If the light distribution is the same in all globular clusters, the curves obtained in this way should, for all of them, be identical except for a shift in both coordinates, the apparent dimension shifting them along the abscissae and the central surface-intensity shifting them along the ordinates. When using the out of focus star images for determining the magnitude scale as described above, the diffraction rings may disturb the shape of the curves. In fact the curves for M3 and M13 show a slightly different shape (the dotted curve in fig. 2 is explained below). By adding 0·12 to the abscissae of the points found for M3 the curve is nearly brought to coincidence with that of M13. That means that M13 is found to be apparently 1·3 times as large as M3 ($0·12 = \log 1·3$).

When the distribution of light in the cluster is known we may, supposing perfect out of focus images, derive by graphical integration a curve of the kind of those of fig. 2. This was done for M3 using HERTZSPRUNG's measures on the distribution of light in this cluster (*A. N.* 4952). The result is illustrated by the dotted curve of fig. 2. The fairly good accordance with the observations suggests that they are sufficiently accurate for deriving from them an absolute determination of the angular diameter as defined above. We may read from the curve the $\log d$ for which the central surface brightness is, say, 1^m fainter than in a focal exposure. Then $\frac{1}{2} d$ is, expressed in minutes of arc, the apparent radius of the circle within which a certain fraction of the total light of the cluster is contained. Assuming $I(r) = e^{-a-br}$, where $I(r)$ is the light intensity at the apparent distance r from the centre of the cluster, I found this fraction to be 0·63.

Thus I find that 63 % of the total light of M3 is contained in a circle of radius 1'·08 round the centre. According to HERTZSPRUNG's measures the radius is 1'·15. For M13 I find the circle thus defined to have a radius of 1'·35.

The problem dealt with in this paper is essentially this: to compare the central surface brightness of a globular cluster with the integrated light of the whole cluster. It is evident that, assuming that all globular clusters have the same relative light distribution, we should obtain from these two numbers the angular diameter as defined above and the relative amount of light contained in the cluster.

The difficulty is that these two numbers have different dimensions; the first is a surface brightness and the second a magnitude. This difficulty is avoided by the use of out of focus images, since these are also characterized by a surface brightness.

A new faint variable star in the Pleiades, by *C. J. Kooreman.*

In the course of the investigation made on the Pleiades at this observatory, I noted a discrepancy in the magnitude of the star Wolf 311 = Graff 355 = Hertzsprung 764. Examination of additional plates showed the star to be variable. The results of 104 exposures, which I have measured in the Schilt photometer, are given in the accompanying table. The comparison stars used are

	W	Gr	He	α (1900) 3^h42^m	δ (1900) + 23°	colour-index I_λ	phgr. magn.
				s			m
a	277	321	687	11·9	56' 14"	+ ·41	13·37
b	282	325	702	19·6	59 5	+ ·32	13·53
c	302	342	740	31·9	47 3	+ ·57	13·93
d	331	376	815	54·2	59 1	+ ·44	14·10
var	311	355	764	39·7	54 44	+ ·29	—

It is seen that the comparison stars do not differ much in colour from the variable. This point is of importance, as the magnitudes of the variable have been derived from very inhomogeneous material.

Professor MAX WOLF, to whom we want to express our thanks, has been so kind to make the last 13 exposures at Heidelberg and to send the plates to Leiden. All the other plates used have not been taken specially for the variable and some of them are not very well suited for the present purpose. Plates with an exposuretime of more than 90 min. have been omitted from the table.

The relative frequencies of the magnitudes found for the variable show that it belongs to the WUMa- or β Lyr-type. No period satisfying all the observations has been found as yet. It is probable that an odd number of apparent periods is contained in $2^d·03$, possibly 5, 7 or 9. The colour of the star is in good agreement with such a period.

The variable does not share in the proper motion of the group.

observatory	exp. time	J. D. hel. M. astr. T. Grw. middle of exposure	phgr. magn.
	min	d	m
H	20	2411625·4700	13·76
G	41·9	12147·2759	·90
G	39	12488·3215	·91
G	40	12511·3500	·93
A	16	14582·5754	·58
A	32	14582·5948	·50
A	72	14669·3307	·52
A	90	14969·5251	·64
A	60	15788·3204	·63
A	45	16885·3889	·42
G	15	17609·4236	·99
G	49	17615·2879	·42
A	20	18677·3509	·72
A	20	18677·3661	·80
A	20	18677·3813	·72
W	30	19625·9988	·55
W	30	19627·9936	·76
W	9·5	19628·0102	·67
W	30	19654·9245	·53
W	9·5	19654·9412	·62
W	3	19654·9519	·75
W	30	19654·9675	·75
W	9·5	19654·9834	·85
W	30	19655·0173	·89
W	9·5	19655·8963	14·14
W	30	19655·9364	13·97
W	30	19657·8647	·90
W	30	19657·9180	·97
W	30	19658·9105	·48
W	9·5	19658·9271	·54
W	30	19658·9541	·49
W	9·5	19658·9694	·52
W	30	19658·9936	·47
W	30	19688·9002	·72
W	9·5	19688·9251	·62
W	30	19688·9487	·50
W	30	19688·9757	·45
W	9·5	19688·9930	·44
W	30	19689·9308	·72
W	30	19689·9585	·83
Po	65	19797·3863	·44
Po	90	19798·3890	·75
Po	90	19798·4624	·80
Po	30	19825·2545	·47
H	20	22220·4691	·59
H	12	22231·4429	·91
Po	30	22616·4924	·58
G	40	22687·4084	·77
B	50	23106·2733	·78
Po	12	23352·4908	·67
Po	30	23352·5109	·72
Po	30	23352·5338	·72
A	20	2423454·2758	13·90
A	20	23454·2903	·93
A	20	23454·3118	·93
A	25	23465·3451	·92
A	25	23466·3056	·64
A	25	23486·2961	·90
A	25	23492·3145	·43
G	55	24525·3572	·92
L	30	24527·3975	·81
L	30	24528·3345	·96
G	75	24528·3545	·77
L	30	24528·3691	·92
L	30	24874·4687	·47
L	30	24908·3400	·70
L	30	24914·2642	·84
L	30	24916·3507	·69
G	60	25157·6034	·42
Po	10	25244·3776	·30
Po	30	25244·4019	·27
Po	60	25244·4428	·47
Po	20	25244·4868	·65
Po	60·5	25258·3058	·50
Po	30·2	25258·3459	·37
Po	20	25258·3711	·33
Po	10	25301·3176	·86
G	44	25511·6343	·56
G	29	25516·6589	·86
G	21	25540·5770	·40
G	41	25540·6064	·39
G	40	25545·6445	·70
Pu	34	25596·2334	·58
Pu	36	25596·4072	14·02
Pu	40	25639·2542	13·54
L	30	25646·3258	·40
Pu	82	25649·2550	·48
Pu	64	25668·2238	·61
L	30	25670·3021	·34
Pu	30	25671·2228	14·00
L	10	25672·2802	13·39
K	10	25997·2372	14·30
K	10	25997·2587	14·20
K	10	25997·2740	13·96
K	10	25997·3539	·46
K	10	25997·3656	·52
K	10	25997·4052	·59
K	10	25997·4691	·79
K	10	25997·4788	·88
K	7	26001·3608	·73
K	7	26001·4011	·53
K	7	26001·4442	·46
K	7	26001·4664	·35
K	7	26001·4865	·43

A = Algiers, B = Bonn, G = Greenwich, H = Helsingfors, K = Königstuhl, L = Leiden, Pa = Paris, Po = Potsdam, Pu = Pulkovo, W = Mount Wilson.