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CALÁN-ESO PROPER-MOTION CATALOG[1]

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ABSTRACT

The Calán-ESO Proper-Motion Catalog (CE Catalog) contains 542 stars with proper motions $\geq 0\farcs2$ yr^{-1}, identified in 14 ESO areas in the southern hemisphere. Proper motions were measured from red IIIa-F plates taken 6–16 yr apart. Comparing the CE catalog with the Luyten and the Luyten half-second catalogs, we find that both suffer from incompleteness, which is particularly serious ($\lesssim$40% complete) for $m_R \gtrsim 13$, where many of the astrophysically interesting object can be found. Proper motions, coordinates, estimated magnitudes, and finding charts for all objects in the catalog are provided.

Subject headings: astrometry — catalogs — stars: fundamental parameters — stars: kinematics
On-line material: machine-readable table

1. INTRODUCTION

Until recently most of the known stars with intrinsically low luminosities have been found by extensive proper-motion surveys, such as the works by Luyten (1957, 1979), Gliese (1969), and Giclas, Burnham, & Thomas (1971). The results from these surveys motivated different groups to undertake similar searches using more modern technology now available for the purpose. Using IR and CCD detectors and covering extensive regions of the sky, projects such as 2 Micron All-Sky Survey, Sloan Digital Sky Survey, and Eros, to mention a few, have produced dozens of new brown dwarfs and several cool white dwarfs. A 1993 proper-motion survey by Ruiz et al. (1993), using the same plate material and similar techniques as in the present survey, revealed the presence of several interesting objects such as the cool white dwarf ESO 439-26, which still holds the record of being the lowest luminosity white dwarf known to date (Ruiz et al. 1995), demonstrating the power of surveys such as this for the detection of very dim (dark) matter.

The nature of dark matter in the universe has been an outstanding unsolved problem of modern astronomy. Although cosmological models suggest that most of this "dark matter" is nonbaryonic, there is a clear need to identify and assess the contribution, at different scales in the universe, of the various types of baryonic dark matter (Lin, Jones, & Klemola 1995; Bosma 1998).

In the local universe dynamical studies indicate that our Galaxy, and most other galaxies (Carollo et al. 1995), have a massive halo made of very faint or dark matter ($M/L \gg 100$) that extends beyond the limits of the visible galaxy (Bahcall, Flynn, & Gould 1992). Recent results from microlensing measurements suggest that $\sim$20% of the "dark" halo consists of objects with masses of the order of 0.5 $M_\odot$ (Alcock et al. 2000). Efforts to have a better understanding of the nature of baryonic dark matter in the solar vicinity and its implications regarding the formation and age of the Galaxy, as well as those related to the process of stellar formation, have given a renewed impulse to proper-motion surveys aimed at finding nearby, intrinsically dim objects that could be identified with old white dwarfs and brown dwarfs (Ruiz et al. 1993; Scholz et al. 2000).

With the purpose of identifying cool white dwarfs in the solar neighborhood, we started a search for proper-motion stars using red (IIIa-F) ESO Schmidt plates taken with intervals of time between 6.4 and 16 yr. The spectroscopic follow-up of the catalog produced more than 25 new cool degenerates, most of which have $m_R > 16$, a range of magnitudes where the Luyten and the Luyten half-second catalogs (Luyten 1957, 1979, hereafter LTT and LHS) are very incomplete. The list of the new white dwarfs will be published separately (M. T. Ruiz 2001, in preparation). As a demonstration of the potential for discovering interesting objects in a proper-motion survey such as this, the first free-floating brown dwarf discovered, Kelu-1 (Ruiz, Leggett, & Allard 1997), was found during the present survey and is object number 298 in this catalog.

The present search for proper-motion stars in 14 ESO areas (5° × 5° each) resulted in a catalog containing 542 objects with $\mu \geq 0\farcs2$ yr^{-1} and $7.5 \lesssim m_R \gtrsim 19.5$. Table 1 contains the information regarding the ESO areas used in the survey, and Table 2 presents coordinates, proper motions, and estimated magnitudes for all 542 stars with their corresponding LTT, LHS, or other designations when appropriate. Finding charts for all objects in the catalog are included in Figure 11.

2. THE SURVEY

The selection of the 14 ESO areas was quite at random except for the fact that we tried to avoid regions at very high galactic latitude ($b \lesssim 40$) where it is difficult to visually detect proper-motion stars using a blink machine. This is due to the lack of enough background stars that can serve as a reference during the blinking process. Areas were selected inspecting the La Silla glass plate (copy) collection of the ESO *R* survey. The plates were taken with the ESO Schmidt Camera using a IIIa-F emulsion and a RG630 filter with an exposure time of 2 hr. We looked for plates having good image quality and a sufficiently large time base. In most cases new original second-epoch plates were obtained for these fields taken with the same characteristics,

[1] Based on plates obtained with the Schmidt Camera operated by ESO at La Silla, Chile. Project 64.H-0318.

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TABLE 1

ESO AREAS

ESO Area	α (2000)	δ (2000)	l (2000) (deg)	b (2000) (deg)	Epoch	Time Base (yr)
426	6 31 58.1	−30 02 13	238.5	−17.0	1995.9	8.0
496	8 49 19.6	−25 20 44	249.5	11.6	1995.1	11.0
373	9 36 47.0	−35 12 10	264.0	12.6	1995.1	9.9
374	10 01 49.4	−35 16 39	268.0	15.9	1995.2	16.0
317	10 25 22.9	−40 05 49	274.9	14.7	1995.2	10.9
501	10 40 00.0	−25 10 00	268.8	28.9	1995.2	10.8
376	10 49 50.9	−35 14 42	276.6	21.3	1996.3	12.0
381	12 50 29.8	−35 07 04	302.7	27.8	1995.2	7.8
508	13 14 50.3	−25 06 08	309.6	37.5	1993.2	14.0
445	13 50 39.7	−30 00 38	317.9	31.1	1994.6	7.3
384	14 02 33.2	−35 16 14	318.9	25.4	1995.5	11.1
385	14 26 23.8	−35 16 14	324.0	23.7	1994.5	7.0
512	14 42 38.0	−25 02 41	332.6	31.3	1994.6	6.4
396	18 50 42.6	−34 49 27	1.1	−15.0	1996.3	10.7

NOTE.—Units of right ascension are hours, minutes, and seconds, and units of declination are degrees, arcminutes, and arcseconds.

including the good image quality (better than 2″). Each plate covers an area in the sky of 5 deg^2 with a plate scale of 67″.5 mm^{-1}. The magnitude limit of these plates is $m_R \sim$ 19.5. Table 1 gives the relevant information regarding the ESO areas covered by the present survey.

Pairs of plates from the same ESO area, taken several years apart, were visually searched using a blink machine. Given the setup of our blink machine, we were able to detect displacements (between the two epochs) down to ~0.7 μm corresponding to 0″.5. Therefore for a time base of 6.5 yr (the smallest we have; see Table 1), we should detect all stars with $\mu \gtrsim 0''.08$ yr^{-1}; this limit is of course strongly dependent on the image quality and the plate fog. The diagram in Figure 1 shows that the present survey is complete down to the limit at $\mu \gtrsim 0''.2$ yr^{-1}. The solid line in Figure 1 has a slope of −3 that corresponds to a uniform

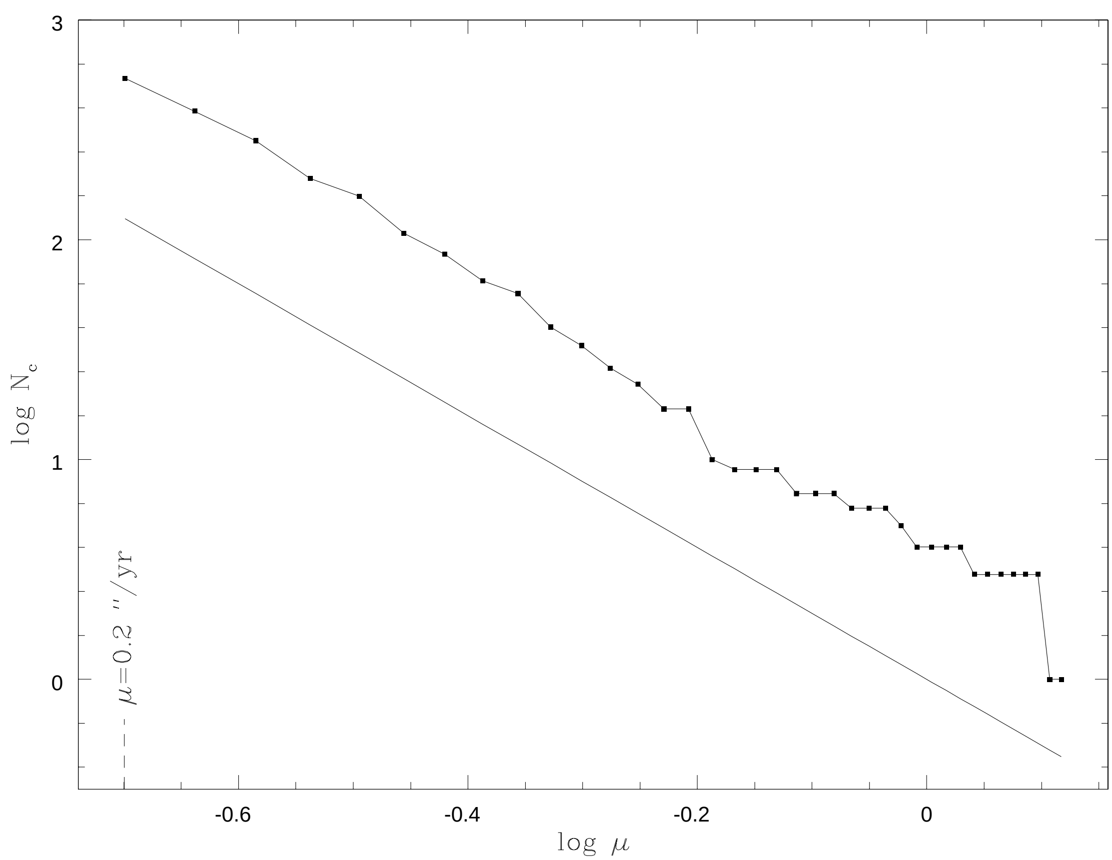


FIG. 1.—Log-log plot of the cumulative number of stars in this survey as a function of proper motions (down to $\mu = 0''.2$ yr^{-1}). The straight line has a slope of −3, which corresponds to a uniform distribution of stars. The fact that the data follows the same slope is an indication that the survey is complete down to its proper-motion limit.

TABLE 2

STARS IN THE SURVEY WITH PROPER MOTIONS ≥0″.2 yr^{-1}

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
1	426		6 21 26.1	−31 34 55	12.04	0.30	226.6
2	426		6 22 18.5	−29 23 21	11.23	0.26	171.7
3	426		6 22 45.2	−28 16 54	16.14	0.25	215.5
4	426	LTT 2540	6 23 40.8	−28 40 58	12.0	0.26	327.2
5	426	LTT 2549	6 24 51.6	−32 07 18	9.05	0.41	20.8
6	426	LTT 2551	6 25 35.8	−32 01 53	10.57	0.20	264.5
7	426		6 26 00.1	−27 16 59	14.77	0.22	239.5
8	426	LTT 2560	6 27 11.8	−31 57 52	12.72	0.26	167.7
9	426	LTT 2561	6 27 40.6	−32 17 54	12.0	0.25	211.9
10	426		6 28 14.2	−28 06 24	14.63	0.24	200.6
11	426		6 28 26.8	−30 43 10	13.56	0.23	8.2
12	426		6 30 24.0	−31 06 42	14.14	0.23	284.9
13	426	LTT 2577	6 31 56.3	−27 43 43	10.18	0.28	9.7
14	426		6 33 50.5	−28 18 46	16.33	0.25	246.6
15	426	LTT 2591	6 34 18.6	−31 52 22	11.90	0.44	200.3
16	426	LHS 5118	6 34 37.4	−28 34 18	17.59	0.48	126.5
17	426		6 35 12.0	−29 12 22	17.07	0.25	157.4
18	426		6 35 51.2	−31 26 34	10.41	0.21	359.0
19	426	LTT 2597	6 36 08.8	−27 37 18	7.24	0.27	200.0
20	426		6 36 48.8	−27 27 53	13.64	0.47	316.1
21	426		6 36 52.2	−29 51 44	15.97	0.24	154.6
22	426	LTT 2601	6 37 03.8	−32 13 29	7.5	0.39	99.8
23	426		6 39 30.1	−31 25 49	10.10	0.26	274.0
24	426	LTT 2614	6 39 43.3	−29 01 51	12.69	0.27	24.4
25	426		6 40 00.0	−30 25 30	17.40	0.28	194.6
26	426	LTT 2619	6 40 26.8	−28 13 40	9.11	0.21	78.3
27	426		6 41 05.1	−28 10 35	17.26	0.31	283.8
28	426		6 41 43.9	−28 34 48	13.16	0.23	341.7
29	426		6 41 53.1	−27 37 49	16.27	0.24	211.7
30	426		6 42 44.0	−28 57 36	14.41	0.20	101.0
31	426		6 43 50.1	−29 23 13	11.79	0.22	325.9
32	496		8 38 16.2	−26 06 00	13.73	0.34	151.7
33	496	LTT 3203	8 39 20.5	−25 24 17	10.90	0.24	150.2
34	496		8 39 56.3	−24 30 01	17.64	0.21	134.0
35	496		8 40 08.0	−25 29 31	16.61	0.20	248.4
36	496	LHS 2037, LTT 3215	8 40 59.7	−23 27 30	10.82	0.92	328.6
37	496		8 43 17.5	−27 37 02	14.62	0.21	313.5
38	496		8 43 54.5	−26 14 32	13.38	0.31	244.7
39	496		8 45 09.1	−23 54 49	17.55	0.25	279.6
40	496		8 45 26.7	−27 00 58	18.82	0.54	249.6
41	496		8 47 13.9	−24 46 18	15.61	0.22	99.7
42	496		8 47 14.2	−24 45 50	17.12	0.36	161.2
43	496		8 48 50.0	−23 00 59	14.42	0.34	182.0
44	496		8 50 35.1	−24 23 50	14.84	0.29	326.2
45	496		8 50 42.2	−23 43 58	17.45	0.25	141.8
46	496	LTT 3260	8 51 19.0	−23 46 53	12.66	0.21	162.4
47	496	LTT 3271	8 52 50.2	−23 43 59	10.28	0.27	359.8
48	496	LTT 3275	8 53 09.9	−24 31 32	12.73	0.26	345.1
49	496		8 53 14.3	−25 53 44	16.22	0.27	289.5
50*	496	LHS 2067	8 53 56.2	−24 46 56	16.31	0.62	75.5
51*	496	LHS 2068	8 53 57.5	−24 46 56	17.50	0.62	75.5
52	496	LTT 3290	8 54 57.4	−24 23 40	8.2	0.37	301.2
53	496		8 55 04.5	−27 48 43	16.12	0.50	149.0
54	496		8 55 10.8	−26 10 47	17.16	0.53	140.0
55	496	LHS 2071	8 55 20.4	−23 52 14	12.55	0.57	272.5
56	496		8 55 58.5	−25 17 09	16.45	0.22	178.1
57	496	LTT 3294	8 56 02.8	−22 57 14	12.56	0.24	314.8
58	496		8 56 17.7	−23 26 58	14.38	0.38	280.3
59	496		8 56 37.6	−27 24 46	18.61	0.20	171.5
60	496		8 57 15.5	−27 47 48	14.10	0.47	293.0
61	496		8 58 53.9	−27 10 39	16.83	0.25	265.9
62	496	LTT 3324	8 59 17.2	−24 53 06	12.36	0.44	199.1
63	496		8 59 39.1	−26 21 41	19.46	0.21	295.7
64	496	LTT 3335	9 01 12.3	−25 31 39	8.16	0.25	186.8

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
65	496	LTT 3341	9 01 48.7	−26 33 52	7.5	0.34	315.4
66	373		9 24 46.4	−35 00 36	14.31	0.33	317.0
67	373		9 25 47.6	−36 07 49	13.75	0.22	323.6
68	373		9 28 53.8	−36 49 09	16.30	0.20	117.3
69	373		9 29 12.9	−36 42 37	14.63	0.29	142.5
70	373		9 29 30.1	−37 25 59	15.32	0.20	173.3
71	373		9 29 33.7	−33 38 42	16.02	0.25	292.3
72	373	LTT 3491	9 29 45.2	−36 27 06	10.64	0.26	121.4
73	373	LTT 3493	9 29 52.8	−36 18 51	12.54	0.27	308.2
74	373		9 30 47.9	−35 06 36	16.25	0.21	272.5
75	373	LTT 3504	9 31 12.9	−36 34 22	10.07	0.31	312.8
76	373	LTT 3506	9 31 32.9	−35 42 58	8.0	0.20	125.5
77	373		9 32 45.1	−36 30 04	16.57	0.22	250.2
78	373		9 32 49.2	−34 55 57	14.91	0.55	301.2
79	373		9 33 46.6	−34 49 49	16.07	0.38	247.4
80	373		9 35 17.6	−37 00 14	13.76	0.28	285.0
81	373		9 35 30.0	−33 34 50	12.02	0.22	325.4
82	373	LTT 3532	9 35 54.2	−33 43 53	11.91	0.26	132.3
83	373		9 36 03.5	−34 02 25	13.00	0.46	293.0
84	373	LTT 3535	9 36 25.7	−36 18 09	9.5	0.21	91.2
85*	373	LTT 3537	9 37 00.0	−37 21 33	14.73	0.34	294.4
86*	373	LTT 3538	9 37 00.1	−37 21 29	15.03	0.34	294.4
87	373		9 37 01.3	−35 57 45	14.16	0.29	293.6
88	373		9 37 35.1	−37 37 11	15.19	0.30	264.5
89	373		9 38 54.2	−33 48 47	15.34	1.33	283.9
90	373		9 38 55.1	−33 36 46	14.62	0.21	326.4
91	373		9 39 19.8	−35 11 49	18.02	0.31	299.1
92	373	LTT 3548	9 40 12.4	−35 10 53	8.2	0.23	278.6
93	373	LTT 3549	9 40 41.0	−35 43 00	10.80	0.21	130.7
94	373		9 40 58.1	−35 05 34	19.65	0.28	47.3
95	373		9 41 48.8	−33 26 13	14.19	0.24	189.7
96	373		9 43 00.2	−33 35 45	12.47	0.39	250.7
97	373		9 43 22.5	−33 22 21	16.43	0.22	291.9
98	373		9 44 01.3	−35 46 31	9.36	0.20	115.1
99	373	LTT 3580	9 44 45.5	−36 32 39	10.52	0.30	240.3
100	373		9 45 47.4	−35 41 47	13.64	0.21	298.7
101	373		9 45 53.7	−37 21 24	17.79	0.24	150.0
102	373		9 45 58.4	−32 53 33	12.66	0.36	298.4
103	373		9 47 45.8	−33 28 03	14.21	0.23	327.7
104	373		9 47 57.4	−35 46 21	12.99	0.24	161.3
105	373		9 48 27.3	−36 24 00	18.2	0.30	288.4
106	374		9 51 13.9	−35 43 05	11.50	0.24	291.7
107	374		9 51 48.5	−36 26 39	14.62	0.25	126.0
108	374		9 52 04.9	−35 34 09	16.55	0.21	272.4
109	374		9 53 02.9	−34 44 43	15.69	0.20	300.2
110	374		9 54 34.8	−33 49 11	14.11	0.43	276.8
111	374		9 55 19.1	−36 49 48	10.82	0.20	277.6
112	374		9 56 12.7	−35 33 46	19.95	0.33	226.3
113	374		9 56 18.4	−34 53 58	13.78	0.48	272.4
114	374		9 56 53.2	−34 17 49	16.31	0.24	63.8
115	374		9 57 27.7	−33 05 37	14.69	0.37	246.1
116	374	LTT 3655	9 57 40.4	−36 09 14	11.01	0.25	262.8
117	374	LTT 3657	9 58 01.6	−35 54 07	15.51	0.20	177.7
118	374		9 58 29.1	−32 42 37	11.0	0.24	152.5
119	374	LHS 2214	9 59 13.8	−33 04 26	14.80	0.59	303.4
120	374		9 59 32.8	−33 17 41	16.16	0.21	28.1
121	374	LTT 3668	10 00 06.4	−36 02 36	8.3	0.22	273.8
122	374		10 00 59.7	−32 57 24	14.7	0.23	139.2
123	374	LTT 3681	10 02 05.6	−37 56 35	12.4	0.24	338.8
124	374		10 02 45.7	−34 33 09	16.53	0.26	286.8
125	374		10 03 20.4	−32 56 28	15.56	0.26	286.4
126	374	LTT 3691, LHS 5166	10 04 38.7	−33 35 06	13.08	0.49	130.5
127	374	LTT 3693	10 04 43.0	−36 01 33	12.32	0.23	265.8
128	374	LTT 3695	10 05 18.1	−34 16 16	14.18	0.20	230.0
129	374		10 07 42.2	−35 22 59	14.87	0.27	246.7
130*	374		10 08 22.9	−33 04 02	17.37	0.20	141.9

