NEW AND MISCLASSIFIED PLANETARY NEBULAE

L. Kohoutek
Hamburg Observatory
Bergedorf, W. Germany

ABSTRACT: Since the "Catalogue of Galactic Planetary Nebulae" 226 new objects have been classified as planetary nebulae. They are summarized in Table 1 which gives the designations, names, coordinates and the references to the discovery. Further 9 new objects have been added to Table 1 and called 'proto-planetary nebulae', but their status is still uncertain. Only 34 objects have been included in the present list of misclassified planetary nebulae (Table 2) although the number of doubtful cases is much larger.

The very extensive investigation of planetary nebulae during the last ten years has motivated the project for the continuation of the "Catalogue of Galactic Planetary Nebulae" (Perek, Kohoutek, 1967). Before the Supplement to the CGPN can be prepared, it has been found useful to compile the following two lists in order to give a true picture of the present stage of the nomenclature of these objects.

(a) The list of "New planetary nebulae" (Table 1) contains 226 objects, the discovery of which has been published since 1966. (In some cases the announced discovery is in press.) The only exception, the nebula A 21 (205+14.1), was discovered in 1955; it was originally omitted from the CGPN but is included in the present list. Table 1 does not contain Wray's objects because they appeared only in his Thesis (1966). In order to duly credit his initial discovery, Wray's numbers are given in the "Remarks" for those nebulae, the discovery of which has been published by others in the meantime.

For the new objects the designations, names, coordinates and the references to the discovery are given. Similar to the CGPN the 'discovery' refers to the designation of the object as a planetary nebula. An uncertain classification (probable, possible, doubtful planetary nebula) is marked by an asterisk affixed to the galactic numbers.

A small group of eight objects called 'possible proto-planetary nebulae' was added to Table 1. It is believed that the status of a

Yervant Terzian (ed.), Planetary Nebulae, Observations and Theory, 47-62.
All Rights Reserved. Copyright©1978 *by the IAU.*

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

'regular' planetary nebula cannot be assigned for the present to these objects which may be in an early stage of evolution of a planetary nebula or even in a stage of a possible planetary nebula progenitor. Nevertheless, great attention should be paid to these very interesting objects and to the formation of planetary nebulae in general.

Only those references are given in the last column of the Appendix to Table 1, which concern the possible proto-planetary nature of the listed objects.

(b) The list of "Misclassified planetary nebulae" (Table 2) includes only a small fraction of all objects, which are known or suspected to be either emission-line stars of various types or nebulae with characteristics unlike those of the conventional planetary nebulae. The new classification of the given 34 objects as H II regions, reflection nebulae, early- or late-type stars seems to be more or less guaranteed; it is recommended to omit them from the CGPN. About 200 further objects are mostly of stellar appearance and classified as late-type stars, Be-like stars, symbiotic variables, Z Andromedae-like stars, objects having only H_α line in emission, very-low-excitation objects, objects with a peculiar spectrum or small H II regions. Their relationship to planetary nebulae is in many cases very questionable but not quite impossible. The main difficulty in classifying these objects consists in the lack of our knowledge about 'conventional' planetary nebulae in the early stage of their evolution.

Any contribution or comment on the lists of new and misclassified planetary nebulae as well as all ideas and classification criteria which could help to distinguish young planetary nebulae from emission-line objects would be very desirable and valuable for the preparation of the Supplement to the CGPN.

I would like to thank Dr. R. Weinberger who provided me with his own list of new and misclassified planetary nebulae.

REFERENCES

Perek L., Kohoutek L., 1967, Catalogue of Galactic Planetary Nebulae, Academia Praha.
Wray, J.D., 1966, Thesis, Northwestern University

Table 1 New Planetary Nebulae (1966-1977)

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
		h m	° ′			
108-76.1	BOBN 1	0 34.78	-13 58.7	F	Boeshaar, Bond 1977	
121 +3.1	WE 1-1	0 35.92	+66 07.2	F	Weinberger 1977	
125-47.1	PHL 932	0 57.32	+15 28	F	Arp, Scargle 1967	
126 +3.1	K 3-90	1 21.55	+65 23.0	F	Kohoutek 1972	
127 -1.1*	K 4-59	1 27.24	+60 15.9	F	Kohoutek 1972	

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
129 -2.1*	WE 2-5	1 39.25	+59 55		Weinberger 1977	
129 +4.1	K 3-91	1 54.79	+66 19.5	F	Kohoutek 1972	
130 +3.1	K 3-92	1 59.91	+64 43.2	F	Kohoutek 1972	
132 -0.1*	K 4-60	2 04.48	+60 31.8	F	Kohoutek 1972	
132 +4.1	K 3-93	2 22.49	+65 34.4	F	Kohoutek 1972	
255-59.1	LO 1	2 55.16	-44 22.3	F	Longmore 1977	R
142 +3.1	K 3-94	3 32.01	+59 53.8	F	Kohoutek 1972	
284-39.1	LO 2	4 03.32	-70 23.0	F	Longmore 1977	
151 +0.1	K 3-64	4 09.63	+51 43.4	F	Kohoutek 1969	
153 -1.1	K 3-65	4 12.21	+48 42.2	F	Kohoutek 1969	
149 +4.1*	K 4-47	4 16.68	+56 11.0	F	Kohoutek 1969	
167 -9.1	K 3-66	4 33.37	+33 33.4	F	Kohoutek 1969	
165 -6.1	K 3-67	4 36.46	+36 39.9	F	Kohoutek 1969	
160 -0.1	WE 1-2	4 43.12	+44 22.6	F	Weinberger 1977	
163 -0.1	WE 1-3	4 51.00	+42 11.8	F	Weinberger 1977	
178 -2.1	K 3-68	5 28.42	+28 56.5	F	Kohoutek 1969	
170 +4.1	K 3-69	5 37.90	+39 13.6	F	Kohoutek 1969	
184 +0.1	K 3-70	5 55.67	+25 18.5	F	Kohoutek 1969	
286-29.1	K 1-27	5 58.83	-75 40.5	F	Kohoutek 1977	
243-25.1*	K 2-12	6 00.40	-37 25.4	F	Kohoutek 1971	
197 -2.2*	KJ 1-1	6 10	+12 24	F	Kazaryan 1966	
184 +4.1	K 3-71	6 10.79	+26 53.8	F	Kohoutek 1969	
201 -4.1	WE 1-4	6 11.85	+7 35.5	F	Weinberger 1977	
204 -3.1	K 3-72	6 21.24	+5 31.8	F	Kohoutek 1969	
247-21.1*	K 2-13	6 23.84	-39 50.0	F	Kohoutek 1971	
201 +2.1*	K 4-48	6 37.15	+11 09.3	F	Kohoutek 1969	
216 -4.1	WE 1-5	6 39.11	-04 59.7	F	Weinberger 1977	
210 -0.2*	K 2-14	6 42.03	+1 22.1	F	Kohoutek 1971	
210 -0.1*	K 4-49	6 42.04	+1 22.7	F	Kohoutek 1969	
208 +1.1*	K 4-50	6 44.42	+4 40.6	F	Kohoutek 1969	
210 +3.1*	WE 2-34	6 57.82	+4 25		Weinberger 1977	
225 -2.1	SA 2-4	7 04.4	-11 41		Sanduleak 1975	
258-15.1	SKWL 3-2	7 13.39	-46 52.9		Stock, Wroblewski 1972	R
225 +0.1*	WE 2-37	7 13.77	-10 47.6		Weinberger 1977	
224 +1.1	WE 1-6	7 15.06	-10 05.2	F	Weinberger 1977	
247-10.1*	SA 3-4	7 16.41	-34 49.1		Sanduleak 1976	R
233 -0.1*	SA 3-5	7 26.04	-17 50.6		Sanduleak 1976	
205+14.1*	A 21	7 26.2	+13 21		Abell 1955	R
276-18.1*	ESO-089-05	7 50.10	-64 08.0		Holmberg,& al 1977	R
259 -9.2*	Y-C 1	7 50.94	-45 43.2		Cesco, Gibson 1973	
252 -4.1	SA 2-18	7 51.13	-36 36.0		Sanduleak 1975	
259 -9.1*	Y-C 2	7 51.20	-45 04.2		Cesco, Gibson 1973	

