
A Catalogue of Galactic Supernova Remnants

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This is a detailed version of the catalogue presented in summary as an appendix in Green (1991, *Publications of the Astronomy Society of the Pacific*, in press). It is an updated version of the catalogue published in Green (1988, *Astrophysics and Space Science*, 148, p3), which should be consulted for detailed explanations of the various entries.

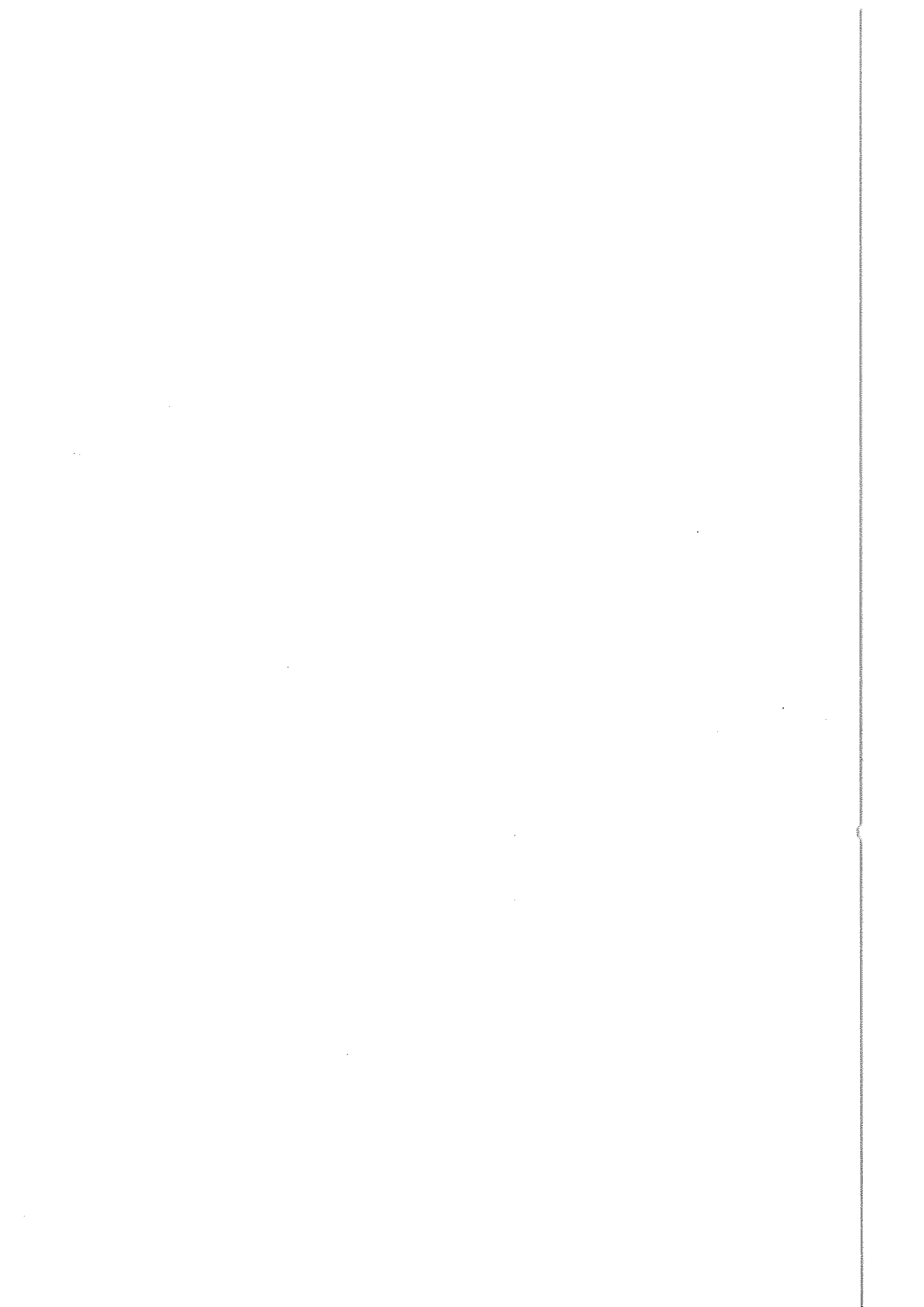


Table I

<i>l</i>	<i>b</i>	RA (1950.0) Dec (h m s) (° ')	size (arcmin)	type	Flux at 1 GHz (Jy)	spectral index	other names
0.0	+0.0	17 42 33 -28 59	3.5 × 2.5	S	100?	0.8?	Sgr A East
0.9	+0.1	17 44 12 -28 08	8	C	18?	varies	
1.9	+0.3	17 45 37 -27 09	1.2	S	0.6	0.7	
4.2	-3.5	18 05 45 -27 04	28	S	3.2?	0.6?	
4.5	+6.8	17 27 42 -21 27	3	S	19	0.64	Kepler, SN1604, 3C358
5.2	-2.6	18 04 25 -25 45	18	S	2.6?	0.6?	
5.4	-1.2	17 59 00 -24 55	35	C?	35?	0.2?	Milne 56
5.9	+3.1	17 44 20 -22 15	20	S	3.3?	0.4?	
6.1	+1.2	17 51 55 -23 05	30 × 26	F	4.0?	0.3?	
6.4	-0.1	17 57 30 -23 25	42	C	310	varies	W28
6.4	+4.0	17 42 10 -21 20	31	S	1.3?	0.4?	
7.7	-3.7	18 14 20 -24 05	18	S	10	0.32	1814-24
8.7	-5.0	18 21 05 -23 50	26	S	4.4	0.3	
8.7	-0.1	18 02 35 -21 25	45	S?	90	0.25	(W30)
9.8	+0.6	18 02 10 -20 14	12	S	3.9	0.5	
