

A LIST OF POSSIBLE, PROBABLE, AND TRUE PLANETARY NEBULAE DETECTED SINCE 1966

R. WEINBERGER

Max-Planck-Institut für Astronomie, Heidelberg-Königstuhl, Federal Republic of Germany
and

Institut für Astronomie der Universität Innsbruck, Austria

Received May 23, 1977

335 objects designated as new possible, probable, or true galactic planetary nebulae since the closing of the Perek & Kohoutek (1967) catalogue are listed with names, designations, the best available equatorial coordinates, galactic coordinates, apparent dimensions, and indications of observations in the optical, infrared and radio range. 44 new candidates which subsequently turned out to be presumably non-planetary are also given. Six new possible planetaries detected by the author are listed for the first time.

Key words: new planetaries – compilation

1. INTRODUCTION

In the preface of the “Catalogue of Galactic Planetary Nebulae” (Perek & Kohoutek 1967), the authors wrote “The primary aim of this catalogue is... to enable astronomers to locate planetaries without having to rediscover them”. In the present paper, we aim essentially at the same goal for the galactic planetary nebulae (PN) detected since the finishing of the above catalogue. After all, a survey of the literature showed that several PN detected in the last decennium have subsequently been rediscovered.

Our list contains 335 objects which have been classified as possible, probable, or true PN. It must be expected that a number of them will prove to be no PN at all. Also, detailed observational data are lacking for most of them. It therefore would be of limited value to carry out any statistics at the moment. A list of 44 new candidates which are now considered to be non-planetary is also given.

2. RESULTS

2.1. Completeness of the List

We are aware of 32 papers dating *from the beginning of 1966 to the end of the first quarter of 1977*, in which discoveries of new PN or interpretations of already known objects as new PN were reported. They are given in the following list. The abbreviations have been taken over from the names given in these papers to new PN, or were formed from the first letters of the authors, sometimes with distinctive digits. One of the papers (Holmberg *et al.* 1977b)—a preprint—was only in part at our disposal (*i.e.* the “survey fields” up to No. 205).

Allen, 1973	Al
Arp & Scargle, 1967	PHL
Blaauw <i>et al.</i> , 1975	BDS
Caloi & Panagia, 1974	CaPa
Cesco & Gibson, 1973	CeGi
Dolidze & Džimšelejšvili, 1966	DoDz
Holmberg <i>et al.</i> , 1974	ESO
Holmberg <i>et al.</i> , 1975	ESO
Holmberg <i>et al.</i> , 1977a	ESO

Holmberg <i>et al.</i> , 1977b	ESO
Kazarjan, 1966	Ka 1
Kazarjan, 1976	Ka 2
Kazarjan & Parsamian, 1971	KaPa
Kohoutek, 1969	K 3, K 4
Kohoutek, 1971	K 1, K 2
Kohoutek, 1972	K 3, K 4
Longmore, 1977	Lo
Nordström, 1975	No
Sanduleak, 1974	Sa 1, St 1
Sanduleak, 1975a	Sa 2
Sanduleak, 1976	Sa 3, St 2
Sanduleak & Stephenson, 1972a	SaSt 1
Sanduleak & Stephenson, 1972b	SaSt 2
Schuster & West, 1976	SchuWe
Sherwood, 1969	She
Stenholm, 1975	Ste
Stock & Wroblewski, 1972	StWr
Van den Bergh <i>et al.</i> , 1973	BRABCMS
Vorontsov-Velyaminov <i>et al.</i> , 1972	VVKDA
Weinberger, 1977	We 1
Weinberger, this paper	We 2
Westbrook <i>et al.</i> , 1975	CRL
Wray, 1966	W 16, W 17

2.2. Nature of Listed Objects

While there was no doubt about the inclusion of true and probable PN, a few words are needed about some of the *possible* planetaries. For some years a number of papers dealt with possible progenitors of PN or objects being extremely young PN. It came out that clear borders between these objects and *bona fide* PN can hardly be drawn. Accordingly, our inclusion or non-inclusion of some possible candidates was somewhat subjective. As an example, CRL 618, an object found in an infrared survey (Walker & Price 1975), has been extensively observed mainly by Westbrook *et al.* (1975) as well as by a small number of other authors. There appears to be fair agreement between these that CRL 618 might be a PN in a very early phase in its evolution. It was therefore included in our list. On the other hand V 1016 Cyg, HBV 475, and similar objects were rather frequently observed indeed (see *e.g.* Stienon *et al.* 1974; Mammano & Ciatti 1975) and were sometimes interpreted as possible progenitors of PN or even extremely young PN too. However, since these interpretations as young PN seem far from being settled, objects of this kind were not included.