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
259 -7.1*	Y-C 3	7 57.91	-44 35.7		Cesco, Gibson 1973	
251 -1.1	K 1-21	8 02.33	-34 07.5	F	Kohoutek 1971	
238 +7.2	SA 2-21	8 06.5	-19 05		Sanduleak 1975	R
246 +2.1*	SA 3-6	8 06.52	-27 32.4		Sanduleak 1976	R
238 +7.1*	Y-C 4	8 06.99	-18 32.9		Cesco, Gibson 1973	
240 +7.1	Y-C 5	8 08.48	-20 22.6		Cesco, Gibson 1973	R
254 +0.1*	NS 238	8 19.0	-36 03	F	Nordstroem 1975	
261 -4.1	SA 2-25	8 19.40	-44 14.2		Sanduleak 1975	R
257 +0.1	VBRC 1	8 29.06	-38 09.7	F	Van Den Bergh,&al 1973	R
255 +3.1	SA 2-28	8 34.32	-35 05.4		Sanduleak 1975	R
256 +3.1	SA 2-30	8 39.22	-35 51.9		Sanduleak 1975	R
267 -3.1*	SA 3-7	8 41.89	-48 43.9		Sanduleak 1976	R
263 +0.1*	K 2-15	8 46.85	-42 42.6	F	Kohoutek 1971	
277 -7.1*	ESO-126-01	9 11.28	-58 38.1		Holmberg,& al 1977	R
274 -0.1*	ESO-212-08	9 29.70	-51 54.0		Holmberg,&al 1977	
277 -3.2	VBRC 2	9 29.90	-56 04.4	F	Van Den Bergh,&al 1973	R
279 -3.2	VBRC 3	9 39.31	-56 44.4	F	Van Den Bergh,&al 1973	R
280 -2.2*	ESO-167-10	9 51.35	-57 11.3		Holmberg,&al 1974	
285 -7.1*	ESO-092-02	9 58.08	-64 29.4		Holmberg,&al 1975	R
284 -5.1	SP 1-1	10 00.51	-61 42.8		Stephenson 1974	R
274 +9.1	LO 4	10 03.73	-44 04.2	F	Longmore 1977	
289-11.1*	Y-C 6	10 04.70	-69 46.5		Cesco, Gibson 1973	
280 +2.1	SM 1	10 10.10	-52 24.3	F	Stenholm 1975	R
270+24.1	K 1-28	10 32.18	-28 55.7	F	Kohoutek 1977	
283+12.1*	ESO-264-53	10 55.03	-45 54.4		Holmberg,& al 1977	R
288 +0.2*	ESO-128-25	10 57.60	-58 45.0		Holmberg,&al 1975	R
295-13.1*	ESO-038-07	11 01.18	-74 37.1		Holmberg,&al 1975	R
285+11.1*	Y-C 7	11 06.87	-47 46.7		Cesco, Gibson 1973	
286+10.1*	Y-C 8	11 08.30	-48 49.9		Cesco, Gibson 1973	
292 -3.1*	SP 2-14	11 08.45	-63 26.9		Stephenson 1976	R
286+11.1	LO 5	11 11.53	-47 49.2	F	Longmore 1977	
287+10.1*	Y-C 9	11 14.76	-48 55.7		Cesco, Gibson 1973	
288 +8.1*	ESO-216-02	11 15.87	-51 53.7		Holmberg,&al 1977	R
283+25.1	K 1-22	11 24.28	-34 05.7	F	Kohoutek 1971	R
290 +9.1*	Y-C 12	11 27.57	-50 58.9		Cesco, Gibson 1973	
289+10.1*	Y-C 13	11 29.05	-49 42.1		Cesco, Gibson 1973	
293+10.1	BLDZ 1	11 50.55	-50 34	F	Blaauw,& al 1975	
294+14.1	LO 6	11 58.17	-47 16.5	F	Longmore 1977	
300 -2.2*	SA 3-20	12 25.78	-65 02.7		Sanduleak 1976	R
300 -3.1*	ESO-095-12	12 27.53	-65 57.8		Holmberg,&al 1977	
299+18.1	K 1-23	12 28.18	-43 57.8	F	Kohoutek 1971	R
302 -5.1*	Y-C 14	12 40.29	-67 56.3		Cesco, Gibson 1973	