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
131*	374		10 08 24.2	−33 03 51	18.5	0.20	141.9
132..........	374		10 09 13.7	−33 42 37	16.49	0.25	262.5
133..........	374	LTT 3716	10 09 32.0	−35 51 26	7.5	0.40	266.4
134..........	374	LHS 5166a, LTT 3718	10 09 49.8	−36 45 19	8.0	0.49	317.1
135..........	374		10 10 51.1	−35 32 18	14.6	0.20	161.9
136..........	374		10 11 13.5	−35 36 22	14.85	0.50	294.6
137..........	374	LTT 3727	10 11 20.2	−37 16 34	10.07	0.27	283.6
138..........	374	LHS 2233, LTT 3742	10 12 59.8	−35 44 00	11.84	0.51	290.5
139..........	317	LTT 3743	10 13 01.9	−39 06 08	10.53	0.42	231.4
140..........	374		10 13 14.8	−36 59 50	16.0	0.25	237.9
141..........	374	LTT 3748	10 13 22.8	−35 57 51	12.15	0.25	281.1
142..........	374		10 13 23.3	−33 30 15	18.59	0.38	314.2
143..........	317		10 13 44.3	−39 06 03	15.08	0.20	294.9
144..........	317		10 13 44.3	−41 55 03	15.00	0.22	281.2
145..........	317		10 17 36.2	−40 00 10	14.37	0.26	137.1
146..........	317	LTT 3784	10 18 37.5	−38 54 20	11.13	0.30	283.5
147..........	317		10 18 38.8	−40 30 56	18.31	0.36	297.8
148*	317	LTT 3790	10 19 51.3	−41 48 45	10.64	0.42	192.3
149*	317	LTT 3791	10 19 53.7	−41 49 00	11.98	0.42	192.3
150..........	317	LTT 3796	10 20 16.5	−41 54 15	10.91	0.24	173.8
151..........	317	LTT 3809	10 21 51.8	−41 55 16	11.41	0.33	228.4
152..........	317		10 21 55.1	−41 35 32	15.51	0.39	285.2
153..........	317		10 21 56.5	−40 11 56	17.14	0.28	282.3
154*	317		10 23 04.8	−41 31 52	12.71	0.23	219.1
155*	317		10 23 06.3	−41 32 31	13.52	0.23	215.9
156..........	317		10 24 54.7	−37 51 07	16.82	0.26	287.8
157..........	317		10 26 21.5	−38 30 35	15.87	0.44	230.6
158..........	317		10 26 59.6	−37 38 09	16.60	0.21	263.4
159..........	317		10 27 34.2	−37 42 30	11.97	0.20	171.6
160..........	317		10 28 20.4	−39 40 47	15.50	0.28	154.4
161..........	317	LTT 3846	10 28 34.5	−38 22 42	10.95	0.26	302.4
162..........	501		10 29 57.9	−26 24 05	16.69	0.21	196.0
163..........	501		10 29 59.2	−26 38 22	14.6	0.21	261.9
164..........	317		10 30 03.8	−39 41 36	15.02	0.20	238.4
165..........	501		10 30 49.9	−26 00 28	14.75	0.33	141.0
166..........	317		10 31 05.7	−39 20 33	14.30	0.25	158.0
167..........	317	LTT 3858	10 31 08.8	−41 27 51	12.21	0.27	286.4
168..........	317		10 31 24.7	−41 06 30	15.46	0.24	314.7
169..........	501		10 31 54.7	−26 39 58	16.62	0.20	268.9
170..........	317		10 32 19.8	−38 31 26	14.41	0.24	316.2
171..........	501		10 32 23.5	−22 51 23	12.51	0.24	149.0
172..........	501		10 33 07.4	−23 02 16	13.86	0.26	168.3
173..........	501		10 33 12.3	−24 32 16	18.24	0.34	298.9
174..........	501		10 33 30.2	−23 45 47	16.19	0.25	228.2
175..........	317		10 33 46.2	−39 57 58	13.40	0.36	303.7
176..........	501		10 33 49.1	−22 50 47	18.07	0.25	249.5
177..........	501		10 34 08.1	−25 05 24	16.5	0.20	272.8
178..........	501		10 34 31.8	−22 59 27	16.94	0.20	235.7
179..........	501		10 35 00.7	−23 53 41	13.4	0.22	283.0
180..........	501	LTT 3878	10 35 00.9	−25 40 25	11.05	0.23	153.4
181..........	501		10 35 14.8	−24 01 19	11.97	0.37	126.3
182..........	317		10 36 32.2	−39 52 02	16.39	0.20	333.2
183..........	501		10 36 42.7	−23 25 34	13.05	0.21	262.3
184..........	317		10 37 39.0	−40 11 41	17.21	0.22	304.9
185..........	317		10 37 44.9	−40 04 05	15.76	0.23	159.5
186..........	501	LTT 3896	10 37 45.3	−27 46 38	11.91	0.37	322.4
187..........	501		10 37 49.5	−24 21 20	17.75	0.24	207.4
188*	501		10 38 05.3	−23 32 09	13.19	0.20	219.8
189*	501	LTT 3897	10 38 06.2	−23 32 57	8.0	0.20	219.8
190..........	501		10 38 12.6	−23 35 40	15.03	0.26	249.5
191..........	376		10 38 24.5	−36 18 19	15.85	0.22	288.7
192..........	501		10 38 34.0	−24 12 51	14.6	0.23	123.2
193..........	501	LTT 3900	10 38 36.9	−26 50 29	12.2	0.25	280.1
194..........	501		10 38 38.6	−24 18 10	18.67	0.22	247.5
195..........	376		10 38 48.5	−36 36 23	13.62	0.45	118.1
196..........	376		10 38 53.4	−35 15 59	16.43	0.27	249.4

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
197..........	501	LTT 3903	10 38 59.2	−24 37 03	13.7	0.20	248.5
198..........	317		10 39 05.7	−40 58 18	16.85	0.30	296.7
199..........	501	LHS 2294	10 39 13.8	−26 01 45	15.43	0.63	292.0
200..........	501		10 39 23.4	−24 55 05	16.0	0.22	186.1
201..........	317		10 39 36.7	−41 45 33	18.05	0.26	295.0
202..........	376		10 40 19.0	−36 03 41	16.31	0.20	302.8
203..........	501		10 40 20.9	−24 41 55	17.00	0.23	188.2
204..........	376	LTT 3919	10 41 09.5	−36 53 42	8.99	0.30	145.8
205..........	501		10 41 14.2	−26 22 44	17.27	0.23	280.7
206..........	501		10 41 14.5	−23 16 46	16.4	0.27	291.3
207..........	501	LTT 3922	10 41 30.4	−27 04 40	8.57	0.28	268.5
208..........	376	LTT 3923	10 41 36.2	−32 57 09	12.76	0.34	303.4
209..........	501		10 41 40.1	−24 04 31	13.36	0.52	303.7
210..........	501		10 42 03.4	−25 30 54	17.1	0.25	152.6
211..........	376		10 42 07.6	−33 08 05	12.48	0.20	279.2
212..........	376		10 42 15.6	−33 26 14	14.7	0.28	168.6
213..........	501	LTT 3929	10 43 06.9	−27 46 00	14.5	0.28	135.8
214..........	501		10 43 14.8	−23 03 40	12.89	0.22	136.8
215..........	376		10 44 02.5	−33 20 28	14.8	0.24	182.4
216..........	501	LTT 3936	10 44 09.6	−26 37 43	13.0	0.32	259.7
217..........	376	LTT 3940	10 44 27.5	−37 00 10	12.7	0.24	259.6
218..........	501		10 44 33.7	−25 32 50	14.64	0.30	270.4
219..........	376		10 44 48.7	−36 07 00	16.5	0.27	131.1
220..........	376	LHS 5174	10 45 34.1	−32 49 53	12.83	0.47	307.2
221..........	376	LHS 2306, LTT 3953	10 45 34.3	−35 21 16	11.55	0.96	291.0
222..........	501		10 45 50.5	−22 58 55	14.50	0.26	174.4
223..........	501		10 45 51.8	−23 09 01	13.66	0.31	234.4
224..........	501		10 46 11.1	−23 57 37	16.5	0.23	151.4
225..........	501		10 46 25.5	−24 52 24	18.67	0.28	274.5
226*	501		10 46 33.4	−24 35 10	12.96	0.22	221.5
227*	501		10 46 37.1	−24 35 07	8.64	0.22	221.5
228..........	376	LTT 3962	10 47 29.3	−34 41 32	12.4	0.28	282.4
229*	501		10 47 44.4	−24 11 26	13.12	0.20	281.0
230*	501	LTT 3963	10 47 45.2	−24 11 28	12.78	0.20	281.0
231..........	501	LTT 3965	10 48 05.6	−26 23 54	7.5	0.20	258.4
232..........	376		10 48 24.8	−36 26 21	14.5	0.27	280.5
233..........	376		10 48 25.6	−37 46 02	18.32	0.21	267.5
234..........	376		10 48 54.5	−36 04 28	14.2	0.28	267.5
235..........	376		10 48 55.4	−34 28 41	16.95	0.33	273.0
236..........	501	LTT 3969	10 49 01.0	−24 23 15	10.8	0.29	315.8
237..........	501		10 50 10.7	−26 51 46	9.31	0.22	243.2
238..........	501		10 50 17.6	−23 41 53	16.60	0.44	125.7
239..........	376		10 50 28.7	−34 34 39	16.92	0.32	210.9
240..........	376	LTT 3977	10 50 37.5	−34 00 17	10.5	0.29	271.2
241..........	501		10 50 43.6	−26 15 26	13.02	0.32	283.9
242..........	501		10 50 59.5	−24 12 45	13.7	0.33	299.3
243..........	501	LTT 3983	10 51 43.5	−25 37 07	9.50	0.29	273.8
244..........	376		10 52 17.3	−36 50 30	12.54	0.32	241.0
245..........	376		10 53 04.8	−36 09 35	16.5	0.23	270.6
246..........	376		10 53 58.5	−33 12 57	17.17	0.32	250.8
247..........	376		10 54 26.2	−34 45 29	17.79	0.51	240.7
248..........	376		10 54 54.3	−37 00 47	18.67	0.20	160.3
249..........	376		10 55 29.6	−35 02 31	13.57	0.30	304.6
250..........	376	LTT 4018	10 57 23.4	−33 29 05	8.83	0.20	92.9
251..........	376		10 57 57.1	−33 44 55	18.6	0.20	254.2
252..........	376		10 59 27.1	−35 38 09	14.76	0.23	293.2
253..........	376	LTT 4042	11 00 02.7	−35 06 36	10.26	0.26	145.9
254..........	376		11 01 29.8	−33 50 08	16.87	0.28	288.8
255..........	376		11 02 48.1	−36 59 37	13.66	0.21	272.9
256..........	381		12 38 57.7	−34 24 02	15.91	0.29	268.3
257..........	381		12 39 02.6	−35 46 42	17.06	0.34	307.8
258..........	381		12 39 17.7	−34 27 27	13.32	0.27	253.0
259..........	381		12 40 21.7	−34 41 54	13.43	0.62	274.8
260..........	381		12 40 22.9	−36 10 47	14.91	0.34	297.9
261..........	381		12 40 29.3	−33 44 16	14.5	0.22	260.7
262..........	381		12 40 42.0	−34 54 45	14.94	0.20	246.4

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
263..........	381		12 41 31.1	−34 38 29	15.12	0.23	301.5
264..........	381		12 41 58.5	−33 39 55	11.36	0.21	239.2
265..........	381	LTT 4848	12 42 23.9	−32 49 46	13.7	0.21	256.7
266..........	381		12 42 36.6	−36 58 58	14.99	0.20	293.6
267..........	381	LTT 4850	12 42 39.6	−36 20 31	10.81	0.27	270.9
268..........	381	LTT 4858	12 43 32.0	−37 41 52	11.39	0.23	272.7
269..........	381	LHS 2615, LTT 4860	12 43 44.0	−37 42 27	7.5	0.62	244.1
270..........	381		12 43 44.5	−34 54 36	19.21	0.21	256.8
271..........	381		12 44 15.2	−37 43 08	12.5	0.20	112.4
272..........	381		12 44 41.8	−34 28 10	15.42	0.26	229.8
273..........	381		12 44 45.0	−35 07 44	14.50	0.28	207.3
274..........	381		12 44 49.7	−33 32 23	14.7	0.22	209.7
275..........	381		12 45 22.8	−34 25 30	14.5	0.27	241.8
276..........	381		12 45 23.8	−33 37 59	19.10	0.29	231.4
277..........	381		12 45 58.5	−36 26 50	16.7	0.34	66.6
278..........	381		12 46 42.4	−33 19 53	11.80	0.28	187.1
279..........	381	LTT 4890	12 47 14.0	−33 22 49	11.0	0.23	274.9
280..........	381		12 47 32.0	−35 08 56	16.59	0.24	183.6
281..........	381		12 47 40.7	−34 21 32	17.7	0.21	250.7
282..........	381		12 49 49.3	−33 14 12	18.86	0.32	210.0
283..........	381		12 50 28.3	−37 30 56	17.29	0.20	279.6
284..........	381		12 50 28.4	−37 33 14	12.6	0.21	132.4
285..........	381		12 50 44.4	−35 29 32	13.46	0.36	251.7
286..........	381		12 51 04.8	−36 30 44	14.33	0.33	244.6
287..........	381		12 52 01.6	−32 56 32	14.5	0.24	246.5
288..........	381		12 52 16.9	−34 44 20	17.09	0.33	243.8
289..........	381		12 54 28.8	−37 19 40	14.7	0.22	258.2
290..........	381		12 54 50.9	−36 14 15	13.65	0.21	189.7
291..........	381		12 58 33.5	−36 24 47	9.97	0.20	273.8
292..........	381		12 58 43.5	−33 56 08	15.43	0.45	162.4
293..........	381		13 00 11.7	−35 05 56	14.77	0.49	277.9
294..........	381	LTT 4970	13 00 21.1	−34 50 11	10.35	0.22	324.3
295..........	381		13 01 17.5	−33 30 32	14.96	0.40	180.1
296..........	381		13 03 29.5	−35 51 24	15.61	0.39	240.8
297..........	508		13 04 03.2	−24 42 18	16.5	0.22	235.7
298[a].........	508	Kelu-1	13 05 40.2	−25 41 06	19.20	0.35	265.4
299..........	508		13 05 50.8	−24 36 58	18.40	0.28	248.4
300..........	508	LTT 5010	13 06 09.0	−25 17 07	13.5	0.37	224.4
301..........	508		13 06 13.8	−27 11 15	16.5	0.32	252.4
302..........	508		13 07 53.7	−23 40 59	19.0	0.30	131.0
303..........	508		13 09 21.9	−23 30 33	18.6	0.42	176.3
304..........	508		13 09 23.3	−27 12 58	17.3	0.23	118.2
305..........	508		13 09 25.2	−26 04 17	17.0	0.20	211.2
306..........	508		13 09 39.7	−23 53 32	13.7	0.24	278.1
307..........	508		13 09 43.0	−27 30 26	16.8	0.22	159.1
308..........	508	LTT 5044	13 10 46.5	−24 10 45	7.5	0.39	264.0
309..........	508		13 11 19.5	−25 35 11	14.3	0.28	136.0
310..........	508	LHS 2691a	13 11 26.4	−23 44 40	17.5	0.56	227.4
311..........	508	LTT 5050	13 12 19.6	−26 25 17	12.5	0.31	256.9
312..........	508	LTT 5053	13 12 20.7	−23 20 09	9.13	0.27	306.5
313..........	508	LTT 5056	13 12 32.0	−27 02 20	12.0	0.26	230.7
314..........	508		13 12 41.5	−24 41 44	16.8	0.30	154.9
315..........	508		13 12 46.5	−23 21 31	17.47	0.34	264.3
316..........	508		13 12 47.9	−27 46 23	14.5	0.25	272.8
317..........	508		13 12 52.9	−25 48 55	16.5	0.37	268.5
318..........	508		13 12 58.3	−27 36 23	19.5	0.23	238.7
319..........	508	LTT 5069	13 13 53.9	−23 11 26	13.7	0.36	260.1
320..........	508		13 14 49.8	−26 26 49	13.7	0.22	161.0
321..........	508	LTT 5077	13 15 01.8	−23 31 06	14.6	0.24	242.4
322..........	508		13 15 08.1	−24 20 03	14.0	0.32	257.0
323..........	508	LTT 5082	13 15 28.0	−25 19 30	9.0	0.20	229.5
324..........	508		13 15 32.5	−23 00 09	17.2	0.28	270.1
325..........	508	LTT 5085	13 15 39.8	−26 19 02	9.2	0.29	150.8
326..........	508		13 16 01.9	−26 56 09	16.7	0.28	252.1
327..........	508		13 16 34.6	−27 39 12	16.5	0.22	219.1
328..........	508		13 17 00.1	−24 23 59	18.4	0.24	291.6

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
329..........	508		13 17 26.5	−24 18 46	17.0	0.27	277.9
330..........	508		13 17 31.2	−23 58 04	18.0	0.21	274.8
331..........	508	LTT 5097	13 17 42.1	−23 50 16	14.3	0.24	230.4
332..........	508	LTT 5115	13 18 57.5	−25 15 18	8.5	0.31	227.3
333..........	508	LTT 5122	13 19 11.4	−23 01 18	10.6	0.37	255.6
334..........	508		13 19 16.3	−24 07 22	16.6	0.32	245.3
335..........	508	LTT 5128	13 19 50.0	−22 45 18	14.5	0.31	250.2
336..........	508		13 19 55.7	−25 11 40	16.6	0.20	203.3
337..........	508		13 20 21.5	−26 41 13	14.6	0.23	281.0
338..........	508		13 20 48.0	−27 21 10	17.5	0.27	194.5
339..........	508		13 20 59.0	−25 50 59	16.3	0.27	269.0
340..........	508		13 22 31.1	−27 22 50	14.6	0.26	237.1
341..........	508		13 22 55.3	−25 29 42	14.6	0.34	254.7
342..........	508		13 23 03.8	−26 28 13	14.5	0.51	356.0
343..........	508	LTT 5159	13 23 37.1	−25 19 41	12.0	0.23	150.7
344..........	508	LHS 2729, LTT 5161	13 23 38.3	−25 54 42	12.5	0.75	250.9
345..........	508		13 23 39.2	−25 45 04	16.7	0.36	252.3
346..........	508		13 24 18.8	−26 02 52	18.7	0.21	254.1
347..........	508		13 24 22.2	−23 50 16	11.0	0.22	136.3
348..........	508		13 25 00.3	−23 35 32	17.78	0.62	268.5
349..........	508		13 25 16.2	−25 38 34	18.93	0.20	260.2
350..........	508		13 25 49.4	−26 28 40	18.5	0.21	245.3
351..........	508		13 26 29.7	−25 26 06	16.8	0.21	274.5
352..........	445		13 40 39.0	−30 32 01	18.6	0.34	253.5
353..........	445	LTT 5298	13 40 45.7	−31 10 11	12.5	0.31	227.8
354..........	445	ESO 445-271	13 41 26.0	−31 24 46	17.10	0.22	251.7
355..........	445	LTT 5311	13 42 25.1	−30 39 56	8.2	0.21	181.0
356..........	445	ESO 445-249	13 43 07.2	−31 01 48	16.58	0.27	243.6
357..........	445	LTT 5337	13 45 01.2	−32 21 05	13.5	0.29	259.2
358..........	445		13 46 17.6	−30 51 27	13.7	0.26	253.7
359..........	445		13 46 46.2	−31 49 25	16.7	0.38	297.0
360..........	445	LTT 5353	13 47 48.9	−31 28 58	12.3	0.34	261.2
361..........	445		13 48 38.2	−28 34 44	18.14	0.24	245.9
362..........	445		13 49 22.0	−32 03 20	16.78	0.30	240.4
363..........	445	LTT 5369	13 49 58.4	−28 11 11	10.0	0.30	244.7
364..........	384		13 50 10.6	−36 02 20	12.3	0.28	219.8
365*	445		13 50 16.0	−27 41 44	16.3	0.20	236.0
366*	445		13 50 16.2	−27 41 48	14.6	0.20	236.0
367..........	445	LHS 2810	13 50 19.8	−29 33 57	13.19	0.58	257.0
368..........	384	LTT 5388	13 51 26.9	−33 21 14	13.68	0.41	244.7
369..........	445	LTT 5383	13 51 27.2	−30 10 58	12.2	0.22	206.7
370..........	384		13 51 31.1	−33 45 59	18.0	0.25	233.9
371..........	445	LTT 5389	13 51 38.8	−31 19 11	8.3	0.33	260.9
372..........	445		13 52 08.6	−29 47 47	16.5	0.20	247.2
373..........	445	LTT 5396	13 52 16.8	−32 35 00	13.7	0.27	236.0
374..........	445	LTT 5395	13 52 17.0	−31 44 27	13.5	0.22	221.4
375..........	445		13 52 57.7	−31 33 18	15.85	0.37	271.5
376..........	445		13 53 12.1	−31 02 42	14.6	0.29	152.5
377..........	445	LTT 5407	13 53 19.9	−30 46 39	12.5	0.24	286.0
378..........	384		13 53 44.7	−34 16 29	15.5	0.27	111.3
379..........	384	LTT 5413	13 53 52.3	−35 18 51	5.5	0.39	242.4
380..........	445		13 53 54.8	−30 15 56	16.2	0.24	189.5
381..........	384	LTT 5418	13 54 57.2	−32 57 06	11.0	0.22	185.3
382..........	445	LTT 5419	13 55 02.7	−29 05 25	8.7	0.43	285.5
383..........	384	LTT 5421	13 55 33.8	−35 50 02	8.1	0.22	259.3
384..........	445		13 56 14.9	−31 38 36	16.5	0.24	230.5
385..........	445	LHS 2826	13 56 20.7	−28 03 51	13.91	0.54	257.6
386..........	384		13 56 46.2	−35 09 05	16.5	0.20	244.1
387..........	445	LTT 5437	13 57 13.1	−29 22 23	12.4	0.47	187.2
388..........	445		13 58 18.0	−31 40 46	16.8	0.33	222.2
389..........	445		13 58 20.9	−27 31 55	17.7	0.24	235.5
390..........	384	LHS 2834, LTT 5445	13 58 36.9	−34 00 02	7.5	0.56	245.4
391..........	384		13 58 39.6	−35 54 51	14.08	0.21	129.7
392..........	384		13 58 56.7	−35 25 17	16.2	0.33	228.6
393..........	384		13 59 02.1	−35 30 37	14.6	0.36	263.8
394..........	384		13 59 38.8	−36 05 10	16.5	0.25	230.6

