing was made. The gain in accuracy by repeated measurement of the same image is small in comparison with the other accidental and systematic errors. I therefore preferred to increase the accuracy by taking more plates.

In order to get a good determination of the variation of the effective wavelength and its mean error with the intensity of the image of the same star, also many faint images were measured which are individually of very little use.

4. Reduction of the Effective Wavelengths to the same Intensity of the Image.

The determination of colour equivalents from effective wavelengths rests in the present paper on the supposition that the effective wavelength depends only on the colour of the star and the intensity of the image on the plate. Hence it is supposed that a bright and a faint star of the same colour will give the same effective wavelength when the exposure times are chosen in such a way, that the images of the two stars show the same intensity, or in other words, that the exponent p in the formula of Schwarzschild mentioned above is independent of the wavelength. The gradation of the scales of exposure time and of intensity may be different for different wavelengths, but the proportion between the two gradations must be independent of the wavelength. That the exponent p is practically independent of the wavelength has been found in different photographic investigations. As the part of the spectrum here considered is only small, the above assumption is plausible.

This assumption is, however, still supported by the material itself. The intensity of the spectra of the IInd order are, as mentioned above, 4·37 magnitudes fainter than the spectra of the Ist order. If now two exposures of the same star are chosen of such different duration, that the spectra of the Ist order of one exposure are of equal intensity as the spectra of IInd order of the other exposure, then practically the same effective wavelength is found from the spectra of the Ist order of the short exposed and the spectra of the IInd order of the long exposed image. It may, of course, be objected that the spectra of Ist and IInd order have different dispersion and are therefore not to be compared directly, but with spectra of approximately symmetrical figure appreciable errors are not to be expected on account of this circumstance. Another control was made by the aid of the faint diffraction images produced by the grating in connection with three metallic bars, which were placed at right angles to the rubber wires in order to support them at certain intervals and to keep them at the proper distances from one another. These additional spectra, which can be seen on the image of Alcyone on Figure 2, are strongly eclipsed by the brightness of the main image and show a somewhat irregular figure owing to their inclined position. Still it may be noted as a support of the assumption made above, that also these additional spectra give practically the right effective wavelength, while they are about 9·7 magnitudes fainter than the common spectra of the Ist order. For the 5 brightest Pleiades these by-spectra gave on 42 images in the mean $l = 1{\cdot}054$ mm $\pm$ ·002 mm (m. e.) or $I_\lambda = -{\cdot}30 \pm {\cdot}04$ (m. e.) in comparison with $-{\cdot}20$ as found from the rest of the material. The difference $\cdot 10 \pm \cdot 04$ (m. e.) is not too large. If anything, it would indicate a shortening of the effective wavelength for decreasing intensity of the light and correspondingly prolonged exposure time and that is exactly the opposite of what was feared.

The reduction of the measures was made in the following way. The distance in millimeters between the two spectra to the right and to the left of the central

Table 2.

Corrections to normal strength of the image, spectra of Ist order, observed values.

diameter of central image, d	·05	·06	.07	·08	·09	·10	·11	·12	·13	·14 mm
mean correction of the effective wavelength to d = ·10 mm	12·0	10·5	5·7	4·4	1·9	0	—1·6	—3·8	—5·1	—5·9 μ
number of differences used	125	171	330	418	164	—	120	400	220	131
diameter of central image, d	·15	·16	·17	·18	·19	·20	·21	·22	·23	·24 mm
mean correction of the effective wavelength to d = ·10 mm	—6·7	—4·8	—7·6	—6·7	—7·3	—8·8	—8·2	—7·1	—4·8	—7·1 μ
number of differences used	95	132	138	105	74	41	25	13	6	7

image, or the effective wavelength was first corrected to the zenith for selective extinction of the light in the earth's atmosphere. These corrections are given in Table 1 for each separate plate.

The intensity of the image on the plate was indicated by the diameter d of the central image of the star. As normal intensity was considered that for which the diameter of the central star image was $^1/_{10}$ mm. In that case the spectra are about 2 magnitudes stronger than the first visible traces and are therefore just well exposed.

It remained to find for a given star the variation of the effective wavelength with changing intensity of the spectra as shown on the plate. To this end for each star the differences of the observed effective wavelengths from that corresponding to a diameter d = ·1 mm of the central image were formed. The mean values of these deviations for different values of d are given in Table 2. No appreciable differences were found in these corrections for stars of different colour. The finally adopted smoothed corrections are given in Table 3. They have been applied to each separate effective wavelength.

Owing to a mistake the effective wavelengths derived from the spectra of the Ist order were treated separately for those exposures where also spectra of higher order were of measurable intensity. For these effective wavelengths from the spectra of the Ist order new corrections to $d = \cdot 1$ mm were derived. They are given in Table 4. It is seen, that for these usually very strong images no sensible variation of the effective wavelength with d was found. For these images I have therefore adopted the constant correction -12μ. This correction is somewhat different from the one ($-7\cdot\mu$) derived above for exposures of the same intensity. But it is evident, that there will be a systematic difference between the qualities of two images, showing the same diameter d of the central star, but in one case the spectra of

Table 3.

Corrections to normal strength of the image, spectra of Ist order, adopted values.

diameter of central image, d	·05	·06	·07	·08	·09	·10	·11	·12	·13 m
adopted correction of the effective wavelength to d = ·10 mm	+13	+10	+7	+4	+2	0	—2	—3·	—4· μ
diameter of central image, d	·14	·15	·16	·17	·18	·19	·20		·24 mm
adopted correction of the effective wavelength to d = ·10 mm	—5·	—6	—6·	—7	—7	—7·	—7·		—7· μ

Table 4.

Corrections to normal strength of the image, spectra of Ist order, when spectra of higher order were also measured, observed values.

diameter of central image, d	·13	·14	·15	·16	·17	·18	·19 mm
mean correction of the effective wavelength to d = ·10 mm	—13·5	—17·2	—14·9	—9·6	—14·4	—11·2	—12·3 μ
number of differences used	3	4	5	10	24	40	38
diameter of central image, d	·20	·21	·22	·23	·24	·25	·26 mm
mean correction of the effective wavelength to d = ·10 mm	—11·0	—12·0	—12·8	—11·9	—12·2	—12·0	—15·4 μ
number of differences used	40	30	85	71	62	50	10

higher order measurable, and in the other not. In the latter case the images will be more nebulous (owing to unquietness of the air or great distance from the centre of the field) and this may give rise to systematic difference in the effective wavelength.

5. Precision of the Effective Wavelengths.

The effective wavelengths found for the same star from different plates showing exposures of the same intensity (same d) were compared, and the mean error of a single effective wavelength derived from the differences between these values. The results are given in Table 5 and the adopted weights in Table 6.

As only one setting was made on each spectrum it is impossible to determine, which fraction of the square of the mean error is due to errors of pointing and which to defects of the image. In this respect my earlier paper (Potsdam Publ.

Nr. 63, p. 16, Tab. 8 and 9) may be compared. The mean errors here found are somewhat greater than those derived in case of the cluster *NGC* 1647 (Ap. J. **42**, 92; 1915). Part of this difference will at any rate be due to the fact that the plates of

Table 5.

Precision of effective wavelengths, spectra of I[st] order.

diameter of central image, d	·05	·06	·07	·08	·09	·10	·11 mm
number of differences used	82	125	222	254	246	211	165
square of mean error of l	843	428	281	138	89	57	61 μ^2
weight of I_λ	3·0	5·9	9·0	18·3	28·4	45	41 m^{-2}
mean error of I_λ	±·58	±·41	±·33	±·23	±·19	±·15	±·16 m
diameter of central image, d	·12	·13	·14, ·15	·16, ·17	·18, ·19	·20, ·21, ·22 mm	
number of differences used	177	66	80	121	70	27	
square of mean error of l	44	40	54	64	39	33 μ^2	
weight of I_λ	57	63	47	39	66	77 m^{-2}	
mean error of I_λ	±·13	±·13	±·15	±·16	±·12	±·11 m	

Table 6.

Adopted weights, spectra of I[st] order.

diameter of central image, d	·05	·06	·07	·08	·09	·10	·11	·12	·13	·14 mm
adopted normal weight of I_λ	2	4	8	18	28	38	48	56	58	52 m^{-2}
diameter of central image, d	·15	·16	·17	·18	·19	·20	·21	·22	·23	·24 mm
adopted normal weight of I_λ	44	36	28	22	16	12	18	6	4	2 m^{-2}

NGC 1647 were measured three times. The marked decrease in accuracy for the fainter images, formerly (Potsdam Publ. l. c.) found, is also shown by the present measures.

6. Determination of Approximate Magnitudes.

The estimates of the diameter d of the central star image were converted into provisional magnitudes according to Table 7, adding the constant of efficiency

Table 7.

diameter of central image, d	·04	·05	·06	·07	·08	·09	·10	·11	·12	·13	·14	·15
provisional magnitude equivalent m'	7·0	6·5	6·1	5·6	5·2	4·8	4·5	4·1	3·8	3·5	3·2	2·9
d	·16	·17	·18	·19	·20	·21	·22	·23	·24	·25	·26	·27
m'	2·6	2·3	2·1	1·8	1·5	1·2	1·0	·7	·5	·3	·1	—·2
d	·28	·29	·30	·31	·32	·33	·34	·35	·36	·37	·38	·39
m'	—·4	—·6	—·8	—1·0	—1·2	—1·4	—1·6	—1·9	—2·1	—2·3	—2·5	—2·7
d	·40	·41	·42	·43	·44	·45	·46	·47	·48	·49	·50 mm	
m'	—2·9	—3·2	—3·4	—3·6	—3·8	—4·0	—4·2	—4·4	—4·6	—4·8	—5·0	

given in Table 1 for each separate plate. The mean provisional magnitudes thus obtained for each star were finally reduced to the scale of A. N. 4767 by means of a table made according to the formula

$$m_{pr} = +12{\cdot}239 + 1{\cdot}008\,(m-12) - {\cdot}017\,(m-12)^2$$

where m_{pr} is the provisional magnitude and m the definitive one.

The correction of m_{pr} to m is therefore zero at $8^{m}{\cdot}5$ and $16^{m}{\cdot}0$. Its maximum value between these two magnitudes is $-{}^{m}{\cdot}24$ for $m_{pr} = 12{\cdot}2$. There will however still remain systematic differences between stars near to and far from the centre of the plates. Near the border of the field bright stars have probably been estimated too bright, and faint ones too faint. The magnitudes are therefore supposed to be most reliable for stars less than 40′ distant from Alcyone. For this region I find by comparison with the magnitudes of A. N. 4767 the mean error to be about $\pm{}^{m}{\cdot}1$ at 14^{m} and about $\pm{}^{m}{\cdot}2$ at 15^{m}. Especially the faintest magnitudes are therefore uncertain even in the central region of the field investigated, but they are only meant to serve for Durchmusterung purposes.

7. The Coordinates.

The coordinates were noted to the tenth of a mm and converted into α and δ for 1900 for the following plates 53, 78, 105, 125, 127, 144, 146, 147, 243, 244, 245, 246, 247, 248, 305, 306, 307 and 312. The coordinates of a few stars not occurring on these plates have been added separately. For stars less than 40′ distant from Alcyone the mean error is in both coordinates about $\pm 2''$. For stars near the border of the field investigated it may be double this amount. This will be sufficient for the identification of the stars.

8. Spectra of the IInd Order.

For the reduction of the effective wavelengths derived from the spectra of the IInd order to normal intensity of the image I have not made use of the diameter d of the central star image, but the intensity of the spectra of the IInd order themselves was directly estimated on the plate. These estimates were made by estimating the diameter d' of the central star image for which the spectra of the Ist order would have the same intensity as that actually observed for the spectra of the IInd order. With these equivalent diameters d' I then proceeded exactly in the same way as above with the diameter d referring to the spectra of the Ist order. The approximate relation between d and d', which for the rest is of no importance, is in the mean

$d =$ ·24	·30	·36	·42 mm
$d' =$ ·084	·089	·100	·121 mm.

When the diameter d of the central image is small, the spectra of the IInd order could only be measured when the air was quiet and the images consequently sharp. For such images the intensity of the spectra of the IInd order, or d', will be found comparatively high.

In order to make the comparison between the spectra of the Ist and IInd orders as direct as possible, $d' = {\cdot}1$ mm was chosen to represent normal intensity of the spectra of the IInd order. For different values of d' the correction of the effective wavelength to $d' = {\cdot}1$ mm was found to be

d'	·08	·10	·12	·134 mm
correction	+6·95	0	−7·1	−10·9 μ
number of images n	74	—	43	26

After smoothing the following corrections were adopted

d'	·08	·09	·10	·11	·12	·13	·14	·15 mm
corr.	+7	+3·	0	−3·	−7	−10	−13	−16 μ

These corrections are, as was to be anticipated, about twice as large as those found for the distance between the two spectra of the Ist order.

The mean error of a single effective wavelength from the spectra of the IInd order was determined in the same way as above for the spectra of the Ist order. The values found are given in Table 8.

Table 8.

Spectra of IInd order.

equivalent diameter of central image, d' =	·08	·09	·10	·11	·12	·13	·14 mm
number of differences used	97	185	98	61	22	7	1
square of mean error of distance between the spectra of IInd order	271	184	210	141	132	119	312 μ^2
weight of I_λ observed	38	56	49	73	78	86	33 m^{-2}
weight of I_λ smoothed	32	44	56	68	80	92	104 m^{-2}
weight of I_λ adopted	8	32	56	64	56	32	8 m^{-2}

The spectra of the IInd order were measured on 703 images, the total weight of the corresponding colour indices being 26412 m^{-2}.

9. Spectra of the IIIrd Order.

For the spectra of the IIIrd order a diameter $d = {\cdot}25$ mm of the central star-image was chosen as representing normal intensity of the exposure. For other values of d the adopted reductions to $d = {\cdot}25$ mm are contained in Table 9. In the same table the square of the mean error of the effective wavelength for different values of d is given followed by the smoothed weights, which have partly been further reduced on account of the uncertainty of the corrections to normal intensity of the image.

Table 9.

Spectra of III[rd] order.

diameter of central image	adopted correction of the effective wavelength to $d = $ mm·25	number of differences used	square of mean error (m. e.)^2	weight		
				observed	smoothed	reduced
mm	μ		μ^2	m^{-2}	m^{-2}	m^{-2}
·14	+ 31	0	—	—	8	0
·15	+ 25	0	—	—	12	0
·16	+ 21	10	1008	23	16	2
·17	+ 18	4	736	31	22	4
·18	+ 15	18	762	30	27	8
·19	+ 12·	16	311	74	33	14
·20	+ 10	34	592	39	39	22
·21	+ 8	9	355	65	46	31
·22	+ 5·	50	464	50	53	42
·23	+ 3·	26	410	56	59	52
·24	+ 2	56	369	63	63	61
·25	0	18	325	71	66	66
·26	— 1·	30	201	115	68	67
·27	— 3·	13	363	64	70	65
·28	— 5	20	303	76	70	60
·29	— 6·	5	137	169	71	55
·30	— 8	22	508	45	71	48
·31	— 9·	10	327	71	71	42
·32	— 11	26	234	99	72	36
·33	— 12	7	531	43	72	30
·34	— 13·	32	444	52	72	25
·35	— 14·	10	220	105	72	19
·36	— 16	24	177	131	73	15
·37	— 17	5	713	32	73	12
·38	— 18·	22	339	68	73	9
·39	— 19·	6	204	113	73	6
·40	— 20·	16	274	84	73	3
·41	— 22	4	148	156	73	1
·42	— 23	3	423	55	73	0
·43	— 24	0	—	—	—	0
·44	— 25	1	312	74	—	0
·45	— 26·	1	312	74	—	0

The spectra of the III[rd] order were measured on 1262 images, the total weight of the resulting colour equivalents being 45766 m^{-2}.

10. Relation between Effective Wavelength and Colour Index.

As normal colour indices the I_H values of the Göttingen Actinometry were chosen. These I_H values are meant to represent the differences between the photographic Göttingen magnitude and the visual magnitude on the Harvard scale. In stead of simply giving the effective wavelengths in Ångström units, as I have previously done, I have in the present paper reduced them all to the I_H system of colour indices.

Table 10.

plate no.	date	centre of plate		sidereal time of exposure		correction of I_λ to the zenith
		α	δ	middle	duration	
	1912	h m	°	h m	s	m
231	Oct. 12	4 29	+ 15½	6 43	114	—·02·
234	— 13	19 32	+ 16	21 7	36	—·02
235	— —	20 8	+ 12	21 22	360	—·02
236	— —	19 45	+ 18	21 43	360	—·02
238	— —	23 42	+ 3	22 44	360	—·03
295	— 16	19 23	+ 20	21 0	114	—·01·
298	— —	20 35	+ 13	22 3	114	—·02
303	— —	0 44	+ 5	1 3	114	—·02
330	— 17	4 13	+ 17	5 13	360	—·01
331	— —	4 13	+ 17	5 27	360	—·01·
332	— —	4 21	+ 15	5 42	360	—·01·
333	— —	4 21	+ 15	5 56	360	—·02
334	— —	4 25	+ 16	6 13	360	—·02
335	— —	4 25	+ 16	6 26	360	—·02·

Table 11.

plate no.	no. Potsdam Publ. Vol. 9	*BD*	phgr. magn. Göttingen m_{pg}	colour index m_{pg}, Gött.— m_v, Harv. I_H	distance between spectra of 1st order reduced to $d = ·1$ mm and to the zenith l	relative weight of l p	*O—C* (I_H)
			m		mm	m^{-2}	m
295	2766	+19°4019	6·39	—·22	1·0736	480	—·33
295	2764	19°4015	5·47	—·10	1·0858	370	—·44
234	2800	15°3866	6·88	—·01	1·0443	500	+·44
295	2759	19°4009	6·17	·00	1·0707	366	—·05
295	2757	19°4004	7·20	·17	1·0726	342	+·08
334, 335	541	15° 637	5·02	·21	1·0834	198	—·09
334, 335	539	15° 636	5·93	·22	1·0720	36	+·14
332, 333	512	15° 625	4·84	·23	1·0875	296	—·14
298	3040	12°4405	7·85	·26	1·0757	448	+·11
231	549	15° 645	6·36	·29	1·0825	30	+·01
334, 335	544	15° 640	6·93	·33	1·0853	246	—·00
334, 335	542	15° 639	5·84	·36	1·0866	56	+·00
332, 333	509	15° 621	6·95	·44	1·0781	200	+·24
234	2814	15°3877	7·61	·47	1·0881	192	+·08
334, 335	532	15° 633	7·13	·49	1·0918	240	+·03
303	80	4° 123	6·56	·73	1·1211	434	—·28
330, 331	498	17° 712	4·98	·81	1·1152	146	—·09
295	2760	19°4010	6·21	·94	1·1233	334	—·12
334, 335	528	15° 631	5·05	·98	1·1162	182	+·06
334, 335	525	16° 605	6·31	1·04	1·1288	236	—·12
234	2816	16°3918	6·73	1·06	1·1175	496	+·12
234	2805	16°3902	8·59	1·20	1·1172	156	+·26
235	2954	11°4180	7·88	1·22	1·1308	106	+·02
236	2848	18°4240	5·32	1·23	1·1305	36	+·04
295	2765	19°4017	7·47	1·35	1·1485	514	—·18
298	3047	12°4419	8·71	1·42	1·1431	458	—·01
298	3042	12°4411	7·47	1·59	1·1443	486	+·14
238	3486	2°4709	7·64	2·10	1·1742	246	+·08

For the determination of the relation between effective wavelength and colour index I_H, 14 special plates were taken of stars contained in the Göttingen Actinometry. The data of these plates are given in Table 10 and the results of the separate stars in Table 11. Least square solutions gave the following formulae using first the colour index I_H and then the effective wavelength l measured in millimeters as argument:

$$l - 1{\cdot}10317 = {\cdot}04983\,(I_H - {\cdot}672)$$

and

$$I_H - {\cdot}672 = 19{\cdot}033\,(l - 1{\cdot}10317)$$

The effective wavelength in Ångström units is equal to $3944{\cdot}2\,l$. Hence

$$\Delta\lambda_{eff}/\Delta I_H = 197 \text{ and } 207 \text{ or in the mean } 202\,{}^{Å}/_{m} \pm 13\,{}^{Å}/_{m} \text{ (m. e.)}$$

Finally the value $\Delta\lambda_{eff}/\Delta I_H = 200\,{}^{Å}/_{m}$ has been adopted, or

$$I_H = 19{\cdot}721\,(l - 1{\cdot}0690)$$
$$\lambda_{eff} = 200\,I_H + 4216{\cdot}4$$

For the colour index derived from the effective wavelength the designation I_λ is used.

11. Relation between the Effective Wavelengths found from the Spectra of the Ist, IInd and IIIrd Order.

The effective wavelengths found from the spectra of the IInd and IIIrd order were first converted into provisional values of I_λ by the aid of the formula derived for the spectra of the Ist order. Marking these provisional values with ′ the following relations were found empirically:

$$I_{\lambda,\,I} = +{\cdot}020 + {\cdot}632\,I'_{\lambda,\,II} + {\cdot}1044\,I'^{2}_{\lambda,\,II}$$

and

$$I_{\lambda,\,I} = -{\cdot}084 + {\cdot}617\,I'_{\lambda,\,III} + {\cdot}1482\,I'^{2}_{\lambda,\,III}$$

These formulae were used for the reduction of $I'_{\lambda,\,II}$ and $I'_{\lambda,\,III}$ to the system $I_{\lambda,\,I}$ adopted in the present paper.