10.0	-0.3	18 05 40 -20 26	8?	S?	2.9	0.8	
11.2	-0.3	18 08 30 -19 26	4	S	22	0.49	
11.4	-0.1	18 07 50 -19 06	8	S?	6	0.5	
12.0	-0.1	18 09 15 -18 38	5?	?	3.5	0.7	
13.5	+0.2	18 11 20 -17 13	5 × 4	S	3.5?	1.0?	
15.1	-1.6	18 21 05 -16 36	30 × 24	S	5.5?	0.8?	
15.9	+0.2	18 16 00 -15 03	7 × 5	S?	4.5?	0.7?	
16.7	+0.1	18 18 05 -14 21	4	C	3.0	0.6	
16.8	-1.1	18 22 30 -14 48	30 × 24?	?	2?	?	
17.4	-2.3	18 28 05 -14 54	24?	S	4.8?	0.8?	
17.8	-2.6	18 30 00 -14 41	24	S	4.0?	0.3?	
18.8	+0.3	18 21 10 -12 25	18 × 13	S	27	0.3	Kes 67
18.9	-1.1	18 27 00 -13 00	33	C?	37	varies	
20.0	-0.2	18 25 20 -11 37	10	F	10	0.0	
21.5	-0.9	18 30 47 -10 37	1.2	F	6	0.0	
21.8	-0.6	18 30 00 -10 10	20	S	69	0.5	Kes 69
22.7	-0.2	18 30 30 -09 15	26	S?	33	0.6	
23.3	-0.3	18 32 00 -08 50	27	S	70	0.5	W41
23.6	+0.3	18 30 20 -08 15	10?	?	8?	0.3	
24.7	-0.6	18 36 00 -07 35	15?	S?	8	0.5	
24.7	+0.6	18 31 30 -07 07	30 × 15	C?	20?	0.2?	
27.4	+0.0	18 38 40 -04 59	4	S	6	0.68	4C-04.71
27.8	+0.6	18 37 06 -04 28	50 × 30	F	30	varies	
29.7	-0.3	18 43 48 -03 02	3	C?	10	0.7	Kes 75
30.7	-2.0	18 51 50 -02 58	16	?	0.5?	0.7?	
30.7	+1.0	18 42 10 -01 35	24 × 18	S?	6	0.4	
31.5	-0.6	18 48 35 -01 35	18?	S?	2?	?	
31.9	+0.0	18 46 50 -00 59	5	S	24	0.55	3C391
32.0	-4.9	19 03 00 -03 00	60?	S?	22?	0.5?	3C396.1
32.8	-0.1	18 48 50 -00 12	17	S?	11?	0.2?	Kes 78