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
395..........	445	LHS 2841, LTT 5467	14 00 57.0	−31 47 48	10.14	0.65	279.9
396..........	384		14 01 03.7	−32 45 26	8.2	0.25	235.9
397*	445		14 01 35.8	−28 53 01	12.3	0.21	191.8
398*	445		14 01 36.9	−28 52 54	13.5	0.21	191.8
399..........	445		14 01 53.4	−32 01 24	17.1	0.27	272.8
400..........	384	LHS 5263, LTT 5472	14 01 59.2	−35 03 34	12.4	0.48	267.6
401..........	445		14 02 12.1	−29 23 56	17.13	0.30	254.8
402..........	384		14 04 21.0	−32 43 32	16.15	0.20	242.1
403..........	384		14 04 24.6	−36 30 43	13.98	0.42	245.0
404..........	384		14 05 27.8	−33 22 24	16.63	0.50	255.6
405..........	384	LTT 5501	14 06 30.7	−33 20 58	8.5	0.36	239.7
406..........	384		14 06 39.8	−34 42 02	15.99	0.44	241.2
407..........	384		14 06 53.2	−36 09 30	18.6	0.25	260.4
408..........	384	LTT 5510	14 07 24.3	−36 43 44	8.0	0.41	126.9
409*	384		14 07 42.7	−33 28 42	16.5	0.25	248.5
410*	384		14 07 42.8	−33 28 35	17.3	0.25	248.5
411..........	384		14 07 46.5	−34 41 21	16.01	0.29	231.1
412..........	384	LTT 5516	14 08 16.2	−36 28 06	12.0	0.25	180.5
413..........	384		14 09 06.6	−34 02 03	16.8	0.20	265.1
414..........	384	LTT 5550	14 11 43.9	−36 43 03	12.5	0.33	242.1
415..........	384		14 12 03.2	−36 46 17	12.5	0.20	251.1
416..........	384		14 13 25.6	−34 19 44	16.8	0.27	243.4
417..........	384		14 13 32.6	−34 12 53	15.6	0.23	246.3
418..........	384		14 13 35.3	−35 01 20	16.3	0.27	294.4
419*	384		14 13 40.8	−36 34 42	16.8	0.21	192.6
420*	384		14 13 41.4	−36 34 37	14.5	0.21	192.6
421..........	385	ESO 385-268	14 14 21.8	−36 30 17	17.35	0.28	218.0
422..........	384		14 14 25.4	−35 35 27	16.8	0.30	252.5
423..........	385	LTT 5626	14 18 38.5	−32 50 40	14.5	0.32	225.6
424..........	385		14 19 09.2	−32 52 08	15.0	0.22	251.9
425..........	385	LTT 5637	14 19 55.8	−33 43 26	12.5	0.23	253.3
426..........	385		14 20 54.7	−36 13 21	16.52	0.75	240.2
427..........	385		14 21 46.5	−33 11 42	15.2	0.23	198.8
428..........	385	LTT 5655	14 21 54.8	−36 09 23	10.5	0.36	243.4
429..........	385		14 22 13.3	−36 45 30	17.0	0.21	288.1
430..........	385		14 22 50.9	−34 47 13	15.0	0.25	241.3
431..........	385		14 23 43.8	−35 38 48	17.79	0.34	212.9
432..........	385		14 23 57.6	−35 29 51	9.58	0.27	188.6
433*	385		14 24 25.5	−35 34 36	12.4	0.36	184.5
434*	385	LTT 5684	14 24 26.4	−35 34 33	14.5	0.36	184.5
435..........	385	LTT 5685	14 25 07.1	−33 58 56	13.0	0.25	282.4
436..........	385		14 26 49.7	−32 56 50	14.8	0.21	92.1
437..........	385		14 27 15.5	−35 23 26	14.46	0.47	177.5
438..........	385		14 27 22.1	−35 22 22	16.89	0.20	211.6
439..........	385		14 27 57.8	−35 04 30	14.62	0.42	239.4
440..........	385		14 28 49.9	−34 48 36	14.93	0.47	240.1
441..........	385	LTT 5716	14 29 07.4	−34 09 21	12.63	0.38	219.9
442..........	385		14 30 22.3	−36 27 30	14.7	0.22	226.6
443..........	385		14 30 26.0	−36 56 59	18.7	0.28	235.3
444..........	385	LTT 5730	14 30 48.3	−33 18 05	10.5	0.20	256.3
445..........	512	LTT 5736, LHS 2933	14 31 30.1	−26 35 46	8.3	0.34	167.2
446..........	385		14 31 32.9	−37 07 59	17.0	0.23	237.7
447..........	385		14 31 41.2	−32 48 30	8.2	0.20	197.3
448..........	512		14 31 59.3	−24 49 51	17.0	0.20	244.3
449..........	385	LTT 5742	14 32 08.3	−36 46 52	12.2	0.23	271.9
450..........	512		14 32 15.9	−26 10 58	17.3	0.32	235.8
451..........	512	LTT 5750	14 33 19.2	−27 06 47	10.9	0.30	146.7
452..........	385		14 33 46.9	−34 48 19	18.63	0.20	218.0
453..........	385		14 34 33.4	−32 56 07	13.5	0.31	253.7
454..........	385		14 34 35.5	−36 11 06	18.2	0.23	235.5
455..........	512		14 34 58.4	−23 35 58	17.92	0.31	279.4
456..........	512		14 35 02.9	−24 58 00	16.48	0.32	207.3
457..........	385		14 35 46.0	−34 59 40	18.56	0.32	252.3
458..........	385		14 35 47.9	−35 30 42	15.01	0.22	261.4
459..........	512	LHS 2950	14 36 00.1	−23 03 04	16.51	0.84	224.8
460..........	385	LTT 5773	14 36 12.4	−33 31 47	12.5	0.32	170.5

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
461..........	385		14 36 29.9	−36 52 49	16.5	0.29	225.1
462..........	512		14 36 33.6	−22 45 52	18.5	0.30	245.5
463..........	512		14 37 02.2	−23 38 33	13.96	0.24	206.0
464..........	512		14 37 03.7	−26 00 20	18.5	0.22	297.1
465..........	512		14 37 11.1	−24 15 54	15.0	0.27	215.1
466..........	512		14 37 16.9	−23 06 07	15.0	0.28	252.6
467..........	385	LTT 5790	14 37 53.6	−34 39 17	12.3	0.24	244.4
468..........	385		14 37 56.8	−36 31 54	12.7	0.35	176.9
469..........	385	LTT 5799	14 38 55.9	−35 36 02	7.5	0.32	225.5
470..........	512	LTT 5798	14 38 59.8	−23 27 12	16.8	0.23	197.7
471..........	512		14 39 01.3	−23 27 05	14.5	0.27	192.3
472..........	512	LTT 5811	14 39 57.5	−24 36 01	12.4	0.31	250.6
473..........	512		14 40 11.9	−23 51 12	18.5	0.31	281.3
474..........	512		14 40 39.0	−23 36 05	16.5	0.39	239.3
475..........	512		14 41 07.8	−25 15 23	17.5	0.21	268.5
476..........	512		14 41 39.8	−23 52 08	16.7	0.28	191.2
477..........	512	LTT 5840	14 42 52.3	−24 29 31	7.5	0.34	261.5
478..........	512	LTT 5843	14 43 12.0	−27 00 00	14.5	0.24	229.8
479..........	512		14 43 23.0	−22 37 38	16.5	0.24	257.1
480..........	512		14 43 52.8	−25 23 10	18.6	0.24	277.6
481..........	512		14 44 02.5	−26 52 09	13.5	0.32	267.5
482..........	512		14 44 03.4	−26 52 08	16.7	0.28	255.6
483..........	512		14 44 05.8	−24 55 36	13.5	0.29	92.4
484..........	512		14 44 15.1	−27 17 24	14.0	0.27	257.2
485..........	512		14 44 29.8	−26 43 33	14.7	0.38	240.1
486..........	512	LTT 5868	14 46 47.9	−24 40 55	11.0	0.41	134.3
487..........	512	LTT 5869	14 46 51.5	−27 14 54	8.3	0.21	245.9
488..........	512		14 46 53.0	−23 27 32	17.0	0.22	102.8
489..........	512		14 47 33.3	−23 38 00	17.2	0.21	224.7
490..........	512		14 47 45.3	−25 37 27	14.6	0.36	206.7
491..........	512		14 48 06.3	−22 53 39	13.5	0.22	294.3
492..........	512		14 48 31.2	−25 09 10	16.8	0.21	198.5
493..........	512		14 48 40.1	−24 52 08	16.5	0.25	266.1
494..........	512		14 48 46.9	−23 49 28	17.0	0.32	215.7
495*	512	LHS 379, LTT 5883	14 49 32.0	−26 06 32	11.07	1.26	260.8
496*	512	LHS 380 LTT, 5884	14 49 33.8	−26 06 21	10.70	1.26	260.8
497..........	512		14 51 31.7	−23 32 10	18.3	0.21	211.7
498..........	512	LHS 383, LTT 5898	14 51 40.9	−24 18 12	7.5	1.09	248.8
499..........	512		14 51 42.3	−27 04 20	15.14	0.46	245.4
500..........	512		14 52 09.5	−23 17 09	18.8	0.23	227.7
501..........	512		14 52 20.5	−25 18 03	15.0	0.25	263.4
502..........	512	LTT 5903	14 52 21.6	−26 20 53	12.44	0.30	261.2
503..........	512	LTT 5905	14 52 37.4	−25 27 16	8.3	0.21	257.3
504..........	512	LTT 5928	14 54 42.4	−26 31 30	12.3	0.32	229.9
505[a]	396		18 41 19.7	−35 31 34	18.10	0.20	216.3
506..........	396		18 42 05.6	−34 13 58	14.6	0.20	171.8
507*	396		18 43 12.5	−33 22 30	14.64	0.46	203.0
508*	396	LTT 7419	18 43 12.6	−33 22 46	9.32	0.46	203.0
509[a]	396		18 43 20.1	−33 54 57	17.6	0.21	218.1
510[a]	396		18 43 45.0	−36 35 47	19.07	0.20	173.0
511[a]	396		18 43 45.5	−34 06 18	18.8	0.21	217.5
512[a]	396		18 43 58.8	−35 35 11	16.5	0.20	242.8
513[a]	396		18 44 23.5	−34 33 54	18.3	0.23	193.2
514[a]	396		18 45 06.2	−36 41 12	15.85	0.64	139.3
515[a]	396		18 46 07.7	−32 50 10	15.42	0.23	160.5
516[a]	396		18 46 12.5	−32 43 00	15.92	0.34	196.6
517[a]	396		18 47 18.9	−36 20 39	17.41	0.23	172.9
518[a]	396		18 47 22.9	−35 17 05	16.25	0.29	203.2
519[a]	396		18 47 36.6	−33 42 05	13.5	0.28	252.3
520..........	396		18 48 00.4	−34 07 08	14.5	0.21	125.5
521..........	396	LTT 7449	18 48 01.4	−36 24 48	10.9	0.49	227.3
522[a]	396		18 52 53.0	−33 25 49	16.36	0.40	193.1
523..........	396		18 54 18.0	−34 07 16	12.7	0.22	196.7
524[a]	396		18 54 51.9	−36 31 44	15.6	0.20	213.2
525..........	396	LTT 7496	18 54 54.9	−36 24 09	12.79	0.34	210.6
526..........	396	LTT 7501	18 55 20.6	−32 32 33	8.05	0.23	196.6

TABLE 2—*Continued*

CE Number (1)	ESO Area (2)	Other Names (3)	α (2000) (4)	δ (2000) (5)	m_R (6)	μ (arcsec yr^{-1}) (7)	θ (deg) (8)
527[a]	396		18 55 56.4	−34 46 09	17.7	0.20	175.2
528	396		18 56 00.6	−36 45 32	12.7	0.21	195.8
529[a]	396		18 56 27.8	−34 23 15	17.3	0.21	186.6
530[a]	396		18 57 20.1	−36 32 54	16.40	0.28	210.4
531[a]	396		18 57 50.0	−35 14 44	17.6	0.24	244.2
532*[a]	396		18 58 34.8	−33 27 42	16.41	0.20	121.6
533*[a]	396		18 58 37.7	−33 27 48	18.61	0.20	121.6
534	396		19 00 01.0	−32 42 03	12.5	0.20	246.4
535	396		19 00 04.8	−36 44 49	12.2	0.21	109.1
536[a]	396		19 00 23.5	−33 59 40	18.6	0.21	182.1
537	396	LTT 7534	19 00 27.1	−36 27 56	12.5	0.31	209.3
538[a]	396		19 01 26.7	−33 21 32	14.83	0.40	231.1
539[a]	396		19 02 35.5	−34 31 00	17.8	0.21	240.5
540	396		19 02 43.9	−34 23 30	12.2	0.21	150.8
541	396		19 03 00.3	−34 00 13	14.0	0.22	176.5
542	396		19 03 03.9	−33 48 54	14.3	0.21	230.5

NOTE.—Units of right ascension are hours, minutes, and seconds, and units of declination are degrees, arcminutes, and arcseconds. Asterisks denote common proper-motion binaries. This table is also available as a machine-readable table in the electronic edition of the *Astrophysical Journal*.

[a] Finding chart from CCD frames in *R*.

distribution of objects. This completeness was proved true in each individual area of the survey.

Once proper-motion stars were selected using a blink machine and marked accordingly, we selected 10 reference (faint) stars around each candidate star and no more than 2′ to 3′ away from it. Positions for the candidate and reference stars were measured in both epochs, using a semiautomatic *x*-*y* measuring machine (manufactured by the Karl Zeiss Company, Jena). For the calculation of proper motions, we used the "geomap" routine in IRAF, which maps one epoch into the other using a second-order polynomial and taking into account changes of scale and rotation between the reference-star systems. Reference stars showing large residuals were eliminated from the fit; this happened rarely and never to more than two reference stars. However, large residuals were to be expected in the case where we had selected as reference an object showing a small proper motion during the two measured epochs. The typical error of the resulting proper motions is $\sim \pm 0''.03$ yr^{-1}, and the error in position angle of the motion θ is $\sim \pm 12°$.

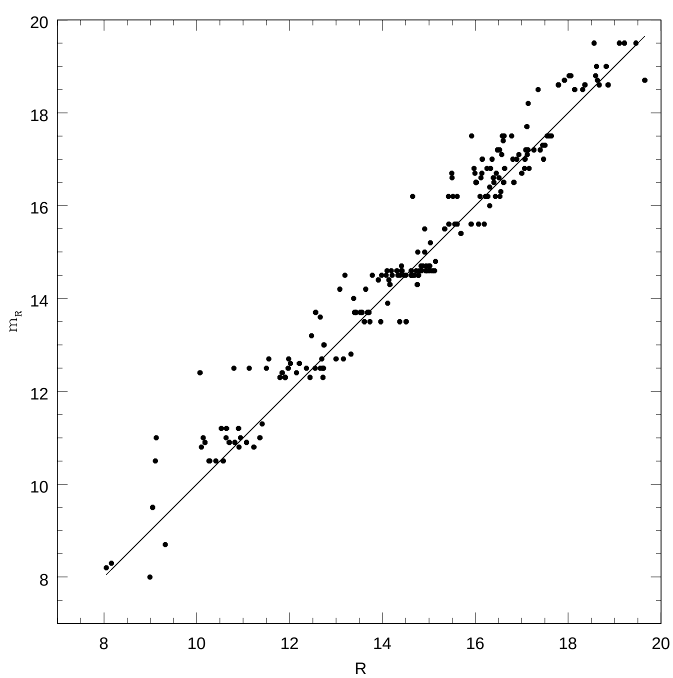


FIG. 2.—Comparison between the red magnitudes estimated from the ESO *R*-plates and their corresponding *R*-magnitudes obtained from CCD photometry.

3. THE CATALOG

CCD photometry in *R* has been obtained for almost half of the stars in the catalog using the 0.9 and 1.5 m telescopes at the Cerro Tololo Inter-American Observatory. For the rest, an eye estimate was made from the ESO *R*-plates and

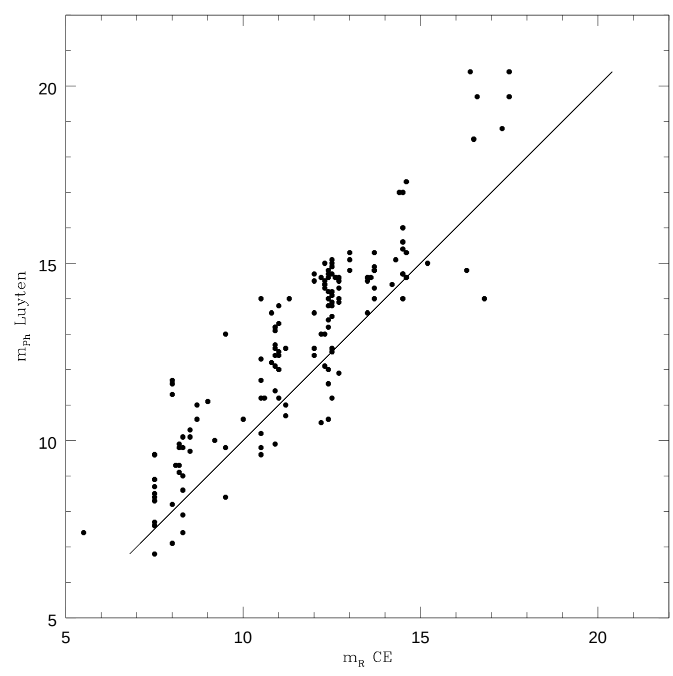


FIG. 3.—Distribution of red magnitudes for the stars in the survey

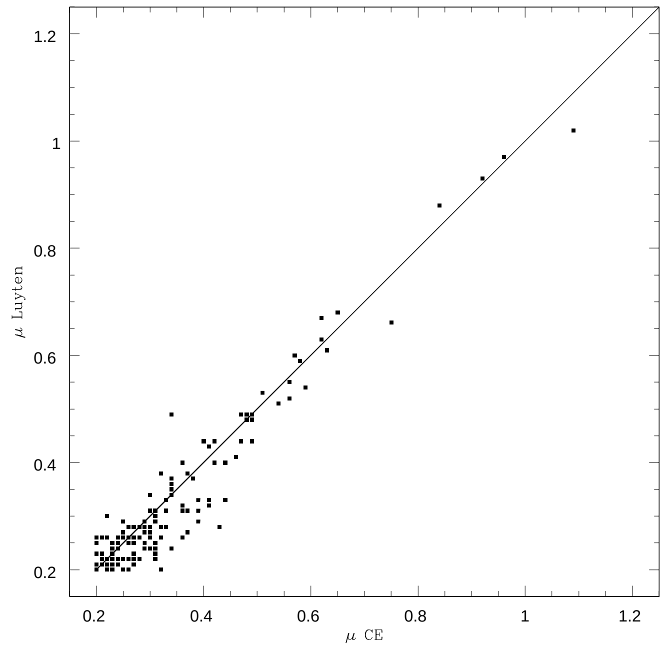


FIG. 4.—Comparison between proper motions measured in this survey and those in LTT and LHS for those stars in common to both surveys.

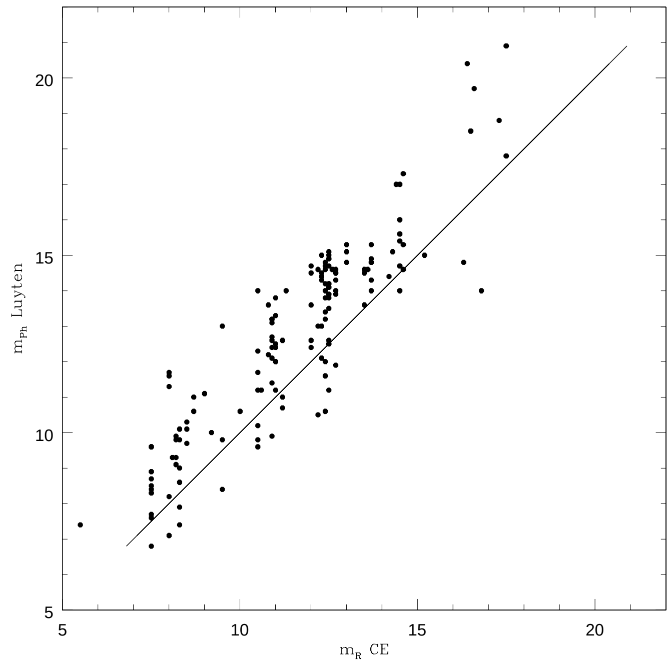


FIG. 6.—Estimated magnitudes for stars in common to the CE, LTT, and LHS surveys. The observed trend is due to the fact that LTT and LHS magnitudes are estimated from blue plates (photographic magnitudes), and our magnitudes have been estimated from red IIIa-F plates.

using the stars with CCD magnitudes as a reference. A comparison between the CCD *R*-magnitude and the estimated magnitude (for the same stars) is presented in Figure 2. A mean difference of $\sim \pm 0.5$ mag was found between the estimated and measured *R*-values. Figure 3 shows the magnitude distribution of stars in the survey with a clear maximum at $13 \gtrsim m_R \gtrsim 17$.

Table 2 summarizes all the information regarding the proper-motion stars found in this survey. In column (1) we give the Calán-ESO Proper-Motion Catalog (CE Catalog) number, column (2) gives the ESO area, column (3) gives

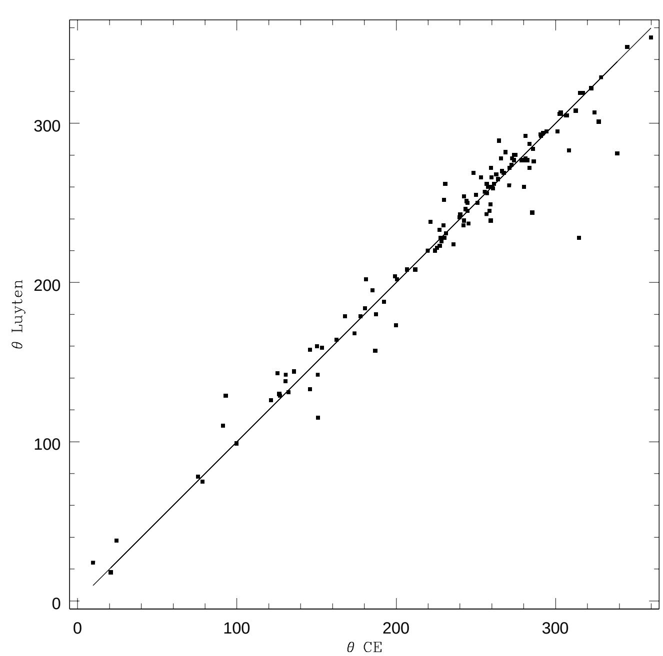


FIG. 5.—Comparison between position angles determined in this survey and those given by Luyten for the same stars in LTT or LHS catalogs.

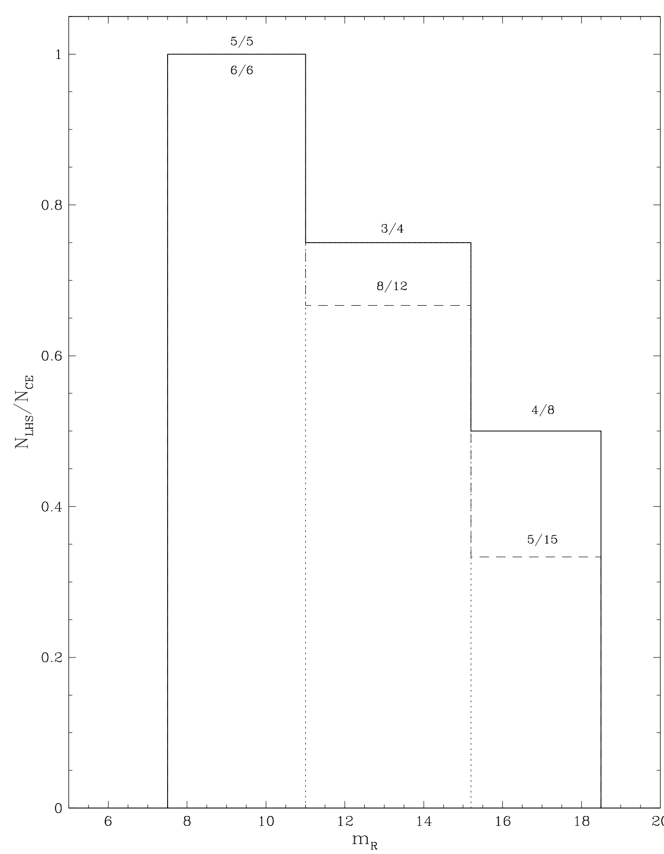


FIG. 7.—Ratio between the number of stars in a given magnitude bin, found in the LHS catalog and the CE catalog (when possible, the bin size has been chosen to include several stars). The solid line indicates a proper-motion cutoff at $\mu \geq 0\farcs6$ yr^{-1}, thus avoiding the uncertainties due to the LHS μ cutoff at $0\farcs5$ yr^{-1}. The dashed line corresponds to a cutoff in μ at $0\farcs5$ yr^{-1}, that is to say, considering all stars in LHS catalog included in the areas covered by the CE survey. The number of stars in each bin is also indicated.