12. Detailed Example of the Measures of Star No. 508.

It was at first intended to print for each star the effective wavelength derived from each separate exposure. For obvious reasons this idea has been abandoned. The example given in Table 12 of the measures of the star no. 508, the $6^1/_2{}^m$ distant companion to Alcyone, will be sufficient to show the character of the observations. The first 4 columns of Table 12 refer to the spectra of the Ist order, the next 4 columns to those of the IInd order and the last 4 columns to those of the

Table 12.

Measures of effective wavelengths of the star no. 508
= Bessel *p* = Wolf 212 = Gaultier 133 = Boss *PGC* 867.

plate no.	d	l_I	p
	mm	mm	m^{-2}
129	·24	1·075	1
226	23	70·	4
100	22	71·	6
175	22	72·	6
122	19	75·	16
106	18	64	22
100	17	59·	28
104	17	70	28
129	17	80	14
173	17	71	28
122	16	77	18
175	16	74	36
218	15	70	22
226	15	69	44
129	14	61	26
54	13	83·	58
104	13	69·	58
164	13	64·	58
221	13	70	58
100	12	60	56
173	12	66	56
175	12	59·	56
54	11	92·	48
106	11	53	48
122	11	75	48
164	11	77	48
218	10	64	19
221	10	71·	38
226	10	61	38
54	9	81·	28
106	9	75·	28

1·0699, 1042

$I_\lambda = +·02$

plate no.	d	l_I	p
104	26	1·073	0
100	25	69	0
122	24	77·	2
218	24	72·	2
173	23	76·	4
164	22	68·	6
221	22	62	6
218	20	68	12
221	18	61·	22
164	16	80·	36
164	16	65	36

1·0699, 126

$I_\lambda = +·02$

plate no.	d'	l_{II}	p
	mm	mm	m^{-2}
97	·14	2·124	8
98	14	·148·	8
125	13	·133	32
162	13	·141·	32
102	12	·145·	56
217	12	·129·	56
222	12	·122·	56
103	11	·127·	64
124	11	·158·	64
126	11	·147	64
163	11	·146·	64
219	11	·141·	64
53	10	·171	56
78	10	·156	56
79	10	·129	56
99	10	·138	56
116	10	·135	56
171	10	·126	56
216	10	·130	56
310	10	·134	56
123	9	·145	32
128	9	·155·	32
165	9	·123·	32
172	9	·115·	32
174	9	·110·	32
220	9	·137	32
225	9	·130·	32
311	9	·129·	32
106	8	·125·	8
117	8	·148	8
122	8	·148	8
164	8	·151	8
215	8	·132·	8
224	8	·128·	8

2·1380, 1320
1·0690

$I'_{\lambda,II} = ·00$

$I_\lambda = +·02$

plate no.	d	l_{III}	p
	mm	mm	m^{-2}
97	·47	3·191·	0
222	42	·216	0
126	42	·220	0
171	40	·244·	3
163	40	·223·	3
98	40	·205	3
219	39	·206·	6
102	39	·229·	6
310	38	·218	9
225	38	·219·	9
216	38	·208·	9
172	38	·204	9
124	38	·242	9
103	38	·201·	9
128	36	·207	15
174	35	·210·	19
116	35	·267·	19
99	34	·207	25
79	34	·236·	25
101	33	·251·	30
311	32	·192	36
123	31	·233	42
220	30	·222·	48
226	29	·179·	55
215	29	·230·	55
173	28	·219	60
165	26	·222	67
104	26	·224·	67
117	25	·258	66
100	25	·196·	66
218	24	·211·	61
173	23	·210·	52
106	23	·223·	52
221	22	·225·	42
164	22	·222	42
218	20	·225	22
54	19	·229·	14
221	18	·223·	8
164	16	·254·	2
164	16	·222	2

3·2205, 1067
1·0735

$I'_{\lambda,III} = +·09$

$I_\lambda = —·03$

III[rd] order. The measures of the spectra of the I[st] order are divided into two groups according to the description given above. For each image the number of the plate is followed by the diameter d or equivalent diameter d' of the central image given to hundredths of a millimeter. Then follows the measured distance between the two spectra corrected to normal intensity (denoted by d or d') of the image. Finally the weight of the effective wavelength is given, unit weight corresponding to a mean error of $\pm 1^m$ in the equivalent colour index I_λ. Half the normal weight was given to images of inferior quality. This star here chosen as an example is, of course, one of those where the number of measured effective wavelengths is largest.

13. Other Determinations of Colour Equivalents of Stars in the Pleiades.

In Table 13 I have compared the effective wavelengths, obtained from the Mount Wilson plates, with colour equivalents from other sources all reduced to the scale of I_λ used in the present paper.

The first part of Table 13 contains the 300 Gaultier stars, which comprise the stars brighter than about $13^{m}\cdot5$ photographically within $55'\cdot4$ of the central star Alcyone. A few bright stars outside this field are given in the second part of Table 13.

The different sources of supplementary colour equivalents used in forming mean values of I_λ are:

1. Effective wavelengths for 59 stars from plates taken with a 81 mm refractor ($f = 1236$ mm) at the Urania observatory, Copenhagen (Potsdam Publ. 63, Table 13).

2. Colour indices for 19 bright Pleiades using the photographic magnitude given in the Göttingen Actinometry (Teil B, Abh. der Ges. der Wiss. zu Göttingen, Math.-phys. Klasse, Neue Folge, Bd. 8, Nro. 4, 14; 1912) in combination with the visual Harvard magnitudes.

3. Colourindices for 92 stars, using the Potsdam UV Zeisstriplet photographic magnitudes combined with the visual magnitudes of Müller and Kempf (A. N. 3587, Bd. 150, 193; 1899).

4. Colour indices for 234 stars estimated photographically by Tikhoff (Publ. de l'Obs. Centr. Nicolas, Sér. 2, Vol. 17) comparing on an arbitrary magnitude scale the differences between the wavelengths 540 and 425 $\mu\mu$.

14. Relation between Brightness and Colour of the Physical Members and Hypothetical Parallaxes of the Pleiades.

A complete separation of the physical members of a cluster from other stars projected on the field investigated is not possible, because it may always happen, that stars not belonging to the group have proper motions (and radial velocities) agreeing within the errors of observation with the motion of the cluster. It is there-

Table 13.

Gaultier no.	Mount Wilson effective wavelengths from spectra of the order I		II		III		Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard, vis.		UV Zeiss-triplet and Müller and Kempf visual		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}
1	·10	99	·13	96	·13	201	·20	239					·02	216	·12	851
2	·32	192											·44	78	·35	270
3	·40	200											·45	74	·41	274
4	1·04	214											1·00	91	1·03	305
5	·41	89													·41	89
6	·79	178											·90	41	·81	219
7	·31	263											·44	60	·33	323
8	·02	72	·12	160	·16	308	·20	·357					·14	224	·15	1121
9	·24	244			·13	186							·23	147	·20	577
10	1·01	338											·85	80	·98	418
11	·77	288											·61	62	·74	350
12	·36	222									·40	90	·30	96	·35	408
13	·43	178													·43	178
14	·17	149													·17	149
15	·54	325											·53	65	·54	390
16	·27	345			·22	84							·30	122	·27	551
17	·27	238													·27	238
18	·36	302									·31	120	·29	110	·33	532
19	·79	220													·79	220
20	·61	280													·61	280
21	·46	357									·55	83	·45	99	·47	539
22	·30	398											·28	101	·30	499
23	·32	406											·49	57	·34	463
24	·21	452	·00	8	·19	572	·16	·3			·25	310	·27	180	·22	1525
25	1·20	108													1·20	108
26	1·02	328											1·02	60	1·02	388
27	·12	232	·11	136	·16	326	·08	304			·19	500	·09	219	·14	1717
28	·68	304									·61	16	·62	60	·67	380
29	1·55	267													1·55	267
30	·39	344											·29	84	·37	428
31	·51	344											·51	60	·51	404
32	·68	509											·48	67	·66	576
33	·81	134											·77	34	·80	168
34	—·21	280	—·17	512	—·13	411	—·20	1760	—·19	300	—·16	1140	—·23	133	—·18	4536
35	1·60	305													1·60	305
36	·52	303											·66	41	·54	344
37	1·34	266									1·37	57	1·30	91	1·34	414
38	—·12	36	—·22	488	—·19	444	—·20	1773	—·24	300	—·21	1350			—·21	4391
39	·48	322											·47	88	·48	410
40	1·08	160											1·08	37	1·08	197
41	·42	·336			·62	14							·25	107	·39	457
42	1·48	134													1·48	134
43	·82	286											·70	45	·80	331
44	·18	513	·18	64	·19	518	·19	68			·11	400	·12	203	·16	1766
45	·07	351	·12	8	·11	324	—·08	3			·12	350	·20	187	·11	1223
46	—·38	78	—·18	224	—·10	57	—·24	1660			—·16	1100	—·18	144	—·21	3263
47	·44	360											·39	92	·43	452
48	·68	155													·68	155
49	—·22	28	—·20	192	—·24	109	—·26	1752	—·16	300	—·19	1300	—·33	20	—·22	3701
50	·96	396											·92	45	·96	441

Table 13 (continued.)

Gaultier no.	Mount Wilson effective wavelengths from spectra of the order I		II		III		Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard, vis.		UV Zeiss-triplet and Müller and Kempf visual		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}
51	·36	300											·42	68	·37	368
52	·27	646			·26	16							·17	113	·26	775
53	·16	123			·27	186							·12	146	·19	455
54	·82	136													·82	136
55	·48	223											·54	43	·49	266
56	·13	540	·12	272	·14	658	·14	369			·11	510	·10	224	·13	2573
57	·45	171											·82	34	·51	205
58	·28	190													·28	190
59	·17	396	·12	72	·15	447	·27	105			·19	400	·17	204	·17	1624
60	1·13	325											·99	80	1·10	405
61	·32	450											·32	59	·32	509
62	·30	740			·34	127					·18	152	·38	128	·30	1147
63	−·02	523	·06	712	·09	678	·03	910			·03	700	·07	241	·04	3764
64	·25	562			·29	185					·24	200	·13	139	·24	1086
65	·34	187			·25	73							·24	142	·29	402
66	·25	759			·22	375					·21	260	·16	162	·23	1556
67	·58	515									·47	51	·49	76	·56	642
68	·50	684											·28	60	·48	744
69	1·62	462											1·70	54	1·63	516
70	·44	820			·73	2							·33	105	·43	927
71	−·27	74	−·22	688	−·19	687	−·20	1523	−·17	300	−·20	1330	−·50	10	−·20	4612
72	1·22	315									·90	30	·97	69	1·16	414
73	·12	915	·13	264	·13	733	·19	425			·12	540	·14	230	·13	3107
74	·58	352													·58	352
75	·44	324											·77	47	·48	371
76	−·18	342	−·09	624	−·10	501	−·16	1639	−·07	300	−·16	1040	·00	162	−·13	4608
77	·23	421											·22	49	·23	470
78	−·21	480	−·06	696	−·05	684	−·18	1341	−·03	300	−·08	920	−·08	210	−·11	4631
79	1·13	702											1·05	64	1·12	766
80	·06	216													·06	216
81	·86	296											·56	43	·82	339
82	·32	815			·37	22					·36	100	·24	109	·32	1046
83	·70	488											·63	64	·69	552
84	·27	235			·36	97							·48	121	·35	453
85	1·19	849	1·14	120	1·22	628	1·22	31			1·03	350	1·13	205	1·17	2183
86	·14	912	·16	304	·18	672	·07	392			·13	510	·10	224	·14	3014
87	1·05	428											·86	59	1·03	487
88	·36	266													·36	266
89	·41	544									·49	85	·59	95	·44	724
90	−·21	192	−·20	856	−·20	991	−·23	1496	−·03	300	−·18	1300	−·40	19	−·19	5154
91	·65	253											·91	38	·68	291
92	·38	716			·36	18							·34	111	·37	845
93	·91	254											1·09	84	·95	338
94	·09	1202	·08	1000	·07	1217	·11	780			·08	670	−·01	238	·08	5107
95	·50	882											·44	82	·49	964
96	·15	490			·18	245							·14	139	·16	874
97	·40	872											·46	96	·41	968
98	·57	876											·42	70	·56	946
99	·23	516	·19	232	·17	544	·15	255			·23	480	·21	217	·20	2244
100	·30	931													·30	931

Table 13 (continued.)

Gaultier no.	Mount Wilson effective wavelengths from spectra of the order						Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard, vis.		UV Zeiss-triplet and Müller and Kempf visual		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I		II		III											
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}
101	·85	402	·		·		·		·		·		·60	52	·82	454
102	·29	274			·29	8							·27	116	·28	398
103	·52	933			·49	44					·43	122	·58	126	·52	1225
104	·19	998			·28	604	·17	3			·14	280	·21	170	·21	2055
105	·85	466											·74	47	·84	513
106	·20	1162			·47	26							·07	124	·19	1312
107	·51	441													·51	441
108	·22	206			·11	134							·29	135	·21	475
109	·39	322											·44	85	·40	407
110	·41	614											·25	109	·39	723
111	·80	182											·95	100	·85	282
112	·37	655									·35	102	·38	105	·37	862
113	—·03	1035	—·02	1256	—·05	867	—·09	1145	—·03	300	—·07	820	—·07	232	—·05	5655
114	·33	736											·47	58	·34	794
115	·29	1059			·26	2							·20	116	·28	1177
116	1·11	698											·96	61	1·10	759
117	·86	657											·87	60	·86	717
118	·20	512	·14	168	·16	455	·27	294			·24	450	·08	210	·19	2089
119	1·24	814									1·20	41	·99	85	1·22	940
120	·63	396											·58	67	·62	463
121	·17	1148	·14	320	·15	1100	·17	237			·17	450	·06	211	·15	3466
122	·44	258											·50	49	·45	307
123	·14	1300			·22	655					·16	270	·18	166	·17	2391
124	·25	964			·32	644					·29	270	·25	163	·28	2041
125	·33	549													·33	549
126	·24	1136	·15	128	·24	1023	·08	44			·18	360	·31	200	·23	2891
127	·65	866									·77	60	·44	90	·64	1016
128	1·32	800									1·40	12	1·41	71	1·33	883
129	1·01	689											·97	59	1·01	748
130	·31	998	·27	888	·28	1003	·23	703			·39	650	·40	239	·30	4481
131	·36	210													·36	210
132	·13	1315	·19	432	·17	1198	·06	272			·09	480	·12	216	·14	3913
133	·02	1168	·02	1320	—·03	1067	—·01	1271	—·11	300	—·07	930	—·01	207	—·02	6263
134	·02	1088	·01	1048	—·02	967	·00	965	—·01	300	—·02	790	—·02	242	—·00	5400
135	·13	1085	·12	656	·10	988	·15	538			·12	600	·08	232	·12	4099
136	·25	587											·39	93	·27	680
137	—·01	1094	·09	784	·00	1067	—·02	905							·01	3850
138	·33	712													·33	712
139	·00	744	—·01	120	—·04	863	—·03	78							—·02	1805
140	1·07	542											1·16	78	1·08	620
141	·16	994	·11	672	·06	1019	·08	522			·08	610	·10	232	·10	4049
142	1·56	868											1·61	63	1·56	931
143	1·36	402											1·16	38	1·34	440
144	—·05	34	—·16	1176	—·16	1075	—·12	940	—·23	300	—·23	1400			—·18	4925
145	·05	1220	·03	1168	·04	1060	—·04	815	—·09	300	—·02	810	—·03	236	·01	5609
146	1·40	988											1·29	78	1·39	1066
147	·67	88													·67	88
148	1·09	582	1·18	56	1·08	646	1·05	15			1·02	320	1·00	197	1·07	1816
149	·38	1145			·16	8							·36	112	·38	1265
150	·28	417													·28	417

Table 13 (conttnued.)

Gaultier no.	Mount Wilson effective wavelengths from spectra of the order						Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard, vis.		UV Zeiss-triplet and Müller and Kempf visual		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I		II		III											
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2
151	1·18	944									1·05	31	1·12	83	1·17	1058
152	·78	677											·89	63	·79	740
153	·64	820											·54	68	·63	888
154	·39	754											·49	64	·40	818
155	·89	446			·91	400					·89	200	·92	145	·90	1191
156	·27	191													·27	191
157	·53	312											·57	78	·54	390
158	1·03	598											1·12	60	1·04	658
159	·26	1080			·28	266					·27	190	·23	143	·26	1679
160	1·10	172													1·10	172
161	1·12	436									1·11	61	1·17	91	1·13	588
162	·38	892											·49	69	·39	961
163	·43	484									·48	44	·54	74	·45	602
164	·28	344													·28	344
165	1·31	267											1·46	92	1·35	359
166	·30	868			·36	253					·24	167	·40	137	·31	1425
167	1·27	696											1·23	63	1·27	759
168	·27	639											·52	68	·29	707
169	·30	478											·11	85	·27	563
170	1·46	272	1·42	276	1·45	298	1·30	285			1·51	410			1·43	1541
171	·52	540											·79	43	·54	583
172	·76	326									·80	84	·90	97	·79	507
173	·29	811			·26	367					·21	280	·29	169	·27	1627
174	·31	184													·31	184
175	·41	442											·60	48	·43	490
176	·41	340													·41	340
177	·20	1134			·14	998	·06	223			·22	450	·12	212	·17	3017
178	·30	268											·48	56	·33	324
179	1·01	355											·91	43	1·00	398
180	·33	888			·41	58					·34	118	·45	121	·35	1185
181	·19	537			·29	140					·25	150	·39	131	·24	958
182	·30	472											·35	69	·31	541
183	1·01	340											·89	43	1·00	383
184	·37	251													·37	251
185	—·20	224	—·17	256	—·15	379	—·18	1746	—·18	300	—·24	1150	—·16	127	—·19	4182
186	·26	430											·31	96	·27	526
187	·28	177													·28	177
188	·17	728											·13	68	·17	796
189	·28	897			·36	173					·23	158	·25	138	·28	1366
190	·40	563											·52	66	·41	629
191	·07	1200	·04	1072	·05	1028	·05	1001			·09	740	·08	245	·06	5286
192	·98	696											1·17	63	1·00	759
193	·25	702	·18	8	·23	588	·43	3			·19	310	·25	179	·23	1790
194	·35	523											·40	122	·36	645
195	1·34	543											1·40	53	1·35	596
196	·36	502											·49	65	·37	567
197	·42	393											·60	50	·44	443
198	·19	660											·16	66	·19	726
199	·39	113													·39	113
200	1·34	326											1·28	34	1·33	360

Table 13 (continued.)

Gaultier no.	Mount Wilson effective wavelengths from spectra of the order						Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard, vis.		UV Zeiss-triplet and Müller and Kempf visual		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I		II		III											
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2
201	·22	259											·42	55	·26	314
202	1·15	868											·98	73	1·14	941
203	·27	253													·27	253
204	·13	184	·17	112	·16	360	·15	180					·18	212	·16	1048
205	1·24	568													1·24	568
206	·22	596											·21	105	·22	701
207	·66	966											·59	89	·65	1055
208	·34	156													·34	156
209	·27	350													·27	350
210	·34	794											·36	81	·34	875
211	·49	374													·49	374
212	·28	407													·28	407
213	1·16	631											1·02	60	1·15	691
214	·16	788	·21	888	·18	775	·13	1099	·31	300	·28	810	·32	232	·20	4892
215	1·21	394											1·16	41	1·21	435
216	·57	173											·78	59	·62	232
217	·25	102													·25	102
218	·59	697											·65	89	·60	786
219	—·13	58	—·17	576	—·22	878	—·23	1782	—·20	300	—·23	1350			—·22	4944
220	·28	554			·32	35					·39	112	·32	110	·30	811
221	·44	592											·38	56	·43	648
222	·26	755											·42	64	·27	819
223	·13	564											·31	100	·16	664
224	—·22	280	—·17	584	—·18	763	—·20	1915	—·20	300	—·18	1210			—·19	5052
225	·56	586											·40	56	·55	642
226	1·00	470											1·12	51	1·01	521
227	·14	739	·15	376	·09	907	·06	304			·12	500	·09	220	·11	3046
228	1·43	102											1·53	105	1·48	207
229	·24	418													·24	418
230	·19	284			·28	390					·18	250	·24	154	·23	1078
231	·02	886	·09	744	·04	707	·09	692			·06	630	·06	236	·06	3895
232	·28	636											·28	68	·28	704
233	·90	378											·94	45	·90	423
234	·79	200													·79	200
235	·19	457													·19	457
236	—·13	745	—·04	760	—·10	621	—·05	1232	—·12	300	—·11	870	—·15	221	—·09	4749
237	·99	188											·99	30	·99	218
238	·61	624											·59	75	·61	699
239	·04	752	·14	368	·09	888	·08	425			·07	520	·14	227	·08	3180
240	·94	483											·89	60	·93	543
241	·58	312													·58	312
242	·62	536											·59	71	·62	607
243	1·21	490									1·09	66	1·04	95	1·17	651
244	·45	572											·44	88	·45	660
245	·08	136			·12	264					·22	300	·27	167	·18	867
246	·76	639											·57	69	·74	708
247	1·03	293											·80	41	1·00	334
248	·83	678											·85	84	·83	762
249	·49	328													·49	328
250	·97	166													·97	166

Table 13 (continued.)