2.3. Omitted Objects

Altogether 44 objects are listed here, which once were designated as new PN, but turned out to be probably of another kind. The by far most important source for these reclassifications was table 1 in Sanduleak (1976), where misclassified or doubtfully classified southern PN are compiled. We give the coordinates (1950.0) and names of the omitted objects as well as a source (not always the original one) for their reclassification. Key: A = Allen (1974), S = Sanduleak (1976), J = Johnson (1973):

06 ^h 42 ^m 04	+01°22'7	K 4-49	A	15 ^h 55 ^m 73	-53°37'4	W 16-196	S
08 09.87	-35 12.3	W 16-15	S	16 05.14	-38 54.9	W 16-203	S
08 12.47	-41 33.3	W 16-17	S	16 09.02	-46 29.9	W 16-206	S
08 29.06	-38 09.7	W 19-11	S	16 15.69	-50 30.6	W 16-214	S
08 46.85	-42 42.6	K 2-15	S	16 48.26	-25 55.4	W 16-237	S
09 31.64	-46 21.3	W 16-51	S	17 06.96	-32 55.1	W 16-255	S
09 46.82	-59 18.0	W 16-60	S	17 28.62	-28 40.0	W 16-282	S
10 00.58	-57 59.3	W 16-63	S	17 33.04	-33 24.3	W 16-292	S
10 33.79	-60 23.3	W 16-73	S	17 36.14	-25 36.5	W 16-294	S
10 58.9	-60 33.	W16-82,83	S	17 38.38	-30 05.2	W 17-96	S
11 01.15	-58 11.3	W 16-84	S	17 43.	-26 10	G2.4+1.4	J
11 35.73	-61 59.3	W 16-97	S	17 48.62	-35 22.7	W 16-319	S
12 17.22	-62 38.7	W 16-109	S	17 59.82	-31 35.3	W 16-355	S
12 32.05	-61 22.5	W 16-118	S	18 00.40	-34 53.2	W 16-358	S
13 40.73	-55 04.5	W 16-134	S	18 03.90	-29 36.8	W 16-371?	S
13 46.06	-61 16.9	W 16-136	S	18 08.90	-33 11.3	W 16-384	S
14 05.33	-56 50.3	W 16-145	S	18 10.79	-42 51.4	W 16-391	S
14 07.91	-64 03.3	W 16-146	S	18 14.18	-28 11.0	W 16-401	S
14 27.32	-61 07.6	W 16-154	S	18 50.23	-24 26.6	W 16-421	S
15 03.3	-57 36.8	W 16-166,167	S	20 41.20	+45 45.7	K 4-54	A
15 14.36	-59 27.2	W 16-173	S	22 46.58	+58 13.2	K 4-57	A

2.4. The List of New Possible, Probable, and True Planetary Nebulae

The 335 new planetary nebulas are listed in table 1. Entries are as follows:

- Column 1: Running number.
- Column 2: Name of object, consisting of an abbreviation of the paper where the object was called for the first time a PN, a hyphen and a number referring in most cases to the number of the entry in the respective table of the discovery paper. Only one name was listed for every object. For some of them, references to other names can be found in Acker & Marcout (1977).
- Column 3: Preliminary designation, according to the system of the Perek & Kohoutek (1967) catalogue.
- Column 4: The most precise equatorial coordinates available in the literature, to the best of the author's knowledge.
- Column 5: The accuracy of α and δ is shown according to the key: $a \leq 1''$; $1'' < b \leq 0.1$; $0.1 < c \leq 0.2$; $d > 0.2$.
- Column 6: The references refer to papers where the listed α and δ and the accuracies are taken from. Additional reference symbols are: Arp = Arp, 1965; ESO3 = Holmberg *et al.*, 1975; KaOg = Kazarjan & Oganessian, 1973; Ko = Kohoutek, 1972; Wr = Wray, 1966. No entry means that the coordinates were taken from the original discovery paper.
- Column 7: Galactic coordinates.
- Column 8: The dimension describes the diameter (in the red spectral region, whenever obtainable) of the major and minor axes of the nebular images in arcsec; st = stellar. Generally, data from the original discovery papers were used, exceptions are announced by references in the same or a 2nd line in the same column. Additional symbols are: Hi = Higgs, 1971; ESO3 = Holmberg *et al.*, 1975; ESO4 = Holmberg *et al.*, 1977a; San = Sanduleak, 1975b. In cases, where no nebular sizes could be found listed, blanks are given.
- Columns 9, 10 and 11: Here it is attempted to give an impression about observations of the nebulae in the optical, infrared and radio region. Crude categories were introduced for that purpose: p photometric, s spectroscopic, c continuum, and l line measurements. Numbers following these symbols refer to papers listed in table 1a, symbols without numbers mean observations carried out in the original publication.