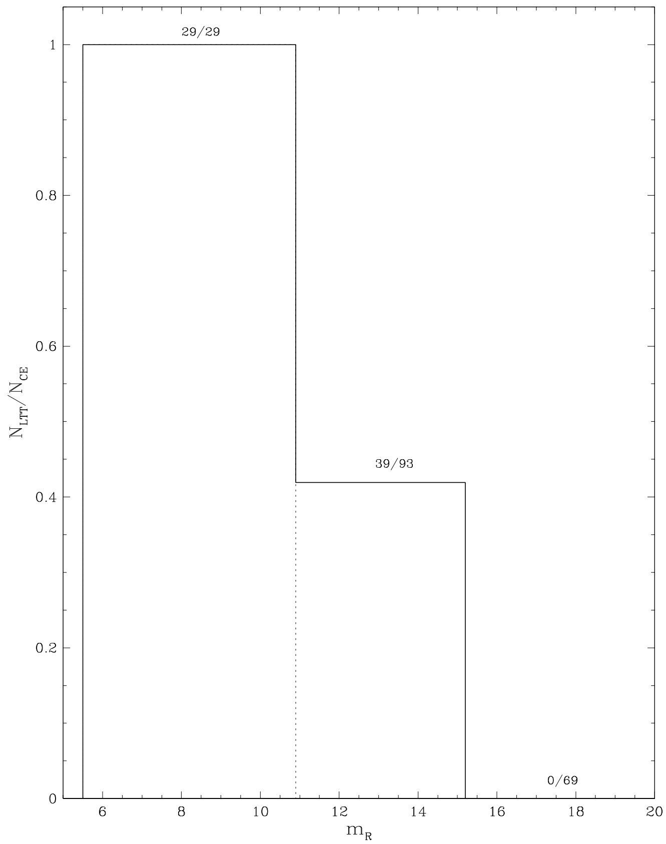


FIG. 8.—Same as in Fig. 7 but for the LTT catalog. In this case the μ cutoff has been set at 0''.3 yr^{-1} to avoid including stars near the limits of the CE and LTT catalog at $\mu = 0''.2$ yr^{-1} (this restriction seems adequate given that the errors in the μ measurements are $\sim 0''.03$ yr^{-1}).

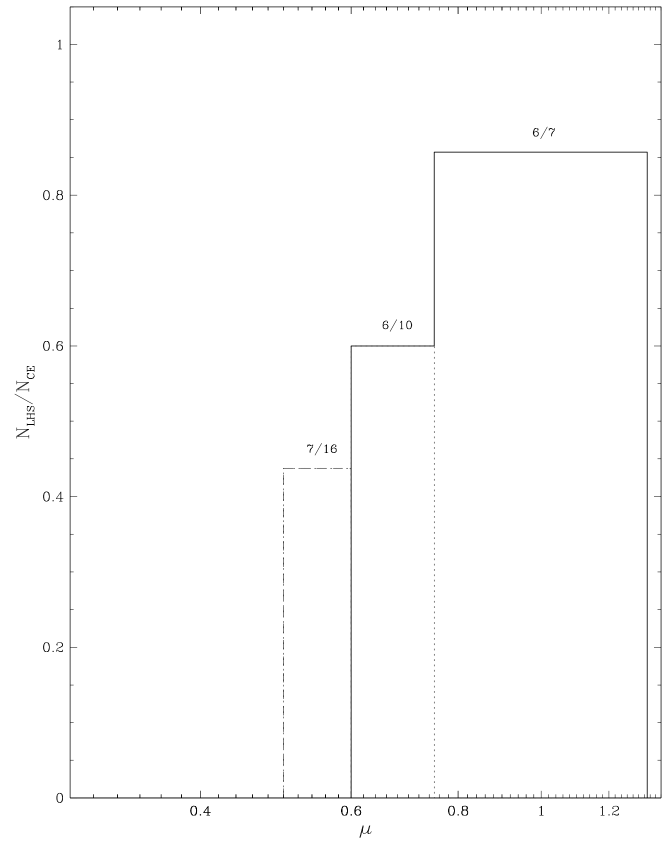


FIG. 9.—Ratio between the number of stars in the LHS catalog and in the CE catalog for a given μ. As in Fig. 7, the dashed line to the ratio of all stars in both catalogs down to $\mu = 0''.5$ yr^{-1}. The solid line the same comparison but with a cutoff at $\mu = 0''.6$ yr^{-1}. The number of stars in each bin is indicated.

other names for the star in case its a known star, and columns (4) and (5) give their positions in equatorial coordinates for equinox 2000 and the corresponding epoch for each particular ESO area given in Table 1. Column (6) gives the red magnitude, estimated (with only one decimal) or CCD measured (two decimals), and columns (7) and (8) give the magnitude and position angle of the proper motions.

In the fraction of the sky covered by this survey, 350 deg^2, there are a total of 154 stars in common with the LTT and LHS catalogs. We recovered all of the LTT stars and all of the LHS stars in our areas, for which we measured a value of $\mu \geq 0''.2$ yr^{-1} (several LTT stars were found to have $\mu < 0''.2$ yr^{-1}). In Figures 4, 5, and 6 we compare our measured μ, θ, and m_R with those from LTT and LHS. The consistency is acceptable, and differences lie within the observational errors of the catalogs. The larger dispersion observed in Figure 6 no doubt is due to the combined effect of errors due to the estimates themselves plus the fact that the emulsions of the plates used in the different surveys have different sensitivities.

For these southern declinations (δ between $-25°$ and $-35°$), the completeness of the LTT and LHS catalogs in relation to this CE catalog is deficient. In Figure 7 we present the ratio between the number of stars in LHS and those in the present catalog as a function of magnitude. The bins sizes in Figure 7 (and Figs. 8, 9, and 10) were chosen to try to include several stars in each bin, thus providing a more meaningful picture. We find that for stars brighter than the 11th magnitude, the LHS and CE catalogs contain the same stars; however, for fainter magnitudes the LHS catalog is only 60% complete, and it gets worse for the faintest magnitudes. The same is true for the LTT catalog; in Figure 8 we can see that for magnitudes fainter than the 13th the catalog is less than 20% complete. In Figures 9 and 10 we present the ratio of the number of stars in the LTT and LHS with respect to the CE catalog as a function of μ; in both cases, we again observe that for $\mu < 0''.8$ yr^{-1} the LHS is only $\sim 60\%$ complete and the LTT catalog less than 40% complete.

The severe lack of completeness at faint magnitudes of the LTT and LHS catalogs can have serious consequences given that most of the astrophysically interesting objects, such as brown dwarfs, cool degenerates, extreme subdwarfs, etc., are intrinsically very faint. Therefore, statistical conclusions about the existence and numbers of these objects drawn from the LTT and LHS catalogs will be seriously affected by the lack of completeness of the above mentioned catalogs.

Recently, Monet et al. (2000) surveyed 35 POSS II plates for high proper-motion stars with $\mu \gtrsim 0''.5$ yr^{-1}; all areas were located in the northern hemisphere. They found only seven new proper-motion stars not previously included by Luyten in his LHS catalog, suggesting that LHS is close to 90% complete; hence, the strong incompleteness found in our work might be restricted to the southern hemisphere. The seven new stars found by Monet et al. all have visual magnitudes fainter than 16.5; therefore, although they find

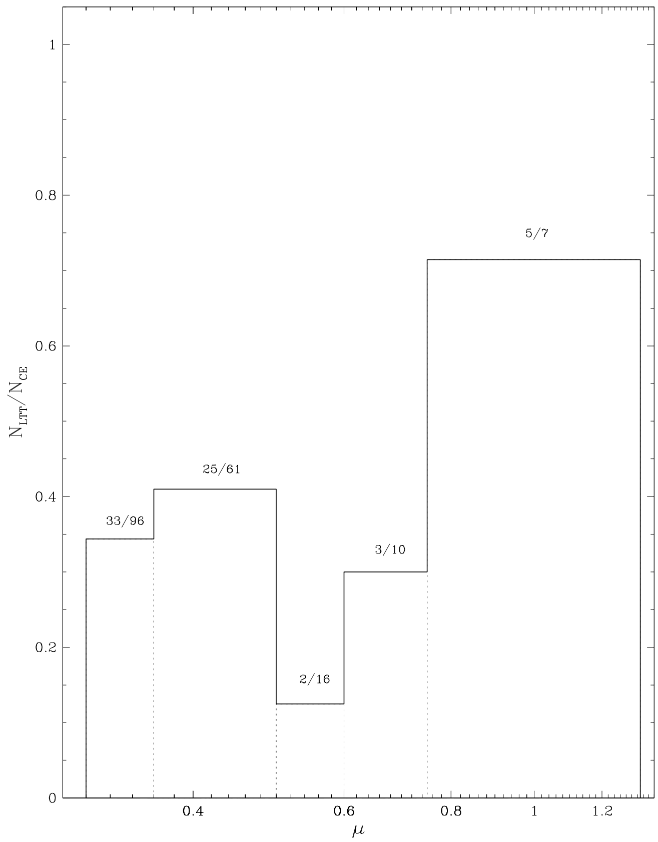


FIG. 10.—Same as in Fig. 9 but for LTT stars. In this case the μ cutoff is at 0.″3 yr^{-1}.

that overall the LHS is 90% complete, this level must go down for magnitudes fainter than 16.5 where most of the white dwarfs and brown dwarfs would be found.

Over the years, several publications have dealt with the level of completeness of Luyten catalogs, arriving at very different answers (see Monet et al. 2000, and references therein, for a detailed discussion). A more extensive survey of the type carried out by Monet et al. would be crucial to settle this issue; the results regarding the completeness of Luyten's catalogs derived by Monet et al. and those from the present survey are affected by the small number of areas considered and the variable quality (from plate to plate) of the original plate material used by Luyten.

Finding charts for all 542 stars are given in Figure 11. Each chart is 4′ in size, and the proper motion star is at the center. Charts were extracted from the Digitized Sky Survey (DSS) based on blue IIIa-J plates taken with the UK Schmidt telescope. For a few objects in ESO area 396 we have included in Figure 11 a CCD image in *R* instead of the blue DSS image. This was necessary in the case of extremely dim stars immersed in a very crowded field. Stars with charts from *R* CCD frames are indicated in Table 2.

We are grateful to ESO for providing us with glass copies of selected ESO *R*-plates and taking new epoch plates with the Schmidt Camera at La Silla. We also thank Rene Mendez for obtaining some *R*-frames to be included as finding charts in Figure 11. This work received partial support from FONDECYT grant 1980659 and Catedra Presidencial en Ciencias 1996.

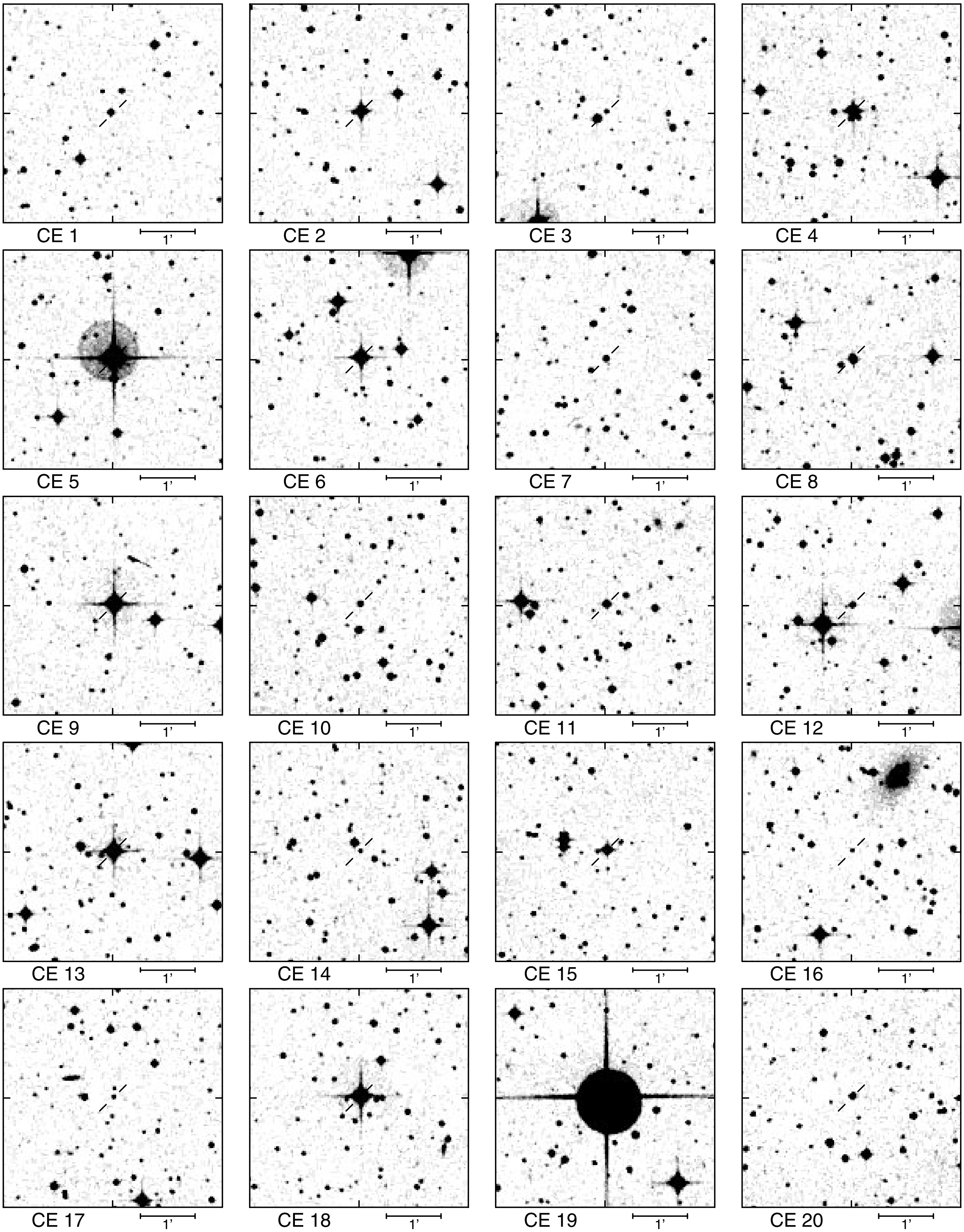


Fig. 11.—Each chart covers an area of $4' \times 4'$; north is up and east to the left. Most charts were extracted from the DSS; a few objects (indicated with an *a* in Table 2), which were too faint or too red for the DSS, have finding charts from *R* CCD frames.