Gaultier no.	Mount Wilson effective wavelengths from spectra of the order						Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard, vis.		UV Zeiss-triplet and Müller and Kempf visual		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I		II		III											
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}	m	m^{-2}
251	—	—	·16	96	·16	116	·10	295	·		·		·10	220	·12	727
252	—·11	316	—·13	408	—·12	389	—·16	1536	·03	300	—·12	960	—·10	192	—·12	4101
253	·68	256											·66	43	·68	299
254	1·33	622									1·42	64	1·26	94	1·33	780
255	·13	456											·26	80	·15	536
256	·47	492											·38	76	·46	568
257	·66	492											·61	62	·65	554
258	·45	164											·67	42	·49	206
259	·35	284													·35	284
260	·37	238													·37	238
261	·08	549	—·08	8	·04	642	·01	31			·03	350	·06	187	·05	1767
262	1·19	301									1·15	61	1·13	95	1·17	457
263	—·01	290	·05	400	—·01	423	·00	652			·04	630	·05	236	·02	2631
264	·31	114													·31	114
265	·20	404			·16	110					·24	190	·24	137	·21	841
266	·30	258													·30	258
267	—·06	262	—·04	432	—·07	267	—·03	1140	·03	300					—·03	2401
268	·23	340													·23	340
269	·32	73													·32	73
270	·21	212											·38	59	·25	271
271	·32	550											·45	78	·34	628
272	1·10	155											·87	34	1·06	189
273	·89	552											·83	71	·88	623
274	·99	482											·97	60	·99	542
275	·26	262											·25	81	·26	343
276	·02	194	·02	8	·07	235	·03	1			·11	300	·11	172	·08	910
277	·16	163											·28	48	·19	211
278	·48	214											·44	84	·47	298
279	·30	196													·30	196
280	1·24	202											1·09	45	1·21	247
281	·10	177	·06	320	·02	308	·10	547			·03	640	·03	237	·06	2129
282	·94	198											1·09	49	·97	247
283	·25	306											·36	85	·27	391
284	·31	284											·47	77	·34	361
285	·29	77													·29	77
286	·14	296											·25	96	·17	392
287	·44	246											·44	97	·44	343
288	·20	302											·31	59	·22	361
289	·37	158													·37	158
290	·31	250											·39	117	·34	367
291	·34	60													·34	60
292	·98	184											·86	75	·95	259
293	·50	84													·50	84
294	·32	55													·32	55
295	·03	108	·09	216	—·04	134	·05	1050			·01	780	—·05	245	·03	2533
296	·74	268											·77	58	·75	326
297	·95	253													·95	253
298	1·19	158											1·04	94	1·13	252
299	1·12	70											1·01	35	1·08	105
300	·59	55													·59	55

Table 13 (continued.)

no. general catalogue	Mount Wilson effective wavelengths from spectra of the order						Copenhagen effective wavelengths Potsdam Publ. 63		Göttingen actinometry and Harvard vis.		UV Zeiss-triplet and Müller and Kempf visuai		Tikhoff difference between 425 and 540 $\mu\mu$		weighted mean	
	I		II		III											
	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p	I_λ	p
	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2	m	m−2
8					·17	60									·17	60
27	·06	4	·12	32											·11	36
29					·01	52									·01	52
65	·17	176									·51	51			·25	227
108	·19	111			·15	106									·17	217
123					·05	65									·05	65
165	·24	2			·77	61									·75	63
169					·21	132									·21	132
182					·41	60									·41	60
248			—·03	112	—·08	3					·26	190			·15	305
260	·14	12			·12	84									·12	96
269	·09	262			·06	117									·08	379
310					·44	120									·44	120
328	·77	28			·73	14									·76	42
396					·04	133									·04	133
416	·19	153			·03	14									·18	167
480	·88	6			1·09	42									1·06	48
526			·04	32	·08	30									·06	62
600			·11	8	·09	36									·09	44
695	·09	2			·24	127									·24	129
724					·63	60									·63	60
1088	·29	45			·28	36					·12	153			·18	234
1158					·07	182									·07	182
1164	·96	75			·96	42									·96	117
1184					·11	108									·11	108
1224	·30	18			·32	22									·31	40

fore more or less arbitrary, which stars are counted as members of the group, while for a number of stars with distinct different motion it may be taken for certain that they do not belong to the system. In the case of the Pleiades the picking out of the physical members is difficult because the proper motion of the group is small and directed nearly away from the sun's apex. According to the *PGC* of Lewis Boss the mean proper motion of 12 bright stars in the Pleiades is $''/a \cdot 054$ in the direction 158° or, applying the Kapteyn correction of $+ ''/a \cdot 013 \cos \delta = ''/a \cdot 012$ to the proper motion in declination (B. A. N. 14), $''/a \cdot 043$ in the direction 152°. The direction from the sun's apex is 147°. It is therefore possible, that the Pleiades, after correction for the sun's motion, are practically at rest in space. The radial velocity calculated under this assumption is $+8^{km}/_s$ in accordance with the observed mean value $+8^{km}/_s \pm 2^{km}/_s$ (m. e.) (comp. Johannes Jung, Astron. Mitt. der Sternw. zu Göttingen, No. 17; 1914). If the apparent proper motion of the Pleiades is considered as entirely caused by the motion of our sun, being $19^{km}/_s$, the parallax of the Plejades is calculated to be $''\cdot0147$ according to the proper motion of Boss or $''\cdot0119$ after having applied the Kapteyn correction.

If the relative proper motions of the Pleiades (also some unpublished material was used for this purpose) are plotted separately for each magnitude, it is seen that the stars of the 4 or 5 brightest magnitudes nearly all belong to the system. The diagram containing the stars between the photographic magnitudes 10^m and 11^m still markedly shows that a group of these stars is moving with the cluster, while there is no more evidence of this when we consider stars between 11^m and 12^m. Regarding still fainter stars there are hardly more objects showing a proper motion common to that of the Pleiades, than should be expected by accident. The good agreement of the colours of such fainter stars, apparently sharing the motion of the cluster, with those expected, is deceiving, because these colours will also be about normal for faint stars of such proper motions which are not members of the system. It is thus very probable that R. Trümpler (Lick Bull. 333, Vol. 10, 110; 1921) has overestimated the number of faint stars belonging physically to the group.

I have therefore found it safest, until more accurate proper motions are available, to confine myself to stars brighter than 11^m photographically when trying to separate the members of the system from the rest. A list of 66 stars thus considered as physically belonging to the group of the Pleiades is given in Table 14. The most remarkable fact shown by this table is the very regular change in colour with the magnitude. Between $4^m\cdot5$ and 11^m the relation between I_λ and m_{pg} is nearly linear. A least square solution gave for these stars the formula

$$I_\lambda = -\cdot662 + \cdot0945\, m_{pg}$$

The deviations $O-C$ in I_λ are given in the fourth column. Their smallness is a sign of the accuracy of the I_λ-values. As there may be a slight preponderance of positive values of $O-C$ in the neighbourhood of 8^m I have compared the $O-C$ values of two consecutive stars in the magnitude sequence in order to determine the accuracy with which the colour or I_λ value of a star may be predicted by its magnitude. Taking the mean error of the determination of I_λ into account, it is found that the mean "error" or deviation of I_λ from the normal value for a given magnitude is $\pm{}^m\cdot028$. To that degree therefore members of the Pleiades of the same magnitude have the same colour index. It is to be remembered, that double stars counted as single and consisting of two nearly equal components should give $O-C$ values about $+{}^m\cdot09$ greater than for single stars.

The 10 stars brighter than $5^m\cdot5$ are all practically of the same colour, the deviations from the mean $I_\lambda = -\cdot20$ not being greater than the observational errors $\pm{}^m\cdot015$.

For the physical members of the group of the Hyades I have formerly (A. N. 5000, Bd. 209, 120; 1919) found the relation $I - \cdot364 = \cdot0935\ (m_{pg} - 6\cdot596)$. The coefficient $\Delta I/\Delta m_{pg}$ is thus practically the same, viz. $+\cdot094$, for the Hyades and

Table 14.

Gaultier no.	phgr. magn.	I_λ	$O-C$	weight p	Gaultier no.	phgr. magn.	I_λ	$O-C$	weight p
	m	m	m	m^{-2}		m	m	m	m^{-2}
144	2·82	—·18	(+·22)	4925	8	8·21	+·15	+·04	1121
219	3·53	—·22	(+·11)	4944	227	8·34	+·11	—·02	3046
38	3·57	—·21	(+·11)	4391	27	8·38	+·14	+·01	1717
71	3·80	—·20	(+·10)	4612	99	8·44	+·20	+·06	2244
90	4·13	—·19	(+·08)	5154	132	8·48	+·14	·00	3913
49	4·18	—·22	(+·05)	3701	204	8·59	+·16	+·01	1048
224	4·94	—·19	+·01	5052	177	8·60	+·17	+·02	3017
185	5·30	—·19	—·03	4182	121	8·63	+·15	·00	3466
34	5·37	—·18	—·03	4536	118	8·66	+·19	+·03	2089
46	5·49	—·21	—·07	3263	59	8·87	+·17	—·01	1624
76	5·69	—·13	—·01	4608	44	8·90	+·16	—·02	1766
252	6·04	—·12	—·03	4101	126	9·00	+·23	+·04	2891
133	6·31	—·02	+·05	6263	45	9·28	+·11	—·10	1223
78	6·37	—·11	—·05	4631	24	9·43	+·22	—·01	1525
236	6·56	—·09	—·05	4749	193	9·46	+·23	·00	1790
113	6·76	—·05	—·03	5655	104	9·67	+·21	—·04	2055
267	6·77	—·03	—·01	2401	173	9·69	+·27	+·02	1627
145	6·84	+·01	+·03	5609	66	9·85	+·23	—·04	1556
134	6·95	·00	+·01	5400	53	10·23	+·19	—·11	455
295	7·00	+·03	+·03	2533	159	10·29	+·26	—·05	1679
191	7·03	+·06	+·06	5286	65	10·33	+·29	—·02	402
63	7·24	+·04	+·02	3764	64	10·40	+·24	—·08	1086
137 A	7·28	—·01	—·04	948	189	10·43	+·28	—·04	1366
94	7·44	+·08	+·04	5107	137 B	10·53	+·37	+·04	473
281	7·52	+·06	+·01	2129	181	10·60	+·24	—·10	958
263	7·59	+·02	—·04	2631	62	10·67	+·30	—·05	1147
231	7·60	+·06	·00	3895	266	10·69	+·30	—·05	258
135	7·85	+·12	+·04	4099	103	10·73	+·52	+·17	1225
141	7·86	+·10	+·02	4049	194	10·82	+·36	·00	645
73	7·99	+·13	+·04	3107	84	10·86	+·35	—·01	453
239	8·10	+·08	—·02	3180	180	10·86	+·35	—·01	1185
86	8·19	+·14	+·03	3014	290	10·95	+·34	—·03	367
56	8·21	+·13	+·02	2573	102	10·98	+·28	—·10	398

the Pleiades. It is therefore of interest to see what is the constant difference of magnitude between stars of the same colour in the Pleiades and the Hyades.

According to B. A. N. 35 the 5 Pleiades Gaultier 90, 49, 224, 185 and 34 have the mean photographic magnitude $4^{m}{\cdot}882$ and the mean c_2/T value 1·576, while the corresponding values for the 10 stars H. R. 1473, 1387, 1392, 1394, 1620, 1479, 1427, 1444, 1380 and 1388 belonging to the Hyades are $m_{pg} = 4^{m}{\cdot}865$ and $c_2/T = 1{\cdot}976$. For stars of the apparent photographic magnitude $4^{m}{\cdot}87$ therefore c_2/T is ·40 greater for the Hyades than for the Pleiades corresponding to $\Delta I_\lambda = {}^{m}{\cdot}24$. Comparing the same 5 Pleiades as just mentioned with the 7 Hyades H. R. 1389, 1473, 1394, 1479, 1444, 1427 and 1380 the mean photographic magnitude according to the Göttingen Actinometry is in both cases $4^{m}{\cdot}81$ and the mean value of $H' = 6 + (H - 6)/1{\cdot}02$, where H is the visual Harvard magnitude (comp. A. N. 5000, 118), is $4^{m}{\cdot}97$ in the case of the Pleiades and $4^{m}{\cdot}66$ in the case of the Hyades, thus giving a difference in colour index of ${}^{m}{\cdot}31$. The mean of the two values for this difference ${}^{m}{\cdot}24$ and

$^{m}.31$ is $^{m}.263$ giving double weight to the former. For the 5 Pleiades considered, the mean value of I_λ is $-.196$, and for the Hyades of magnitude $4^{m}.865$ it is thus found to be $-.196 + .263 = +.067$. This value of I_λ corresponds to $m_{pg} = 7.54$ in the Pleiades. Hence, the magnitude difference between stars of the same colour in the Pleiades and the Hyades is $7^{m}.54 - 4^{m}.865 = 2^{m}.675$. Supposing that stars of the same colour have the same absolute magnitude in the two groups and adopting a parallax of $''.027$ for the Hyades (A. N. 5000, 114) the parallax of the Pleiades is calculated to be $''.0079$.

For the 6 stars β, γ, δ, ε, g Ursae majoris and α Coronae borealis of the Ursa major system the mean photographic magnitude is $2^{m}.74$, the mean value of c_2/T is 1.72, and the mean parallax $''.043$. The same colour is found for Pleiades of the photographic magnitude $6^{m}.17$ differing by $6^{m}.17 - 2^{m}.74 = 3^{m}.43$ from the mean magnitude of the 6 stars of the Ursa major system. From these data the parallax of the Pleiades is in the same way as above calculated to be $''.0088$. The two results $''.0079$ and $''.0088$ agree with the first estimate made of the parallax of the Pleiades by a reasoning of this kind, using the spectral classification of Antonia C. Maury, viz. $''.0085 \pm ''.002$ (m. e.) (Zeitschr. für wiss. Photographie Bd. 5, 106, footnote 37; 1907).

Orbital motions in double stars physically belonging to the Pleiades are so far too inaccurately known to allow of a reliable calculation of hypothetical dynamical parallaxes.

Taking the parallax of the Pleiades to be $''.009$, a distance of one parsec inside the group corresponds to an angle of $57^\circ.3 \times .009 = {}^\circ.52$ or $31'$ as seen from the earth. The number of Pleiades with a space distance from Alcyone of less than one parsec may be estimated at about 50 or about 150 times larger than the star density in the neighbourhood of our sun (comp. B. A. N. 5, 21; 1922). The corresponding proportion of mass is probably a few times greater, while the total light intensity of the stars per unit volume in the inner region of the Pleiades is about 4000 times larger than in the neighbourhood of our sun. It therefore appears that the conspicuousness of the Pleiades as seen in the sky is due partly to great star density inside the group and partly to great luminosity of its members and that the importance of these two causes is of the same order of magnitude.

15. The Colours of Stars not Physically belonging to the Pleiades.

In Figure 3 a diagram is given containing the 421 stars, for which the weight of I_λ is at least 100 m^{-2}. (Adding the colour indices of Shapley and Richmond this number would be increased with 28 to 449). Stars with a proper motion approximately equal to that of the group are indicated by crosses, the other stars by dots. Probably not all the stars marked with a cross and fainter than the 12^{th} photographic magnitude are physically connected with the cluster.

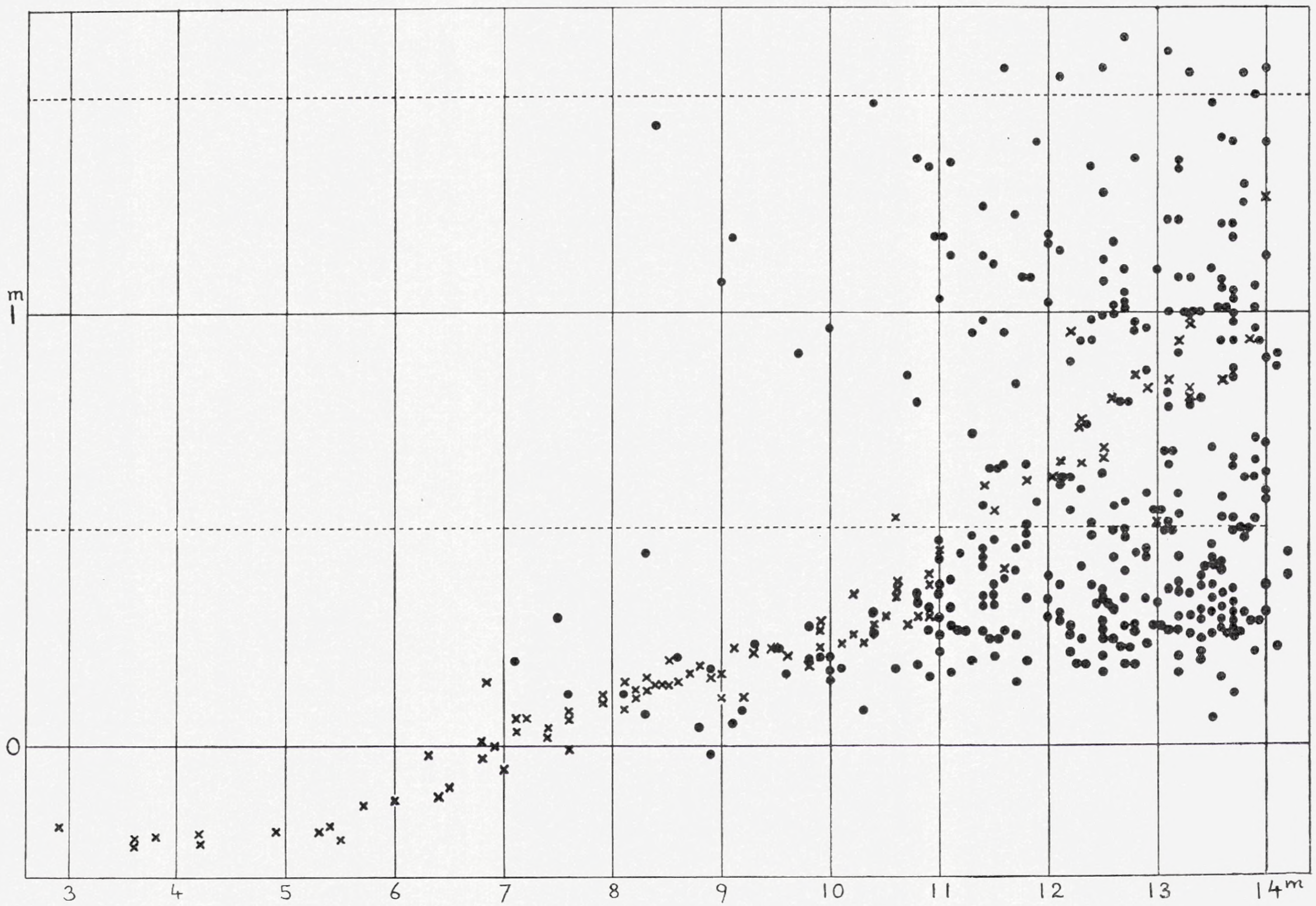

Figure 3.

The colours of the 236 stars for which $m_{pg} > 11^{m}{\cdot}95$ and $p\ (I_\lambda) > 99{\cdot}5\ \mathrm{m}^{-2}$ are distributed as follows

limits of I_λ	·0		·1		·2		·3		·4		·5		·6		·7
number of stars ..		1		7·		36		34·		22·		18·		19·	

	·7		·8		·9		1·0		1·1		1·2		1·3		1·4		1·5		1·6		1·7
		10		13·		21·		19·		9		7		6·		2		6		1·	

In Figure 4 the full curve represents the smoothed relative frequencies of I_λ for these faint stars of mean photographic magnitude 13^{m} forming the background of the Pleiades cluster. For comparison the corresponding curves are shown firstly for the 103 stars in the whole sky which are brighter than 3^{m} photographically according to King (Harv. Ann. **71**, 21 and **76**, 117), broken line, and secondly for

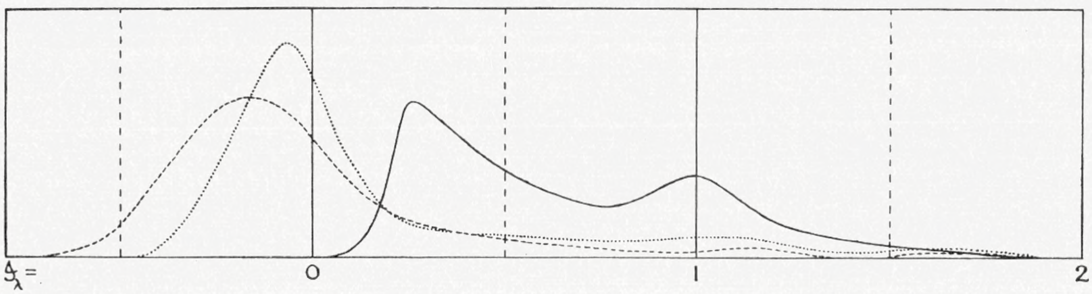

Figure 4.

the 136 stars north of the equator and brighter than 4^{m} photographically (Leiden Ann. **14**, II), dotted line. The bad agreement between these two additional curves may be mainly due to unreliability of the material used. At any rate the difference in the colour distribution shown by stars of $m_{pg} = 13^{m}$ in the Pleiades and of $m_{pg} = 3^{m}$ taken from the whole sky is very striking. This difference may, as is well known, be explained without assumption of selective extinction of light in space, simply by the falling off in star density with increasing distance from our sun thus causing a lack of absolutely bright and white stars among the apparently faint stars.

16. Double and Neighbouring Stars.

In Table 15 the 33 more conspicuous pairs of stars, noted during measurement of the plates, have been listed. The narrowest of these pairs (nos 408 and 407) shows a distance of $1''{\cdot}5$ between the two components, while among the following double stars, which were not recognized as double on the plates, is one of about $1''{\cdot}6$ separation.

gen. cat. no.	Gaultier no.	Bu		distance	m_{pg}	I_λ	p
				″	m	m	m−2
74	21	1838	Barnard 3	1·6	11·0	·47	539
248	—	1853	Σ 444	3·3	5·8	·15	305
313	86	1856	β 536	·2	8·4	·14	3014
447	118	1866	β 537	·4	8·8	·19	2089
757	193	1883	β 1105	·3	9·5	·23	1790
870	219	1887	Σ 453	·4?	3·6	—·22	4944
1020	271	1898	β 1106	·4	11·8	·34	628

Σ 444 was not seen double because it only occurs on long exposed plates and near the border of the field.