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
302 +2.1*	ESO-131-15	12 42.98	-60 03.8		Holmberg, & al 1975	R
302 -0.2	VBRC 4	12 45.50	-63 33.6	F	Van Den Bergh,&al 1973	R
304 +5.2*	ESO-173-01	12 57.68	-56 37.5		Holmberg,& al 1975	R
305 +3.1*	SP 2-22	13 11.37	-58 35.9		Stephenson 1976	R
305 -3.1	SA 2-91	13 16.11	-65 53.4		Sanduleak 1975	R
307 +5.1	SA 2-93	13 21.19	-57 15.7		Sanduleak 1975	R
310+24.1	LO 8	13 22.75	-37 20.7	F	Longmore 1977	R
305-13.1	ESO-040-11	13 29.98	-75 31.1		Holmberg,& al 1977	R
309 +6.1*	SM 2	13 35.70	-55 51.8	F	Stenholm 1975	
308 -1.1*	ESO-097-03	13 37.55	-64 00.5		Holmberg,& al 1975	R
309 +1.1	VBRC 5	13 40.57	-60 34.6	F	Van Den Bergh,&al 1973	R
310 +2.1*	SM 3	13 50.00	-58 42.9	F	Stenholm 1975	
311 +2.2	SUWT 2	13 52.3	-59 08	F	Schuster, West 1976	R
317+19.1	SKWL 4-9	14 00.25	-41 08.9		Stock, Wroblewski,1972	R
311 -6.1*	SA 3-25	14 14.93	-67 15.4		Sanduleak 1976	R
322+14.1	K 1-24	14 35.03	-44 00.0	F	Kohoutek 1971	R
317 +3.1	VBRC 6	14 37.97	-56 02.3	F	Van Den Bergh,&al 1973	R
333+32.1*	Y-C 16	14 42.07	-23 35.0		Cesco, Gibson 1973	
315 -4.1	SA 2-108	14 48.51	-63 50.0		Sanduleak 1975	R
324 +9.1*	ESO-223-10	14 58.23	-48 09.2		Holmberg,&al 1977	
320 +0.1	SA 2-110	15 01.49	-57 20.0		Sanduleak 1975	R
318 -2.3	SA 2-111	15 01.55	-60 37.2		Sanduleak 1975	R
318 -3.1*	ESO-135-04	15 04.65	-61 32.6		Holmberg,&al 1974	R
339+29.1*	Y-C 17	15 05.44	-23 03.4		Cesco, Gibson 1973	
319 -4.1*	ESO-135-09	15 23.22	-62 20.7		Holmberg,&al 1974	R
330 +5.1	LO 9	15 38.66	-47 31.2	F	Longmore 1977	R
328 +1.1	LO 10	15 45.77	-52 21.4	F	Longmore 1977	
330 +4.2	SA 2-125	15 47.71	-48 17.1		Sanduleak 1975	R
335 +9.1	ESO-330-02	15 49.80	-41 41.6		Holmberg,&al 1977	R
331 +3.1	SA 2-128	15 49.84	-48 34.5		Sanduleak 1975	R
329 +1.1	VBRC 7	15 51.08	-51 13.7	F	Van Den Bergh,&al 1973	
342+15.1*	Y-C 19	15 55.62	-31 51.8		Cesco, Gibson 1973	
321 -9.1*	ESO-100-07	15 56.72	-64 39.5		Holmberg,&al 1975	R
332 +3.1*	SA 3-32	15 56.73	-48 07.1		Sanduleak 1976	R
336 +8.1	SKWL 4-10	15 58.80	-41 25.3		Stock,Wroblewski 1972	R
340+12.1	LO 11	16 00.10	-35 52.6	F	Longmore 1977	R
332 +1.1*	SA 3-33	16 03.25	-49 18.6		Sanduleak 1976	R
340+10.1	LO 12	16 05.14	-37 00.9	F	Longmore 1977	R
345+15.1	LO 13	16 06.58	-30 46.2	F	Longmore 1977	
321-11.1*	ESO-100-12	16 07.55	-66 31.4		Holmberg,&al 1975	R
331 +0.2	LO 14	16 07.95	-51 10.1	F	Longmore 1977	

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
330 -2.2	SA 1-4	16 11.43	-53 44.1		Sanduleak 1974	R
321-11.2*	ESO-100-16	16 12.25	-66 30.6		Holmberg,&al 1975	R
61+41.1	DDDM 1	16 38.55	+38 48		Dolidze,Dzhimshel,1966	R
352+11.2*	K 2-16	16 41.70	-27 58.6	F	Kohoutek 1977	
313-21.1*	ESO-023-08	16 54.22	-78 22.8		Holmberg,&al 1975	R
342 -2.2*	SA 3-41	17 03.88	-44 18.8		Sanduleak 1976	R
336 -7.1*	K 2-17	17 05.64	-52 09.3	F	Kohoutek 1977	R
340 -4.1	SA 1-5	17 07.71	-47 21.3		Sanduleak 1974	R
336 -8.1*	ESO-180-05	17 13.12	-53 33.1		Holmberg,&al 1977	R
333-11.1*	ESO-180-06	17 14.70	-56 51.3		Holmberg,&al 1977	R
355 +4.1*	SA 3-43	17 14.73	-29 58.6		Sanduleak 1976	
337 -9.1*	ESO-180-07	17 18.60	-52 43.7		Holmberg,&al 1977	R
331-13.1	SKWL 2-48	17 20.70	-59 29.6		Stock,Wroblewski 1972	R
346 -4.1	SA 2-202	17 25.6	-42 30		Sanduleak 1975	
344 -6.1	SA 2-208	17 26.39	-45 20.5		Sanduleak 1975	R
351 -1.1	SA 2-215	17 29.62	-36 41.8		Sanduleak 1975	R
339 -9.1*	ESO-228-05	17 30.48	-51 00.6		Holmberg,&al 1977	R
349 -4.1	LO 16	17 32.17	-40 10.1	F	Longmore 1977	
10 +7.1	SA 2-230	17 39.17	-15 54.8		Sanduleak 1975	
11 +7.1	SA 2-237	17 41.82	-15 44.0		Sanduleak 1975	
356 -3.4*	SM 4	17 46.50	-33 31.2	F	Stenholm 1975	
358 -1.2*	SA 3-80	17 47.05	-30 56.7		Sanduleak 1976	R
1 -1.4*	SA 3-92	17 51.69	-28 48.4		Sanduleak 1976	
13 +5.1*	SA 3-96	17 52.92	-15 02.2		Sanduleak 1976	
1 -2.2*	SA 3-104	17 55.24	-29 20.6		Sanduleak 1976	
345-11.1*	ESO-279-14	17 55.87	-46 38.7		Holmberg,&al 1975	R
358 -4.2*	SA 3-107	17 56.63	-32 59.1		Sanduleak 1976	R
340-14.1	SKWL 2-41	17 56.96	-52 44.3		Stock,Wroblewski 1972	R
14 +4.1*	SA 3-111	17 58.27	-14 30.3		Sanduleak 1976	
2 -3.7*	SA 3-115	18 00.91	-28 28.1		Sanduleak 1976	R
349-10.1*	ESO-280-02	18 00.92	-43 24.0		Holmberg,&al 1977	R
0 -4.3*	SA 3-117	18 01.50	-31 03.0		Sanduleak 1976	R
3 -3.1*	SA 3-119	18 03.35	-27 44.8		Sanduleak 1976	
341-15.1*	ESO-182-04	18 05.48	-52 34.4		Holmberg,&al 1975	R
345-13.1	SKWL 2-37	18 06.77	-48 26.4		Stock,Wroblewski 1972	R
351-10.1	SKWL 2-28	18 09.35	-41 31.3		Stock,Wroblewski 1972	R
7 -3.2*	SP 2-128	18 14.73	-24 03.8		Stephenson 1976	R
356-11.1	LO 17	18 24.40	-37 17.9	F	Longmore 1977	
16 -2.1*	SA 3-134	18 26.47	-15 09.7		Sanduleak 1976	
13 -4.2	V-V 3-4	18 27.62	-19 16.9		Vor.-Velyaminov,&al 1972	R
348-16.1*	ESO-281-07	18 29.83	-46 17.0		Holmberg,&al 1977	R
38 +7.1	K 1-25	18 30.77	+8 16.1	F	Kohoutek 1971	