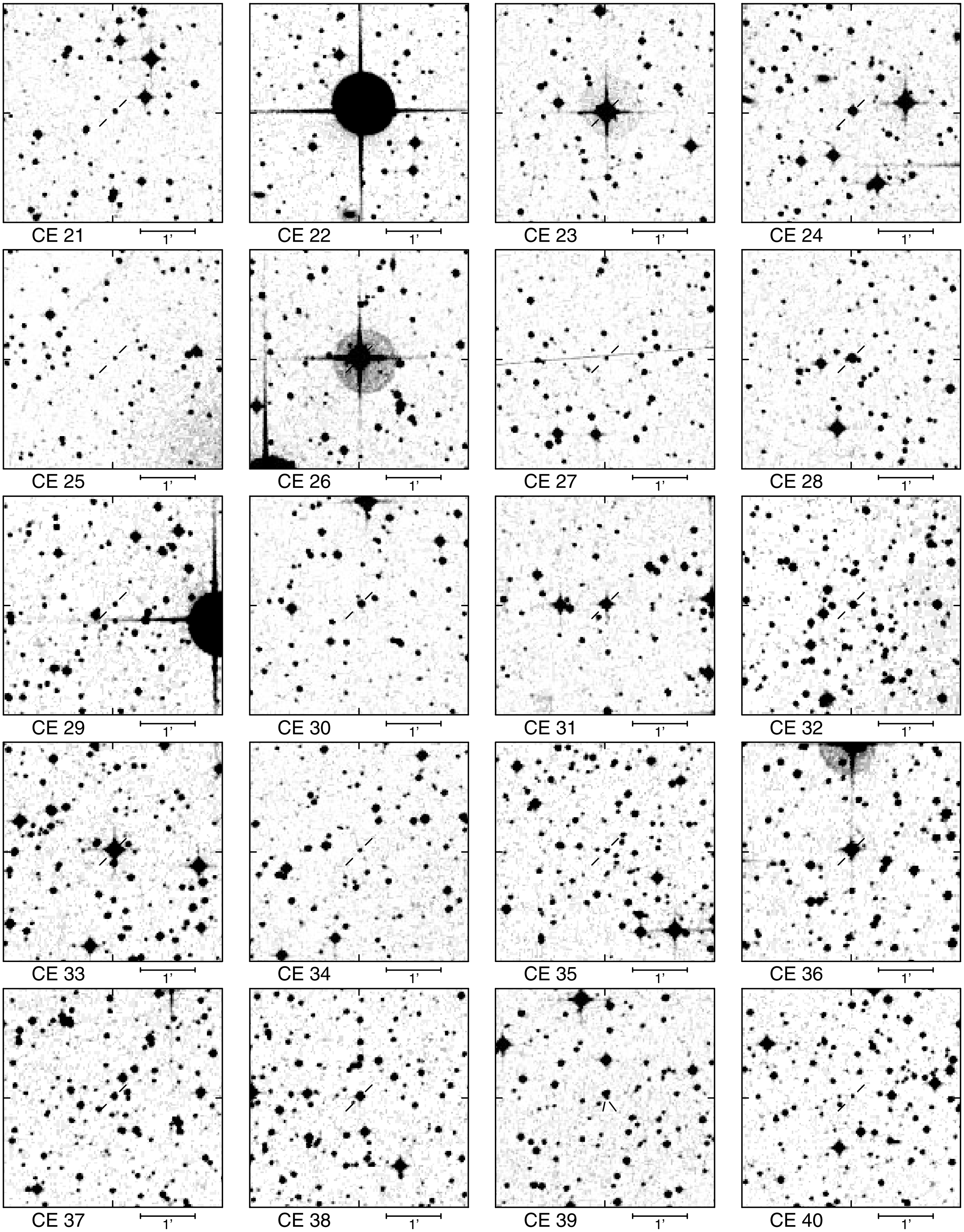


FIG. 11.—*Continued*

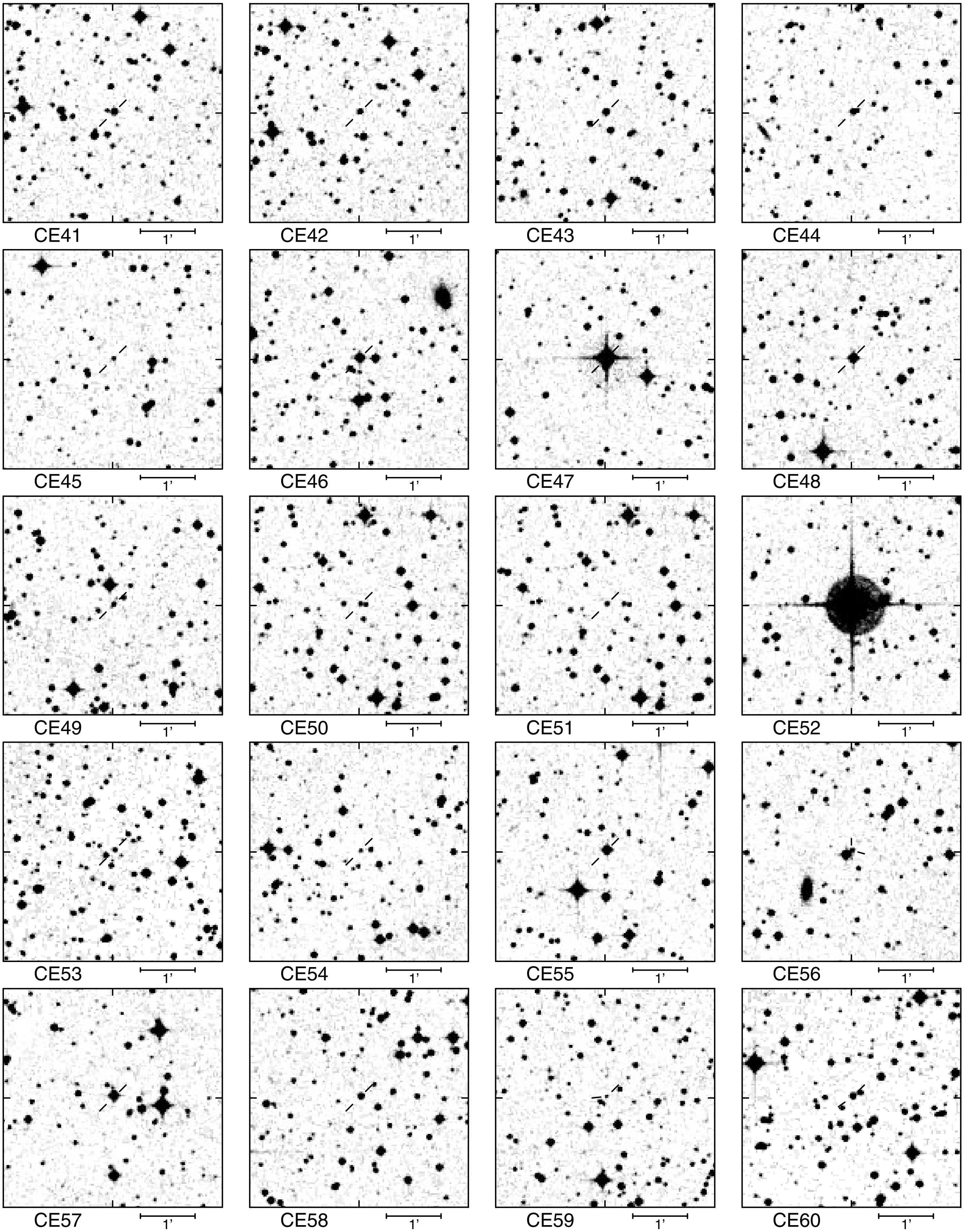


FIG. 11.—*Continued*

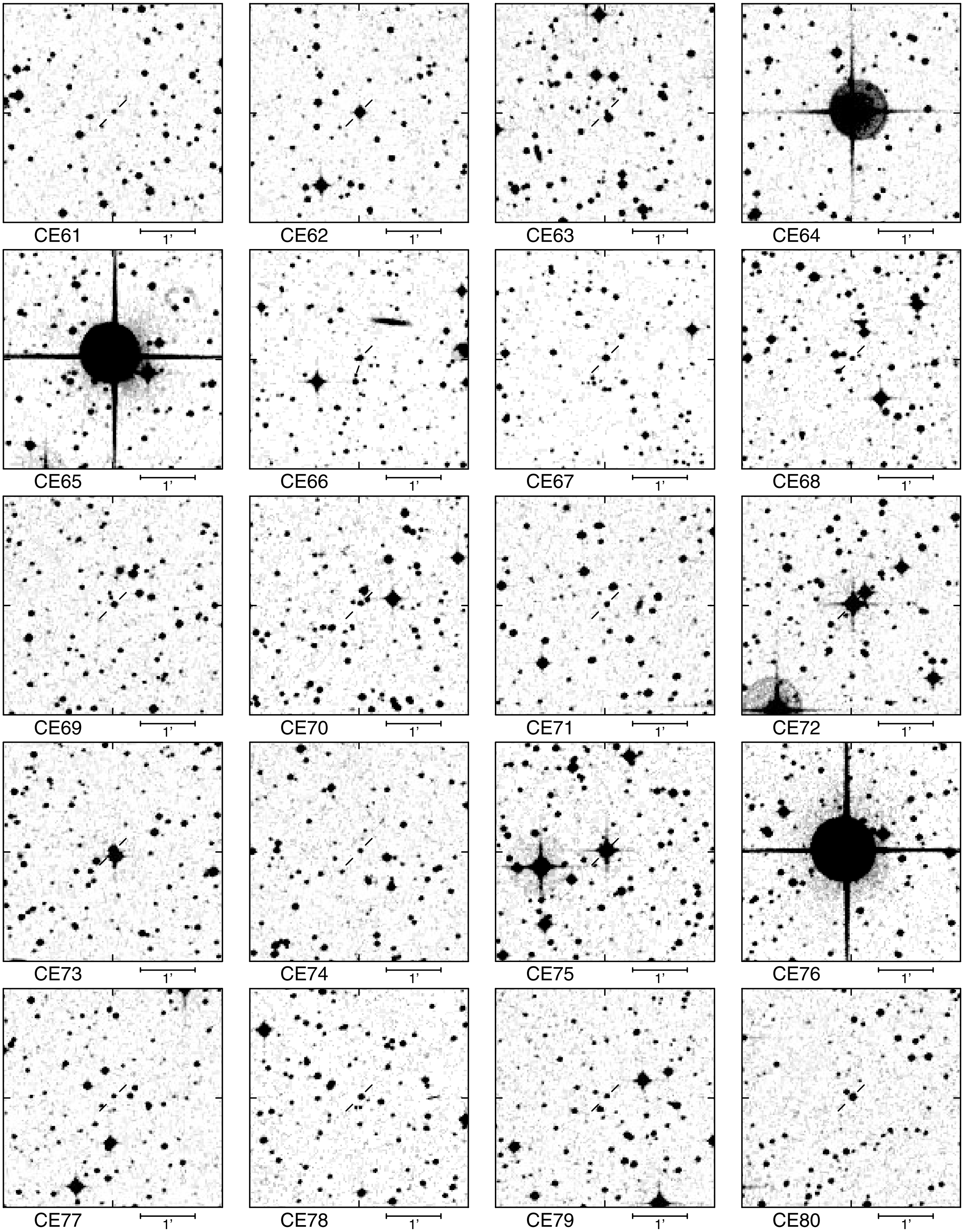


Fig. 11.—*Continued*

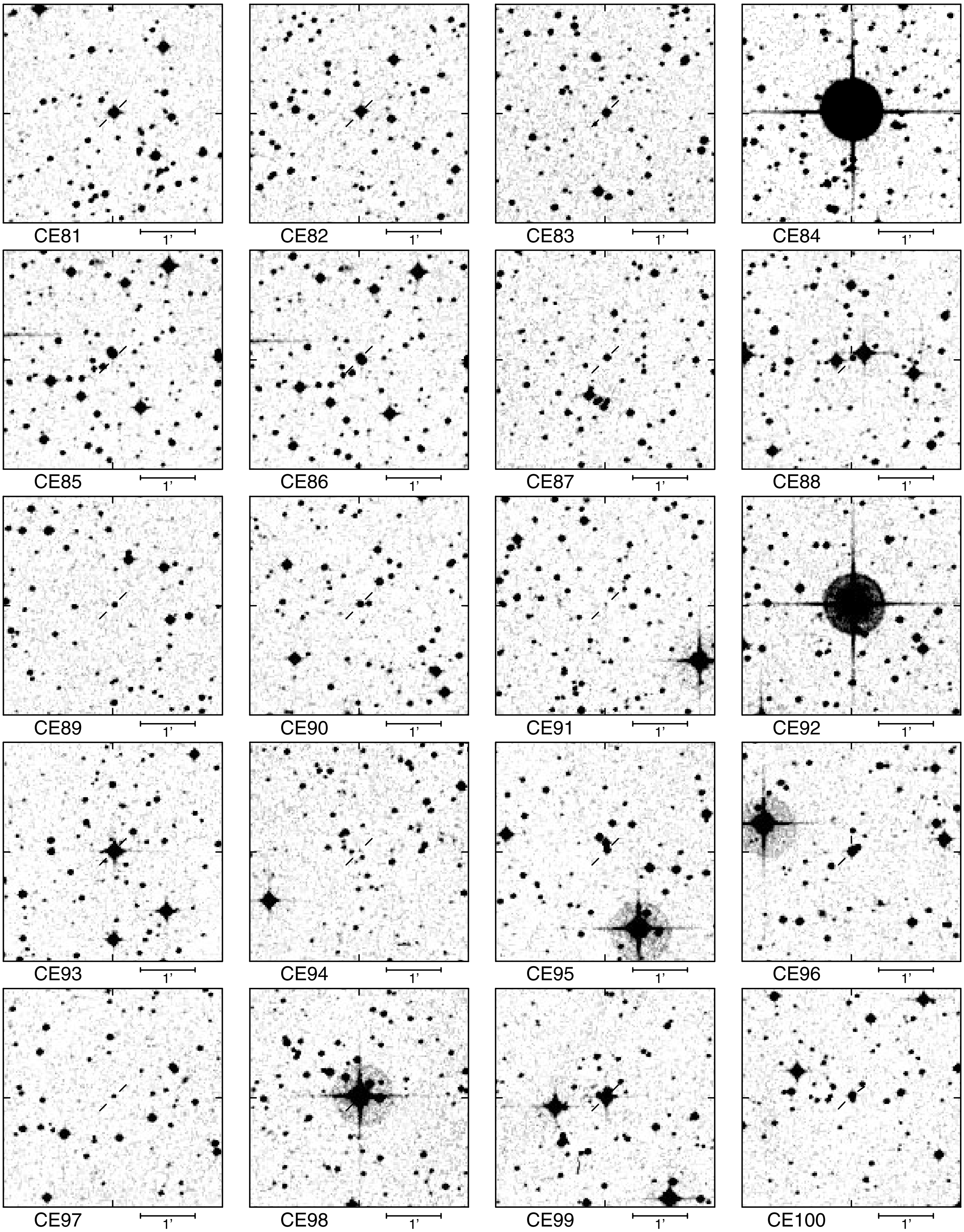


Fig. 11.—*Continued*

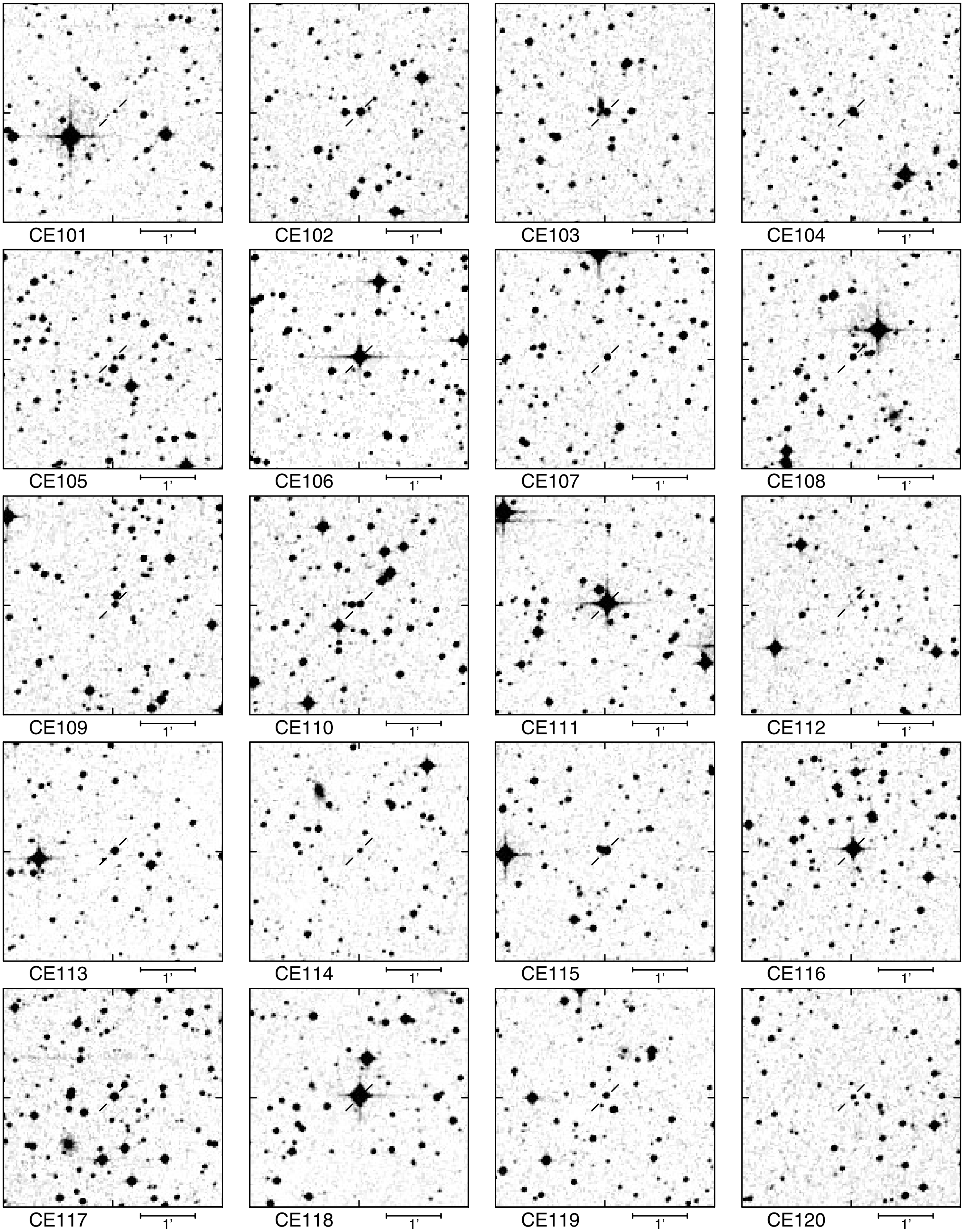


FIG. 11.—*Continued*

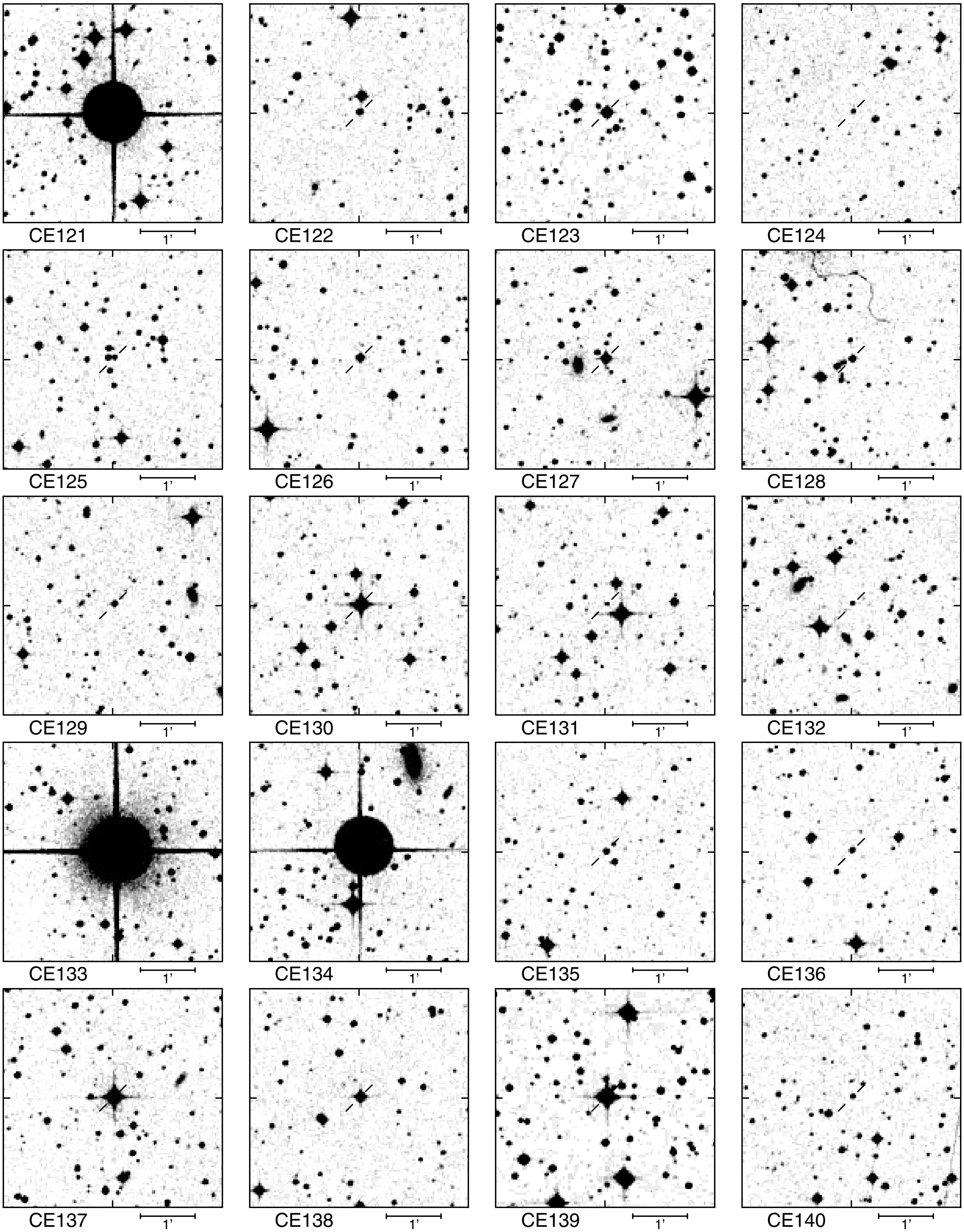
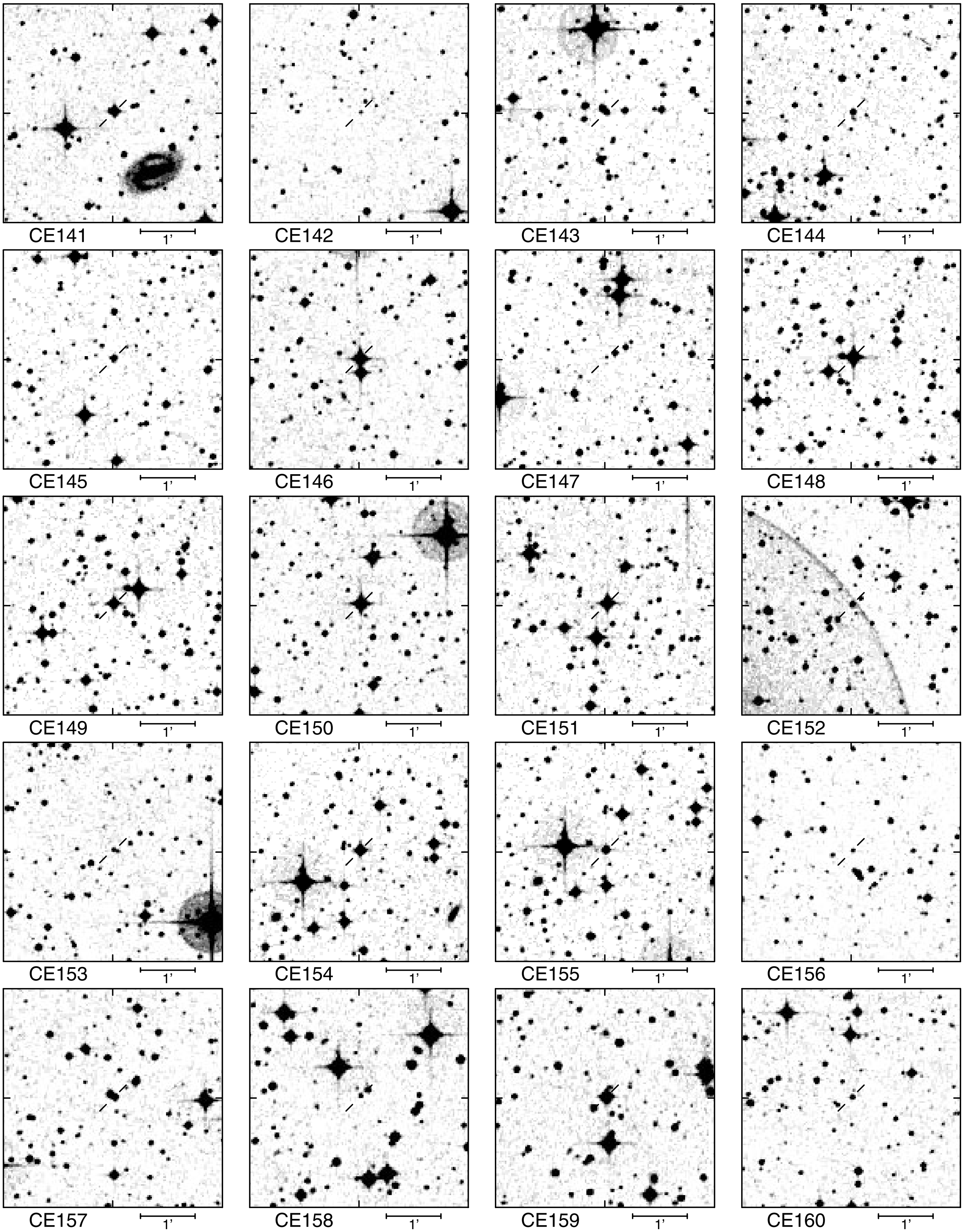


FIG. 11.—*Continued*



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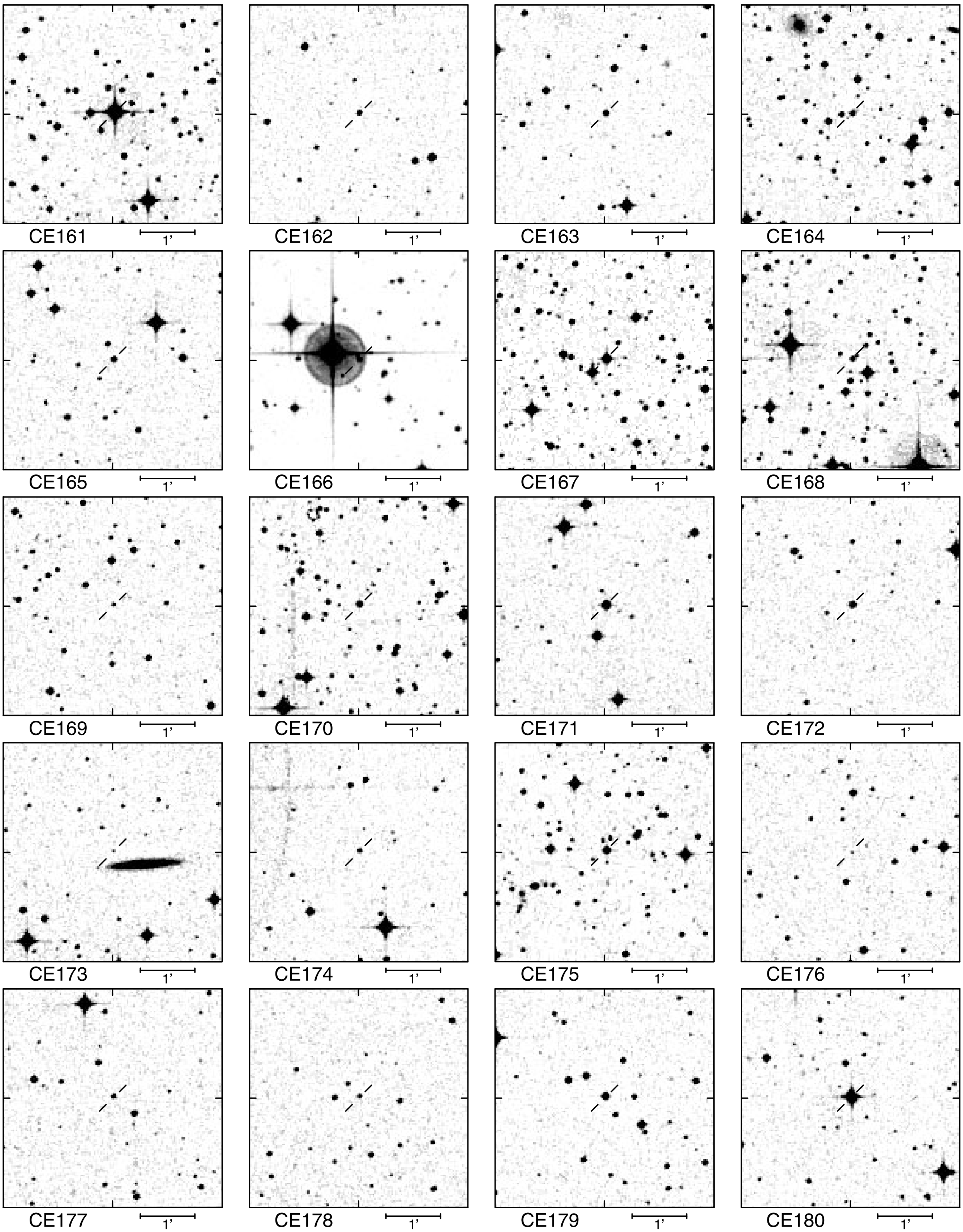