Table 15.

Double and neighbouring stars.

number in general catalogue		A		photogr. magnitude		A		B		pos. angle	dis-tance	plate no.
A	B	α (1900) 3h	δ (1900)	A	B	I_λ	p	I_λ	p	ϑ	ϱ	
		m s	° ′ ″	m	m	m	m−2	m	m−2	°	″	
20	21	37 38·0	+24 16 33	14·2	15·2	1·38	4	·89	1	170·6	17·70	243
73	71	38 17·1	23 42 53	12·1	12·7	·61	280	·79	220	310·4	5·67	244
221	224	39 43·5	24 8 41	13·9	14·9	·23	71	·39	6	132·1	2·61	78
273	278	40 8·9	24 15 17	13·9	14·9	1·06	124	1·40	21	161·5	17·58	78
305	306	40 17·0	23 53 3	9·1	13·8	1·17	2183	·32	92	7·8	18·20	127
368	373	40 38·6	23 39 3	12·0	15·5	·30	931	·74	3	32·9	23·11	53
401	402	40 46·7	23 56 41	14·2	15·3	·55	94			34·9	3·06	53
408	407	40 48·8	24 1 50	13·1	14·4	·51	441			305·3	1·50	78
510	502	41 24·9	23 29 39	7·2	14·6	·00	5400	·25	30	278·5	26·62	170
520	518	41 28·2	23 36 20	7·6	10·6	—·01	948	·37	473	268·5	6·21	54
524	522	41 28·5	24 20 57	8·9	11·5	—·02	1805	·33	712	327·7	6·88	119
635	645	41 59·8	23 7 41	11·1	12·7	1·13	588	·28	344	114·1	26·07	105
641	640	42 ·7	24 25 48	13·9	14·1	·61	80	·49	56	359·9	13·56	121
644	649	42 1·4	22 53 1	10·8	14·5	1·35	359	·57	13	21·3	19·13	105
651	654	42 2·5	23 47 26	10·4	12·6	·31	1425			128·2	1·62	54
701	705	42 19·3	23 20 35	13·1	15·0	1·00	398	·82	35	28·8	20·05	105
778	776	42 45·1	24 1 25	12·1	15·7	1·14	941			280·8	17·55	162
790	799	42 48·7	22 52 59	13·7	14·9	·49	13	·44	1	48·3	17·96	245
796	791	42 49·3	24 48 48	13·5	15·4	·33	42	·40	1	236·2	8·97	246
819	821	42 56·4	24 14 18	13·1	15·3	·27	350			145·5	13·11	146
837	839	43 1·0	24 52 59	13·5	14·0	·99	42	·45	27	45·0	8·82	146
865	867	43 11·0	24 0 57	14·7	15·3	·37	8	1·46	2	35·1	6·70	53
870	881	43 12·8	23 44 53	3·6	14·8	—·22	4944	·99	4	42·5	46·59	101
893	894	43 20·2	23 45 43	14·9	15·7	·35	11			130	5	53
999	1000	44 ·3	23 38 55	10·0	14·5	·21	841	1·13	16	182·3	8·93	144
1003	1002	44 1·5	23 32 41	6·8	10·9	—·03	2401			239·9	3·54	221
1003	1001	44 1·5	23 32 41	6·8	10·9	—·03	2401	·30	258	237·7	10·24	221
1003	998	44 1·5	23 32 41	6·8	15·4	—·03	2401	·55	1	260	25	247
1040	1037	44 17·9	23 34 52	13·9	14·6	·23	70	·65	14	285·9	11·12	247
1066	1064	44 29·0	24 21 11	14·4	15·2	1·27	10	1·00	2	279·2	10·30	146
1175	1177	45 24·5	24 33 38	11·7	14·5	·81	78	·21	4	302·7	14·44	146
1189	1187	45 30·8	24 0 38	14·9	15·1					230·5	8·04	144
1192	1191	45 32·1	23 32 1	12·5	12·9	·22	80			299·2	1·69	144

The double star $BD + 22°536$ found by TRÜMPLER (Publ. Astr. Soc. of the Pacific **33**, 270; 1921) is just outside the field investigated in the present paper.

17. General Catalogue.

In the general catalogue given at the end of this paper all the results have been collected. It contains 1246 stars arranged according to their right ascension. Several objects, too faint for accurate determination of their effective wavelength have been included mainly to show the limit of the reliability of the results. For these faint stars the general catalogue has merely the character of a Durchmusterung.

The first column gives the current number of the star. In order to facilitate the identification of components of double stars, these have been marked: (comp. Table 15). Known double stars not recognized as such in the present paper have been marked with an asterisk *. The next three columns give the star numbers according to WOLF (Ann. de l'obs. de Paris, Mém. Vol. 14, II, p. A 9; 1877), GAULTIER (Bull. de la Soc. astron. de France, Vol. 14, 445; 1900) and GRAFF (Astron. Abh. der Hamburger Sternw. zu Bergedorf, Bd. 2, Nr. 3; 1920). The fifth and the sixth columns give the right ascension and the declination for 1900, and the seventh column the number of plates on which the position is based. The eighth column gives the approximate photographic magnitude, which is only meant to serve for identification purposes, and the ninth column the number of plates used in evaluating the magnitude. The tenth and eleventh columns give the mean colour index I_λ and its weight, the mean error of I_λ being the square root of its reciprocal weight. In the twelfth column the colour index of SHAPLEY and RICHMOND (Contrib. from the Mount Wilson obs. No. 218, Ap. J. **54**, 323; 1921), converted into the scale of I_λ, is given for comparison. The relation between I_λ and the colour index of SHAPLEY and RICHMOND was found to be as follows

I, Sh and *R*	$-{}^{\mathrm{m}}.20$	0	·20	·40	·60	·80	1·00	1·20	1·40	1·60	1·80	2·00	2·20
I_λ	—·34	—·12	·10	·32	·54	·77	·98	1·17	1·34	1·49	1·64	1·79	1·94

The weight of the I_λ values of SHAPLEY and RICHMOND is found to be $20\,\mathrm{m}^{-2}$ corresponding to a mean error of $\pm{}^{\mathrm{m}}.22$. In deriving this mean error, systematic differences, which seem to be present between different regions of the field, have been disregarded. The most noticeable differences between the colour indices of SHAPLEY and RICHMOND and the effective wavelengths are shown by the stars no. 285 and 925. Especially for the fainter stars, where the weight of I_λ as derived from the effective wavelengths is small, the colour indices of SHAPLEY and RICHMOND form a welcome supplement. A comparison for the fainter stars of the two I_λ values in the tenth and the twelfth column tends to show, that the small weights of the I_λ values as derived from the effective wavelengths are somewhat greater than indic-

Table 16.

Integrated weight of I_λ.

	plates from	measured at		number of stars	total weight of I_λ	fraction
effective wave-lengths	Mount Wilson	Potsdam	spectra of I order	1156	175116 m^{-2}	·471
			— - II —	57	25828	·070
			— - III —	92	44023	·118
				1169	244967	·659
	Copenhagen Urania Obs.	Copenhagen University Obs.		59	42071	·113
			all effective wavelengths	1169	287038	·772
colour-indices	Göttingen and Harvard, vis.			19	5700	·015
	Potsdam			89	41407	·111
	Pulkovo			234	24879	·067
			old colour indices	241	71986	·194
total content of the 10th column of the general catalogue				1169	359024	·966
Shapley and Richmond, new colour indices				635	12700	·034
grand total				1176	371724	1·000

ated. Thus the weights 4, 13, 22, 31 and 40 could accordingly be increased to 10, 20, 30, 40 and 50 respectively, but I have thought it safer to let them stand as they are.

The total weight of all the I_λ values of the general catalogue is 371724 m^{-2}. This weight is distributed over the different series as indicated in Table 16.

It is seen that the Mount Wilson effective wavelengths contribute 66 percent of the total weight of I_λ and all the effective wavelengths together 77 percent, while the rest, 23 percent, is due to colour indices.

As is seen in the general catalogue the weight of I_λ is very different for different stars. Thus for 76 stars the weight of I_λ is greater than 1000 m^{-2}. The total weight for these 76 stars is 214716 m^{-2} or 58 percent of the weight for all the stars.

18. The Map.

The accompanying map of the Pleiades contained in the general catalogue was drawn to the scale of 1 second of time equal to 1 millimeter. It has been reduced to $^3/_{10}$ of the original size. The scale is about 1 mm to 45″·9, the equivalent focal length being 4494 mm.

The diameters of the dots representing the single stars increase with the apparent brightness of the stars in such a way, that a difference of 1 magnitude corresponds to a difference in the logarithmus of the diameter of ·06. This is practically the same scale as used on the maps of the Bonner Durchmusterung.

On common photographs of stars the diameter of the images varies about $1^1/_2$ times as rapidly with the magnitude but this would in the present case make the brightest stars inconveniently big if the faint stars are at the same time to be well visible.

The double and neighbouring stars contained in table 15 have been marked with a short line showing approximately the position angle of the pair. Special attention is called to the group of the 4 stars nos 1003, 1001, 1002, and 998, of which the three first named components are shown as one star on the map.

I am greatly indebted to the director of the Mount Wilson Observatory, Professor George E. Hale, who not only immediately granted my request to use the 60-inch reflector for the determination of effective wavelengths, but also offered his assistance in realizing my plans. I owe the main part of the necessary funds and five months' leave from Potsdam to the Prussian government and the Academy of Science of Berlin. I wish also to express here my best thanks for the kind and disinterested help given to me by all of the Mount Wilson Observatory staff, not least to Mr. Hoge, the indefatigable night assistant.

General Catalogue.

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
1				36 40·0	24 0 41	1	13·6	1	·		·	68
2				40·6	23 56 4	1	13·6	1	·27	18		67
3				41·9	23 34 2	1	11·9	1	·30	29		68
4				42·9	23 38 56	1	14·0	1	·18	4		67
5				49·8	23 57 5	1	10·5	1	1·01	22		65
6				49·9	23 45 4	1	12·9	1	·77	19		64
7				52·4	24 9 48	1	9·5	1	·26	3		68
8				58·5	24 10 29	1	8·1	1	·17	60		67
9				59·1	23 48 23	1	11·6	1	·24	26		62
10				37 ·3	23 33 25	1	10·2	1	·58	16		64
11				7·6	24 10 1	1	12·5	1	·82	24		64
12				17·1	23 51 24	1	13·2	1	·50	28	1·05	58
13	2		2	18·8	23 24 20	2	10·8	2	1·47	39		62
14			5	23·0	24 5 50	2	12·4	2	·41	76	·30	60
15			7	25·8	24 10 5	2	13·1	2	·59	33		61
16			8	25·9	23 42 49	2	13·7	2	·36	18	·48	56
17			9	28·9	24 18 4	1	13·8	1	·89	9	·99	63
18	4		10	34·8	24 20 7	1	12·7	1	·54	48	·40	63
19	6		11	36·6	23 21 29	1	10·8	1	·28	22	·26	60
20:	5		12	38·0	24 16 33	1	14·2	1	1·38	4	·57	61
21:				38·0	24 16 14	1	15·2	1	·89	1	·77	61
22	7		14	39·0	23 26 44	2	12·0	2	·60	87	·60	57
23				41·0	24 0 16	1	14·8	1	—·23	4		54
24			17	42·2	24 25 25	1	14·2	1	·67	8	·13	65
25	9		18	42·8	23 13 13	1	10·5	1	·30	16		63
26				45·6	23 28 26	1	14·9	1	·12	2	·43	55
27	12		19	46·2	23 19 59	1	7·8	1	·11	36		58
28	11	1	20	46·6	24 3 28	2	8·1	9	·12	851		54
29	13		21	47·8	23 16 44	1	9·5	1	·01	52		60
30	14	2	24	52·1	23 43 19	2	11.5	6	·35	270	·68	50
31				53·5	24 16 38	1	15·2	1	—·50	1		58
32	15	3	25	54·3	23 55 53	3	11·6	6	·40	200	·28	50
33	17		27	58·2	23 22 50	2	13·7	3	·63	32	·48	55
34	16	4	28	59·0	23 55 59	3	11·0	8	1·03	305	·98	49
35			30	59·2	23 23 36	2	14·8	2	·07	5		54
36		5	29	59·4	23 26 10	2	13·4	5	·41	89	·56	53
37	18	6	31	38 ·2	24 13 1	3	13·1	6	·81	219		55
38				·6	24 11 38	1	15·6	1	1·20	2		54
39				1·4	23 58 1	1	14·2	1	·16	4		49
40	21		32	2·1	23 55 40	3	14·0	4	·54	39	·33	49
41	19	7	33	2·4	24 8 17	2	12·5	7	·33	323	·18	52
42				2·6	24 0 23	1	14·8	1	·41	4		50
43	20	8	34	3·1	24 14 31	2	8·1	11	·15	1121		55
44	23	9	35	38 3·2	23 34 1	2	9·8	11	·20	577		50
45	22	10	36	3·4	23 49 52	3	11·4	11	·98	418	1·24	48
46	24	11	37	4·1	23 53 10	3	12·3	9	·74	350	·40	48
47	26		38	5·7	23 13 41	2	10·9	2	·23	58	—·21	58
48				6·2	24 40 20	1	10·2	1	·39	16		71
49	25	12	39	6·4	24 11 22	2	11·0	8	·35	408		53
50	27	13	40	7·0	23 55 41	3	13·2	7	·43	178	·22	48

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
51	29		41	7·2	23 17 2	2	13·1	3	·76	90	·70	56
52				7·2	23 48 54	2	14·5	5	·88	21	·48	47
53	30	14	42	7·6	23 52 20	3	13·2	7	·17	149	—·22	47
54		[illegible]		8·2	23 45 27	1	14·7	2	·76	9	·40	47
55	28	15	43	8·3	23 57 35	3	12·2	8	·54	390	·23	48
56			44	8·3	24 25 55	2	13·9	2	·57	13	·62	60
57				8·4	24 41 10	1	13·6	1	·70	9	·64	71
58			45	8·6	24 4 49	3	14·7	3	1·75	16	1·32	50
59			46	9·3	24 1 39	2	13·9	4	·48	62	·44	48
60			47	9·8	24 1 13	2	14·0	4	·57	52	·53	48
61				10·2	23 51 34	2	14·5	4	·39	24		46
62	31		48	10·7	24 12 15	3	15·0	3	1·48	10		52
63	32	16	49	13·4	23 55 50	3	10·4	13	·27	551		46
64				13·5	23 27 51	1	15·3	1	—·15	2		49
65	33		50	15·2	24 25 14	2	11·5	5	·25	227	·33	59
66				15·5	24 18 28	2	15·4	2	1·20	3		54
67	35	17	51	15·8	24 14 28	3	12·8	8	·27	238		52
68	34		52	16·2	24 27 48	2	10·6	2	·43	44		60
69	37	18	53	16·3	24 5 16	3	10·8	10	·33	532	·66	48
70			54	16·6	23 3 52	1	11·3	1	·44	44	·79	62
71:	36	19	55	16·7	23 42 56	2	12·7	7	·79	220	·57	45
72				16·9	24 45 20	1	11·9	1	·65	58	1·07	73
73:	38	20	57	17·1	23 42 53	2	12·1	8	·61	280	·52	45
74*	39	21	58	18·5	23 47 11	3	11·0	14	·47	539		44
75	41	22	59	20·0	23 57 23	3	11·0	13	·30	499		45
76			61	22·3	23 3 29	1	12·5	1	·69	24		62
77	42		60	22·3	24 28 48	2	10·8	2	·26	44	·22	60
78	40		62	22·3	24 33 28	2	9·9	2	1·41	12		63
79				22·5	24 14 34	2	14·5	4	—·41	24		51
80	43		63	22·8	24 27 26	2	11·5	6	·64	168	·91	59
81	44	23	64	22·9	23 56 42	3	12·5	10	·34	463	—·06	44
82			65	24·2	24 27 8	2	14·4	4	·96	8	·84	58
83	46		66	25·5	23 39 19	2	13·7	5	·86	57		43
84	45		67	25·8	23 12 8	2	13·7	2	·83	18	1·05	55
85				26·0	24 20 6	1	15·6	1	·81	2		53
86				26·9	23 35 42	2	14·6	2	·54	8		44
87				27·1	23 45 13	1	14·9	1				42
88	47	24	68	27·3	23 49 4	3	9·3	22	·22	1525		42
89				27·5	23 17 47	1	14·9	1	·57	2		52
90	48	25	69	27·5	24 6 34	2	13·7	6	1·20	108	1·33	46
91	50	26	70	28·5	23 21 10	3	12·0	8	1·02	388	·82	50
92	51	27	71	28·7	24 4 46	2	8·4	15	·14	1717		45
93	49	28	72	28·9	24 16 28	3	12·5	8	·67	380		51
94				30·2	23 54 19	1	15·3	1	1·56	1		42
95				30·6	23 53 0	2	15·0	2	·77	1		42
96				31·6	23 51 23	2	14·7	7	·82	26		41
97			73	32·1	24 23 55	2	14·1	5	·47	38	·29	55
98				38 37·5	23 53 48	1	15·6	1	1·10	2		40
99	54		74	38·5	23 22 27	2	13·6	5	·81	87	·81	47
100				38·7	24 19 23	1	15·2	1	·75	2		51

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
101				38·7	24 43 21	1	14·0	1	·57	8	·42	68
102				38·9	24 49 16	1	15·0	1	1·59	1		73
103	53	29	75	39·2	23 44 49	3	13·3	11	1·55	267	1·64	40
104	58		76	39·2	23 24 29	3	13·9	6	·76	51	·51	46
105				39·3	24 38 47	1	14·6	1	·80	4	·67	64
106				40·0	24 0 11	2	14·7	5	·66	22		41
107	57	30	77	42·2	24 11 44	3	11·5	10	·37	428	·72	46
108	56		78	43·0	24 30 12	1	10·0	7	·17	217		57
109	59	31	79	44·7	24 4 58	3	12·4	9	·51	404	·57	42
110				45·0	22 58 24	1	13·6	1	·06	9		62
111			80	45·2	23 58 14	3	13·7	10	·30	174	·49	40
112				45·8	24 17 35	1	15·2	1	1·74	2		48
113				46·3	24 44 38	1	13·6	1	·46	18	·52	68
114				46·6	23 24 5	1	14·9	1	1·77	4		44
115	60	32	82	47·4	23 54 59	3	12·1	16	·66	576	·59	38
116	61	33	83	48·7	24 24 53	2	13·4	6	·80	168	1·25	53
117	62	34	84	51·5	23 58 30	3	5·5	31	—·18	4536		38
118	63	35	85	52·7	23 50 52	3	13·1	11	1·60	305	1·62	37
119	64	36	86	52·9	23 44 22	3	13·0	12	·54	344		37
120				52·9	24 34 22	2	14·2	2	·38	13	·57	59
121				53·2	24 6 7	2	14·7	2	·34	8	·81	41
122	65	37	87	53·4	23 16 30	2	11·1	9	1·34	414		48
123				54·7	22 57 17	1	8·4	1	·05	65		62
124				55·0	23 4 33	1	13·6	1	·50	18	·71	56
125				55·8	24 37 38	2	14·4	2	·24	8	·58	61
126	66	38	88	56·2	23 47 56	3	3·6		—·21	4391		36
127			89	57·2	24 24 54	2	14·2	5	·65	42	·89	51
128				57·9	24 4 46	1	15·2	1	1·28	1		39
129	68	39	90	58·0	23 36 25	3	11·3	11	·48	410	·67	37
130				58·8	24 29 21	1	15·2	1	·77	1		54
131	67	40	91	58·9	24 28 20	2	13·2	7	1·08	197	1·10	54
132				59·3	23 17 41	1	14·3	1	1·05	4		46
133	69	41	92	59·3	24 7 7	3	10·9	11	·39	457	·54	40
134			93	59·9	23 3 17	1	13·6	1	·56	18	·59	56
135				39 ·7	23 46 32	1	14·6	2	1·34	4	1·28	35
136				2·0	24 20 25	1	15·6	1	·56	2		47
137				2·4	23 38 1	2	14·8	2	·74	10	1·09	36
138	70	42	94	3·6	24 16 11	3	13·5	7	1·48	134	1·64	44
139				5·3	23 46 37	3	14·0	7	·08	61	·50	34
140				6·3	24 14 38	1	15·2	1	—·31	1		43
141	71	43	96	7·6	23 31 32	3	12·6	8	·80	331	1·26	37
142				8·4	24 40 17	1	14·6	1	·34	2	·76	62
143	78		97	8·5	23 4 50	1	13·6	1	·57	18	·47	54
144				9·1	24 42 57	1	12·2	1	—·11	56	·32	64
145	73	45	99	9·9	23 23 19	3	9·2	17	·11	1223		41
146	72	44	98	9·9	23 56 57	3	8·9	29	·16	1766		34
147				10·5	24 27 23	2	13·8	6	·35	80	·28	51
148				11·0	23 22 10	1	14·9	1	·63	2		41
149				11·1	24 21 39	2	14·1	4	·62	42	·48	47
150	76	46	100	11·8	24 31 29	2	5·7	12	—·21	3263		54

General Catalogue (continued).