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
6 -8.1	AE 1	18 31.79	-27 08.8		Allen 1973	R
14 -5.1	V-V 3-5	18 33.58	-19 22.0		Vor.-Velyaminov,&al 1972	R
14 -5.2	V-V 3-6	18 34.24	-19 05.0		Vor.-Velyaminov,&al 1972	R
13 -7.2*	Y-C 26	18 38.96	-20 35.2		Cesco, Gibson 1973	
21 -3.1	WE 1-7	18 41.32	-12 16.1	F	Weinberger 1977	
15 -8.1*	Y-C 29	18 46.19	-19 37.5		Cesco, Gibson 1973	
28 -2.1*	SP 2-149	18 47.49	-5 18.5		Stephenson 1976	R
20 -5.1	SA 1-8	18 47.91	-13 34.7		Sanduleak 1974	R
13-10.1	Y-C 32	18 52.51	-21 53.6		Cesco, Gibson 1973	R
356-18.1*	ESO-337-04	18 54.93	-39 58.5		Holmberg,&al 1977	R
33 -1.1*	SP 2-151	18 56.29	-0 37.1		Stephenson 1976	R
341-24.1	LO 18	19 05.63	-55 39.5	F	Longmore 1977	
5-18.1	SKWL 2-21	19 11.15	-32 39.5		Stock,Wroblewski 1972	R
6-19.1	SKWL 2-18	19 18.97	-31 36.4		Stock,Wroblewski 1972	R
59 -1.2	WE 1-8	19 46.72	+22 17.7	F	Weinberger 1977	
69 +1.1*	KJ 1-2	19 59	+33 08	F	Kazaryan 1966	
84 +9.1	K 3-73	20 02.53	+49 10.6	F	Kohoutek 1972	
65 -3.1	WF 1-9	20 06.98	+26 18.0	F	Weinberger 1977	
78 +5.1	DD 1	20 07.02	+42 21.3	F	Dolidze 1971	R
77 +3.1*	KJPN 1	20 10.64	+40 36.4	F	Kazaryan,Parsamyan 1971	R
77 +3.2	KJPN 2	20 13.60	+40 25.5	F	Kazaryan,Parsamyan 1971	R
76 +1.2*	KJPN 3	20 15.43	+38 40.9	F	Kazaryan,Parsamyan 1971	R
77 +2.1*	KJ 2-1	20 15.6	+39 35.9	F	Kazaryan 1976	
73 -2.1	K 3-76	20 23.11	+33 25.0	F	Kohoutek 1972	
79 +0.1*	KJPN 4	20 27.0	+40 14.7	F	Kazaryan,Parsamyan 1971	
78 +0.1	SD 1	20 27.50	+40 05.3	F	Sherwood 1969	R
86 +5.1	WE 1-10	20 30.32	+48 42.4	F	Weinberger 1977	
78 -2.1*	K 4-53	20 40.35	+37 29.7	F	Kohoutek 1972	
84 +2.1*	K 4-54	20 41.20	+45 45.7	F	Kohoutek 1972	
84 +1.1*	K 4-55	20 43.43	+44 28.3	F	Kohoutek 1972	
88 +4.1	K 3-78	20 43.82	+50 11.7	F	Kohoutek 1972	
92 +5.1	K 3-79	20 51.77	+53 34.3	F	Kohoutek 1972	
86 +0.1*	K 4-56	20 54.02	+46 21.7	F	Kohoutek 1972	
84 -4.1	K 3-80	21 05.77	+40 45.8	F	Kohoutek 1972	
91 +1.1	WE 1-11	21 09.23	+50 34.8	F	Weinberger 1977	
87 -3.1*	WE 2-245	21 16.25	+43 36.0		Weinberger 1977	
83 -8.1	K 3-81	21 20.27	+37 54.4	F	Kohoutek 1972	
65-27.2*	CIPG 1	21 27.6	+11 57		Caloi, Panagia 1974	R
93 -0.1	K 3-82	21 29.11	+49 46.9	F	Kohoutek 1972	
94 -0.1	K 3-83	21 33.98	+50 40.8	F	Kohoutek 1972	
91 -4.1	K 3-84	21 36.92	+45 46.9	F	Kohoutek 1972	
353-55.1*	ESO-289-19	22 18.10	-44 08.0		Holmberg,&al 1975	R