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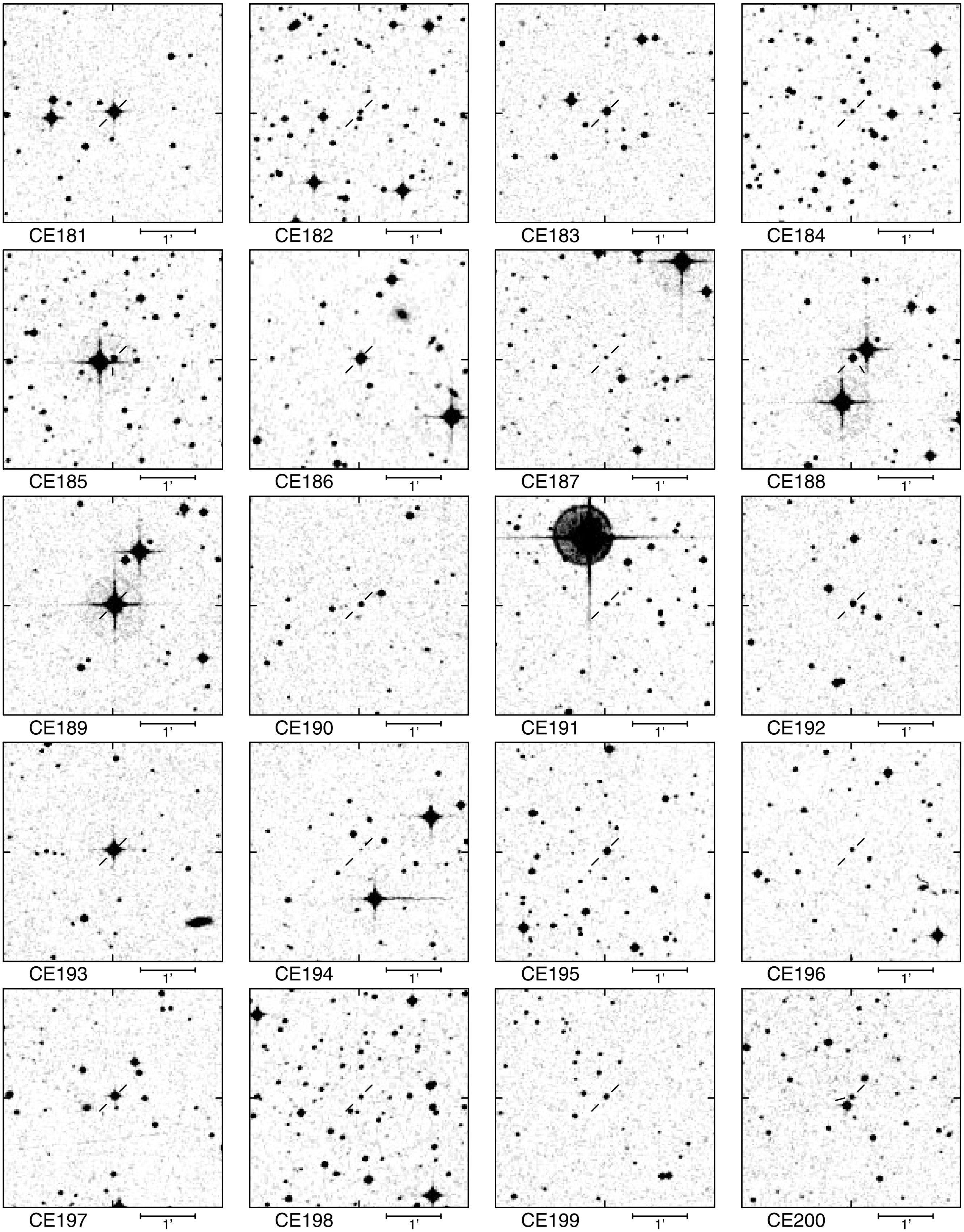

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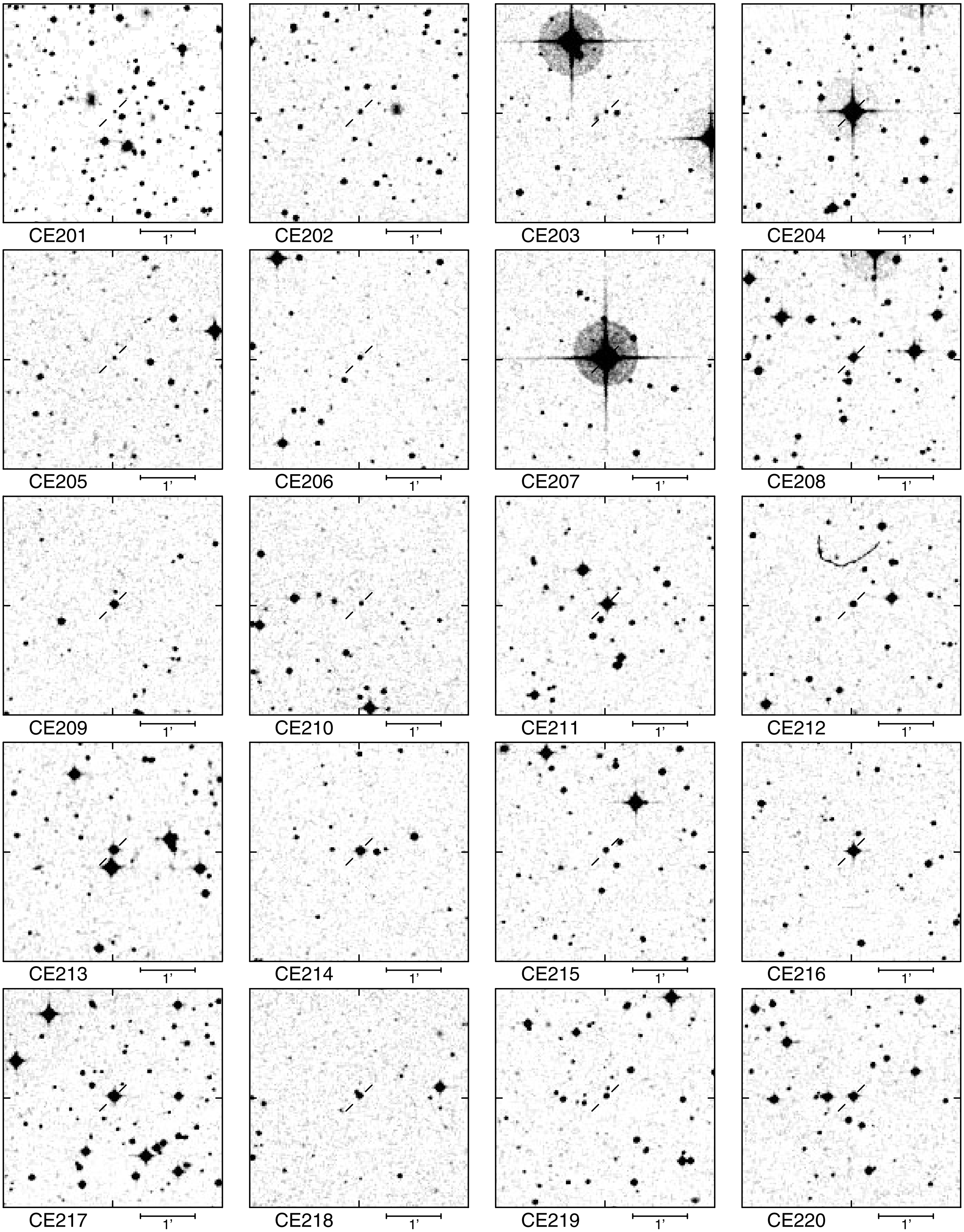

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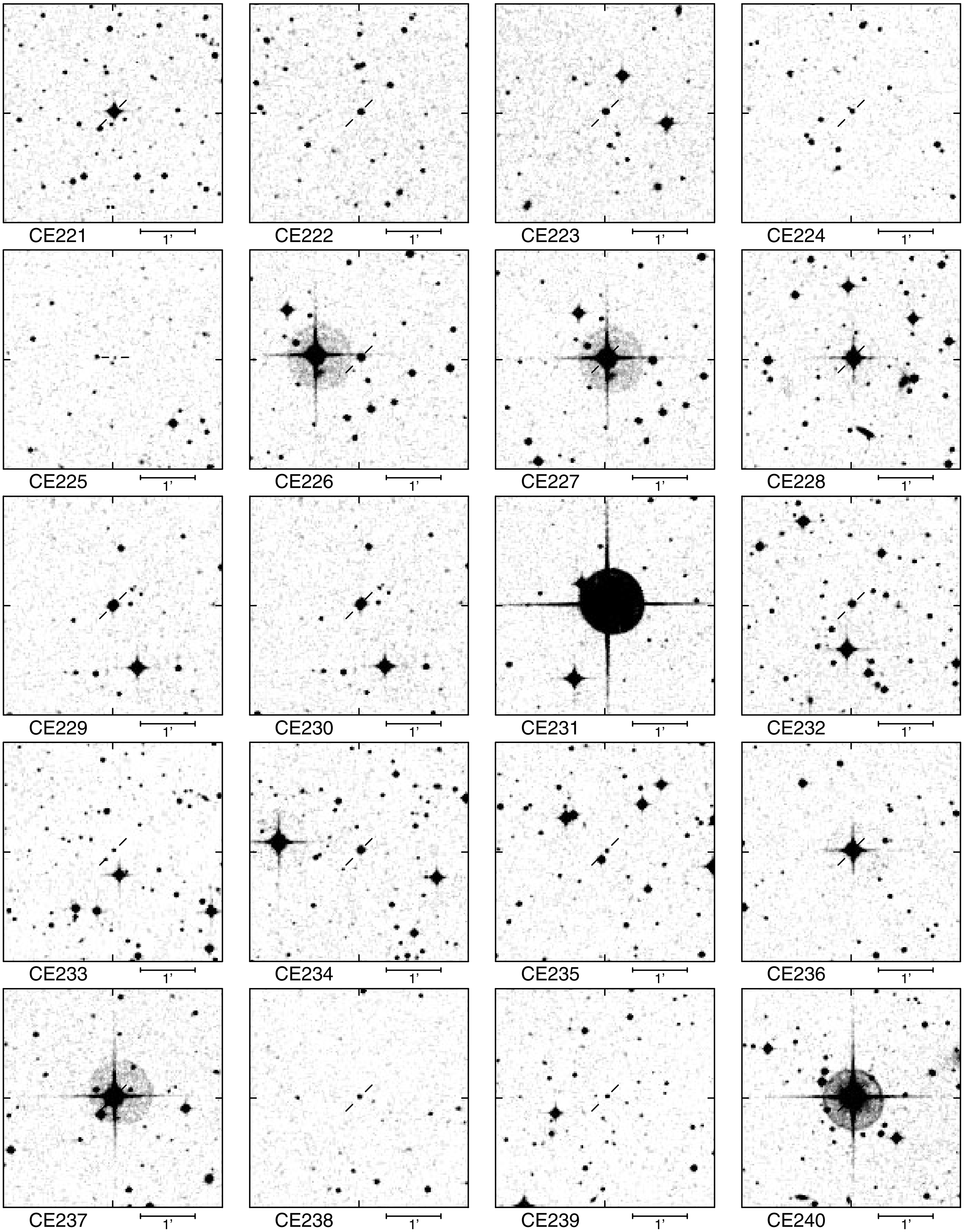

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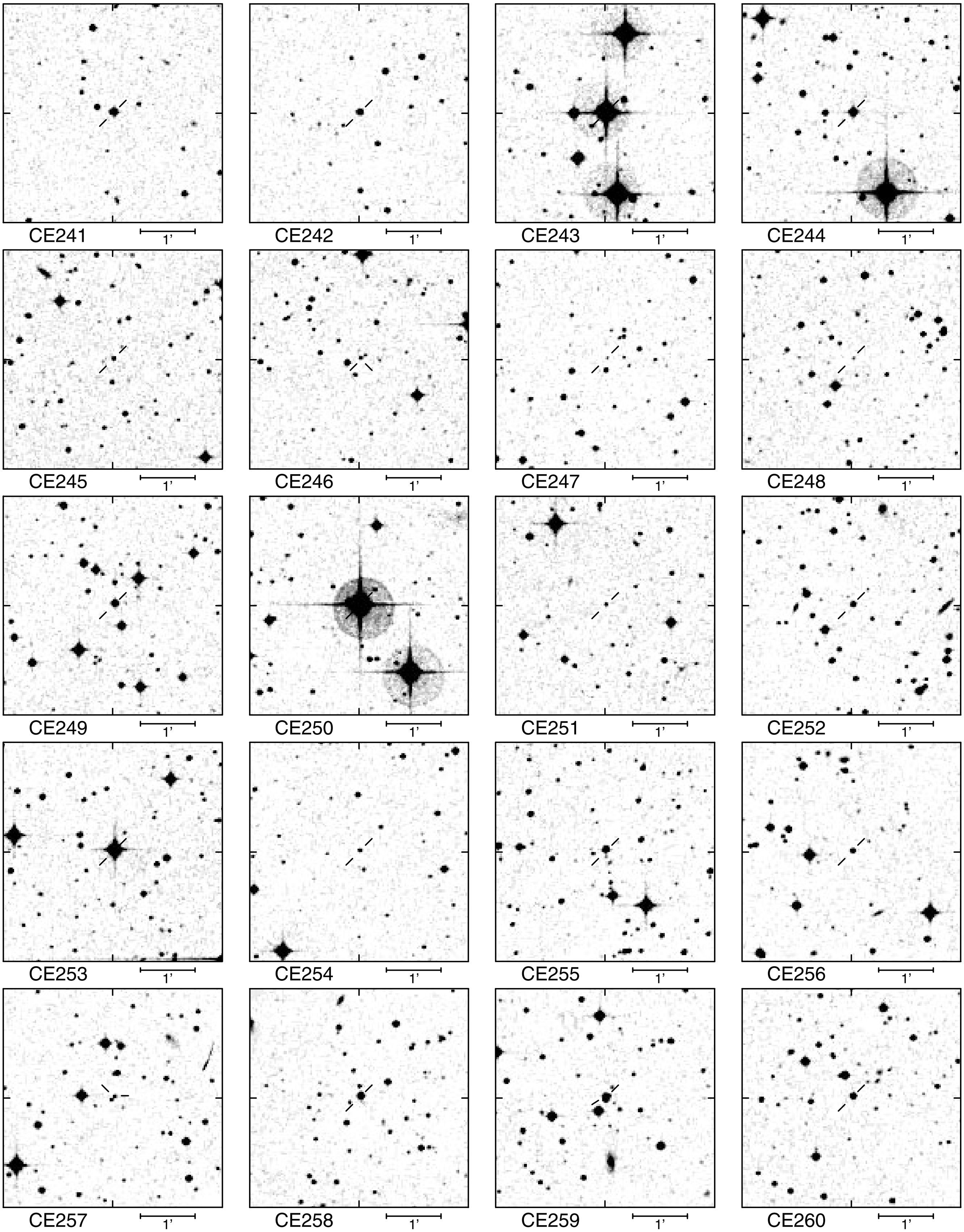

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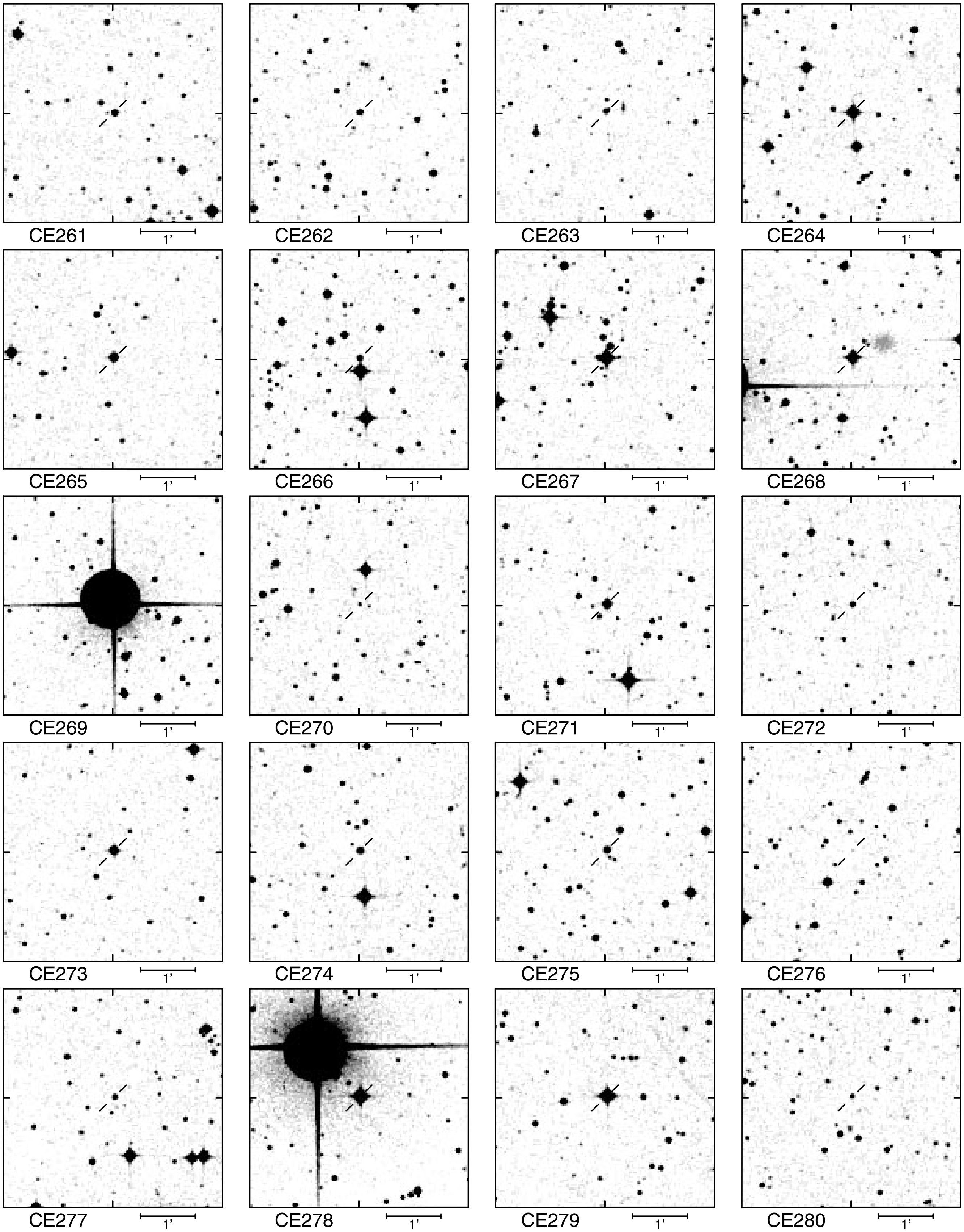

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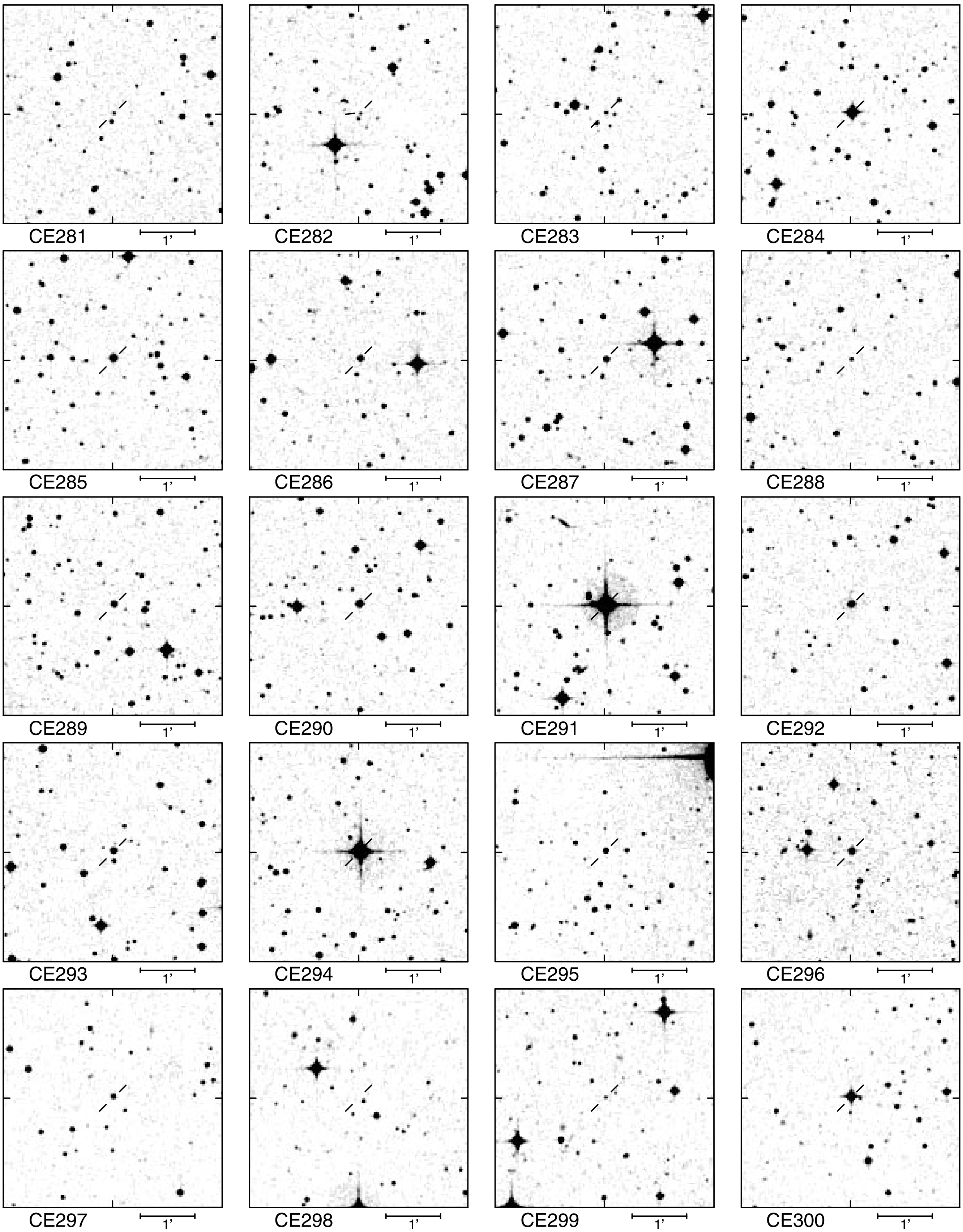