Table I

<i>l</i>	<i>b</i>	RA (1950.0) (h m s)	Dec (° ')	size (arcmin)	type	Flux at 1 GHz (Jy)	spectral index	other names
33.2	-0.6	18 51 12	-00 05	18	S	5?	varies	
33.6	+0.1	18 50 15	+00 37	10	S	22	0.5	Kes 79, 4C00.70, HC13
34.7	-0.4	18 53 30	+01 18	35 × 27	S	230	0.30	W44, 3C392
36.6	-0.7	18 58 05	+02 52	25?	S?	?	?	
36.6	+2.6	18 46 20	+04 23	17 × 13?	S	0.7?	0.5?	
39.2	-0.3	19 01 40	+05 23	8 × 6	S	18	0.6	3C396, HC24, NRAO 593
39.7	-2.0	19 10 00	+04 50	120 × 60	?	85?	0.7?	W50, SS433
40.5	-0.5	19 04 45	+06 26	22	S	11	0.5	Flo
41.1	-0.3	19 05 08	+07 03	4.5 × 2.5	S	22	0.48	3C397
42.8	+0.6	19 04 55	+09 00	24	S	3?	0.5?	
43.3	-0.2	19 08 44	+09 01	4 × 3	S	38	0.48	W49B
43.9	+1.6	19 03 30	+10 25	60?	F?	8.6?	0.0?	
45.7	-0.4	19 14 05	+11 04	22	S	4.2?	0.4?	
46.8	-0.3	19 15 50	+12 04	17 × 13	S	14	0.42	(HC30)
49.2	-0.7	19 21 30	+14 00	25?	S?	160?	0.3?	(W51)
53.6	-2.2	19 36 30	+17 08	28	S	8	0.6	3C400.2, NRAO 611
54.1	+0.3	19 28 28	+18 46	1.5	F?	0.5	0.1	
54.4	-0.3	19 31 10	+18 50	40	S	28	0.5	(HC40)
55.7	+3.4	19 19 10	+21 38	23	S	1.4	0.6	
57.2	+0.8	19 32 50	+21 50	12?	S?	1.8?	?	(4C21.53)
59.8	+1.2	19 36 50	+24 12	20 × 16?	?	1.6	0.5	
65.1	+0.6	19 52 30	+28 25	90 × 50	S	6	0.6	
65.3	+5.7	19 31 00	+31 05	310 × 240	S?	52?	0.6?	
65.7	+1.2	19 50 10	+29 18	18	?	5.1	0.6	DA 495
68.6	-1.2	20 06 40	+30 28	28 × 25?	?	0.7?	0.0?	
69.0	+2.7	19 51 30	+32 45	80?	?	120?	varies	CTB 80
69.7	+1.0	20 00 45	+32 35	16	S	1.6	0.8	
73.9	+0.9	20 12 20	+36 03	22?	S?	9?	0.3?	
74.0	-8.5	20 49 00	+30 30	230 × 160	S	210	varies	Cygnus Loop
74.9	+1.2	20 14 10	+37 03	8 × 6	F	9	varies	CTB 87
78.2	+2.1	20 19 00	+40 15	60	S	340	0.7	DR4, γ Cygni
82.2	+5.3	20 17 30	+45 20	95 × 65	S	120?	0.7?	W63
84.2	-0.8	20 51 30	+43 16	20 × 16	S	11	0.5	
89.0	+4.7	20 43 30	+50 25	120 × 90	S	220	0.40	HB21
93.3	+6.9	20 51 00	+55 10	27 × 20	S	9	0.54	DA 530, 4C(T)55.38.1
93.7	-0.2	21 27 45	+50 35	80	S	65	0.3	CTB 104A, DA 551
94.0	+1.0	21 23 10	+51 40	30 × 25	S	15	0.44	3C434.1
109.1	-1.0	22 59 30	+58 37	28	S	20	0.50	CTB 109
111.7	-2.1	23 21 10	+58 32	5	S	2720	0.77	Cassiopeia A, 3C461
112.0	+1.2	23 13 40	+61 30	30?	S?	7?	0.6?	
114.3	+0.3	23 34 45	+61 38	90 × 55	S	6?	0.3?	
116.5	+1.1	23 51 20	+62 58	80 × 60	S	11?	0.8?	
116.9	+0.2	23 56 40	+62 10	34	S	9?	0.5?	CTB 1
117.4	+5.0	23 52 30	+67 30	60 × 80?	S?	30?	0.5?	
119.5	+10.2	00 04 00	+72 30	90	S	36	0.3	CTA 1