Every single category covers a broad range of data. As an example, an “s” was used for mere estimates of the strength of the H α lines as well as for extensive discussions of high dispersion spectra; a “p” comprises crude estimates of the total brightness of a nebula usually derived from plates as well as accurate photoelectric measurements.

Some remarks on column 9: Especially in cases, where a PN was previously considered to be a star and was so published in various lists together with brightness estimates, usually only one reference is given. Therefore no claim for completeness as to references can be laid on this column.

The data in columns 10 and 11 on the other hand should be complete as we hope. The references do, for the sake of brevity, not always state the original sources. *E.g.*, the catalogue of Higgs (1971) is often referred to for radio observations instead of the numerous original papers.

3. SIX NEW POSSIBLE PLANETARIES

During a survey for strongly reddened galaxies on the Palomar Observatory Sky Survey (POSS) prints, six new possible PN have been found. Details concerning this survey are given by Weinberger (1977). Besides the data on these candidates in Table 1, some additional ones are presented in Table 2:

x and y are *rectangular coordinates* (in mm), measured from the lower left corner of the first POSS field listed in the subsequent column. The red (m_r) and blue (m_b) *surface brightnesses* were estimated by comparison with surface brightnesses of the Abell (1966) planetaries and are expected to be reliable to ± 1.0 mag/arcsec² at worst. The values listed correspond to the brightest section of each nebula; considering the limiting surface brightnesses of the POSS (25 mag/arcsec² in the red, 26.5 mag/arcsec² in the blue), 5 of the 6 objects show to be extraordinarily weak. Because of their appearance on the POSS red prints, We 2–37, We 2–245, and We 2–262 seem to be the most promising candidates for being true planetary nebulae.

ACKNOWLEDGEMENTS

I wish to express my gratitude to Prof. Pfeleiderer and Prof. Elsässer for valuable discussions and critical comments, and to Prof. Kohoutek for sending me his own list of new and misclassified planetary nebulae. Many thanks are also due to the referee who provided me with those tables in Wray's thesis dealing with planetary nebulae.

REFERENCES

- Abell, G.O.: 1966, *Astrophys. J.* **144**, 259.
 Acker, A. and Marcout, J.: 1977, *Astron. Astrophys. Suppl.* (in press).
 Allen, D.A.: 1973, *Observatory* **93**, 85.
 Allen, D.A.: 1974, *Monthly Notices Roy. Astron. Soc.* **168**, 1.
 Arp, H.C.: 1965, in A. Blaauw and M. Schmidt, (eds.), *Stars and Stellar Systems*, V, University of Chicago Press, Chicago, p. 401.
 Arp, H. and Scargle, J.D.: 1967, *Astrophys. J.* **150**, 707.
 Blaauw, A., Danziger, I.J. and Schuster, H.-E.: 1975, *Astron. Astrophys.* **44**, 469.
 Bráz, M.A.: 1975, *Observatory* **95**, 211.
 Cahn, J.H. and Rubin, R.H.: 1974, *Astron. J.* **79**, 128.
 Caloi, V. and Panagia, N.: 1974, *Astron. Astrophys.* **36**, 139.
 Cesco, C.U. and Gibson, J.: 1973, *Astron. Astrophys. Suppl.* **11**, 335.
 Dolidze, M.V. and Džimšelejšvili, G.N.: 1966, *Astr. Tsirk.* **385**, 7.
 Higgs, L.A.: 1971, *Publ. Astrophys. Branch. Nat. Res. Council Canada* **1**, No. 1.
 Holmberg, E.B., Lauberts, A., Schuster, H.-E. and West, R.M.: 1974, *Astron. Astrophys. Suppl.* **18**, 463.
 Holmberg, E.B., Lauberts, A., Schuster, H.-E. and West, R.M.: 1975, *Astron. Astrophys. Suppl.* **22**, 327.
 Holmberg, E.B., Lauberts, A., Schuster, H.-E. and West, R.M.: 1977a, *Astron. Astrophys. Suppl.* **27**, 295.
 Holmberg, E.B., Lauberts, A., Schuster, H.-E. and West, R.M.: 1977b, *Astron. Astrophys. Suppl.* (in press).
 Johnson, H.M.: 1973, *Mém. Soc. Roy. Sci. Liège*, Coll. 8^e, 6^e Sér., Vol. 5, p. 121.
 Kazarjan, M.A.: 1966, *Astrofizica* **2**, 371.