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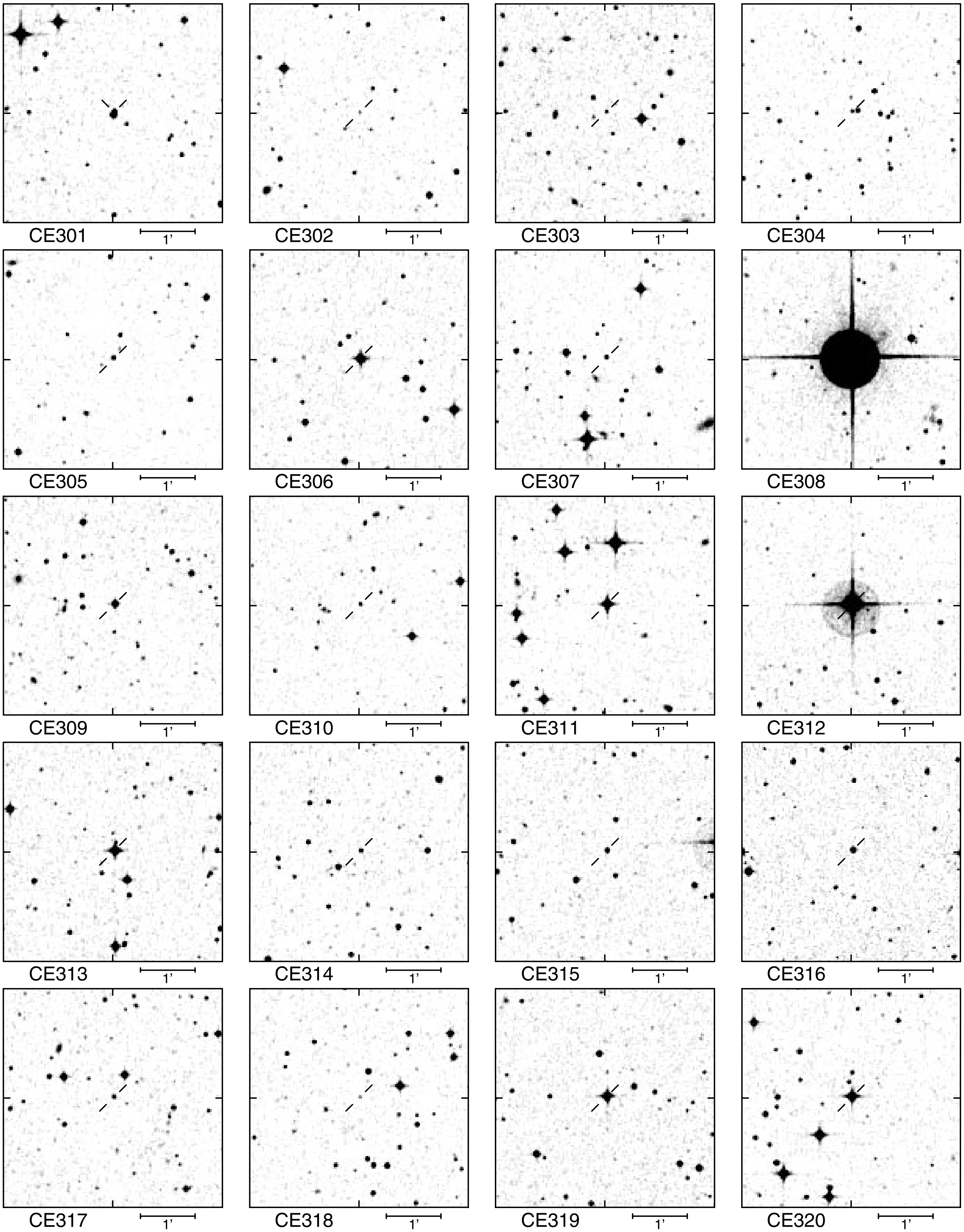

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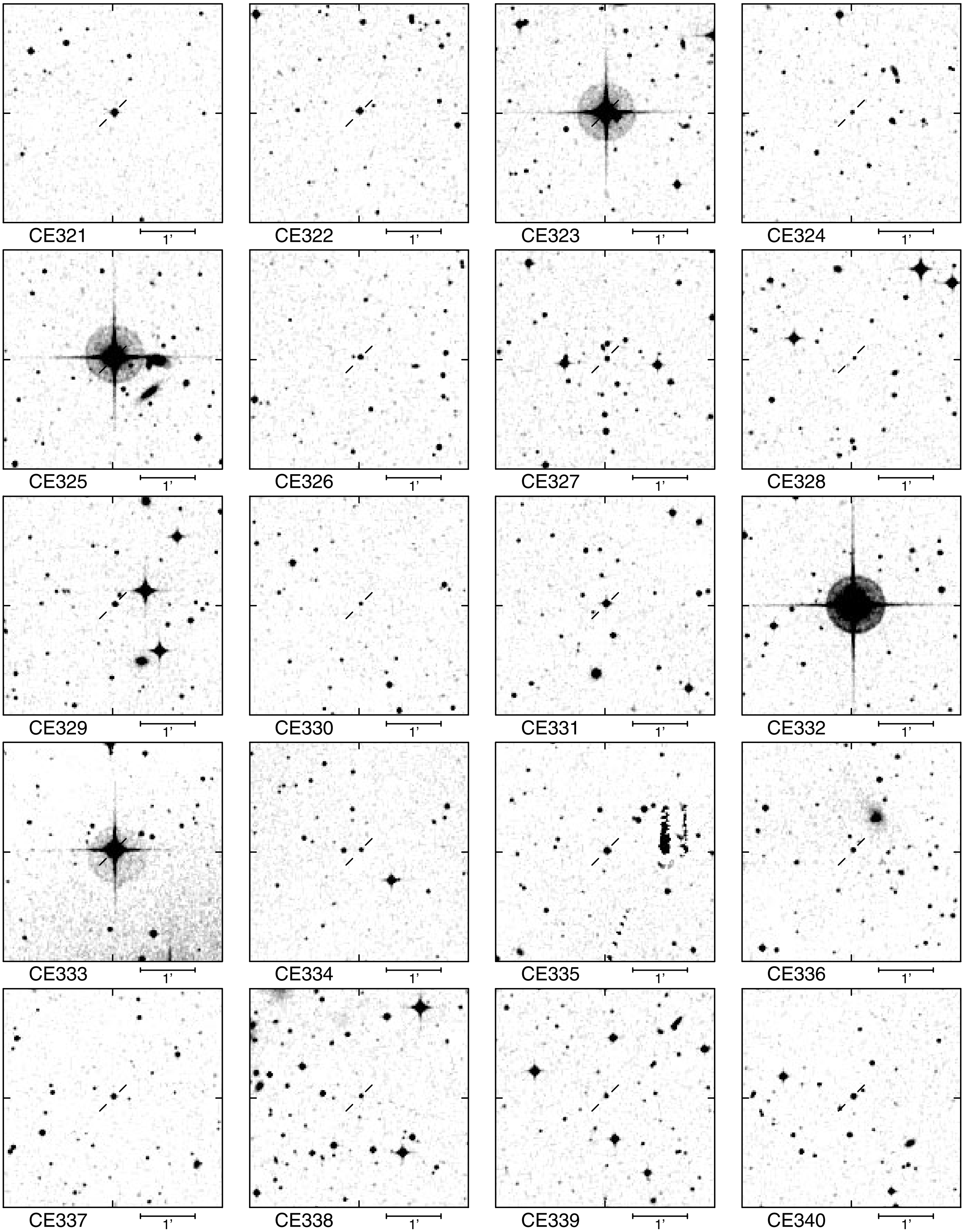

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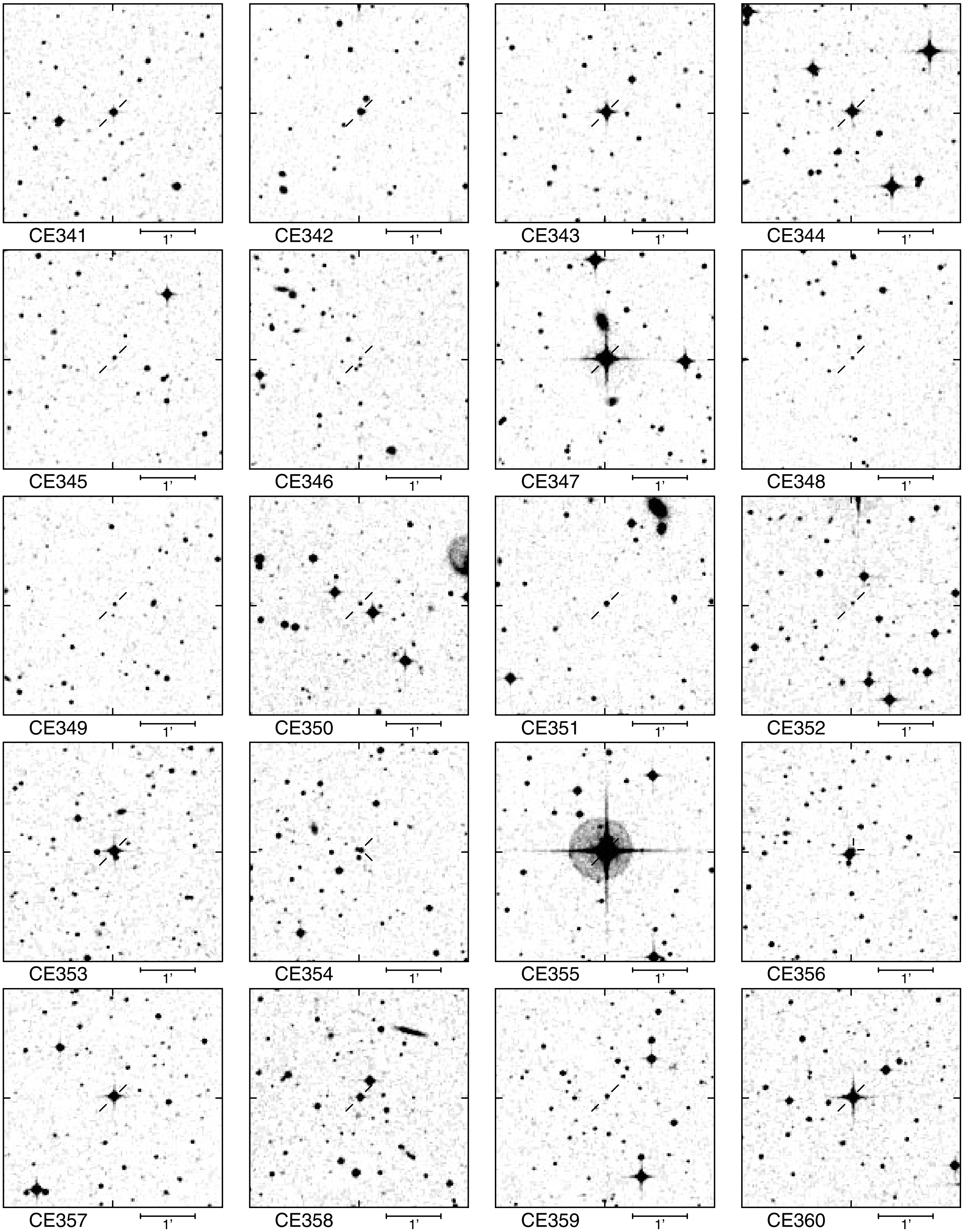

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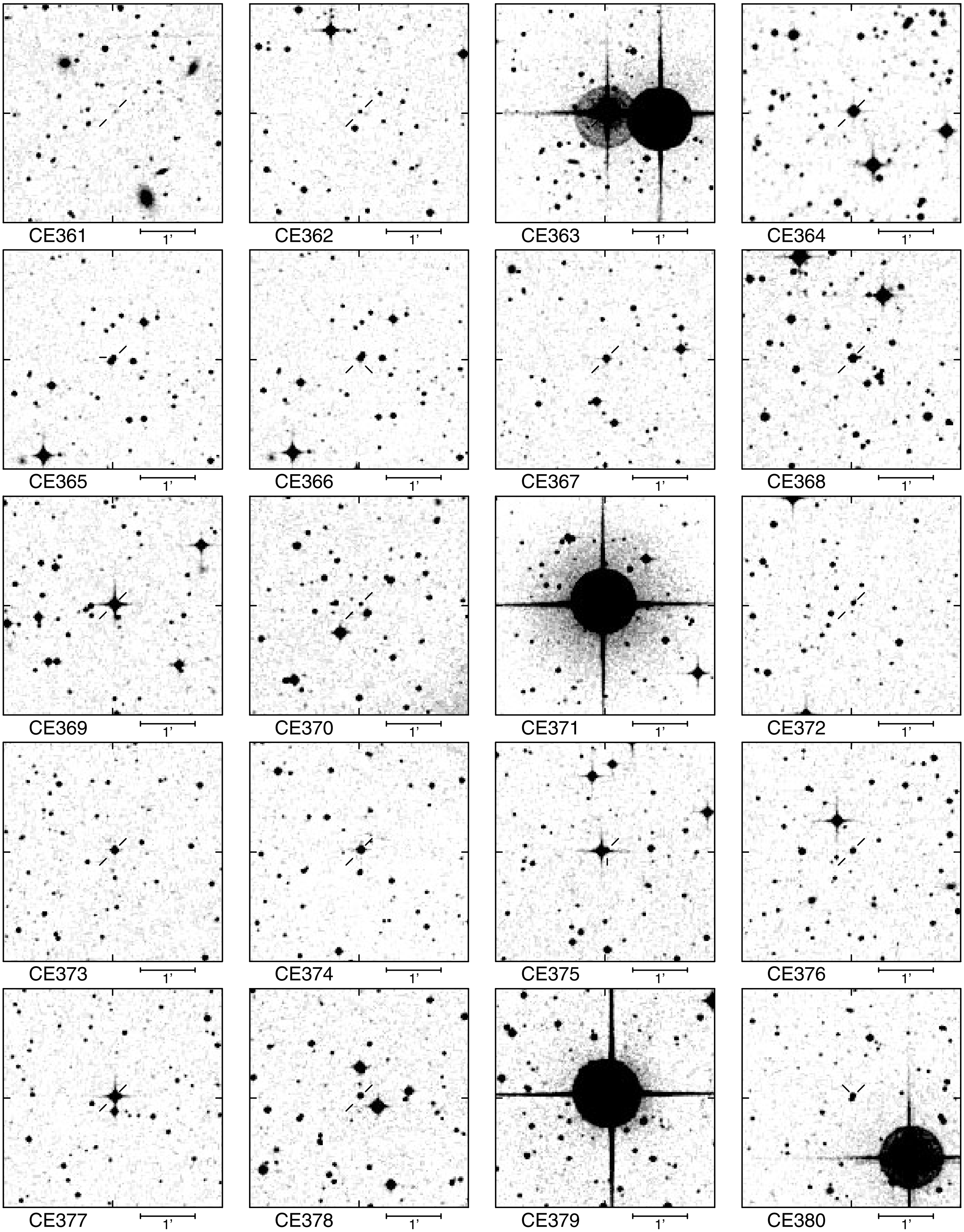

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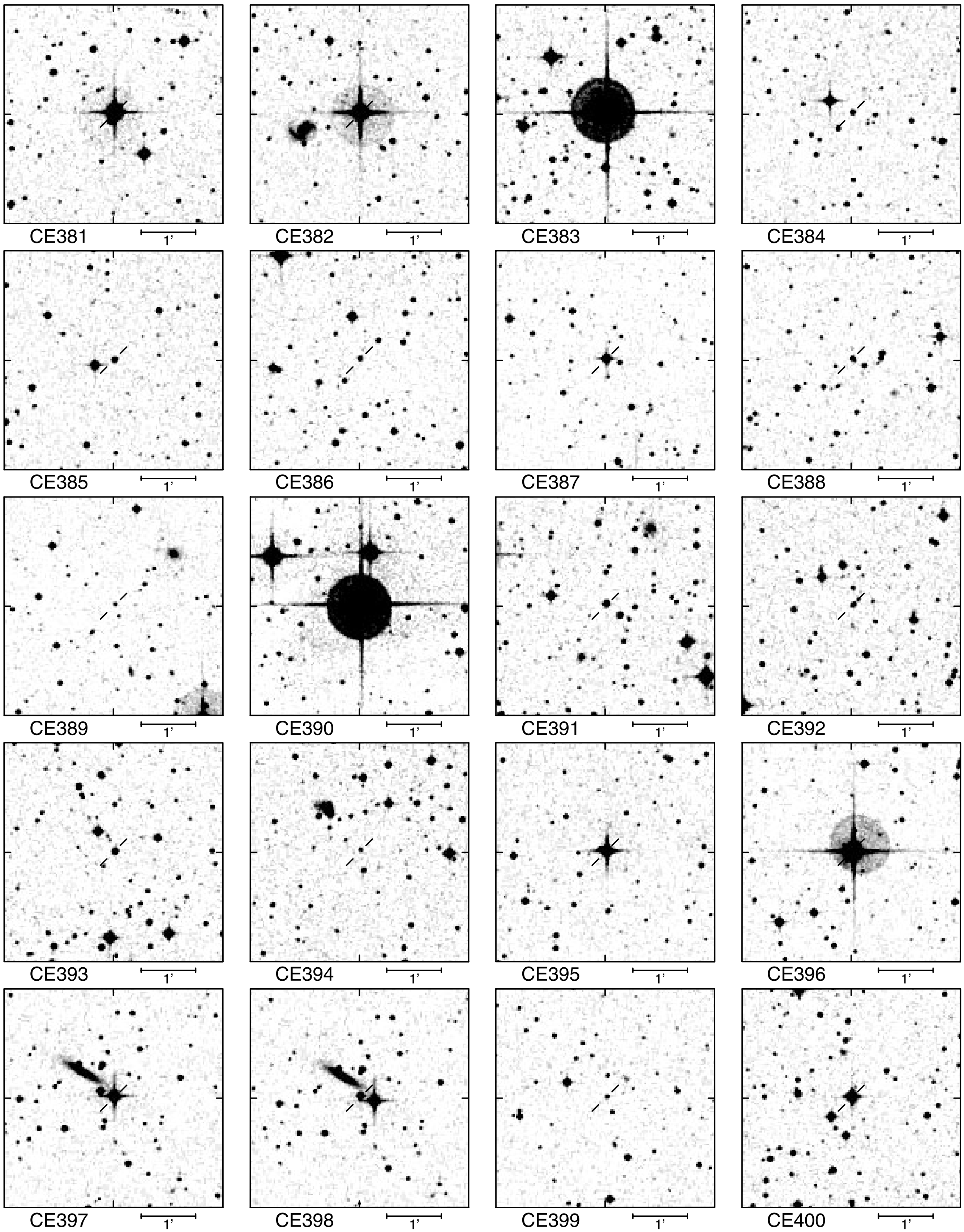

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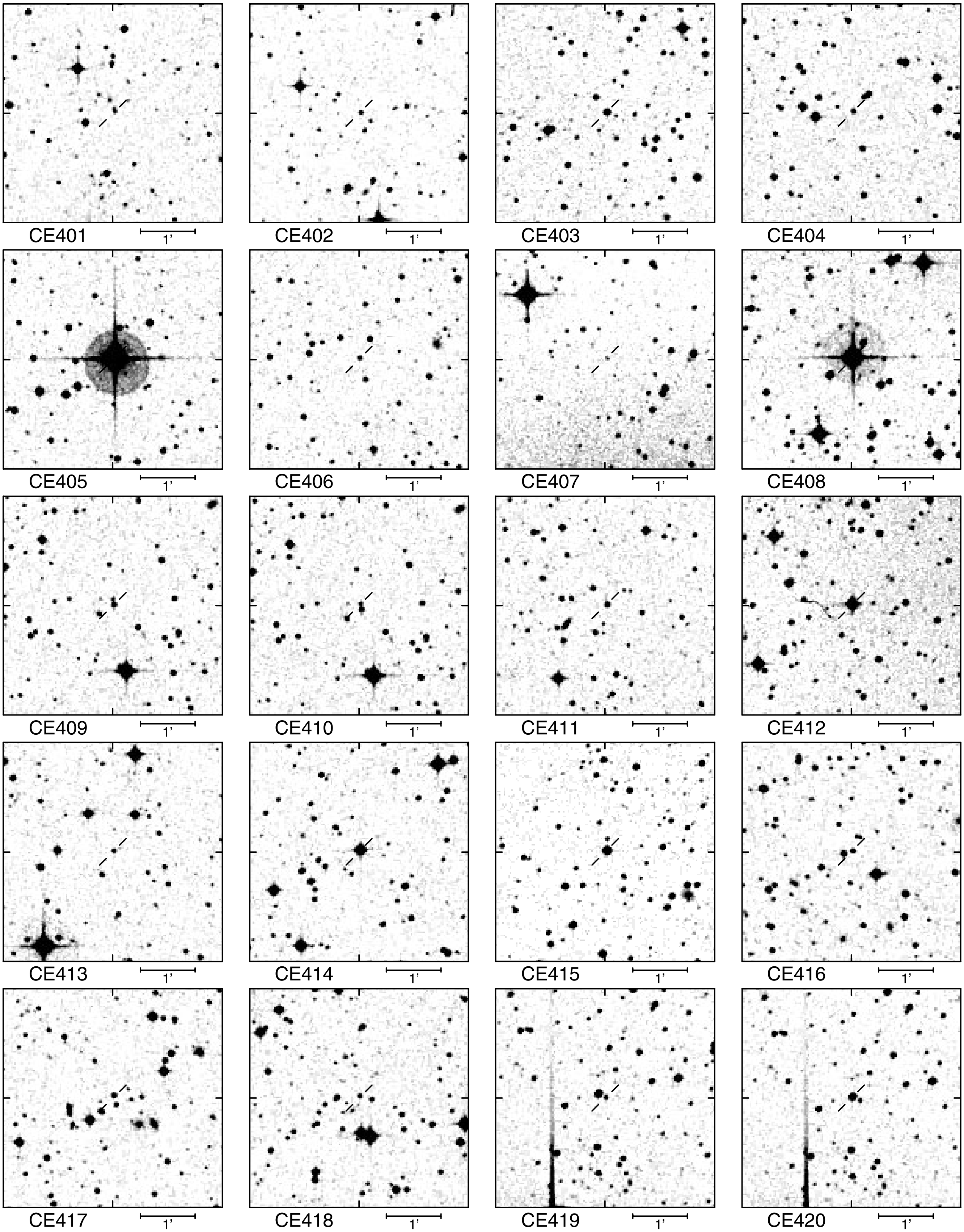