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
151	77	47	101	12·8	24 10 12	3	11·4	10	·43	452	·36	39
152				39 13·5	23 56 50	4	15·0	4	·71	9		33
153				14·3	24 11 44	1	15·2	1	·83	1		40
154				14·6	24 16 20	2	15·2	2	·73	6		42
155				14·7	24 56 23	1	13·2	1	·27	14		75
156	79	49	103	15·2	24 9 11	3	4·2		—·22	3701		38
157	80	48	102	15·2	23 34 50	3	13·1	7	·68	155	·90	34
158	82	50	104	16·2	23 48 37	3	12·9	13	·96	441	1·23	31
159	75		105	17·2	24 37 8	2	12·8	2	·42	86	·57	58
160				17·5	22 45 46	1	12·2	1	1·20	56		69
161				17·6	23 31 54	1	15·3	1	·74	2		35
162				18·1	22 58 53	1	12·5	1	·16	48	·82	57
163				18·6	24 9 40	2	15·4	2	1·06	1	1·35	38
164	81		106	19·3	24 34 26	2	12·3	4	·19	174	·30	56
165				19·4	22 48 37	1	9·0	1	·75	63		66
166	83	51	107	19·9	24 24 34	2	12·1	8	·37	368	·28	48
167				22·1	24 33 26	2	14·2	4	·11	46	·42	54
168	85		109	22·7	23 50 19	3	13·7	11	·28	165	·42	30
169	84		108	22·8	24 36 28	2	8·6	2	·21	132		57
170	86	52	110	23·1	23 51 56	3	11·0	21	·26	775	·31	30
171				23·5	24 18 23	2	14·3	5	·40	38	·60	42
172	88		111	24·1	23 47 35	2	14·4	6	·54	47	·67	29
173				24·1	24 9 25	1	15·2	1	1·15	1		36
174				25·3	23 56 13	1	15·2	1				30
175	89		112	25·7	23 24 50	3	13·5	7	·69	132	·66	37
176	87	53	113	25·9	24 34 22	3	9·8	9	·19	455		55
177				26·3	24 25 4	4	15·4	4	·78	4		47
178				26·5	24 1 49	3	14·7	3	·62	14		32
179				26·7	23 22 17	2	15·1	2	·57	6		38
180				27·3	24 24 44	2	14·6	5	·99	18		47
181	93	54	114	27·3	23 9 29	2	13·3	6	·82	136	·62	47
182				28·5	22 53 28	1	8·2	1	·41	60		61
183				29·0	23 47 58	1	14·3	1				28
184	92		115	29·3	23 45 20	2	14·0	8	·49	70	·53	28
185	94	55	118	29·6	23 10 19	2	12·7	6	·49	266	·62	47
186			116	29·6	24 12 35	3	14·7	4	·49	18	·76	37
187	91	56	117	29·9	23 43 19	3	8·3	33	·13	2573		28
188				29·9	24 11 22	1	15·2	1	·39	1		37
189	90		119	30·5	24 17 59	3	14·6	5	1·03	26	·68	41
190				30·9	24 53 37	1	14·0	1	·34	4		71
191				31·1	22 52 45	1	10·5	1	·82	22		61
192	95	57	120	31·2	23 7 1	2	13·0	7	·51	205	·79	49
193	97		121	32·5	23 55 52	3	13·9	9	1·50	107	1·38	29
194				32·9	22 48 3	2	12·5	1	·62	48	·92	65
195				32·9	22 56 35	1	13·6	1	1·02	18	·97	58
196	98	58	122	33·2	23 5 8	2	12·8	5	·28	190	·59	50
197				34·2	23 26 52	2	14·9	3	1·29	11	1·19	34
198				35·1	24 42 8	1	14·0	1	1·10	8	·64	60
199				35·6	24 15 23	1	15·8	1				38
200	99		123	35·9	23 33 23	3	13·5	7	·46	123	1·04	30

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
201	104		124	36·1	23 18 25	2	13·6	6	·57	124	·77	39
202				36·1	23 59 24	3	14·1	10	1·14	58	·94	29
203				36·1	24 52 28	1	13·6	1	1·76	9		70
204				36·5	23 58 10	3	15·4	3	1·42	4		28
205				36·8	24 50 17	1	13·6	1	·06	18		68
206	101	59	125	39 37·2	24 9 2	3	9·0	22	·17	1624		34
207				38·0	22 57 14	1	14·0	1	·71	4	·52	57
208				38·0	24 15 30	2	15·4	2	1·20	4		38
209				38·1	24 6 13	1	15·2	1	—·76	2		32
210	100	60	126	38·5	24 35 16	2	11·6	9	1·10	405	1·05	54
211	102	61	127	38·7	24 11 10	3	12·6	13	·32	509	·41	35
212			128	38·9	23 36 46	3	13·8	9	·31	131	·59	28
213	103	62	129	39·1	23 46 13	3	10·5	27	·30	1147		26
214				39·7	23 2 32	2	14·6	2	·73	12	·74	52
215				40·6	23 57 0	3	14·5	9	·88	38		27
216	105	63	130	40·8	24 1 23	4	7·4	36	·04	3764		29
217				41·3	22 46 56	1	12·5	1	·40	48		66
218			131	41·3	23 35 58	3	14·0	8	·79	75	·80	28
219	107	64	132	42·6	24 18 50	2	10·1	21	·24	1086		40
220				43·1	22 44 16	1	12·9	1	·49	19		68
221:			134	43·5	24 8 41	3	13·9	8	·23	71		33
222				43·7	24 36 17	3	14·3	4	·21	27	·58	54
223	108		133	43·8	23 26 29	3	13·3	8	·80	204	1·16	33
224:				43·8	24 8 40	2	14·9	2	·39	6		32
225	106	65	135	43·8	24 35 34	3	9·9	12	·29	402		54
226				44·0	24 44 35	2	14·0	2	1·04	26	1·05	62
227	109	66	136	44·5	23 58 33	3	9·9	31	·23	1556		27
228	110	67	137	44·6	24 7 7	3	11·9	16	·56	642	·79	31
229				45·0	22 44 40	1	12·2	1	·04	56		67
230	113	68	138	46·6	23 57 25	3	12·4	21	·48	744	·63	26
231				46·8	24 22 8	2	15·4	2	·18	4		42
232	112	69	139	46·8	24 24 0	3	12·7	13	1·63	516	1·38	44
233				47·1	24 40 24	3	12·8	3	·96	130	·83	58
234	114	70	140	47·7	23 54 28	3	11·0	27	·43	927	·41	25
235				49·3	23 15 58	1	16·1	1				39
236				49·6	23 38 59	3	14·8	4	·06	17		25
237	111		141	50·5	24 33 53	3	13·5	8	·41	158	·59	52
238				50·7	24 8 10	3	15·1	4	·48	11		31
239				51·1	23 16 19	1	15·6	1				39
240	118		142	51·3	23 17 14	3	13·8	8	·49	130		38
241	116	72	144	52·4	24 6 49	3	12·0	18	1·16	414	1·16	30
242	115	71	143	52·4	24 3 19	4	3·8		—·20	4612		28
243				52·8	23 47 22	1	14·9	1	·47	4		23
244				53·0	23 33 21	2	14·4	2	·99	16		27
245				53·1	23 38 6	3	14·7	4	·37	20		25
246				53·2	23 32 23	1	15·3	1	1·06	1		27
247				53·4	24 17 17	3	15·0	3	·75	12		37
248*				54·6	22 50 5	2	5·8	2	·15	305		61
249				54·8	23 33 41	2	15·2	2	1·38	6		26
250				55·1	23 2 7	2	14·8	2	1·26	8		50

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
251	120	73	145	40 55·3	23 43 36	4	8·2	48	·13	3107		22
252	122		146	55·4	23 18 28	3	13·4	8	1·00	206	1·12	37
253	117	74	147	56·4	24 29 18	3	12·9	12	·58	352	·63	47
254	125	75	148	56·7	23 7 8	3	12·7	9	·48	371	·14	46
255	121	76	149	57·1	24 14 30	2	5·9	30	—·13	4608		34
256	123		150	57·9	23 56 22	4	13·8	15	1·55	192	·167	23
257	128		151	59·7	23 8 41	1	15·1	1	1·06	4	1·17	44
258				40 ·1	22 49 48	2	13·1	2	·34	52	·99	61
259				·5	24 3 48	4	14·0	13	·58	117	·56	26
260				·8	24 44 19	2	9·7	2	·12	96		60
261				·9	24 42 46	1	15·0	1	·86	2		59
262				1·8	24 12 49	1	15·2	1	·20	2	·77	32
263	124	77	152	3·9	24 31 32	3	12·7	12	·23	470	·43	48
264				4·1	24 6 35	4	14·1	10	·18	88	·61	28
265	129	78	153	5·4	24 12 53	2	6·7	32	—·11	4631		32
266				5·9	24 53 42	2	13·1	2	·37	57		69
267				6·9	23 35 4	3	14·4	4	·56	24		23
268	132		154	7·2	23 25 31	3	13·7	8	·86	132		29
269				7·4	24 40 47	2	10·3	10	·08	379	·59	56
270	131	79	156	7·7	23 43 58	4	12·5	20	1·12	766		20
271				7·8	24 42 17	2	10·9	6	·27	160	·01	58
272	130		155	8·0	24 26 4	2	14·6	5	·96	28	1·22	43
273:	133		158	8·9	24 15 17	3	13·9	9	1·06	124	1·35	33
274				8·9	24 49 47	2	12·2	2	·26	114		65
275			157	8·9	24 34 16	3	14·5	7	·46	39	·87	50
276		80	159	9·1	24 31 40	3	13·5	10	·06	216	·74	48
277	135		160	9·3	23 5 37	2	13·6	5	·84	116		46
278:				9·3	24 15 1	3	14·9	8	1·40	21	1·16	33
279	127	81	161	9·4	24 33 16	2	12·9	10	·82	339	·70	49
280				9·4	22 59 47	2	14·4	3	1·46	18	·98	51
281				9·8	22 47 50	2	13·9	2	·56	13		63
282				10·6	24 0 2	4	14·9	5	·36	15		22
283				10·7	23 49 44	1	15·3	1				19
284				10·7	24 18 53	1	15·8	1				36
285				10·9	24 36 18	3	14·0	5	·19	62	1·10	52
286				10·9	24 37 7	3	13·8	5	·32	72	·47	53
287	134		163	11·4	24 19 19	3	14·2	9	·76	78	·69	37
288	126		162	11·4	24 35 47	2	15·1	5	1·07	14	1·06	57
289	137	82	164	11·6	23 44 54	3	10·9	30	·32	1046		19
290				11·7	22 54 22	2	10·8	3	1·33	48		56
291				12·0	23 54 48	1	15·9	1				20
292				12·7	23 45 43	2	15·2	2	1·51	6		18
293				12·9	22 49 16	2	12·7	2	1·56	86	1·48	61
294				13·3	23 2 10	1	15·1	1	2·64	4		49
295	138	83	165	14·0	24 18 38	3	12·5	16	·69	552	·66	36
296				14·7	23 44 50	2	14·8	9	·58	34		18
297				14·9	22 59 24	1	15·0	2	1·16	6	1·15	51
298		84	166	15·3	23 1 41	2	10·2	10	·35	453		49
299				15·6	22 49 25	2	13·9	2	·47	22		61
300				16·4	23 44 34	3	15·8	3				18

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
301				40 16·4	24 43 45	2	13·7	4	·19	83	·66	59
302				16·8	23 2 18	1	15·6	1				48
303				16·9	23 15 52	1	14·6	1	·34	8		36
304				16·9	24 5 10	3	15·0	4	1·11	13		25
305:	141	85	167	17·0	23 53 3	4	9·1	41	1·17	2183		18
306:			168	17·1	23 53 22	2	13·8	6	·32	92	·60	18
307				17·5	24 18 44	3	15·1	3	·91	10	1·24	35
308				17·8	24 45 1	2	14·4	3	·17	30	·58	60
309				17·8	22 53 50	2	14·9	3	1·21	10	·86	56
310				18·3	22 49 1	2	8·3	2	·44	120		61
311				18·8	24 28 7	3	15·3	4	·34	8		44
312	142		169	19·2	23 40 22	4	13·7	15	·65	235	·56	18
313*	143	86	170	19·3	23 52 42	4	8·4	46	·14	3014		17
314				19·7	24 57 30	2	14·0	2	1·38	9		72
315				20·1	24 49 56	2	14·7	2	·61	9		64
316	139	88	172	20·7	24 30 34	3	13·2	11	·36	266	·31	46
317	140	87	171	21·0	24 33 28	3	12·7	13	1·03	487	·61	48
318				21·1	23 36 28	3	15·2	3	1·14	2		20
319	145		173	21·8	24 1 14	4	14·5	6	1·08	35	·69	21
320				22·1	23 58 5	3	15·4	3	·36	6		19
321				22·2	24 28 26	1	15·4	1	·50	1		44
322	147	89	174	22·9	23 10 31	3	11·0	16	·44	724	·60	40
323	146	90	176	23·4	23 38 14	4	4·2		—·19	5154		18
324	144		177	23·5	23 43 25	3	13·4	12	·20	176	·21	16
325				23·6	23 36 20	3	15·0	3	·65	12	·44	19
326			175	23·9	23 41 46	2	14·6	9	·45	52		17
327	149	91	178	24·4	23 12 32	3	13·1	10	·65	253	·72	38
328				25·0	24 54 2	2	10·3	2	·76	42		68
329	148	92	179	25·0	24 15 29	3	11·0	23	·37	845	·28	32
330				25·0	24 38 22	3	14·4	6	—·06	20		53
331				25·9	22 41 51	1	13·0	1	·35	19		67
332	150		180	27·0	24 2 59	4	13·6	16	·93	250	·67	21
333				27·2	24 42 20	2	12·1	6	1·54	296	1·50	56
334				27·5	24 38 8	3	13·5	6	·26	130	·32	52
335				27·5	23 2 8	1	15·6	1				48
336				28·4	24 49 26	2	10·6	2	·27	32		63
337		93		29·6	23 0 40	2	11·3	9	·95	338	1·17	49
338				29·8	23 43 8	3	15·1	3	·91	8		15
339				29·9	23 38 5	1	14·9	1	·48	4		17
340				30·0	24 53 46	1	15·0	1	·44	2		67
341	151	94	181	30·3	23 56 40	4	7·6	65	·08	5107		17
342				30·9	24 55 0	2	13·8	2	·66	32		69
343	152	95	182	31·1	24 7 22	3	11·8	24	·49	964	·24	24
344				31·5	23 34 34	3	14·4	7	·55	56		19
345				31·8	25 0 44	1	10·6	1	·18	16		74
346	156		183	32·3	23 16 53	3	13·7	7	·93	136	·88	34
347			184	32·6	24 3 41	4	14·5	6	·69	32		21
348			185	32·9	23 3 47	2	14·1	4	·43	44	·53	46
349				33·0	23 39 37	3	15·4	3	·87	4		16
350			186	33·4	23 54 35	4	14·6	5	·46	27		15

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
351				40 33·5	24 44 47	2	13·7	4	·79	82		58
352				33·6	23 34 19	3	15·0	6	·45	8		19
353			187	33·8	23 4 4	2	14·6	4	·65	21	·63	45
354	154	96	188	34·0	24 33 30	3	10·0	22	·16	874		48
355				34·5	22 47 49	1	13·6	1	·83	9	·48	61
356				34·7	23 48 21	1	15·3	1				13
357	155		189	34·7	24 1 18	3	13·9	14	·29	171	·17	19
358			190	34·9	24 0 41	3	14·2	12	·39	106	·18	18
359				35·5	23 58 10	1	14·9	1	·35	4	·88	17
360	157		191	35·6	23 40 21	2	14·7	8	1·10	33	1·01	15
361				35·6	22 52 19	2	11·8	3	·50	154	·49	57
362	158	97	192	36·1	23 33 2	3	11·4	28	·41	968	—·03	19
363				36·5	24 16 33	3	14·6	8	·39	50	·33	31
364				37·3	24 25 53	1	15·7	2	1·41	2		40
365	159	98	193	37·3	23 49 40	4	12·7	31	·56	946	·23	13
366	164		194	37·5	23 32 7	3	13·6	15	1·20	291	1·05	20
367				37·8	24 52 26	2	13·6	2	·08	37		66
368:	163	100	196	38·6	23 39 3	3	12·0	31	·30	931	—·19	15
369	162		197	38·7	23 40 44	3	13·7	7	·85	103	·57	14
370				38·7	24 27 30	2	14·2	6	·33	59	—·01	42
371	161	99	195	38·7	23 18 47	3	8·5	30	·20	2244		31
372	165		198	38·8	23 29 19	4	13·6	12	·35	241	·52	22
373:				39·6	23 39 19	2	15·5	3	·74	3		15
374	160	101	199	39·7	24 26 13	3	12·8	14	·85	402	·46	40
375				40·0	24 8 53	2	15·5	1	—·30	4		24
376		102		40·2	24 38 56	2	10·7	10	·28	398	·64	52
377				40·2	24 46 49	1	15·4	1	—·55	2		60
378	166		200	40·2	24 1 57	3	13·3	20	·99	403	·67	19
379				40·3	24 37 56	2	14·4	4	·94	24	1·06	51
380				41·3	24 12 33	3	14·6	6	1·19	32	·94	27
381				41·6	23 32 16	3	14·9	3	·72	14		19
382				41·7	24 53 55	1	14·5	1	·28	4		67
383	167		202	41·7	24 30 28	3	13·7	11	·66	156	·56	44
384				41·7	23 52 44	1	15·3	1	—·02	2		13
385	168	103	201	41·8	23 28 36	4	10·6	31	·52	1225		22
386				42·0	24 35 27	2	14·2	4	·64	38	·44	49
387	170		203	42·2	23 40 59	3	14·0	16	1·39	179	·93	13
388	169	104	204	42·7	23 47 34	2	9·6	42	·21	2055		11
389	171		205	42·9	24 2 25	3	14·0	15	·63	153	·17	19
390	172	105	206	42·9	23 43 8	2	13·1	20	·84	513	·36	12
391				43·2	24 54 42	2	13·6	2	·01	37		68
392				44·1	23 44 59	1	15·3	1	·30	2		11
393				44·3	23 25 59	1	15·1	1	·92	4		24
394				44·8	25 2 45	1	12·9	1	·18	48		76
395	173		207	45·2	23 11 11	2	13·1	9	·78	236	·46	38
396				45·8	22 48 0	2	8·8	2	·04	133		60
397				46·0	23 38 25	3	15·1	3	·89	8		14
398				46·0	23 57 59	1	15·3	1	·26	2		15
399				46·1	24 58 57	1	13·6	1	·13	28		72
400				46·5	24 37 8	2	13·9	5	·61	72	·58	50

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
401:	174		208	40 46·7	23 56 41	2	14·2	11	·55	94	·76	14
402:				46·8	23 56 40	1	15·3	1				14
403	175	106	209	47·3	24 0 5	2	10·8	37	·19	1312	·19	16
404				47·4	23 1 47	2	14·2	4	·19	28	·21	47
405				47·5	24 19 0	3	14·3	9	·53	66	·08	33
406				47·6	23 42 37	1	14·9	1				11
407:				48·7	24 1 51	1	14·4	1				17
408:	176	107	210	48·8	24 1 50	3	13·1	19	·51	441		17
409			211	48·9	24 17 31	3	14·9	5	·69	20	·70	31
410				49·3	24 35 17	2	14·4	4	·52	24	·49	48
411	178		212	49·5	23 30 52	3	13·7	14	·36	271	·23	19
412				50·3	24 54 42	2	13·2	2	·21	52		68
413	177		213	50·7	24 14 52	3	13·5	15	·42	260	·09	29
414				51·6	23 30 49	4	15·0	8	·95	16		19
415				52·3	22 50 32	2	12·4	3	·98	168	·87	58
416				53·2	24 48 55	2	10·6	9	·18	167		62
417				54·0	24 54 50	2	12·9	2	·66	86		68
418				54·5	24 39 12	2	13·9	5	·65	73	·33	52
419			214	55·7	23 51 43	4	14·5	6	·62	47	·47	9
420		108		55·9	22 55 43	2	9·9	10	·21	475		52
421				56·0	23 40 56	4	15·2	6	·31	20		11
422				56·1	24 49 56	1	15·0	1	1·14	2		63
423				56·3	23 51 25	2	15·6	3	1·40	2		9
424	179	110	216	56·4	24 29 10	3	10·9	19	·39	723		42
425	180	109	215	56·6	24 36 38	2	11·7	9	·40	407	·67	49
426				57·6	23 48 2	1	15·3	1	1·77	2		8
427		111		57·8	22 53 58	2	10·7	9	·85	282	·98	54
428	181	112	217	58·3	23 16 22	3	10·9	23	·37	862	·12	32
429				58·4	23 25 41	1	14·8	2	1·49	8		23
430				41 ·1	23 50 16	2	15·1	3	1·51	5		8
431				·2	24 10 30	2	15·3	3	·50	3	·86	24
432	185		218	·4	23 30 24	4	13·7	12	·49	215	·44	19
433				1·3	24 46 49	2	13·9	4	1·55	54	1·25	59
434				1·6	22 59 51	2	14·2	4	1·08	25	·72	48
435				1·7	24 51 8	1	14·4	7	·50	4		64
436	182	113	219	1·8	24 12 34	4	7·0	57	—·05	5655		26
437	184	114	220	2·2	23 46 40	2	12·7	26	·34	794	·26	7
438				2·4	23 2 16	2	15·1	2	1·13	5		46
439				2·5	23 2 58	1	15·5	1				45
440	186	115	221	2·5	24 4 25	3	11·1	33	·28	1177	·32	18
441				2·6	23 26 53	1	15·5	1	·27	2		22
442	183	116	222	2·8	24 1 14	2	12·7	26	1·10	759	1·31	15
443				3·2	22 46 56	2	13·6	2	·76	27		61
444	187	117	223	3·9	23 40 20	2	12·9	23	·86	717	·82	10
445				4·0	23 26 11	3	15·0	4	·40	14		22
446	190		224	4·2	24 3 44	3	14·8	6	1·15	24		17
447*	188	118	225	5·1	24 30 36	3	8·8	26	·19	2089		43
448				5·5	23 33 50	3	14·3	3	·27	30	—·10	15
449	189	119	226	5·8	24 19 35	3	11·7	25	1·22	940	1·71	32
450				5·8	23 50 20	3	14·9	4	·22	16		7