- Kazarjan, M.A.: 1976, *Byurakan Obs.* **12**, 385.
 Kazarjan, M.A. and Oganessian, E.Ya.: 1973, *Astr. Tsirk.* **753**, 3.
 Kazarjan, M.A. and Parsamian, E.S.: 1971, *Astr. Tsirk.* **602**, 6.
 Kohoutek, L.: 1969, *Bull. Astr. Inst. Csl.* **20**, 307.
 Kohoutek, L.: 1971, *Astron. Astrophys.* **13**, 493.
 Kohoutek, L.: 1972, *Astron. Astrophys.* **16**, 291.
 Lo, K.Y. and Bechis, K.P.: 1976, *Astrophys. J. Letters* **205**, L21.
 Longmore, A.J.: 1977, *Monthly Notices Roy. Astron. Soc.* **178**, 251.
 MacGregor, A.D., Phillips, J.P. and Selby, M.J.: 1973, *Monthly Notices Roy. Astron. Soc.* **164**, 31P.
 Mammano, A. and Ciatti, F.: 1975, *Astron. Astrophys.* **39**, 405.
 Merrill, P.W. and Burwell, C.G.: 1943, *Astrophys. J.* **98**, 153.
 Merrill, P.W. and Burwell, C.G.: 1950, *Astrophys. J.* **112**, 72.
 Merrill, K.M. and Stein, W.A.: 1976, *Publ. Astron. Soc. Pacific* **88**, 874.
 Nordström, B.: 1975, *Astron. Astrophys. Suppl.* **21**, 193.
 Perek, L. and Kohoutek, L.: 1967, *Catalogue of Galactic Planetary Nebulae*, Academia Prague.
 Peterson, A.W.: 1976, *Astron. Astrophys.* **53**, 441.
 Rubin, R.H.: 1970, *Astron. Astrophys.* **8**, 171.
 Sanduleak, N.: 1974, *Publ. Astron. Soc. Pacific* **86**, 215.
 Sanduleak, N.: 1975a, *Publ. Warner and Swasey Obs.* Vol. **2**, No. 1.
 Sanduleak, N.: 1975b, *Publ. Astron. Soc. Pacific* **87**, 705.
 Sanduleak, N.: 1976, *Publ. Warner and Swasey Obs.* Vol. **2**, No. 3.
 Sanduleak, N. and Stephenson, C.B.: 1972a, *Publ. Astron. Soc. Pacific*, **84**, 816.
 Sanduleak, N. and Stephenson, C.B.: 1972b, *Astrophys. J.* **178**, 183.
 Schuster, H.-E. and West, R.M.: 1976, *Astron. Astrophys.* **46**, 139.
 Sherwood, W.A.: 1969, *Observatory* **89**, 207.
 Smith, M.G. and Gull, T.R.: 1975, *Astron. Astrophys.* **44**, 223.
 Stenholm, B.: 1975, *Astron. Astrophys.* **39**, 307.
 Stienon, F.M., Chartrand, M.R. and Shao, C.Y.: 1974, *Astron. J.* **79**, 47.
 Stock, J. and Wroblewski, H.: 1972, *Publ. Dept. Astron. Universidad de Chile* **2**, 59.
 Terzian, Y., Balick, B. and Bignell, C.: 1974, *Astrophys. J.* **188**, 257.
 Terzian, Y. and Dickey, J.: 1973, *Astron. J.* **78**, 875.
 Van den Bergh, S., Racine, R., van Agt, S., Barnes, T., Coutts, C., Madore, B. and Skill, A.: 1973, *Astrophys. J.* **179**, 863.
 Vorontsov-Velyaminov, B.A., Kostjakova, E.B., Dokuchaeva, O.D., and Arkhipova, V.P.: 1972, *Astr. Tsirk.* **716**, 7.
 Wackerling, L.R.: 1970, *Mem. Roy. Astron. Soc.* **73**, 153.
 Walker, R.G. and Price, S.D.: 1975, *AFCRL Infrared Sky Survey*, Vol. 1 (Air Force No. AFCRL-TR-75-0373).
 Weinberger, R.: 1977, *Astron. Astrophys. Suppl.* (submitted).
 Welin, G.: 1973, *Astron. Astrophys. Suppl.* **9**, 183.
 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. and Wynn-Williams, C.G.: 1975, *Astrophys. J.* **202**, 407.
 Wray, J.D.: 1966, *Thesis*, Northwestern University.