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	R.A. (1950)	Decl.		Discovery	Rem.
107 -0.1*	K 4-57	22 46.58	+58 13.2	F	Kohoutek 1972	
111 +6.1*	KJPN 6	22 47.27	+66 45.8	F	Kazaryan,Parsamyan 1971	R
108 +0.1	K 3-85	22 48.89	+59 14.4	F	Kohoutek 1972	
106 -4.1	K 3-86	22 52.65	+54 40.0	F	Kohoutek 1972	
107 -2.2	K 3-87	22 53.03	+56 26.5	F	Kohoutek 1972	
113 +6.1*	KJPN 7	23 05.7	+66 43.1	F	Kazaryan,Parsamyan 1971	
113 +5.1*	KJ 2-2	23 07.2	+66 32.0	F	Kazaryan 1976	
110 -0.1	WE 1-12	23 10.04	+59 19.8	F	Weinberger 1977	
112 +3.1	K 3-88	23 10.18	+64 23.0	F	Kohoutek 1972	
111 -3.1*	WE 2-260	23 20.08	+57 29.6		Weinberger 1977	
112 -0.1	KJPN 8	23 21.93	+60 41.0	F	Kazaryan,Parsamyan 1971	R
116 +0.1*	WE 2-262	23 49.85	+62 14		Weinberger 1977	

* Possible Planetary Nebula F Finding Chart R Remarks

REMARKS

0 -4.3 WRA 16-363, Initial discovery by Wray (1966).
2 -3.7 WRA 17-107, Initial discovery by Wray (1966).
5-18.1 SA 2-383
6 -8.1 WRA 15-1876. See also Allen (1974).
6-19.1 WRA 16-423, Initial discovery by Wray (1966). SA 2-389.
7 -3.2 See Sanduleak (1976).
13 -4.2 SA 2-341, Confirmed by Sanduleak (1975).
F Vor.-Velyaminov,et al(1975).
13-10.1 SA 2-376, Confirmed by Sanduleak (1975).
14 -5.1 HE 3-1716. SA 2-351, Confirmed by Sanduleak (1975), see also Sanduleak (1974). F Vor.-Velyaminov,et al(1975).
14 -5.2 Y-C 25, Discovered indep. by Cesco, Gibson (1973). SA 2-352, confirmed by Sanduleak (1975). F Vor.-Velyaminov,et al(1975).
20 -5.1 AS 326. SA 2-370, Confirmed by Sanduleak (1975).
28 -2.1 See Sanduleak (1976).
33 -1.1 See Sanduleak (1976).
61+41.1 Confirmed by Kazaryan, Oganesyan (1973), F.
65-27.2 In M 15. Confirmed by Peterson (1976), F.
76 +1.2 K 4-52.
77 +3.1 K 4-51.
77 +3.2 K 3-75.
78 +5.1 K 3-74, Discovered indep. by Kohoutek (1972).
78 +0.1 KJPN 5. K 3-77.
111 +6.1 K 4-58.
112 -0.1 K 3-89.
205+14.1 YM 29, Discovered indep. by Johnson (1955) As symmetric galactic nebula. Omitted from CGPN.
Classified as supernova remnant by Vor.-Velyaminov (1960).
Peculian PN (Johnson, Rubin, 1971). PN (Terzian, 1971).

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

238 +7.2 F Sanduleak (1975A).
240 +7.1 SA 2-22, Confirmed by Sanduleak (1975).
246 +2.1 WRA 16-13, Initial discovery by Wray (1966).
247-10.1 WRA 17-2, Initial discovery by Wray (1966).
255 +3.1 WRA 16-22, Initial discovery by Wray (1966).
255-59.1 K 1-26, Discovered indep. by Kohoutek (1977).
256 +3.1 WRA 16-26, Initial discovery by Wray (1966).
257 +0.1 WRA 19-11. RCW 21. Susp. diff. nebula by Sanduleak (1976).
258-15.1 WRA 17-1, Initial discovery by Wray (1966). SA 2-6.
LO 3, Confirmed by Longmore (1977).
261 -4.1 WRA 16-19, Initial discovery by Wray (1966).
267 -3.1 WRA 16-28, Initial discovery by Wray (1966).
276-18.1 Galaxy or PN, peculiar, star superimp.
277 -3.2 WRA 17-31, Initial discovery by Wray (1966). RCW 44.SA 3-10.
277 -7.1 Galaxy or PN.
279 -3.2 WRA 17-35, Initial discovery by Wray (1966). SA 3-11.
280 +2.1 SA 2-56, Confirmed by Sanduleak (1975).
283+25.1 V-V 3-1.
283+12.1 Galaxy or PN, peculiar.
284 -5.1 See Sanduleak (1974). WRA 15-490. HE 3-358. SA 2-51,
confirmed by Sanduleak (1975).
285 -7.1 Galaxy or PN.
288 +8.1 Galaxy or PN, starlike nucleus.
288 +0.2 Diffuse nebula or PN.
292 -3.1 See Sanduleak (1976).
295-13.1 PN or defect, peculiar ring.
299+18.1 V-V 3-2.
300 -2.2 WRA 16-113, Initial discovery by Wray (1966).
302 +2.1 Galaxy or PN. WRA 16-120, Initial discovery by Wray (1966).
302 -0.2 WRA 16-121, Initial discovery by Wray (1966). RCW 70.
SA 2-87, confirmed by Sanduleak (1975). LO 7.
304 +5.2 PN or galaxy, ring, F-type star superimp.
WRA 16-122, Initial discovery by Wray (1966).
305 +3.1 See Sanduleak (1976).
305 -3.1 WRA 17-59, Initial discovery by Wray (1966).
ESO-096-07, Discovered indep. by Holmberg,et al. (1975).
305-13.1 Starlike nucleus. Confirmed by West (1976).
307 +5.1 WRA 16-128, Initial discovery by Wray (1966).
ESO-173-12, discovered indep. by Holmberg,et al (1975).
308 -1.1 Star superimp.
309 +1.1 SUWT 1. Confirmed by West (1976).
310+24.1 K 1-29, Discovered indep. by Kohoutek (1977).
311 +2.2 Confirmed by West (1976).
311 -6.1 WRA 16-150, Initial discovery by Wray (1966).
313-21.1 Galaxy or PN.
315 -4.1 WRA 16-158, Initial discovery by Wray (1966).
317+19.1 HE 3-959. SA 2-102. See also Sanduleak (1974).
NGC 5408, peculiar galaxy (V_r= 497 km/s), Allen (1974).
317 +3.1 Corrected coordinates given by Holmberg,et al.(1977).
318 -2.3 WRA 16-161, Initial discovery by Wray (1966).
318 -3.1 PN or defect.