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
451				41 6·0	24 53 58	2	12·5	2	·21	104		66
452	191	120	227	6·2	23 11 7	2	12·1	12	·62	463	·94	37
453				6·7	22 57 32	2	14·0	4	·25	26	·66	50
454				7·0	23 50 58	1	15·1	1				7
455				7·0	23 23 49	3	14·8	5	·68	20	·23	24
456				7·1	22 49 36	2	13·9	3	·69	35	·52	58
457	192	121	228	7·7	23 41 7	2	8·6	64	·15	3466		9
458				9·8	23 24 30	2	15·6	2				24
459	193	122	229	10·1	24 33 39	3	12.9	8	·45	307	·31	46
460			230	10·5	23 7 29	2	14·1	4	·11	48	·37	40
461	194		231	10·8	24 12 55	3	14·3	10	1·19	94	1·05	26
462	197		232	11·1	23 24 19	4	13·2	17	·93	388	·50	24
463				11·3	23 28 26	1	15·5	1	1·07	2		20
464				11·3	23 15 39	1	15·1	1	1·10	4		32
465			233	11·9	23 10 15	2	14·0	4	·30	43	·33	37
466				12·6	22 55 2	1	14·6	1	2·32	8		53
467				12·8	23 24 2	3	15·2	7	1·06	10	1·08	24
468	196	123	234	13·0	23 58 1	2	9·6	55	·17	2391		11
469				13·1	24 46 19	1	15·0	1	·07	4	·73	59
470				13·2	24 7 32	3	14·4	7	·48	56	·50	20
471				13·2	24 48 32	2	11·5	8	·21	244	·21	61
472				13·3	23 2 46	1	15·5	1	—·12	2		45
473				13·4	23 56 46	1	15·3	1	1·39	2		10
474				14·0	25 2 46	1	12·3	1	·02	58		75
475	198	124	235	14·2	23 28 17	4	9·8	45	·28	2041		20
476				14·3	23 44 2	4	14·8	8	·35	30	·26	5
477	195		236	14·4	23 53 41	4	14·3	8	·31	59	·26	7
478				15·2	25 3 41	1	11·1	1	·08	28		76
479				16·0	24 29 25	2	15·4	3	—·00	6	·73	42
480				17·1	24 58 56	1	9·9	1	1·06	48		71
481	206		237	17·9	23 24 16	4	13·6	17	1·07	277	·63	24
482			238	18·0	23 48 29	3	14·0	8	·39	72	·41	3
483	199	125	239	18·3	23 52 56	1	13·0	23	·33	549	·53	6
484	202	126	240	19·7	23 49 5	1	9·1	63	·23	2891		3
485	204	127	241	20·4	23 30 28	4	11·5	29	·64	1016	·80	17
486				20·5	23 15 45	1	14·6	1	·32	8		32
487			242	20·7	24 4 55	3	14·0	11	1·26	158	·83	17
488	207	128	243	20·9	23 36 13	3	12·4	24	1·33	883	1·35	12
489				21·0	24 50 0	2	12·5	6	·36	253		62
490				21·2	23 47 25	2	15·2	4	1·12	9	·80	3
491	205	129	244	21·2	24 8 37	4	12·7	24	1·01	748	1·04	21
492	201		245	21·4	24 20 0	4	14·0	12	·31	123	·16	32
493				21·6	23 43 38	2	15·2	3	·73	8		5
494	208	130	246	21·7	23 25 0	5	7·5	61	·30	4481		23
495				21·9	22 56 29	2	14·2	4	·12	28	·67	51
496				22·2	23 17 10	2	15·2	2	·70	5		30
497				22·2	22 36 52	1	11·7	1	·81	52		71
498	203	131	247	22·5	24 33 51	3	13·1	7	·36	210	·63	46
499				22·5	24 13 11	2	15·3	2	·61	6		26
500	210			22·6	23 38 27	3	14·8	5	·34	24	·57	9

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
501	209	132	248	41 22·6	23 49 49	3	8·5	73	·14	3913		3
502:				23·0	23 29 41	3	14·6	9	·25	30		18
503	211		249	23·2	23 41 31	4	14·1	11	·90	140	·68	7
504				23·6	24 39 40	1	14·9	2	·60	6	·71	52
505				24·0	24 51 49	1	14·0	1	·20	18		64
506				24·2	23 0 10	2	13·9	4	1·35	53		47
507			251	24·3	23 46 14	5	13·9	15	1·01	123	·69	2
508	212	133	250	24·4	23 48 26	3	6·4	85	—·02	6263		2
509				24·5	24 50 11	1	15·4	1	·63	2		62
510:	213	134	252	24·9	23 29 39	4	7·2	60	—·00	5400		18
511				25·4	23 42 28	2	14·7	3	1·35	16		5
512				26·2	24 44 36	2	14·3	4	1·33	25	1·13	57
513	214	135	253	26·2	24 16 45	5	7·9	60	·12	4099		29
514				26·2	23 21 13	1	15·5	1	1·06	2		26
515				26·6	24 23 19	1	14·9	2	1·53	8		35
516				27·4	24 5 5	1	15·0	2	1·03	7		17
517	215	136	254	27·5	23 14 41	4	11·2	20	·27	680	·14	33
518:	216		255	27·6	23 36 19	2	10·6	34	·37	473		11
519				28·1	23 46 52	1	14·6	7	1·11	12	1·38	1
520:	217	137	256	28·2	23 36 20	2	7·6	57	—·01	948		11
521				28·2	24 26 58	2	14·8	5	—·07	24		39
522:	218	138	257	28·3	24 21 2	4	11·5	26	·33	712	·08	33
523				28·5	23 35 16	3	14·9	5	·75	19	·78	12
524:	219	139	258	28·5	24 20 57	4	8·9	41	—·02	1805		33
525				28·8	24 3 17	1	14·3	1	1·02	8		16
526				28·9	22 36 47	1	7·4	1	·06	62		71
527				29·1	23 44 29	1	14·9	1	·41	4		3
528	221		259	29·4	24 11 53	4	13·6	18	·29	283	·41	24
529	223		260	29·9	23 19 15	4	13·6	1	1·01	238	1·21	28
530				30·3	23 55 1	1	15·3	1	2·00	2		7
531	224	140	261	30·5	23 13 56	4	11·8	17	1·08	620	1·19	34
532				30·6	24 25 4	1	15·4	1	·53	2		37
533				30·8	24 9 17	1	15·2	2	·45	6		22
534	225	141	262	31·1	23 22 8	5	7·9	58	·10	4049		25
535	222	142	263	31·2	24 14 47	5	12·5	26	1·56	931	1·56	27
536				31·3	23 26 18	2	14·8	4	·91	22		21
537				31·6	23 34 19	3	15·0	4	·33	18		13
538	220	143	264	31·7	24 7 25	4	13·2	18	1·34	440		20
539				31·9	24 56 37	1	11·1	1	·53	28		69
540	226	145	265	32·3	23 58 47	3	7·0	64	·01	5609		11
541				32·4	24 10 58	2	15·3	3	—·14	2		23
542	227	144	266	32·4	23 47 44	1	2·9		—·18	4925		0
543				32·6	24 32 41	2	15·3	2	·56	2		45
544				33·5	23 54 22	1	14·9	1	·34	4		7
545	228		267	33·5	23 38 40	3	14·1	10	·87	136	·94	9
546				34·1	24 14 59	4	15·2	9	·35	16	·54	27
547				34·3	24 46 16	2	14·2	4	·59	38	·72	58
548				34·6	24 29 8	1	15·0	3	·70	8		41
549				34·9	24 17 39	3	15·2	6	·44	14	·44	30
550				34·9	25 3 49	1	13·6	1	·90	14		76

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
551				41 35·0	25 0 55	1	14·0	1	·57	18		73
552	229		268	35·6	24 22 31	3	14·0	9	1·13	138	·94	35
553	231		269	36·3	23 39 23	3	14·2	9	·40	90	·19	8
554	230		270	36·5	24 11 39	4	13·8	17	1·29	226	1·24	24
555				37·0	23 8 31	2	15·3	2	·65	2		39
556				37·1	25 4 38	1	11·1	1	·23	28		77
557	232		271	37·1	23 22 8	5	13·5	14	·78	49	·42	25
558				37·7	23 57 5	1	15·3	1	1·72	2		9
559				37·8	23 52 10	1	14·9	1	·47	4		5
560	233	146	272	38·0	24 13 34	4	11·9	30	1·39	1066	1·53	26
561				38·3	23 33 32	1	15·5	1	1·45	2		14
562	234		273	38·6	23 54 22	3	13·7	17	1·04	221	1·05	7
563				39·3	22 46 37	1	14·7	1	1·04	2		61
564				39·4	24 16 2	1	14·9	1	·98	4		28
565				39·5	24 49 54	1	13·8	3	·08	55		62
566				39·6	24 4 22	1	15·3	1				17
567				40·5	25 0 15	1	13·3	1	·35	38		72
568		147		40·8	22 58 32	4	13·8	6	·67	88	·51	49
569	235	148	274	41·2	23 18 1	4	9·0	33	1·07	1816		30
570				41·4	24 46 28	3	13·3	7	·30	177	·73	59
571				41·7	24 58 35	1	14·4	1	—·05	4		71
572				42·1	22 36 54	1	14·1	1	·34	4		71
573				42·5	24 52 23	1	13·3	1	·41	19		65
574				42·6	23 50 8	1	15·2	3	·93	6		3
575	238		275	42·7	23 9 34	2	15·1	2	1·22	6	1·08	38
576				42·9	24 46 30	3	13·7	7	1·05	108	·88	59
577	237	149	276	43·0	24 3 24	3	11·1	35	·38	1265	·31	16
578				43·1	23 59 34	1	14·9	1				12
579				43·1	25 1 40	1	11·4	1	—·07	36		74
580	236	150	277	43·2	24 22 35	3	13·0	16	·28	417	·32	35
581				43·3	22 43 28	1	13·3	1	·29	14		64
582				43·3	24 48 0	2	15·2	2	1·39	4		60
583	240	151	278	43·5	23 41 36	3	12·0	28	1·17	1058	1·04	7
584				43·5	22 42 38	1	13·3	1	·05	14		65
585	239	152	279	43·6	23 50 25	4	12·7	28	·79	740	·80	4
586	241	153	280	44·0	23 49 44	5	12·5	29	·63	888	·83	3
587				44·7	24 59 13	1	15·0	1	·20	4		71
588	243		281	44·9	23 39 46	2	14·6	8	1·17	54	1·00	8
589				45·2	23 25 52	2	15·0	3	1·43	9		22
590				45·5	23 43 52	1	15·2	2	·93	1		5
591				45·7	23 37 25	1	14·8	2	·79	4		11
592	244	154	282	46·0	23 58 24	3	12·7	26	·40	818	·61	11
593				46·2	24 0 29	1	15·0	2	·46	5		13
594				46·3	24 21 43	3	15·2	5	·13	11	·24	34
595				46·4	23 23 18	1	15·5	1	1·85	1		25
596				46·6	22 48 13	1	12·6	1	—·01	48	·12	59
597	245	155	283	46·8	23 14 5	4	9·7	23	·90	1191		34
598	242	156	284	46·9	24 22 24	3	13·7	12	·27	191	·07	35
599				47·0	22 37 16	1	12·6	1	·87	24		70
600				47·0	25 4 37	1	7·9	1	·09	44		77

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
601				42 47·0	22 38 8	1	12·0	1	·07	58		69
602				47·1	24 58 38	1	11·1	1	·12	28		71
603				48·1	23 54 36	1	14·8	3	·85	14		8
604				49·7	23 24 46	1	15·2	2	·60	6		23
605				51·2	23 35 55	3	14·8	7	·95	28		13
606				51·6	23 56 30	1	14·7	2	·86	9		10
607	246		285	52·8	24 22 10	2	14·8	5	·41	28	·23	35
608			286	53·0	24 15 41	4	13·8	13	·62	222	·28	28
609				53·2	22 44 50	1	12·6	1	·46	48		63
610		157		53·2	22 54 35	3	11·5	9	·54	390	·19	53
611				53·3	24 33 25	2	15·2	4	·35	8	·51	46
612	247	158	287	53·6	24 3 31	3	12·7	21	1·04	658	·99	16
613				53·7	23 51 29	1	14·9	1	1·13	4		6
614				54·2	23 35 30	2	15·4	4	1·44	6		13
615				54·8	23 35 53	2	15·3	4	1·39	8		13
616				55·0	24 49 15	2	11·6	8	1·56	264		62
617			289	55·5	24 27 50	3	14·3	7	·43	60	·53	40
618	248		288	55·5	23 6 4	4	13·2	6	·53	126	·59	42
619				55·7	23 59 48	1	14·9	1	·14	4		13
620	249	159	290	56·0	23 37 59	3	10·2	38	·26	1679		11
621				56·7	24 47 41	2	13·4	5	·30	103	·31	60
622			293	56·9	23 41 24	3	14·5	7	·50	51		8
623			291	56·9	24 15 59	2	14·8	5	·68	20	·54	29
624	252		292	57·0	23 29 1	3	13·8	10	·48	152	·43	19
625				57·6	23 30 31	3	14·7	9	·40	26		18
626	259		294	58·1	23 30 50	3	13·9	9	·71	129	·74	18
627				58·2	24 13 2	2	14·8	9	·93	49		26
628	250		295	58·3	23 59 32	1	14·8	7	·57	39	·34	13
629				58·6	24 42 15	2	11·8	10	1·08	340	·99	55
630				58·7	24 10 47	1	15·3	1				24
631	254	160	296	58·8	24 27 17	3	13·5	9	1·10	172	·70	40
632				59·1	22 54 18	1	15·1	1			·32	53
633				59·2	23 53 47	1	14·7	2	·96	10		9
634	255		297	59·3	23 22 49	5	13·9	13	·96	138	1·03	25
635:	256	161	298	59·8	23 7 41	3	11·1	15	1·13	588		40
636	258	162	299	·0	23 23 14	5	12·0	22	·39	961	·13	25
637	251		300	·1	24 1 17	3	14·4	8	·55	56	·42	15
638	262		301	42 ·2	23 26 4	3	14·5	8	·54	56	·16	22
639	257	163	302	·4	23 9 25	4	11·7	14	·45	602	·07	39
640:			303	·7	24 26 1	3	14·1	7	·49	56	·12	39
641:	253		304	·7	24 25 48	3	13·9	7	·61	80	·62	38
642	260		305	·7	23 16 59	4	13·6	10	·40	158	·29	31
643				1·4	24 52 41	2	13·2	2	·74	76		65
644:		165		1·4	22 53 1	3	10·8	10	1·35	359	·91	55
645:	263	164	306	1·5	23 7 31	3	12·7	10	·28	344	·19	41
646				1·5	24 25 25	3	15·1	5	1·35	9		38
647			307	1·6	23 40 49	2	14·2	9	·44	101	·34	10
648	261		308	1·8	23 16 42	3	14·6	9	1·45	46	1·03	32
649:				2·0	22 53 16	2	14·5	4	·57	13	·69	55
650				2·3	23 40 11	1	15·4	4	1·10	4		10

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		
651:	264	166	309	42 2·5	23 47 26	2	10·4	39	·31	1425		7′
652				2·6	24 17 13	2	15·4	3	·63	2		30
653				2·7	23 7 5	4	14·6	7	·12	29	·34	41
654:				2·8	23 47 25	1	12·6	1				7
655				2·9	23 41 5	1	15·7	3				10
656				3·1	25 2 1	1	10·9	1	·35	22		74
657				3·8	23 25 5	3	14·6	7	·33	32		24
658				4·7	25 2 26	1	15·0	1	·26	2		75
659	265	167	310	4·7	23 34 10	5	12·5	22	1·27	759	1·12	15
660	267		311	5·0	23 46 42	2	13·7	15	1·39	226	1·44	8
661	270	168	312	5·6	23 20 6	6	12·1	17	·29	707	·17	28
662				5·7	23 52 4	1	15·3	1	—·03	2		9
663				5·9	24 17 28	2	15·0	3	1·05	8	·28	31
664				6·1	23 40 49	2	15·3	4	—·34	5		10
665				7·0	25 1 4	1	13·3	1	·53	38		74
666	269	169	313	7·0	24 33 23	3	11·6	14	·27	563	—·26	46
667				7·5	23 25 56	1	15·7	1				23
668				8·0	24 36 2	2	15·4	2	1·34	3	·46	49
669		170		8·0	24 40 46	2	8·4	16	1·43	1541		54
670				8·1	22 41 34	1	13·3	1	·40	14		66
671				8·3	23 40 38	1	15·3	1				11
672				8·4	24 58 55	1	14·4	1	—·25	8		71
673	272		314	8·6	23 45 46	2	13·8	14	1·25	214	1·21	9
674				9·1	23 22 47	1	15·5	1	—·34	2		26
675				9·2	25 1 43	1	13·6	1	·05	28		74
676				9·4	22 38 2	1	12·3	1	·26	28		70
677				9·4	23 58 46	1	15·4	2	—·61	2		14
678	274	171	315	9·4	24 9 50	3	13·0	19	·54	583	·53	24
679				9·5	24 8 38	2	15·1	5	·37	14	·11	22
680	273	172	316	9·6	23 4 26	4	10·8	12	·79	507	·86	44
681	275	173	317	10·2	23 50 0	1	9·9	39	·27	1627		9
682	271	174	318	10·9	24 33 2	3	13·5	9	·31	184		46
683				11·0	22 41 56	1	12·6	1	—·15	48		66
684	276		320	11·2	23 25 43	2	14·4	6	·52	58	·16	24
685	279	175	319	11·3	23 33 23	5	12·9	19	·43	490	·14	17
686				11·6	24 14 53	1	15·3	1				29
687	277	176	321	11·9	23 56 14	1	13·5	17	·41	340	·38	12
688				14·2	24 47 23	2	13·2	6	·27	151	·22	60
689				14·2	24 51 37	1	14·3	1	—·40	4		64
690				14·3	24 18 7	1	15·3	1	—·03	2		32
691				14·4	23 8 8	2	15·0	4	·66	10	·51	41
692				14·6	22 49 26	1	14·1	1	1·30	4		59
693	280	177	323	16·1	24 0 37	1	8·7	58	·17	3017		16
694	281		322	16·4	23 41 24	2	14·0	13	1·56	167	1·70	12
695				17·2	24 54 25	2	9·3	2	·24	129		67
696				18·0	23 16 10	1	15·5	1	1·73	2		33
697				18·4	23 58 30	1	15·3	1	1·09	2		15
698				18·6	24 44 23	2	11·6	9	·39	280	—·08	57
699		178		18·6	22 56 41	3	12·5	7	·33	324	·32	52
700				18·8	22 37 23	1	11·7	1	·28	26		71

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
701:	283	179	324	42 19·3	23 20 35	5	13·1	13	1·00	398	·98	29
702	282		325	19·6	23 59 5	2	13·6	17	·32	292	·47	16
703				19·7	23 52 7	1	14·7	3	·52	16		12
704				19·9	22 51 46	1	14·1	1	·22	8	—·09	57
705:				19·9	23 20 52	5	15·0	9	·82	35	·51	29
706	286	180	326	20·9	23 34 58	4	10·8	31	·35	1185	·42	17
707				21·2	24 19 22	1	14·3	1	·47	4		33
708	288	181	327	21·2	23 19 46	4	10·3	20	·24	958		30
709			328	21·2	23 47 14	2	15·2	4	1·68	8		11
710	284	182	329	21·4	24 32 17	2	12·1	11	·31	541	·01	46
711				21·4	24 52 59	2	13·2	2	·40	76		66
712	285		330	21·6	24 27 58	3	13·9	9	·62	124	·43	42
713	287		331	21·9	24 22 1	2	14·1	7	·50	86	·32	36
714				22·2	23 32 54	2	15·3	3	·44	8		19
715	289	183	332	22·6	23 45 11	2	13·3	16	1·00	383	1·14	12
716				23·3	24 48 56	2	14·0	3	·35	31		62
717	290	184	333	23·7	23 24 50	5	13·5	13	·37	251	·16	26
718				24·1	24 11 51	2	15·4	3	—·03	6		27
719				24·6	24 34 20	1	15·9	1				48
720				24·8	23 45 29	1	15·4	2	1·70	2		12
721	291		335	25·6	24 33 9	2	13·7	6	1·17	142	1·11*)	47
722	293	185	334	25·6	23 6 50	3	5·3	22	—·19	4182		43
723	292	186	336	26·2	24 34 13	2	11·2	15	·27	526	·01	48
724				26·5	25 1 2	1	8·6	1	·63	60		74
725				26·5	22 57 37	2	14·1	4	·78	20	·49	51
726				26·6	24 29 28	1	15·3	1	—·05	2		43
727	294	187	337	27·2	23 17 2	4	13·6	11	·28	177	·13	33
728				27·4	23 53 53	1	15·2	3	·13	7		14
729				27·4	23 16 12	2	15·1	1	·58	2		34
730				27·9	24 41 11	2	12·5	8	1·07	290	·46	55
731				28·8	23 13 11	2	15·1	4	·17	10		37
732				29·1	25 0 46	1	15·0	1	·08	2		74
733	295	188	339	29·1	23 59 58	2	12·5	23	·17	796	·00	18
734	298		338	29·2	23 27 4	4	14·0	11	·70	129	·76	24
735	299	190	341	29·6	23 19 43	4	12·3	15	·41	629	·16	31
736	296	189	340	29·6	23 44 28	2	10·4	35	·28	1366		14
737				29·7	24 32 57	1	15·3	1	·47	2		47
738				30·6	25 1 30	1	12·6	1	·20	56		75
739				30·7	22 43 25	2	13·0	2	·30	52		65
740	302		342	31·9	23 47 3	2	14·0	10	·57	113	·48	14
741	297		343	32·0	24 33 55	2	13·9	6	·66	104	·56	48
742	300	191	344	32·6	24 2 17	3	7·2	61	·06	5286		20
743			345	32·7	24 7 20	3	13·4	13	·22	244	·00	24
744				33·0	22 59 37	3	13·5	5	·93	97	·66	50
745				33·2	23 21 34	2	15·2	2	—·07	4		30
746	304		346	33·6	23 36 25	3	14·0	10	·26	98	·29	18
747	301	192	347	33·7	23 57 58	2	12·6	22	1·00	759	·92	17
748				34·0	23 38 35	2	15·1	5	·63	17		17
749				34·4	24 17 45	1	15·4	2	·64	3		33
750				34·8	23 36 7	1	15·5	7	·57	4		18

*) It is assumed that Shapleys minutes of *RA* should be 33·2 instead of 32·2.