R. Weinberger

Institut für Astronomie der Universität
 Innsbruck,
 Universitätsstr. 4
 A-6020 Innsbruck
 Austria

Table 1a References for columns 9, 10, and 11 of Table 1.

1 ALLEN, 1974	12 MERRILL & STEIN, 1976
2 BRAZ, 1975	13 PETERSON, 1976
3 CABN & RUBIN, 1974	14 SANDULEAK, 1975a
4 HIGGS, 1971	15 SMITH & GULL, 1975
5 KAZARJAN & OGANESYAN, 1973	16 STOCK & WROBLEWSKI, 1972
6 KAZARJAN & PARSAMIAN, 1971	17 TERZIAN ET AL., 1974
7 KOHOUTEK, 1972	18 TERZIAN & DICKEY, 1973
8 LO & BECHIS, 1976	19 VORONTSOV-VELYAMINOV ET AL., 1972
9 MACGREGOR ET AL., 1973	20 WACKERLING, 1970
10 MERRILL & BURWELL, 1943	21 WALKER & PRICE, 1975
11 MERRILL & BURWELL, 1950	22 WELIN, 1973
	23 WEST, 1976

Table 2 Six new possible planetaries.

No.	x	y	POSS No.	Surface br.	
				m_r	m_b
5	139	141	1240	23.9	>26.5
34	109	96	929	23.3	>26.5
37	210	250	1619, 895	23.8	>26.5
245	50	243	1133, 806	22.0	24.7
260	259	12	1173, 595	24.5	>26.5
262	65	269	1173, 1233	23.6	25.8

Table 1 New possible, probable, and true planetary nebulae.