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

319 -4.1 PN or defect
320 +0.1 RCW 87. WRA 16-160, Initial discovery by Wray (1966).
321 -9.1 Galaxy or PN.
321-11.1 Galaxy or PN.
321-11.2 Galaxy or PN.
322+14.1 V-V 3-3.
330 +5.1 K 1-30, Discovered indep. by Kohoutek (1977).
330 +4.2 WRA 16-189, Initial discovery by Wray (1966).
330 -2.2 WRA 15-1441. SA 2-138, Confirmed by Sanduleak (1975).
331 +3.1 WRA 16-192, Initial discovery by Wray (1966).
331-13.1 SA 2-193.
332 +3.1 WRA 16-199, Initial discovery by Wray (1966).
332 +1.1 WRA 16-202, Initial discovery by Wray (1966).
333-11.1 Galaxy or PN, starlike nucleus.
335 +9.1 PN or galaxy, starlike centre.
K 1-31, discovered indep. by Kohoutek (1977) F.
336 +8.1 WRA 15-1407. SA 2-132, Confirmed by Sanduleak (1975).
See also Sanduleak (1974).
336 -7.1 ESO-227-06, Classified by Holmberg,et al(1977) as possible galaxy.
336 -8.1 PN or galaxy.
337 -9.1 Galaxy or PN, starlike nucleus.
WRA 16-266, Initial discovery by Wray (1966).
339 -9.1 Galaxy or PN.
340+12.1 K 1-32, Discovered indep. by Kohoutek (1977).
340+10.1 K 1-33, Discovered indep. by Kohoutek (1977).
340 -4.1 WRA 15-1633. SA 2-177, Confirmed by Sanduleak (1975).
340-14.1 WRA 15-1818. SA 2-278, See also Sanduleak (1974).
341-15.1 Galaxy or PN, 4 stars superimp.
342 -2.2 WRA 16-251, Initial discovery by Wray (1966).
344 -6.1 WRA 16-278, Initial discovery by Wray (1966).
345-11.1 Galaxy or PN.
345-13.1 SA 2-304.
348-16.1 Galaxy or PN.
349-10.1 Galaxy or PN.
351 -1.1 WRA 16-286, Initial discovery by Wray (1966).
351-10.1 WRA 16-385, Initial discovery by Wray (1966).
SA 2-311, Confirmed by Sanduleak (1975).
353-55.1 Compact galaxy or PN.
356-18.1 Galaxy or PN, starlike object in ring.
358 -1.2 WRA 16-312, Initial discovery by Wray (1966).
358 -4.2 WRA 16-344, Initial discovery by Wray (1966).

APPENDIX TO TABLE 1 POSSIBLE PROTO-PLANETARY NEBULAE

Name	R.A. (1950)	Decl.	Remarks and References
CRL 618	4 39.56	+36 01.2	May be a PN seen at an early phase in its evolution (Westbrook, et al, 1975) May be a proto-PN (Lo, Bechis, 1976).

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Name	R.A. (1950)	Decl.	Remarks and References
MWC 574	7 45.75	-14 00.2	Extremely-low-excitation object, may be PN in an early stage of development (Sanduleak,Stephenson, 1972A).
AS 201	8 29.61	-27 35.3	Strong [O III]λ 4363 emission and G-type abs. spectrum, susp. proto-PN (Sanduleak,Stephenson, 1972B).
IRC +10216	9 45.25	+13 30.7	CW Leo. A probable PN progenitor (Zuckerman,et al,1976).
CPD-53 8315	16 59.00	-53 51.5	HE 3-1312. Extremely-low-exc. object, may be PN in an early stage of development. Strong abs. feature at the K-line (Sanduleak,Stephenson, 1972A).
HM Sge	19 39.69	+16 37.6	May be a slow nova or object similar to V 1016 and V 1329 Cyg (Dokuchaeva, 1976). May be a PN in some early stage of formation (Arkhipova,Esipov, 1976). Possible PN (Stover,Sivertsen, 1977). May evolve to the phase of a compact PN (Ciatti,etal,1977).
V 1016 Cyg	19 55.3	+39 41.4	MH$_\alpha$ 328-116. May be an early stage of a PN (Crampton,et al,1970). May be a newborn PN (Ahern, 1975). Early stage of PN (Mammano,et al,1975).
HBV 475	20 49.04	+35 23.6	V 1329 Cyg. May be an early stage of a PN (Crampton,et al, 1970). Resembl. late-type star (Allen,1974A). Symbiotic var. (Stienon,et al,1974).
CRL 2688	21 00.33	+36 29.7	May be a proto-PN (Lo,Bechis, 1976). A post-carbon-star object and probable PN progenitor (Zuckerman,et al, 1976).

REFERENCES TO TABLE 1

A Abell G.O., 1955, Publ. Astron.Soc.Pacific 67, 258.
(New numbering in: 1966, Astrophys.Journ. 144, 259).
-- Ahern F.J., 1975, Astrophys. Journ. 197, 639.
AE Allen D.A., 1973, Obs. 93, 85.
-- Allen D.A., 1974, Monthly Notices 168, 27P.
-- Allen D.A., 1974A, Monthly Notices 168, 1.
-- Arkhipova V.P., Esipov V.F., 1976, Astron.Tsirk, USSR Moscow, No. 930, 5.