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p=20$	Distance from Alcyone
				m s	° ′ ″		m		m	m⁻²		′
751	303		348	42 34·9	24 20 59	3	13·3	9	·26	218	·12	36
752				35·3	24 45 32	2	11·3	9	·20	286	—·01	59
753	305		349	35·8	23 18 32	2	14·4	6	1·39	34	·98	32
754				36·0	25 1 25	1	10·3	1	·28	12		75
755	308		350	36·7	23 36 5	4	13·6	16	1·01	286	1·02	19
756	310		351	37·2	23 46 15	1	14·6	6	1·12	34	·96	15
757*	307	193	352	37·8	23 52 26	3	9·5	36	·23	1790		16
758				38·2	24 51 40	1	14·9	1	—·32	2		66
759				39·0	24 34 7	2	14·4	4	·35	34	·46	49
760	312	194	353	39·1	23 7 41	3	10·6	20	·36	645		43
761	314	195	354	39·4	23 30 41	5	12·8	17	1·35	596	1·44	23
762				39·5	23 27 38	1	15·5	1				25
763	306		356	39·6	24 28 28	2	14·5	4	1·21	28	·98	43
764	311		355	39·7	23 54 44	3	13·7	16	·29	224	—·16	17
765				40·3	22 42 56	1	13·3	1	·35	34		66
766				40·9	23 21 21	1	15·5	1	·62	2		31
767				41·2	24 28 17	1	15·9	1				43
768	313	196	357	41·5	24 22 29	3	12·4	13	·37	567	—·03	38
769				41·6	24 48 53	2	14·4	2	—·26	16		63
770	317	198	359	42·6	24 8 52	3	12·3	19	·19	726	·38	27
771	315	197	358	42·8	23 14 24	4	12·8	12	·44	443	·02	37
772	309		360	42·8	24 27 57	3	13·7	9	·33	152	·32	43
773		199		43·2	23 0 43	3	13·4	6	·39	113	·58	49
774				43·4	24 37 23	2	14·1	4	·24	52	·36	52
775	319	200	361	43·5	23 28 16	5	13·2	13	1·33	360	1·26	25
776:				43·7	24 1 28	1	15·7	1				21
777		201		44·8	22 59 31	3	12·5	7	·26	314	·18	51
778:	318	202	362	45·1	24 1 25	3	12·1	25	1·14	941	·98	22
779				45·5	24 10 31	3	14·2	8	·24	76	·08	28
780	321		363	45·5	23 28 26	5	13·9	13	·52	174	·43	26
781	320		365	46·0	24 0 56	3	14·7	11	1·15	54	·96	21
782				46·0	23 10 39	1	15·5	1				41
783				46·0	24 24 20	1	15·9	1				40
784	324		364	46·1	23 31 35	3	14·5	8	·46	41	·29	23
785				46·4	24 14 0	2	15·4	4	·22	8		31
786	316		366	46·8	24 23 42	3	14·5	7	·45	56	·24	40
787				47·4	23 50 11	1	15·3	1	·70	2		17
788	325	203	367	47·9	23 34 49	4	13·7	14	·27	253	·17	22
789	322		368	48·5	24 1 16	3	13·7	17	·12	258	·28	22
790:				48·7	22 52 59	2	13·7	2	·49	13	·99	57
791:				49·0	24 48 43	2	15·4	2	·40	1		63
792		204		49·0	22 57 13	3	8·3	13	·16	1048		53
793			369	49·2	23 50 30	3	14·4	7	·34	52	·39	18
794				49·2	24 0 52	2	15·5	6	·71	5		22
795				49·3	24 27 20	1	15·0	3	·37	12	·43	43
796:				49·3	24 48 48	2	13·5	2	·33	42		63
797	323		370	49·4	23 20 0	2	14·8	5	·99	14	·92	33
798				49·6	23 53 56	1	15·3	1	·06	2		19
799:				49·7	22 53 12	2	14·9	2	·44	1	·21	57
800				50·0	24 14 10	2	14·8	6	·50	28	·42	32

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p=20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
801				43 50·3	24 42 59	2	12·9	6	·34	183	·26	58
802	327	205	371	50·3	23 13 5	4	11·4	18	1·24	568	1·01	39
803				50·8	23 38 35	2	14·7	4	·47	20		20
804				50·8	24 53 39	1	14·9	1				68
805	326	206	372	50·9	24 19 39	3	11·0	18	·22	701		37
806				51·0	24 25 8	2	14·6	3	·21	27	·43	41
807	328	207	373	51·7	23 57 39	3	11·6	29	·65	1055	·53	21
808	329	208	375	52·6	23 7 3	3	13·5	8	·34	156	·24	45
809	330		374	52·7	23 40 14	4	13·9	13	·93	168	·72	20
810				52·9	24 44 10	1	14·3	1	·34	8	·98	59
811				53·1	24 28 8	2	14·7	5	·82	36	·58	44
812				53·2	24 58 12	2	13·5	2	·25	28		73
813				54·0	23 10 23	1	15·5	1	1·72	1		42
814				54·1	23 52 32	1	15·3	1	·31	2		19
815	331		376	54·2	23 59 1	2	14·1	8	·44	66	·37	22
816				54·9	23 11 29	2	15·1	2	·22	4		41
817				55·4	24 28 1	2	15·1	4	·41	14	·71	44
818				55·6	23 32 22	2	15·2	2	·80	4		24
819:	332	209	377	56·4	24 14 18	4	13·1	13	·27	350		33
820				56·4	24 49 57	2	13·5	2	·33	56		65
821:				57·0	24 14 10	1	15·3	1				33
822				57·4	23 59 56	1	15·3	1	·31	2		23
823				57·5	23 29 28	2	15·5	2				27
824				57·6	23 19 29	2	14·9	2	·11	2		34
825				57·9	24 28 16	1	15·9	1				45
826	333	210	378	58·2	23 50 5	4	12·0	21	·34	875	·46	20
827	337	212	379	58·3	23 27 40	5	13·0	15	·28	407	—·12	28
828	334	211	380	58·5	23 31 34	4	13·1	16	·49	374	·33	25
829				58·8	24 57 43	2	12·8	2	·30	96		72
830				58·9	23 29 4	3	14·7	8	·23	32	·61	27
831				58·9	24 17 47	1	14·9	1				36
832	335	213	381	59·5	23 43 1	3	12·6	20	1·16	631		20
833				59·6	24 47 49	1	15·3	1	·96	2		63
834				59·7	24 53 58	1	14·9	1	1·40	2		69
835				·3	24 44 54	2	14·2	2	·65	22	·52	60
836	338	214	382	·5	23 33 4	5	7·1	46	·20	4892		25
837:				1·0	24 52 59	2	13·5	2	·99	42		68
838	339		383	1·0	23 21 42	2	14·3	5	·69	32	·30	33
839:				1·3	24 53 5	2	14·0	2	·45	27		68
840				1·4	23 8 46	1	15·1	1				44
841	343		384	1·7	23 57 39	2	14·9	5	1·27	19	·82	23
842	341	215	385	3·2	23 34 45	5	13·2	16	1·21	435	1·33	24
843	340		386	3·4	24 24 24	3	14·3	7	·86	59	1·03	42
844				3·6	22 53 43	3	11·8	3	·65	134	·72	58
845	336		387	3·9	23 39 4	2	15·4	3	1·12	9	1·09	23
846				4·1	24 44 34	1	15·3	1	·99	2		60
847				5·8	24 18 7	1	14·5	3	·45	30	·24	37
848				6·1	23 35 14	1	15·5	3	1·22	5		25
849				6·2	23 36 13	1	15·3	3	·10	8		24
850			388	6·3	23 45 13	3	13·6	14	·51	217	·88	22

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
851		216		43 7·3	22 56 49	3	12·2	5	·62	232	·52	55
852				8·4	24 29 47	1	14·9	1	·75	4		47
853	342		389	8·5	24 5 29	4	14·2	9	·74	57	·81	28
854				9·1	24 25 34	1	14·4	2	1·04	22		44
855		217		9·1	23 1 44	3	13·4	5	·25	108	·53	51
856				9·4	23 34 33	1	15·3	1	·79	2		26
857				9·7	24 10 14	2	15·1	3	·52	12		32
858				9·7	23 43 54	2	15·0	6	·27	5	—·12	23
859				9·9	24 25 6	1	14·9	1	·54	4		43
860				10·0	24 26 49	1	14·4	2	·25	22		45
861	345		391	10·0	23 20 53	4	13·9	9	·93	118	·96	35
862	347	218	390	10·1	23 28 30	4	11·4	22	·60	786	·66	29
863	346		392	10·4	23 39 37	4	14·0	11	·37	117	·47	24
864	344		393	10·9	23 42 14	4	13·7	13	·98	189	·99	23
865:				11·0	24 0 57	1	14·7	2	·37	8	—·07	26
866				11·0	24 3 44	2	14·9	2	—·42	8		28
867:	352		394	11·4	24 1 2	1	15·3	1	1·46	2	·74	26
868				12·5	23 40 50	1	15·9	1				24
869	355		395	12·6	23 19 29	2	14·8	5	·73	16	·41	36
870:	349	219	396	12·8	23 44 53	4	3·6		—·22	4944		23
871				13·1	24 28 3	1	14·5	2	·33	22		46
872	357	221	398	13·5	23 33 41	5	12·6	17	·43	648	·43	27
873	351		399	13·5	23 16 18	2	14·5	6	·23	30	·37	39
874	348	222	400	13·6	24 4 45	4	12·5	22	·27	819		29
875	350	220	397	13·6	24 19 50	3	10·8	19	·30	811		39
876				13·8	22 57 43	3	13·9	4	·33	17	·30	55
877	354	223	401	14·1	23 18 22	4	10·9	20	·16	664	·07	37
878	353	224	402	14·4	23 49 52	4	4·9		—·19	5052		23
879	356	225	403	14·6	23 55 47	4	12·6	16	·55	642	·51	25
880	359	226	404	15·1	23 13 25	4	12·6	12	1·01	521	1·32	41
881:				15·2	23 45 24	1	14·8	4	·99	4	1·18	24
882				15·4	24 26 34	1	14·7	2	1·01	20		45
883				15·6	24 53 58	1	14·3	1	·13	4		70
884		228		15·8	22 57 41	3	10·4	5	1·48	207		55
885	358	227	405	15·8	23 34 51	5	8·2	46	·11	3046		27
886	363		406	16·4	23 8 50	2	14·8	3	·43	6	·54	46
887	361	229	407	16·7	24 10 17	4	12·9	14	·24	418	·54	33
888				17·1	23 11 5	4	14·7	4	·77	10	·19	44
889	362	230	408	17·1	23 6 5	4	9·5	17	·23	1078		48
890				18·7	24 59 54	1	12·8	1	·06	24		76
891	365	231	409	19·1	24 5 26	4	7·6	54	·06	3895		30
892				19·8	23 52 35	1	15·3	1	·89	2		25
893:				20·2	23 45 43	2	14·9	5	·35	11	1·00	25
894:				20·3	23 45 38	1	15·7	2				25
895	364	232	410	20·3	24 6 31	4	12·2	17	·28	636	·53	31
896				20·9	24 53 18	2	13·2	2	·30	76		70
897				21·0	23 50 11	1	15·3	1	·61	2	·32	25
898				21·1	23 29 37	1	15·4	2	·67	4		31
899	366	234	412	21·9	24 28 17	3	13·3	8	·79	200	·87	48
900				22·0	24 55 7	1	14·9	1	·20	4		72

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
901				43 22·0	23 37 14	3	15·1	5	·39	13		27
902	367	233	411	22·0	23 56 47	4	13·2	14	·90	423	·79	25
903				22·2	23 40 53	1	15·3	3	·41	8		26
904				23·3	24 38 8	1	15·3	1			·14	56
905	368	235	413	23·4	23 43 10	3	12·7	15	·19	457	·16	26
906				23·5	24 43 30	2	13·5	2	·32	42	·27	61
907				23·5	22 59 39	3	13·7	4	·45	26	·99	54
908	371		414	23·6	23 57 32	4	14·1	8	·43	72	·37	27
909				23·6	23 50 47	1	15·3	1	·58	2		26
910	370	236	415	24·0	24 4 32	4	6·6	51	—·09	4749		30
911				24·1	24 33 50	1	14·9	1	—·78	4		53
912				24·1	24 46 52	1	14·3	1	·01	8		64
913				24·1	24 26 38	1	15·3	1	1·66	2		46
914	374	237	416	24·2	23 17 18	4	13·7	11	·99	218	1·12	40
915				25·7	24 26 58	1	14·9	1	·26	4		47
916				25·9	24 33 52	2	14·3	3	·03	30	·21	53
917				26·1	23 54 32	1	14·9	1	·41	4		27
918	372		417	26·3	24 28 38	3	13·7	6	·79	91	·66	48
919	375		418	26·5	24 37 56	3	11·3	6	·72	153	·86	56
920	373		419	27·1	24 25 8	3	13·7	7	·52	105	·71	46
921				27·4	23 34 28	1	15·2	2	·75	6		29
922	378	238	420	27·7	23 32 4	4	11·8	17	·61	699	1·00	31
923	377		422	28·6	23 10 18	3	13·7	7	1·00	84	·81	44
924	376	239	421	28·9	23 56 33	4	8·1	44	·08	3180		28
925	381		423	28·9	23 29 22	4	14·1	10	1·19	99	1·93	32
926				28·9	24 13 25	1	15·3	1	—·42	2		37
927	380	240	424	29·4	23 30 13	4	12·4	14	·93	543	1·19	32
928				30·1	23 54 40	1	15·3	1	1·20	2		28
929				30·4	24 16 11	1	15·3	1	·47	2		39
930	379	241	425	31·0	24 0 17	4	13·2	13	·58	312	·70	30
931				31·5	22 48 31	3	13·0	3	·61	47	·52	65
932				32·3	22 55 27	1	13·7	1	·46	4	·47	59
933			427	32·5	24 9 59	4	14·2	5	·35	50	·40	35
934	383		426	32·6	23 34 45	5	13·6	11	1·40	154	1·86	30
935				32·6	24 4 42	4	14·4	7	—·02	35	·34	32
936	382	242	428	32·7	23 24 26	3	12·1	13	·62	607	·70	36
937			429	32·7	23 57 51	4	14·1	7	·41	61	·36	29
938				33·2	24 30 26	1	14·3	1	·11	8		51
939				33·3	24 10 20	3	14·8	3	·44	6	·31	36
940			430	33·5	24 28 59	2	14·2	2	·63	4	·64	50
941	385		431	35·0	24 21 5	3	13·6	7	·16	119	·47	43
942	384	243	432	35·3	24 19 23	2	11·0	15	1·17	651		42
943				35·8	22 58 28	3	13·4	3	·56	32	·64	57
944				36·3	24 42 39	1	15·3	1	—·04	2		62
945	387		433	36·8	24 20 23	2	14·0	6	·48	62	·44	43
946	393	244	435	36·8	23 29 27	4	11·4	17	·45	660	·88	34
947	390		434	36·9	23 43 31	4	13·6	11	·42	182	·57	29
948	388	245	436	37·3	23 4 33	4	8·9	10	·18	867		52
949	391		437	38·3	23 46 29	4	13·8	9	·50	139	·47	29
950				38·4	24 35 12	1	14·3	1	1·35	8	1·32	55

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
951				43 38·4	24 44 34	1	14·3	1	·08	4	·41	64
952				38·7	23 47 45	1	15·2	2	1·28	1		29
953			439	38·9	24 11 53	3	14·1	5	·03	43	·13	38
954	389		438	39·0	23 57 11	4	13·9	12	·22	138	·28	30
955				39·0	23 23 32	2	14·8	4	·09	12		38
956	392	246	440	39·1	23 59 28	5	12·3	16	·74	708	·97	31
957				40·5	23 35 17	1	15·5	1	·04	2		32
958	396		441	40·6	23 9 53	4	13·9	7	·09	47	·04	48
959				41·0	24 24 16	1	15·3	1	—·17	2		47
960	397		443	41·0	23 10 50	4	13·7	7	·46	67	·48	47
961	386		442	41·2	24 22 37	2	14·1	4	·51	48	·69	46
962	399	247	444	42·0	23 55 18	4	13·3	13	1·00	334	1·12	31
963	398		445	42·2	23 39 2	5	13·9	11	·29	137	·72	31
964				42·3	24 16 16	1	14·9	1	·44	4		41
965				42·4	23 46 22	2	15·4	2				30
966				43·5	24 52 37	1	14·9	1	1·41	2		71
967			446	43·6	24 7 38	4	14·0	6	·36	55	·04	36
968	395	249	447	43·7	24 6 35	4	12·6	9	·49	328	·60	35
969	400	248	448	43·8	23 43 55	4	11·7	19	·83	762	1·28	30
970	402		449	44·0	23 8 40	1	14·7	1	—·01	1	·24	49
971				44·2	22 59 10	3	11·1	3	·32	112	·58	57
972	401	250	451	44·4	24 9 29	3	13·3	8	·97	166	·80	37
973	404		450	44·5	23 22 36	3	13·8	7	·28	85	·87	39
974				45·1	22 45 1	2	10·4	2	1·37	44		69
975	403	251	452	45·7	23 2 17	3	7·6	3	·12	727		55
976				46·7	24 23 53	1	14·3	1	·42	8		47
977	406	252	453	47·4	23 24 28	4	6·0	27	—·12	4101		39
978	405	253	454	47·9	24 2 34	4	13·1	11	·68	299	·86	34
979				48·2	24 13 19	1	14·7	2	·43	11	·20	40
980	407	254	455	48·7	23 56 25	4	10·9	23	1·33	780	1·02	32
981				48·7	22 58 8	3	11·4	3	·33	136	·08	58
982				49·0	24 41 24	2	14·2	2	·78	26	1·06	62
983	408	255	456	49·5	23 28 34	4	11·7	14	·15	536	·27	37
984	409	256	457	50·0	23 26 25	4	11·8	13	·46	568	·62	38
985			458	50·6	23 49 38	3	14·2	7	·74	73	·32	32
986	413	257	459	54·1	23 24 5	4	12·3	13	·65	554	·51	40
987				54·3	23 44 53	1	14·9	3	·52	8		33
988	411	258	460	54·6	24 12 10	3	13·1	6	·49	206	·33	41
989	410		461	54·6	23 59 50	4	13·7	12	·25	188	·31	35
990				55·1	24 29 34	1	14·3	1	·31	8		53
991	416	259	462	56·7	23 43 29	4	13·3	11	·35	284	·50	33
992	412	260	463	57·0	24 2 10	5	13·2	11	·37	238	·64	36
993	415	261	464	57·5	23 54 49	4	9·1	31	·05	1767		34
994	417	262	465	57·7	23 13 34	3	11·0	11	1·17	457		48
995	414	264	466	58·9	24 17 1	3	13·4	6	·31	114	·14	44
996	418	263	467	58·9	24 2 40	4	7·4	24	·02	2631		37
997				59·0	22 52 47	1	13·7	1	—·52	4		64
998::				59·2	23 32 37	1	15·4	1	·55	1		37
999:	420	265	468	44 ·3	23 38 55	3	10·0	19	·21	841		35
1000:			469	·4	23 38 46	2	14·5	5	1·13	16	·86	35