(1) NO.	(2) NAME	(3) DESIGN.	(4) R.A. (1950) H M S	(5) DECL. (1950) D M S	(6) ACC REF.	(7) ϵ D	(8) DIMENSION ARCSEC	(9) OPTICAL	(10) INFRARED	(11) RADIO
1	We 1-1	121 +01	00 35 55.2	+66 07 12	c	121.67	3.55			
2	We 1-2	125 +40	00 37 55	+66 07 12	c	125.40	3.55			
3	K 4-59	127 -01	01 27.24	+60 15.9	b	127.23	1.98			
4	We 2-5	129 -01	01 39.15	+60 15.9	d	129.26	2.07			
5	K 3-91	129 +01	01 54.79	+66 19.5	b	129.55	4.56			
6	K 3-92	130 +01	01 59.91	+66 43.2	b	130.48	3.15			
7	K 3-93	132 +01	02 01.99	+66 31.6	b	132.42	4.70			
8	K 3-94	132 +01	02 05.02	+66 31.6	b	132.42	4.70			
9	K 3-95	135 +01	02 33.16	+66 31.6	b	135.42	4.70			
10	Lo-1	255 +50	03 55.02	+44 22.6	b	255.35	59.64 (373)			
11	Lo-2	284 +30	03 32.01	+59 53.8	b	142.15	3.49			
12	Lo-3	284 +30	04 03 37.9	+51 43 23.0	a	151.40	0.51			
13	K 3-64	151 +01	04 09 37.9	+51 43 23.0	a	151.40	0.51			
14	K 3-65	153 +01	04 12 12.6	+48 42 14	a	153.77	1.41			
15	K 3-66	157 +01	04 15 12.6	+48 42 14	a	157.14	1.41			
16	K 3-67	167 +01	04 33 22.12	+53 33 36.6	a	167.46	9.11			
17	K 3-67	165 +01	04 36 37.52	+53 33 36.6	a	165.54	6.57			
18	CrL 618	166 +01	04 39 33.58	+53 33 36.6	a	166.45	6.53			
19	We 1-2	160 +01	04 43 07.0	+44 22 38	c	160.56	0.54			
20	K 3-93	163 +01	04 38 52.7	+41 57	c	163.16	0.57			
21	K 3-94	170 +01	05 37 54.1	+39 13 39	a	170.74	4.65			
22	K 3-70	184 +01	05 37 54.1	+39 13 39	a	184.61	0.67			
23	K 3-70	243 +20	06 00.40	+37 25.4	a	243.79	25.34			
24	K 3-71	184 +01	06 10 47.4	+26 53 51	a	184.89	4.40			
25	K 3-71	184 +01	06 10 47.4	+26 53 51	a	184.89	4.40			
26	K 3-71	184 +01	06 10 47.4	+26 53 51	a	184.89	4.40			
27	K 3-72	204 +01	06 11 31.7	+26 53 51	a	204.88	3.58			
28	K 3-72	204 +01	06 11 31.7	+26 53 51	a	204.88	3.58			
29	K 2-13	247 +21	06 23.84	+39 50.0	a	247.77	21.68			
30	K 4-48	201 +01	06 37 09.17	+11 09 17.6	a	201.74	2.52			
31	We 1-5	216 +01	06 39 06.5	+04 59 44	c	216.31	4.49			
32	K 2-16	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
33	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
34	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
35	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
36	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
37	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
38	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
39	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
40	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
41	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
42	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
43	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
44	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
45	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
46	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
47	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
48	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
49	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
50	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
51	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
52	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
53	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
54	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
55	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
56	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
57	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
58	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
59	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
60	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
61	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
62	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
63	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
64	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
65	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
66	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
67	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
68	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
69	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
70	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
71	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
72	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
73	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
74	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
75	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
76	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
77	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
78	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
79	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
80	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
81	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
82	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
83	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
84	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
85	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
86	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
87	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
88	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
89	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
90	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
91	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
92	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
93	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
94	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
95	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
96	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
97	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
98	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
99	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
100	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
101	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
102	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
103	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
104	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
105	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
106	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
107	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
108	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
109	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
110	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98	0.92			
111	We 2-5	210 +01	06 102.03	+02 22.1	c	210.98				

Table 1 (continued)