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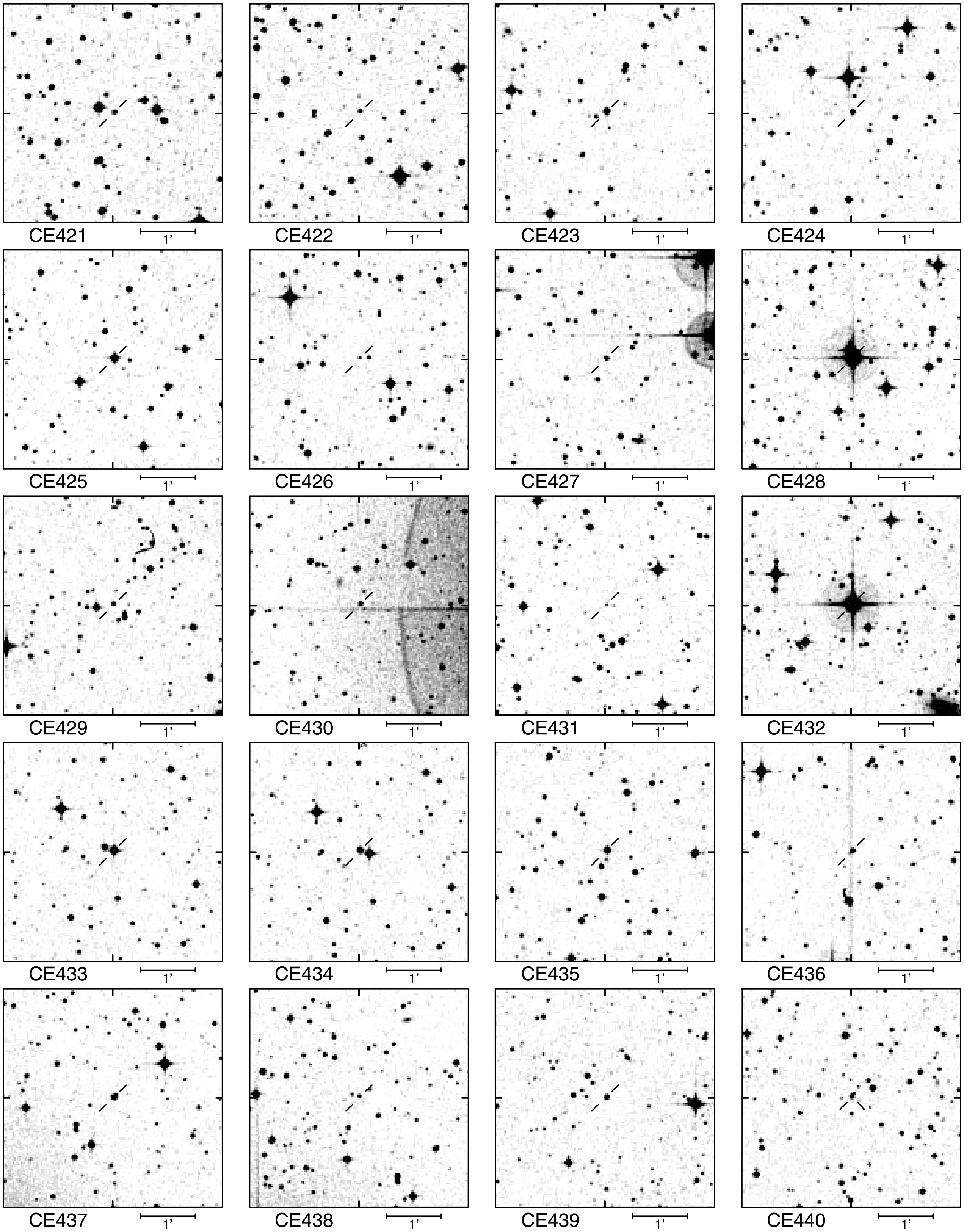

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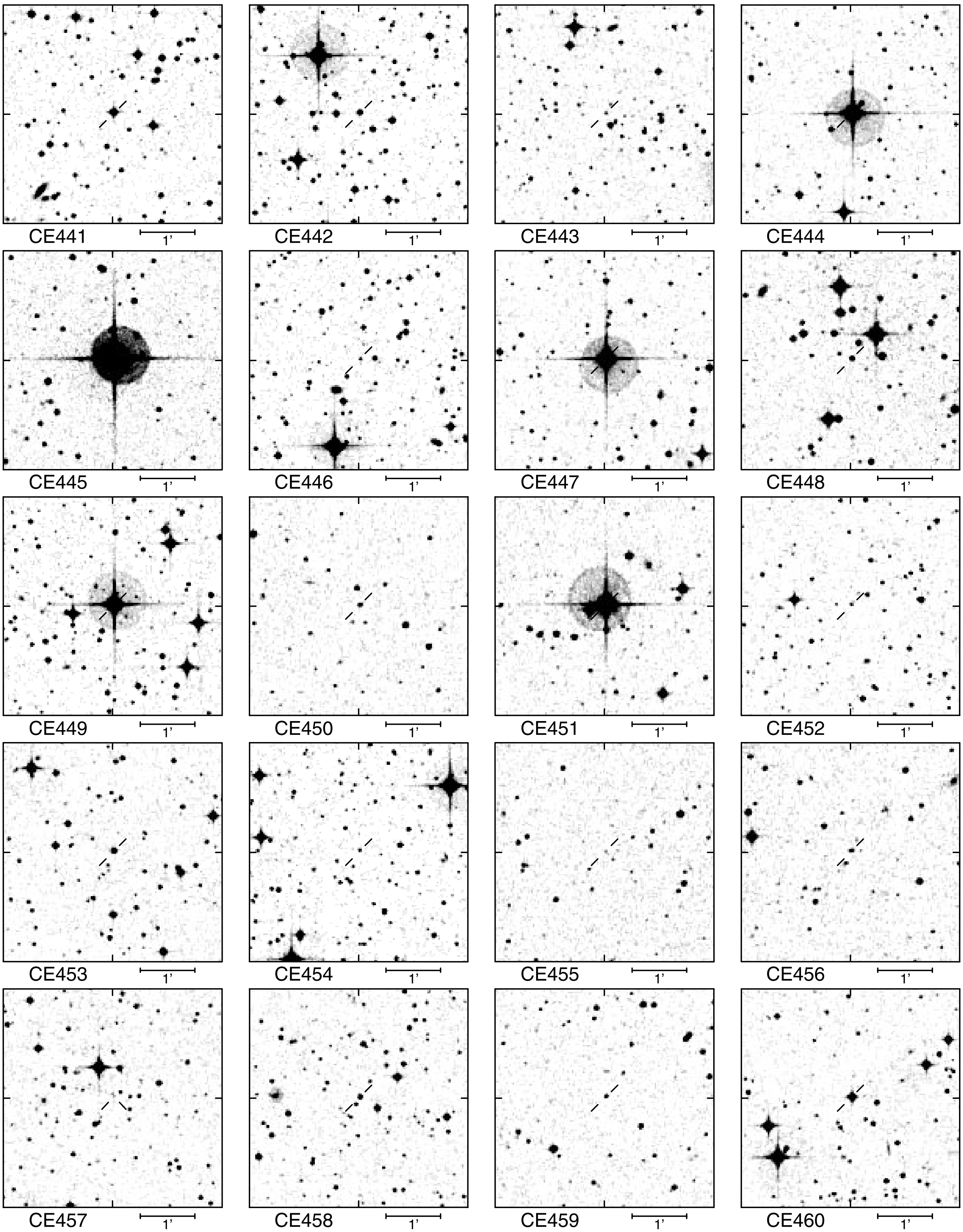

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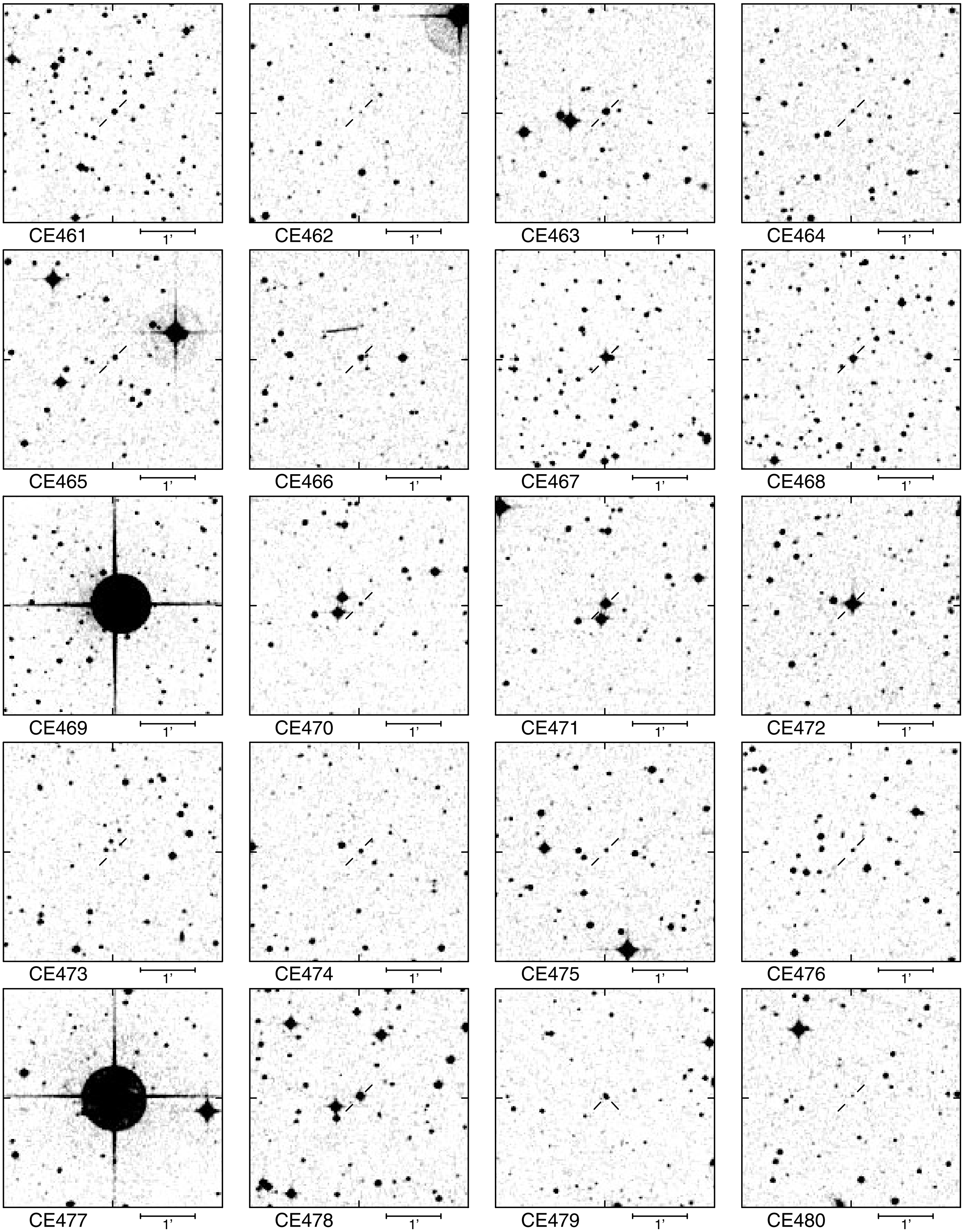

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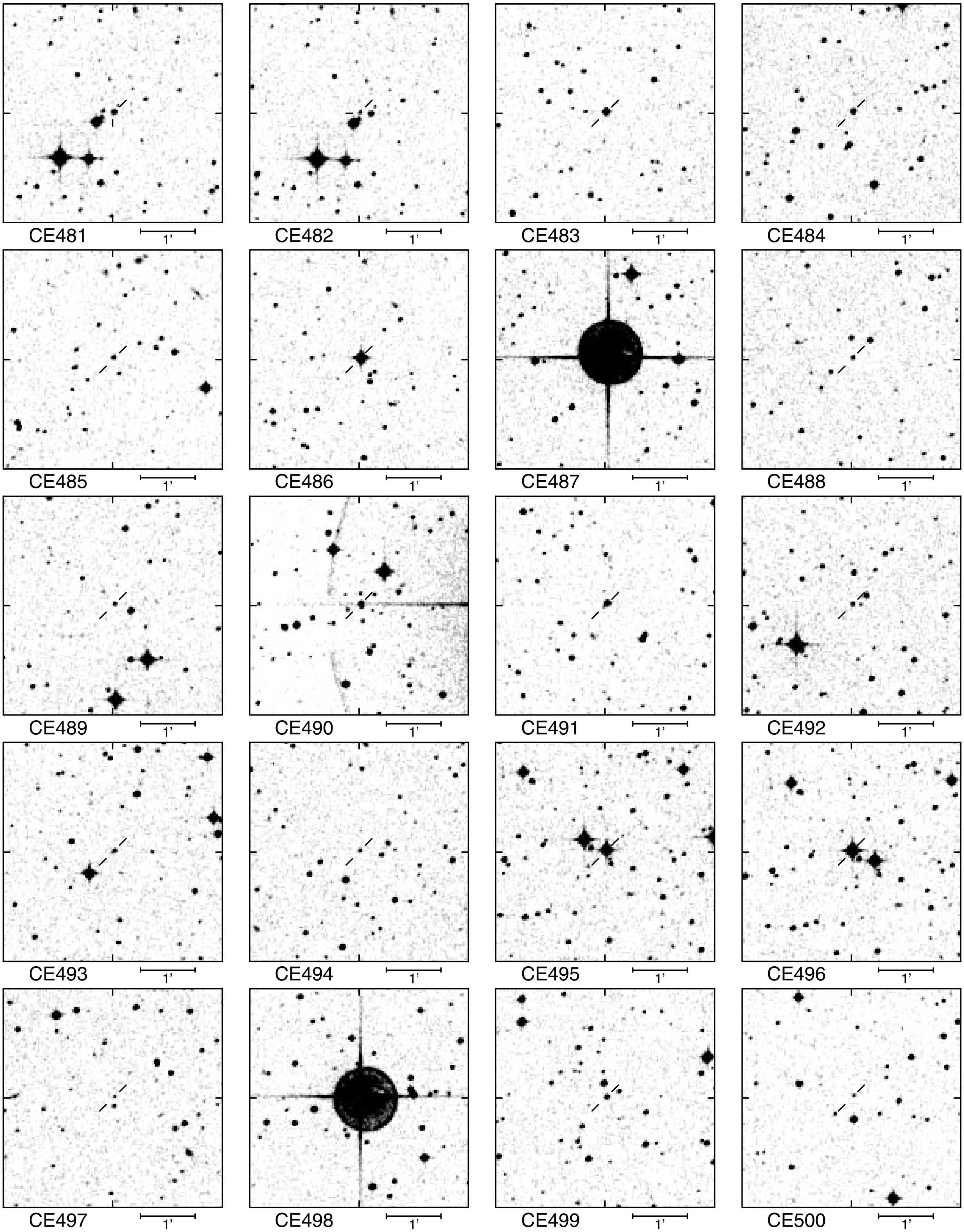

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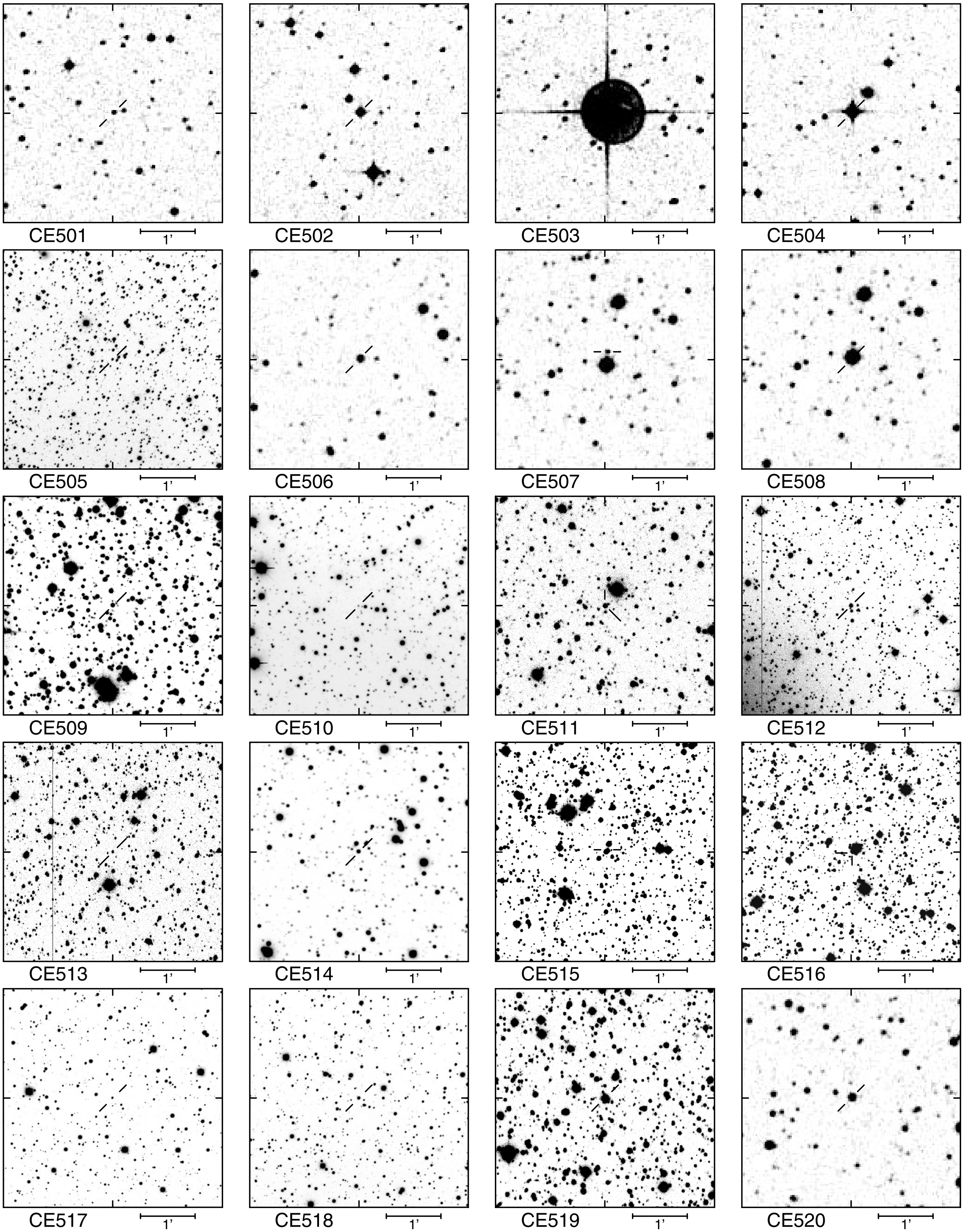

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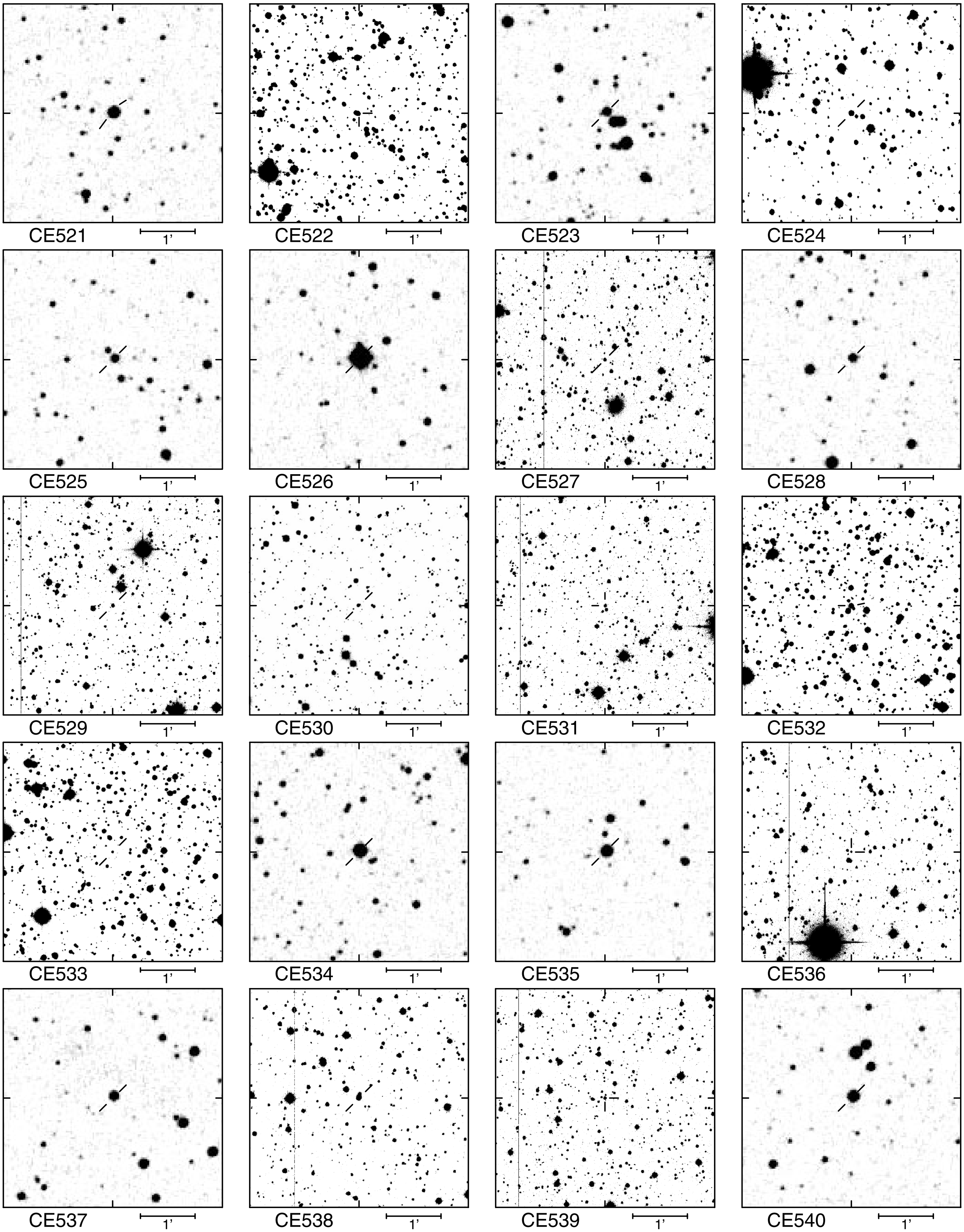

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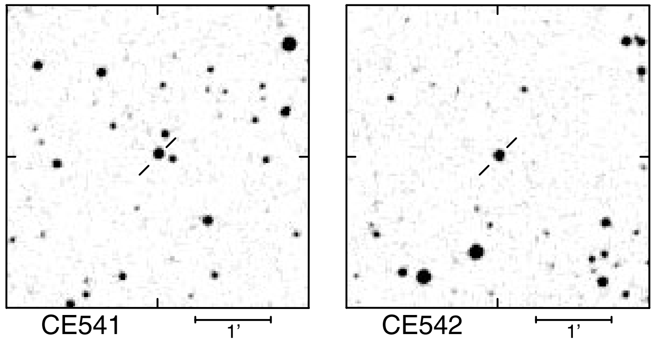

FIG. 11.—*Continued*

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