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m^{-2}		′
1001::	421	266	470	44 ·8	23 32 37	4	10·9	10	·30	258		37
1002::	422		471	1·3	23 32 38	1	10·9	2				37
1003::	423	267	472	1·5	23 32 41	4	6·8	18	—·03	2401		37
1004				1·5	22 53 14	1	14·7	1				64
1005				1·6	22 54 53	2	9·7	2	·18	26		63
1006	419	268	473	2·9	24 3 17	3	12·7	9	·23	340	·28	38
1007				3·4	23 53 4	3	14·2	7	·36	61	·51	35
1008	424		474	3·7	23 36 40	2	14·1	4	·54	42	·29	36
1009	425		475	4·6	23 6 45	2	13·4	2	·94	18	·92	54
1010				4·8	23 38 35	1	15·4	1	·63	1		36
1011				5·0	24 27 47	1	14·3	1	·22	8		53
1012				5·0	24 52 56	1	13·2	1	·58	38		74
1013	426	269	476	5·3	24 23 32	2	13·6	4	·32	73	·62	50
1014				5·5	24 49 2	1	12·5	1	·58	56		70
1015	428	270	477	5·9	24 21 59	2	12·6	6	·25	271	·39	49
1016	427		478	6·3	24 19 12	2	13·7	4	·76	63	·58	47
1017				6·7	24 1 35	1	15·0	1	·64	1		38
1018				8·4	24 56 23	1	15·3	1				77
1019				8·7	23 47 54	1	15·0	1	·28	2		36
1020*	429	271	479	8·8	23 54 39	3	11·8	14	·34	628	·41	36
1021				9·1	24 56 50	1	13·2	1	·27	19		78
1022	431	272	480	10·1	23 42 51	3	13·6	9	1·06	189	1·01	36
1023				10·1	23 59 37	1	14·6	1	·70	4	·49	38
1024	430	273	481	11·2	23 49 6	3	12·2	14	·88	623	1·17	36
1025				12·6	24 55 56	1	14·3	1	1·19	4		77
1026				12·6	23 50 27	2	14·9	4	·62	13	·82	37
1027	432	274	482	12·9	23 55 28	3	12·5	11	·99	542	1·24	37
1028			483	13·0	24 36 19	2	13·5	2	·40	36	·62	61
1029				13·4	23 38 25	1	15·3	2	·14	2		38
1030				14·2	24 13 46	1	15·0	2	·99	8	1·10	45
1031				14·4	23 59 29	1	14·8	2	1·10	10	1·08	39
1032	433	275	484	14·7	24 19 26	2	11·7	8	·26	343	—·08	49
1033				14·8	24 9 54	3	14·0	4	·41	28	·27	43
1034	434		485	14·9	24 29 14	2	13·5	2	·51	32	·43	55
1035	437		487	15·8	23 30 59	2	13·7	6	·05	61	·33	41
1036			486	16·3	24 30 5	2	13·7	2	·46	22	·46	56
1037:	435		488	17·1	23 34 53	3	14·6	6	·65	14	·41	40
1038	436	276	489	17·2	24 21 42	2	9·2	11	·08	910		51
1039				17·3	23 46 38	1	15·0	1				38
1040:	439		490	17·9	23 34 52	3	13·9	6	·23	70	·11	40
1041				18·7	24 16 13	1	15·3	1	·78	1		47
1042	438		491	18·9	23 11 37	1	14·2	1	—·06	2	·50	52
1043				18·9	24 55 9	1	13·9	1	·04	9		77
1044				19·4	24 38 56	2	13·4	2	·84	46		64
1045				19·4	24 46 42	1	14·3	1	·71	4	·12	70
1046				20·9	24 26 5	1	14·3	1	·46	8		54
1047				21·7	24 21 20	1	15·9	1				51
1048	442	277	492	22·9	24 10 14	3	12·8	8	·19	211	·04	45
1049	441	278	493	23·0	24 9 49	3	11·5	8	·47	298	·83	45
1050				23·2	24 0 13	1	15·0	3	—·09	11	·41	41

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
1051	444	279	495	44 23·4	23 34 39	4	13·2	8	·30	196	·14	41
1052			494	23·4	23 36 8	2	14·5	2	·67	6	·52	41
1053	445	280	496	23·5	23 38 57	2	13·1	7	1·21	247	1·34	40
1054				23·6	24 17 46	2	14·9	2	—·26	6	·26	49
1055	443		497	23·7	23 30 18	3	14·1	5	·53	24	·41	43
1056	440		498	24·9	23 55 0	3	14·3	5	·78	28	·98	40
1057				26·2	24 10 28	1	15·3	1				46
1058				26·6	23 52 38	1	14·0	1	·95	4	·68	40
1059				26·7	22 47 39	2	11·2	2	·67	42		72
1060				26·7	23 51 46	1	15·0	1				40
1061				26·8	24 27 55	1	15·3	1				56
1062				27·1	23 34 11	1	14·5	2	·07	10	·12	42
1063	446		499	27·8	24 27 28	2	13·2	2	·99	56	1·12	56
1064:				28·3	24 21 11	2	15·2	2	1·00	2		52
1065				28·8	23 54 0	1	14·0	1	1·02	8		41
1066:			500	29·0	24 21 11	2	14·4	2	1·27	10	1·10	52
1067				29·1	23 0 31	1	13·3	1	·38	9	·77	62
1068				29·7	24 27 10	1	14·9	1				56
1069	447	281	501	30·0	24 11 31	3	7·2	16	·06	2129		47
1070	448	283	503	30·2	24 12 49	3	11·4	9	·27	391	·71	48
1071				30·2	24 14 46	1	15·3	5	·47	2		49
1072	450	282	502	30·3	24 2 37	2	12·8	6	·97	247	1·21	43
1073	452	284	504	30·6	23 16 8	3	11·4	6	·34	361	·30	52
1074				30·9	24 28 47	1	14·9	1	·40	4		58
1075	449		505	31·7	23 35 16	3	14·1	5	·40	38	·28	43
1076	451		507	32·0	24 32 3	2	12·3	2	·25	104	·32	60
1077	454	285	506	32·3	23 43 55	3	13·7	5	·29	77		41
1078				32·5	23 45 35	1	15·0	1	1·64	2		41
1079				33·3	24 49 38	1	13·9	1	·22	18		74
1080	453	286	508	33·6	24 12 18	3	11·1	9	·17	392	·18	48
1081			509	33·6	24 13 32	3	13·7	5	·65	49	·94	49
1082			512	34·9	24 33 55	1	13·9	1	·31	18	·41	62
1083				34·9	24 30 53	1	13·9	1	—·23	18		60
1084				34·9	24 27 13	1	15·3	1				57
1085	455		511	35·0	23 52 37	3	14·1	5	·62	44	·32	42
1086				35·0	24 34 17	1	15·3	1	·44	1		62
1087	456		514	35·6	24 36 8	2	11·2	2	·37	88	·42	64
1088	457		513	35·6	24 29 16	2	10·1	4	·18	234		59
1089				35·7	23 27 44	1	15·5	1	·38	2		46
1090				36·1	23 57 5	3	13·2	5	·01	98	·18	43
1091	459		516	36·4	24 12 16	3	13·9	5	·93	66	·98	49
1092	458	287	515	36·4	24 2 35	2	11·2	9	·44	343	·32	45
1093				37·1	24 29 51	1	15·3	1				60
1094				38·0	22 57 10	2	13·6	2	·31	22	·48	66
1095				38·4	24 22 37	1	15·3	1	·86	2		55
1096				39·0	24 29 3	1	14·9	1				59
1097				39·2	23 58 4	3	14·3	4	·97	24	·58	44
1098				39·7	22 47 18	1	12·4	1	—·11	24		74
1099				39·8	24 14 23	2	14·2	4	·07	24	·22	50
1100	460		517	40·6	23 11 26	3	12·7	3	1·05	71	1·32	56

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
1101				44 40·8	23 39 33	1	15·0	1	·95	1	·93	44
1102				41·2	24 18 1	1	14·9	1				53
1103	461	288	518	41·4	23 53 33	3	12·2	7	·22	361	·29	44
1104				41·4	23 48 57	1	15·0	1	·02	2		43
1105				41·4	22 56 29	2	13·4	2	·70	18	·29	67
1106	463	289	519	41·5	23 34 25	4	13·4	8	·37	158	·46	45
1107				42·4	22 55 4	2	13·4	2	1·06	18	·49	68
1108	464	290	520	43·3	23 37 50	2	10·6	10	·34	367		45
1109				43·6	24 29 4	1	14·9	1	·07	2		60
1110				44·1	24 17 1	3	13·7	3	·63	26	·80	53
1111				44·2	24 42 59	1	12·5	1	·61	56	1·07	70
1112				45·3	24 50 14	1	13·5	1	—·16	14		76
1113			523	46·9	23 0 27	2	11·2	2	·83	42	1·10	65
1114			524	48·5	22 59 26	2	10·7	2	·15	55		66
1115				48·6	22 56 28	1	13·7	1	·63	4	·58	68
1116	468		525	48·8	23 4 53	1	14·7	1	1·10	2	1·00	62
1117				48·8	24 31 7	1	15·3	1				62
1118		291	526	50·1	24 8 16	3	13·3	3	·34	60	·31	50
1119				50·2	24 23 58	2	14·2	2	—·04	9	·42	58
1120				50·3	24 15 35	2	14·4	2				53
1121	469	292	527	51·1	24 7 37	2	11·6	4	·95	259	1·04	50
1122				51·3	24 16 51	3	13·5	4	·61	40	·26	54
1123	470	293	528	51·6	23 33 11	4	13·2	5	·50	84	·14	48
1124	467		529	53·5	24 24 21	2	13·5	2	·75	36	1·10	59
1125				53·7	24 7 37	1	15·5	1				50
1126	471		530	53·9	23 7 15	3	11·4	3	·55	128	·27	61
1127	472	294	531	54·5	23 25 26	4	13·5	5	·32	55	·23	51
1128				54·8	23 26 47	1	14·6	1	1·25	2	·83*)	51
1129	473	295	532	55·4	23 39 35	2	7·1	9	·03	2533		47
1130				55·5	24 29 7	1	13·9	1				62
1131			533	56·1	23 1 40	2	12·8	2	1·36	28		65
1132	477	296	534	57·6	23 53 43	3	12·3	7	·75	326	·52	47
1133	479	297	535	57·6	23 31 59	4	12·2	6	·95	253	·69	49
1134	475		536	57·8	23 19 17	4	13·7	5	·45	31	·22	55
1135	478		538	58·6	24 32 38	2	12·4	2	·27	96	·46	65
1136				58·7	24 21 49	2	14·4	2	·85	5	·72	58
1137				58·8	23 1 30	1	14·7	1				66
1138	476		539	58·9	23 10 46	2	13·9	2	·72	11	·39	60
1139			537	59·0	24 14 43	3	13·2	3	·43	51	·31	54
1140			540	59·3	23 56 58	2	13·6	2	·60	22	·67	48
1141				59·5	22 51 8	1	8·8	5				74
1142			541	59·9	24 8 46	2	13·6	2	·60	26	·46	52
1143	474		542	45 ·3	24 22 42	2	13·0	2	·13	66	·42	59
1144	480		543	·6	23 26 5	2	14·2	2	·51	4	·70	52
1145				1·3	23 59 45	1	15·0	1				49
1146				2·3	24 45 11	1	13·9	1	1·12	9	·79	75
1147			544	3·9	24 23 46	2	14·2	2	1·12	11	·87	60
1148			546	4·6	23 55 12	1	13·6	1	·49	18	·66	49
1149	481		545	4·7	24 2 28	2	13·6	2	·20	26	·27	51
1150	483	298	547	5·4	23 36 7	2	11·4	5	1·13	252		50

*) Shapleys declination assumed to be 23° 26′·8 instead of 23° 26′·3.

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		
1151	482		548	45 5·3	24 38 12	2	12·1	2	·88	84	·97	70′
1152				5·5	24 17 45	1	14·3	1	·77	4	·31	57
1153				5·5	24 39 11	1	14·9	1			·92	71
1154	486	299	549	6·1	23 39 20	2	13·3	3	1·08	105	1·25	50
1155			550	6·4	23 54 4	3	13·6	3	·32	41	·66	49
1156	484		552	7·1	24 22 21	2	12·3	2	·93	104	1·08	60
1157	489		553	7·3	23 48 34	2	13·8	3	1·11	31	1·00	49
1158	487		551	7·3	23 7 37	3	8·3	3	·07	182		63
1159				9·2	24 45 10	1	14·3	1	·85	4	·93	76
1160	488		554	9·6	24 3 18	1	13·6	1	1·05	18	1·25	52
1161	491	300	555	11·0	23 35 45	2	13·6	3	·59	55	·31	51
1162				12·1	23 55 40	1	14·9	1			·04	51
1163	485		556	12·6	24 26 52	2	13·2	2	·48	37	·50	64
1164	490		557	13·2	24 17 25	3	10·0	6	·96	117		59
1165				15·1	24 32 15	1	13·9	1	—·63	9		68
1166	493		558	15·4	23 20 55	4	13·0	4	·29	70	·03	58
1167	492		559	15·4	24 12 59	2	12·5	3	·28	113	·04	57
1168	494		560	17·3	23 12 50	3	13·0	3	·69	23	·38	62
1169	496		561	19·1	23 19 14	3	9·6	3	·26	32		59
1170	497		563	20·1	23 31 32	3	13·4	3	·72	65	·59	54
1171	498		562	20·2	24 17 16	3	13·2	3	·00	51	·30	60
1172				21·2	23 55 5	1	15·0	1	·59	1	·48	53
1173				22·1	24 32 4	1	14·3	1	·68	4	·88	69
1174	499		564	22·2	24 4 49	2	11·5	4	1·11	166		55
1175:	500		565	24·5	24 33 38	2	11·7	2	·81	78	·83	70
1176				25·0	24 13 27	1	14·6	1	·77	4	·80	59
1177:				25·3	24 33 30	2	14·5	2	·21	4	·61	70
1178	501		566	25·5	24 21 54	2	13·2	2	·44	28	·42	63
1179				26·0	23 59 29	1	15·0	1	·28	2		55
1180	502		567	27·1	23 23 44	2	13·7	2	·56	13	·31	59
1181				27·1	23 47 11	1	14·0	1	1·38	8	1·00	54
1182	506		569	28·3	23 39 25	2	13·0	2	1·10	66	·97	55
1183	504		568	28·5	23 28 56	1	14·6	1	1·90	4	1·11	57
1184	503		570	28·6	24 13 4	2	9·0	2	·11	108		60
1185				29·1	24 25 4	1	13·9	1	·22	9	·42	66
1186	505		571	29·3	24 15 44	2	11·8	2	·20	114	·38	61
1187:				30·4	24 0 32	1	15·1	1				56
1188				30·7	23 33 25	1	14·0	1	·48	8	·67	56
1189:				30·8	24 0 38	1	14·9	1				56
1190	509		573	30·9	23 37 28	2	12·4	2	·96	96	·64	55
1191:				31·9	23 32 2	1	12·9	2				57
1192:	512		574	32·1	23 32 1	1	12·5	2	·22	80		57
1193				33·0	23 54 16	1	14·0	1	—·04	8	·58	55
1194				33·2	23 35 58	1	14·6	1	·65	4	·99	56
1195	507		575	33·6	24 18 59	1	15·1	1			1·15	63
1196				34·6	24 11 2	1	14·6	1			·32	60
1197	511		576	34·8	24 18 38	1	13·2	1	·50	9	·32	63
1198				34·9	23 37 24	1	15·0	1	—·31	1		56
1199	513		577	35·0	23 44 0	2	12·8	2	·87	76		56
1200	515		578	35·3	23 20 11	1	13·9	1	—·35	4	·24	62

General Catalogue (continued.)

No.	Wolf	Gaultier	Graff	α (1900) 3h	δ (1900)	Number of plates	m_{pg}	Number of images	I_λ	p	I_λ Sh. and R. $p = 20$	Distance from Alcyone
				m s	° ′ ″		m		m	m−2		′
1201				45 35·6	23 49 53	3	13·7	3	·37	31	·29	56
1202	516		579	35·6	23 36 40	2	12·3	2	·59	104	·59	57
1203				37·1	23 42 50	1	15·0	1				56
1204				39·4	23 44 44	1	15·0	1	1·28	2		57
1205				40·4	24 10 27	1	14·4	1			·51	61
1206	518		580	40·5	24 14 53	2	12·7	2	·67	76	·42	63
1207	519		581	41·8	24 22 2	1	12·1	1	·26	48	·54	66
1208				42·1	23 42 40	1	14·6	1	·47	4		57
1209	521		582	44·6	24 15 1	2	12·7	2	·16	38	—·01	64
1210	520		583	44·7	24 25 45	1	11·8	1	·27	56		69
1211	522		584	47·1	24 25 31	1	12·8	1	1·35	28	1·59	69
1212				49·3	24 19 28	1	13·6	1	—·36	4	·04	67
1213				49·4	24 3 41	1	14·0	1	1·07	8	·80	61
1214				49·7	23 55 28	1	14·0	1	·05	8	·14	59
1215	524			50·9	23 27 7	2	13·1	2	·22	28		63
1216	526			51·3	23 41 8	1	14·0	1	1·22	8		60
1217	527			55·0	23 56 5	2	12·8	2	·14	38	—·11	61
1218	528			55·2	24 5 14	2	13·2	2	·81	23		63
1219				56·9	24 0 49	1	14·0	1	·45	4		62
1220	530			57·4	23 54 43	1	13·6	1	1·10	18		61
1221	533			58·4	23 51 55	1	12·9	1	·47	38		61
1222	534			58·4	23 58 44	2	11·5	2	·25	110		62
1223	537			59·8	23 31 23	2	13·5	2	·09	18		63
1224	535			59·9	23 36 10	2	9·7	2	·31	40		62
1225				·9	23 59 47	1	14·6	1				63
1226				1·6	23 42 42	1	15·0	1	—·18	1		62
1227				1·8	24 11 49	1	14·0	1	·95	4		66
1228	538			2·0	23 47 8	1	13·6	1	·54	18		62
1229	539			2·8	24 10 40	2	12·8	2	·38	33		66
1230	540			3·0	24 21 50	1	12·5	1	·92	19		71
1231	541			3·9	23 51 23	1	12·9	1	·35	38		62
1232	547			46 7·6	24 1 41	2	13·0	2	·33	56		64
1233	550			10·4	23 55 47	1	10·5	1	·57	22		64
1234	548			11·3	23 42 29	1	13·6	1	·45	9		64
1235	553			14·4	24 1 47	2	12·3	2	·84	75		66
1236	554			18·7	23 45 5	1	13·2	1	·82	28		66
1237	559			18·8	24 6 2	2	10·7	2	·84	64		68
1238	562			27·2	23 51 7	1	14·0	1	1·52	8		68
1239	563			29·6	23 33 46	1	11·3	1	1·12	44		69
1240	568			32·4	23 37 53	1	13·2	1	·47	28		69
1241				34·3	24 2 1	1	13·6	1	·46	9		70
1242				48·2	23 58 50	1	13·2	1	·89	28		73
1243				53·8	23 50 38	1	13·6	1	·18	9		74
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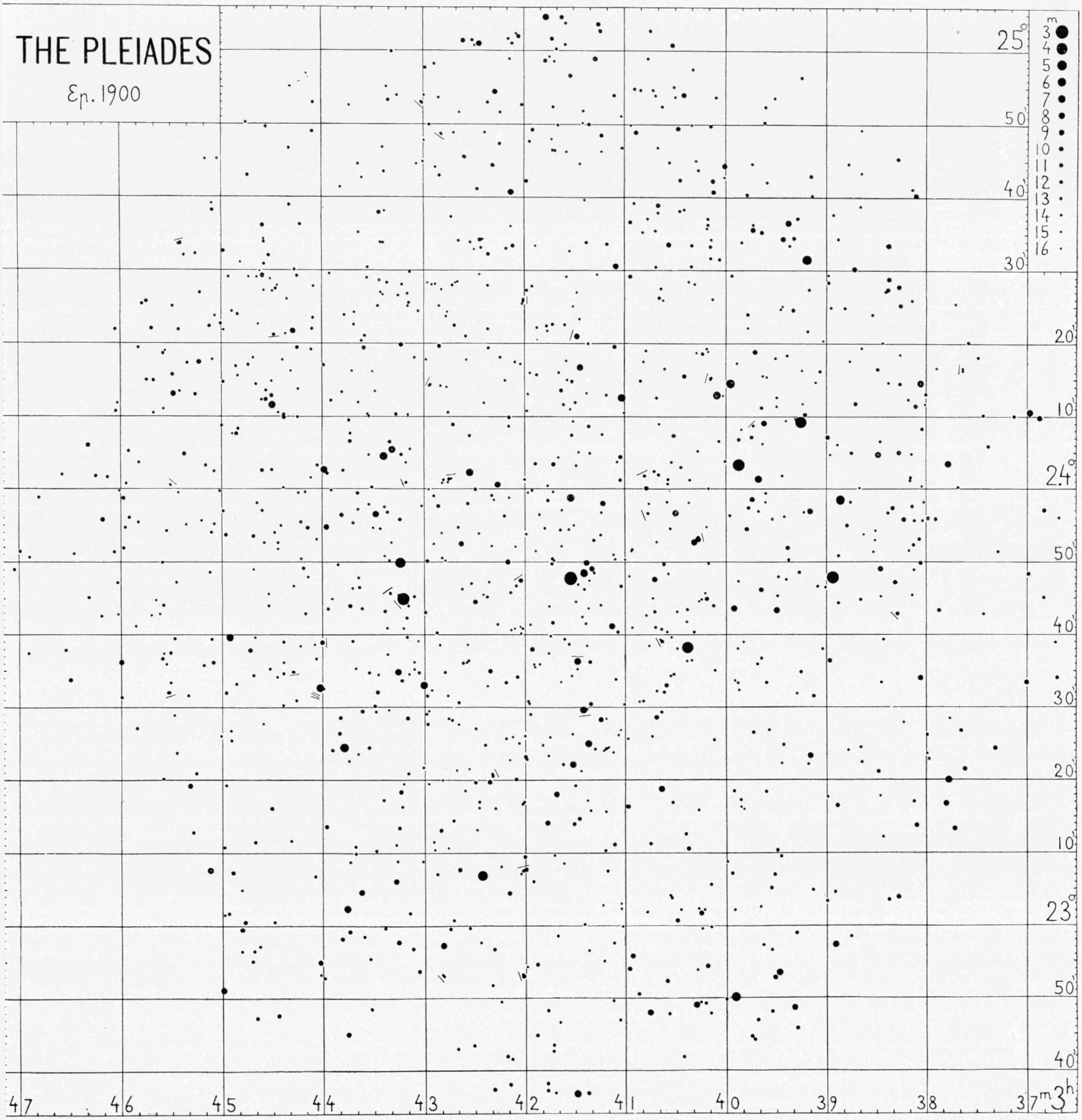
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