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

PHL	Arp H., Scargle J.D., 1967, Astrophys. Journ. 150, 707.
BLDZ	Blaauw A., Danziger I.J., Schuster H.-E., 1975, Astron.Astrophys. 44, 469.
BOBN	Boeshaar G.O., Bond H.E., 1977, Astrophys.Journ. 213, 421.
CIPG	Caloi V., Panagia N., 1974, Astron.Astrophys. 36, 139.
Y-C	Cesco C.U., Gibson J., 1973, Astron.Astrophys.Suppl. 11, 335.
--	Ciatti F., Mammano A., Vittone A., 1977, Astron.Astrophys. (in press).
--	Crampton D., Grygar J., Kohoutek L., Viotti R., 1970, Astrophys. Letters 6, 5.
--	Dokuchaeva O.D., 1976, Inform.Bull.Var.Stars No. 1189.
DD	Dolidze M.V., 1971, Astron.Tsirk. USSR Moscow, No. 629, 6.
DDDM	Dolidze M.V., Dzhimshelejshvili G.N., 1966, Astron.Tsirk. Kazan, No. 385, 7.
HE3	Henize K.G., 1976, Astrophys.Journ.Suppl. 30, 491.
ESO	Holmberg E.B., Lauberts A., Schuster H.-E., West R.M., 1974, Astron.Astrophys.Suppl. 18, 463.
ESO	Holmberg E.B., Lauberts A., Schuster H.-E., West R.M., 1975, Astron.Astrophys.Suppl. 22, 327.
ESO	Holmberg E.B., Lauberts A., Schuster H.-E., West R.M., 1977, Astron.Astrophys.Suppl. 27, 295.
YM	Johnson H.M., 1955, Astrophys. Journ. 121, 604.
--	Johnson H.M., Rubin R.H., 1971, Astrophys. Journ. 163, 151.
KJ1	Kazaryan M.A., 1966, Astrofiz. 2, 371.
KJ2	Kazaryan M.A., 1976, Astrofiz. 12, 385.
--	Kazaryan M.A., Oganesyan E.Ya., 1973, Astron.Tsirk.USSR Moscow, No. 753, 3.
KJPN	Kazaryan M.A., Parsamyan E.S., 1971, Astron.Tsirk.USSR Moscow, No. 602, 6.
K3,K4	Kohoutek L., 1969, Bull.Astron.Inst.Czech. 20, 307.
K1,K2	Kohoutek L., 1971, Astron. Astrophys. 13, 493.
K3,K4	Kohoutek L., 1972, Astron.Astrophys. 16, 291.
K1,K2	Kohoutek L., 1977, Astron.Astrophys. (in press).
--	Lo K.Y., Bechis K.P., 1976, Astrophys.Journ. 205, L21.
LO	Longmore A.J., 1977, Monthly Notices 178, 251.
--	Mammano A., Ciatti F., 1975, Astron.Astrophys. 39, 405.
NS	Nordstroem B., 1975, Astron.Astrophys.Suppl. 21, 193.
--	Peterson A.W., 1976, Astron.Astrophys. 53, 441.
RCW	Rodgers A.W., Campbell C.T., Whiteoak J.B., 1960, Monthly Notices 121, 103.
SA1,SP1	Sanduleak N., 1974, Publ.Astron.Soc.Pacific 86, 215.
SA2	Sanduleak N., 1975, Publ.Warner Swasey Obs. Vol.2, No.1.
--	Sanduleak N., 1975A, Publ.Astron.Soc.Pacific 87, 705.
SA3,SP2	Sanduleak N., 1976, Publ.Warner Swasey Obs. Vol.2, No.3.
--	Sanduleak N., Stephenson C.B., 1972A,Astrophys.Journ. 178,183.
--	Sanduleak N., Stephenson C.B., 1972B,Publ.Astron.Soc.Pacific 84, 816.
SUWT	Schuster H.-E., West R.M., 1976, Astron.Astrophys. 46, 139. (Erratum Astron.Astrophys. 48, 483).
SD	Sherwood W.A., 1969, Obs. 89, 207.
SM	Stenholm B., 1975, Astron.Astrophys. 39, 307.

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

-- Stienon F.M., Chartrand III. M.R., Shad C.Y., 1974, Astron. Journ. 79, 47.

SKWL Stock J., Wroblewski H., 1972, Publ.Dep.Astron.Univ.Chile, 2, 59. (2- Table II, 3- Table III, 4- Table IV).

-- Stover R.J., Sivertsen S., 1977, Astrophys.Journ. 214, L33.

-- Terzian Y., 1971, Astrophys.Journ. 166, 559.

VBRC Van Den Bergh S., Racine R., Van Agt S., Barnes T., Coutts Ch., Madore B., Skill A., 1973, Astrophys.Journ. 179, 863.

-- Vorontsov-Velyaminov B.A., 1960, Astron.Tskirk.USSR.Moscow, No.211, 25.

V-V3 Vorontsov-Velyaminov B.A., Kostyakova E.B., Dokuchaeva O.D., Arkhipova V.P., 1972, Astron.Tsirk.USSR Moscow, No. 716, 7.

-- Vorontsov-Velyaminov B.A., Kostyakova E.B., Dokuchaeva O.D., Arkhipova V.P., 1975, Astron.Zhurn. 52, 264.

WE1 Weinberger R., 1977, Astron.Astrophys. (in press).

WE2 Weinberger R., 1977, preprint.

-- West R.M., 1976, Publ.Astron.Soc.Pacific 88, 896.

-- Westbrook W.E., Becklin E.E., Merrill K.M., Neugebauer G., Schmidt M., Willner S.P., Wynn-Williams C.G., 1975, Astrophys.Journ. 202, 407.

WRA Wray J.D., 1966, unpublished, thesis, Northwestern University.

-- Zuckerman B., Gilra D.P., Turner B.E., Morris M., Palmer P., 1976, Astrophys.Journ. 205, L15.

Table 2 Misclassified Planetary Nebulae

Design.	Name	Remarks and References
3 -1.1	HE 2-325	Peculiar M-type emission-line star (Sanduleak, Stephenson, 1973).
4 +6.1	H 2-12	The brightest knot in the nebular remnant of the Kepler's SN of 1604 (V 843 OPH) (Bond, 1976).
26 +1.1	V-V 1-8	Very probably an HII region (Chopinet, Lortet-Zuckermann, 1976).
44 +8.1	K 3-10	Resembling late-type star (Class S) (Allen 1974). Not a PN, M8 star (Allen, Fosbury, 1975).
45 -0.1	K 4-21	Resembling late-type star (Class S) (Allen 1974). Not a PN, M7 star (Allen, Fosbury, 1975).
48 -0.1	K 4-24	Resembling late-type star (Class S) (Allen 1974). Not a PN, M7 star (Allen, Fosbury, 1975).
50 +3.1	M 1-67	Probably does not belong from the morphological point of view to PN (Khromov,Kohoutek, 1968). Resembling late-type star (Class S) (Allen, 1974). Not a PN, but a ring nebula containing a popula-