(1) NO.	(2) NAME	(3) DESIGN.	(4) R.A. (1950) H. M. S.	(5) DECL. (1950) D. M. S.	(6) DIMENSION ARCSEC	(7) δ	(8) DIMENSION ARCSEC	(9) OPTICAL INFRARED	(10) INFRARED RADIO	(11) RADIO
168	W 17-38	305 + 3'2"	13 07 12.6	-59 29 11	305.31	+ 3.03	305.92	s		
169	St 2-22	305 + 3'1"	13 11 37	-58 35.9	305.31	+ 3.88	305.92	s		
170	W 17-59	305 - 3'1"	13 16 06.5	-65 53.23	305.77	- 3.44	24.24	e		
171	W 16-128	307 + 5'0"	13 21 11.2	-57 15.39	307.36	+ 5.07	18.18	e		
172	Lo-8	310.35 + 24.63	13 22 43	-57 29.6	310.35	+ 24.63	ES03	e		
173	W 16-129	307 + 1'1"	13 22 51.3	-60 59.41	307.09	+ 1.34	125+104	e		
174	W 17-60	306 + 0'2"	13 22 51.9	-63 18.51	306.79	+ 0.96	ES03	e		
175	ESO-00-PN111	305 + 1'0"	13 29 59	-75 31.1	305.62	- 13.13	78+66	e23		
176	W 17-61	308 + 1'0"	13 34 16.1	-63 32.49	308.37	+ 0.58		e		
177	W 17-62	308 + 1'0"	13 35 51.8	-65 51.8	309.56	+ 6.12		e		
178	W 17-63	308 + 0'2"	13 36 56.5	-61 51.21	308.62	+ 0.22		e		
179	ESO-097-PN03	308 + 1'1"	13 37 33	-64 00.5	308.29	+ 1.91	85+60	e23		e2
180	BRACO-5	309 + 1'1"	13 40 34	-60 34.6	309.82	+ 0.52		e		
181	W 16-137	309 + 0'1"	13 46 44.4	-59 04.02	309.82	+ 0.52		e		
182	W 16-138	309 + 0'1"	13 46 44.4	-59 04.02	309.82	+ 0.52		e		
183	Schub-2	311 + 3'2"	13 52.3	-59 08.9	311.05	+ 2.68	90+45	e23		
184	W 16-143	310 + 3'1"	13 56 33.9	-65 10.57	310.12	+ 3.50		e		
185	W 16-143	310 + 3'1"	13 56 33.9	-65 10.57	310.12	+ 3.50		e		
186	W 17-64	311 + 1'9"	14 00 15.1	-61 08.54	311.14	+ 1.49		e		
187	W 17-65	311 + 0'1"	14 05 05.6	-62 15.41	311.73	+ 0.85		e		
188	W 17-66	308 + 2'6"	14 05 53.6	-62 15.41	308.70	- 12.19		e		
189	W 16-150	311 + 1'0"	14 19 56.1	-65 15.26	311.19	+ 6.03		e		
190	W 16-155	311 + 0'1"	14 29 17.0	-60 41.46	311.97	+ 0.44		e		
191	W 16-155	311 + 0'1"	14 29 17.0	-60 41.46	311.97	+ 0.44		e		
192	K 1-24	322 + 3'1"	14 35 03.0	-64 00.0	322.37	+ 14.59	48+48	e		
193	W 17-67	313 + 5'1"	14 36 44.7	-65 38.02	313.82	- 5.32		e		
194	W 17-68	317 + 3'1"	14 37 58.1	-56 02.30	317.84	+ 3.39	BRACO5	e		
195	CeC1-16	333 + 3'0"	14 52 04.00	-73 35 03.6	333.85	+ 32.18		e		
196	W 16-158	315 + 0'1"	14 58 30.4	-63 49.59	315.72	- 4.22		e		
197	ESO-223-PN110	324 + 9'1"	14 58 30.4	-63 49.59	324.17	+ 9.08	18+18	e		
198	W 16-161	318 + 2'3"	15 01 29.1	-57 20.13	320.15	+ 0.80	147 HI	e4		
199	W 16-161	318 + 2'3"	15 01 29.1	-57 20.13	320.15	+ 0.80	147 HI	e4		
200	ESO-135-104	318 + 3'0"	15 04 39	-61 32.6	318.44	+ 3.07	42+42	e		
201	ESO-177	335 + 2'1"	15 05 26.18	-61 32.6	335.46	+ 29.15		e		
202	W 16-174	321 + 0'1"	15 15 37.1	-57 11.29	321.87	- 0.05		e		
203	W 16-174	321 + 0'1"	15 15 37.1	-57 11.29	321.87	- 0.05		e		
204	W 17-69	321 + 0'1"	15 17 11.8	-57 46.11	321.74	- 0.65		e		
205	W 16-179	325 + 6'5"	15 21 04.3	-51 26.02	325.65	+ 4.37		e		
206	W 17-70	321 + 1'0"	15 22 54.3	-58 48.10	321.81	- 1.93		e		
207	ESO-135-109	319 + 0'1"	15 23 13	-62 20.71	319.88	- 4.90	24+18	e		