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120.1	+1.4	00 22 30	+63 52	8	S	56	0.61	Tycho, 3C10, SN1572
126.2	+1.6	01 18 30	+64 00	70	S?	7	varies	
127.1	+0.5	01 25 00	+62 55	45	S	13	0.6	R5
130.7	+3.1	02 01 55	+64 35	9 × 5	F	33	0.10	3C58, SN1181
132.7	+1.3	02 14 00	+62 30	80	S	45	0.6	HB3
152.2	-1.2	04 05 30	+48 24	110?	S?	16?	0.7?	
160.9	+2.6	04 57 00	+46 36	140 × 120	S	110	0.6	HB9
166.0	+4.3	05 23 00	+42 52	55 × 35	S	7?	0.4?	VRO 42.05.01
166.2	+2.5	05 15 30	+41 50	90 × 70	S	11	0.5	OA 184
179.0	+2.6	05 50 30	+31 05	70	S?	7	0.4	
180.0	-1.7	05 36 00	+27 50	180	S	65	varies	S147
184.6	-5.8	05 31 30	+21 59	7 × 5	F	1040	0.30	Crab Nebula, 3C144, SN1054
189.1	+3.0	06 14 00	+22 36	45	S	160	0.36	IC443, 3C157
192.8	-1.1	06 06 30	+17 20	78	S	20?	0.6?	PKS 0607+17
205.5	+0.5	06 36 00	+06 30	220	S	160	0.5	Monoceros Nebula
206.9	+2.3	06 46 00	+06 30	60 × 40	S?	6	0.5	PKS 0646+06
211.7	-1.1	06 43 10	+00 24	70?	S?	15?	0.5?	
240.9	-0.9	07 40 30	-25 06	95?	S?	24?	0.1?	
260.4	-3.4	08 20 30	-42 50	60 × 50	S	130	0.5	Puppis A, MSH 08-44
261.9	+5.5	09 02 20	-38 30	40 × 30	S	10?	0.4?	
263.9	-3.3	08 32 30	-45 35	255	C	1750	varies	Vela (XYZ)
279.0	+1.1	09 56 00	-53 00	95	S	30?	0.6?	
284.3	-1.8	10 16 30	-58 45	24?	S	11?	0.3?	MSH 10-53
290.1	-0.8	11 01 00	-60 40	15 × 10	S	42	0.4	MSH 11-61A
291.0	-0.1	11 09 45	-60 22	10	F	16	0.29	(MSH 11-62)
292.0	+1.8	11 22 20	-59 00	12 × 8	C?	15	0.4	MSH 11-54
293.8	+0.6	11 32 40	-60 37	20	C	5.5?	0.6?	
296.1	-0.5	11 48 40	-62 17	33?	S	8?	0.6?	
296.5	+10.0	12 07 00	-52 10	90 × 65	S	48	0.5	PKS 1209-51/52
296.8	-0.3	11 56 00	-62 18	14	S	9	0.6	1156-62
298.5	-0.3	12 10 00	-62 35	5?	?	5	0.4	
298.6	-0.0	12 11 00	-62 20	12 × 8?	S	4.3	0.3	
299.0	+0.2	12 15 00	-62 12	11?	S?	9?	?	
302.3	+0.7	12 42 55	-61 52	15	S	5.5	0.4	
304.6	+0.1	13 02 50	-62 26	8?	S?	14	0.5	Kes 17
308.7	+0.0	13 38 00	-62 00	17 × 7	F?	12	0.4	
309.2	-0.6	13 43 00	-62 39	17 × 13	S	7?	0.4?	
309.8	+0.0	13 47 00	-61 50	24	S	17	0.5	
311.5	-0.3	14 02 00	-61 44	3?	?	3.7	0.5	
312.4	-0.4	14 09 20	-61 29	36 × 27	S	44?	0.3?	
315.4	-2.3	14 39 00	-62 17	40	S	49	0.6	RCW 86, MSH 14-63, SN185
315.4	-0.3	14 32 10	-60 23	15 × 10	S	8	0.4	
316.3	-0.0	14 37 40	-59 47	25 × 15	S	24	0.4	(MSH 14-57)
320.4	-1.2	15 10 30	-58 58	30	C	60?	0.4?	MSH 15-52, RCW 89
321.9	-0.3	15 16 45	-57 23	30 × 20	S	13	0.3	