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	Remarks and References
		tion I WN star (Cohen, Barlow, 1975). Very probably an HII region (Chopinet, Lortet-Zuckermann, 1976). May be the result of mass loss from a runaway star (Israel, Felli, 1976).
50-36.1	A 76	Galaxy, V_r= +3240 km/s (Chopinet, 1971).
62 -1.1	K 4-40	Resembling late-type star (Class S) (Allen 1974). Not a PN, M6 star (Allen, Fosbury, 1975).
64 +0.1	K 3-47	Resembling late-type star (Class S) (Allen 1974). Not a PN, M10E star (Allen, Fosbury, 1975). AA Vul, Mira Var., M-type (Bond, 1976).
70 +1.1	K 3-50	Possibly a small 'compact' H II region (Rubin, Turner, 1969). Compact H II region in an extensive H I cloud (Bridle, Kesteven, 1970). H II Region (H-Alpha Condensation in SH 2-100) (Chopinet, Lortet-Zuckermann, 1976).
70 +1.2	NGC 6857	H II region in an extensive H I cloud (Bridle, Kesteven, 1970). H II region (H-Alpha condensation in SH 2-100) (Chopinet, Lortet-Zuckermann, 1976).
88 +6.1	KR 1-2	Very probably not a PN (Kohoutek, 1972).
93 +5.1	K 4-44	Probably a knot in 93+5.2 (NGC 7008) (Chopinet, Lortet-Zuckermann, 1976).
108 -5.1	K 4-46	Resembling late-type star (Class S) (Allen, 1974) LL Cas, M-type (Bond, 1976).
114+10.1	KR 2-2	Most likely a reflection nebula (Kohoutek, 1972).
121 -2.1	KR 1-1	Very probably not a PN (Kohoutek, 1972).
149 -1.1	KR 2-1	Probably does not belong from the morphological point of view to PN (Khromov, Kohoutek, 1968). Most likely a reflection nebula (Kohoutek, 1972).
151 +2.1	V-V 1-2	Very probably an HII region (Chopinet, Lortet-Zuckermann, 1976).
195 -0.1	SH 2-266	Probably not a PN, it resembles early-type emission-line star associated with nebulosity (Frogel, Persson, Kleinman, 1972). Probably a nebulosity containing an emission-

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	Remarks and References
		line B star (Cohen, Barlow, 1975). H II region (Chopinet, Lortet-Zuckermann, 1976). Pec. BE star with IR excess (Allen, Swings, 1976).
196 -1.1	V-V 1-5	Probably does not belong from the morphological point of view to PN (Khromov, Kohoutek, 1968). H II region (Chopinet, Lortet-Zuckermann, 1976).
197 -2.1	V-V 1-4	Very probably an HII region (Chopinet, Lortet-Zuckermann, 1976).
197 -2.2	KJ 1-1	Very probably an HII region (Chopinet, Lortet-Zuckermann, 1976).
235 +1.1	V-V 1-7	Most probably a reflection nebula (Kohoutek, Wehmeyer, 1975).
266 -0.1	HE 2-17	Not a PN (Henize, 1967). Resembles a pec. BE star (Swings, 1973).
288 +5.1	HE 2-61	Not a PN (Webster, 1966). Only H-Alpha emission line visible, stellar (Sanduleak, Stephenson, 1973).
319 -9.1	HE 2-134	Not a PN (Webster, 1966). Z And-like star (Sanduleak, Stephenson, 1973).
330 +4.1	CN 1-1	Not a PN (Webster, 1966).
331 -5.1	PC 11	Not a PN (Webster, 1966).
336 -0.1	NGC 6164-5	Probably not a PN, the central star is too luminous (M = -6.2) (Westerlund, 1960). Possible ident. with Sco XR-2 (Johnson, 1966). Not a PN (Johnson, 1972). H II region (Danks, Manfroid, 1977).
337 -5.1	HE 2-187	OB+, star No. 3888 (Stephenson, Sanduleak, 1971).
338 +1.1	HE 2-174	Not a PN (Webster, 1966). Extr. BE-like object (Sanduleak,Stephenson, 1973). Only Balmer lines and [O I] at 6300 Å visible (Swings, 1973).
345 -0.1	H 2-3	Probably does not belong from the morphological point of view to PN (Khromov, Kohoutek, 1968). Higher flux density at 2 cm than NGC 7027, similar to K 3-50 (Rubin, 1970). H II region (Bráz, Jardim, Kaufmann, 1975).

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press

Design.	Name	Remarks and References
348 -0.1	H 2-6	Higher flux density at 2 cm than NGC 7027, similar to K 3-50 (Rubin, 1970). H II region (Bráz, Jardim, Kaufmann, 1975).

REFERENCES TO TABLE 2

Allen D.A., 1974, Monthly Notices 168, 1.
Allen D.A., Fosbury R.A.E., 1975, Obs. 95, 15.
Allen D.A., Swings J.P., 1976, Astron.Astrophys. 47, 293.
Bond H.E., 1976, Publ.Astron.Soc.Pacific 88, 192.
Bráz M.A., Jardim J.O., Kaufmann P., 1975, Astron.Astrophys. 43, 153.
Bridle A.H., Kesteven M.J.L., 1970, Astron.Journ. 75, 902.
Chopinet M., 1971, C.R. Acad.Sci. Paris, T.272, 290.
Chopinet M., Lortet-Zuckermann M.C., 1976, Astron.Astrophys.Suppl.25,179.
Cohen M., Barlow M.J., 1975, Astrophys.Lett. 16, 165.
Danks A.C., Manfroid J., 1977, Astron.Astrophys. 56, 443.
Frogel J.A., Persson S.E., Kleinman D.E., 1972, Astrophys.Lett. 11, 95.
Henize K.G., 1967, Astrophys.Journ.Suppl. Vol.XIV, 125.
Israel F.P., Felli M., 1976, Astron.Astrophys. 50, 47.
Johnson H.M., 1966, Astron.Journ. 71, 166.
Johnson H.M., 1972, Astrophys.Journ. 176, 645.
Khromov G.S., Kohoutek L., 1968, Bull.Astron.Inst.Czech. 19, 90.
Kohoutek L., 1972, Astron.Astrophys. 16, 291.
Kohoutek L., Wehmeyer R., 1975, Astron.Astrophys. 41, 451.
Rubin R.H., 1970, Astron.Astrophys. 8, 171.
Rubin R.H., Turner B.E., 1969, Astrophys.Journ. 157, L41.
Sanduleak N., Stephenson C.B., 1972, Astrophys.Journ. 178, 183.
Sanduleak N., Stephenson C.B., 1973, Astrophys.Journ. 185, 899.
Stephenson C.B., Sanduleak N., 1971, Publ.Warner Swasey Obs. Vol. 1, No.1.
Swings J.P., 1973, Astrophys. Lett. 15, 71.
Webster B.L., 1966, Publ. Astron. Soc. Pacific 78, 136.
Westerlund B.E., 1960, Ark.Astron. 2, 467.

https://doi.org/10.1017/S0074180900142561 Published online by Cambridge University Press