208	W 16-185	319 + 0'1"	15 23 13	-62 20.71	319.88	- 4.90	24+18	e		
209	W 16-185	319 + 0'1"	15 23 13	-62 20.71	319.88	- 4.90	24+18	e		
210	W 16-188	338 + 1'0"	15 44 37.1	-51 21.4	338.82	+ 14.82		e		
211	W 16-188	338 + 1'0"	15 44 37.1	-51 21.4	338.82	+ 14.82		e		
212	W 17-71	346 + 2'0"	15 46 55.0	-52 21.4	346.87	+ 22.85		e		
213	W 16-189	330 + 6'2"	15 47 42.8	-48 17.03	330.99	+ 4.39	60 HI	e4		
214	W 16-191	329 + 1'0"	15 51 56.2	-51 22.29	329.08	+ 1.96	36+36	e		
215	W 16-191	329 + 1'0"	15 51 56.2	-51 22.29	329.08	+ 1.96	36+36	e		
216	W 16-191	329 + 1'0"	15 51 56.2	-51 22.29	329.08	+ 1.96	36+36	e		
217	BRACO-7	329 + 0'2"	15 55 05.3	-48 34.28	331.08	+ 3.94		e		
218	CeC1-19	342 + 1'5"	15 55 37.22	-51 51 47.6	342.97	+ 15.94	105+95	e		
219	W 16-197	326 + 3'1"	15 55 44.1	-57 21.27	326.15	+ 3.38		e		
220	ESO-100-G107	321 + 2'0"	15 56 43	-64 39.5	321.46	- 9.00	24+18	e		
221	W 16-199	332 + 0'1"	15 56 43	-64 39.5	332.45	+ 3.58		e		
222	W 16-199	332 + 0'1"	15 56 43	-64 39.5	332.45	+ 3.58		e		
223	W 16-199	332 + 0'1"	15 56 43	-64 39.5	332.45	+ 3.58		e		
224	W 17-72	333 + 0'1"	16 00 05.6	-62 14.33	333.35	- 7.43		e		
225	W 16-202	332 + 1'0"	16 03 14.8	-49 18.37	332.28	+ 1.96		e		
226	Lo-12	340 + 1'0"	16 05 10	-36 59.0	340.89	+ 10.84	83+75	e		
227	Lo-13	345 + 1'5"	16 06 35	-30 46.2	345.51	+ 15.13	71	e		
228	W 16-203	331 + 1'0"	16 07 37	-59 10.1	331.92	+ 1.07		e		
229	SO-14	331 + 1'0"	16 07 37	-59 10.1	331.92	+ 1.07	125+117	e		
230	W 17-73	330 + 2'3"	16 11 43	-53 46.1	330.22	- 2.16		e		
231	W 17-73	325 + 2'0"	16 11 29.7	-60 55.02	325.26	- 7.38		e		
232	ESO-100-G116	321 + 1'0"	16 12 15	-66 30.6	321.37	- 11.45	24+18	e		
233	W 17-74	330 + 2'0"	16 13 06.4	-51 10.12	330.16	- 0.46		e		
234	W 17-75	330 + 2'0"	16 13 06.4	-51 10.12	330.16	- 0.46		e		
235	W 16-216	331 + 4'0"	16 18 07.8	-67 57.8	331.92	+ 4.39		e		
236	W 16-216	331 + 4'0"	16 18 07.8	-67 57.8	331.92	+ 4.39		e		
237	W 17-76	332 + 1'0"	16 41 17	-27 58.36	332.95	+ 11.40		e		
238	ESO-023-G108	313 + 2'0"	16 54 13	-78 22.8	313.94	- 21.40	24+24	e		
239	SaSt-2-12	334 + 2'0"	16 59 00.2	-53 51.31	334.84	- 7.46		e		
240	W 16-251	342 + 2'0"	17 02 57.1	-44 18.47	342.95	- 2.31		e		
241	Sa 1-20-PN105	340 + 1'0"	17 07 01	-47 21.3	340.91	- 4.66		e		
242	W 16-252	333 + 1'0"	17 14 62	-56 51.3	333.70	- 11.02		e		
243	ESO-180-G106	333 + 1'0"	17 14 62	-56 51.3	333.70	- 11.02	12+12	e		
244	Sa 3-43	355 + 5'1"	17 14 73	-29 58.6	355.79	+ 4.45		e		
245	W 16-266	337 + 9'1"	17 18 36.5	-52 43.39	337.50	- 9.18	18+18	e		
246	StR-48	331 + 1'0"	17 20 42.0	-59 29.34	331.89	- 13.13		e		
247	W 16-269	348 + 3'0"	17 21 10.9	-44 39.12	348.35	+ 3.65		e		
248	W 16-270	348 + 3'0"	17 21 10.9	-44 39.12	348.35	+ 3.65		e		
249	W 16-278	359 + 3'4"	17 26 23.2	-45 20.31	359.42	- 6.16		e		
250	W 17-88	344 + 3'0"	17 28 57.6	-27 56.14	344.29	+ 3.04		e		
251	W 16-286	351 + 1'0"	17 29 37.3	-36 41.48	351.99	- 1.91		e		