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323.5	+0.1	15 24 50	-56 11	10?	S	3?	0.4?	
326.3	-1.8	15 49 00	-56 00	36	C	145	varies	MSH 15-56
327.1	-1.1	15 50 30	-55 00	14?	S?	8?	?	
327.4	+0.4	15 44 30	-53 40	20	S	34	0.6	Kes 27
327.6	+14.6	14 59 35	-41 44	30	S	19	0.6	SN1006, PKS 1459-41
328.0	+0.3	15 49 30	-53 20	6?	?	2.4?	0.6?	
328.4	+0.2	15 51 40	-53 08	6	F	16	0.2	(MSH 15-57)
330.0	+15.0	15 05 00	-39 30	180?	S	350?	0.5?	Lupus Loop
330.2	+1.0	15 57 20	-51 26	10	S?	7	0.3	
332.0	+0.2	16 09 30	-50 45	10	S	9	0.5	
332.4	-0.4	16 13 45	-50 55	9	S	28	0.5	RCW 103
332.4	+0.1	16 11 30	-50 35	15	S	26	0.5	MSH 16-51, Kes 32
335.2	+0.1	16 24 00	-48 40	19	S	18	0.5	
336.7	+0.5	16 28 30	-47 13	13 × 10	S	6	0.5	
337.0	-0.1	16 32 10	-47 27	14?	S?	17?	0.5?	(CTB 33)
337.2	-0.7	16 35 45	-47 45	4?	?	2.1	0.7	
337.3	+1.0	16 29 00	-46 30	11	S	16	0.5	Kes 40
337.8	-0.1	16 35 20	-46 53	7?	?	18	0.5	Kes 41
338.1	+0.4	16 34 20	-46 18	12	S	4.5	0.4	
338.3	-0.0	16 37 20	-46 28	8?	S?	15?	0.7?	
338.5	+0.1	16 37 30	-46 13	8?	?	28?	0.3?	
340.4	+0.4	16 42 55	-44 34	6	S	6	0.4	
340.6	+0.3	16 44 05	-44 29	5	S	5.1	0.4	
341.9	-0.3	16 51 25	-43 56	6	S	3.2	0.5	
342.0	-0.2	16 51 15	-43 48	11 × 7	S?	3.5?	0.4?	
344.7	-0.1	17 00 20	-41 38	8?	S?	3.0	0.5	
346.6	-0.2	17 06 50	-40 07	8	S	10	0.5	
348.5	+0.1	17 10 40	-38 29	10	S	72	0.3	CTB 37A
348.7	+0.3	17 10 30	-38 08	10	S	26	0.3	CTB 37B
349.7	+0.2	17 14 35	-37 23	2.5 × 2	S?	20	0.5	
350.0	-1.8	17 23 40	-38 20	30?	S?	31	0.5	
351.2	+0.1	17 19 05	-36 08	7	C	5.8	0.4	
352.7	-0.1	17 24 20	-35 05	6 × 5	S?	6?	0.6?	
355.9	-2.5	17 42 35	-33 42	13	S	8	0.5	
357.7	-0.1	17 37 15	-30 56	3 × 8?	?	37	0.4	MSH 17-39
357.7	+0.3	17 35 20	-30 42	24	S	10	0.4?	
358.4	-1.9	17 46 05	-31 16	40 × 36	S	12.5?	0.5?	
359.0	-0.9	17 43 35	-30 15	23	S	23	0.5	
359.1	-0.5	17 42 20	-29 56	24	S	14	0.4?	

Table II

Other names for SNRs

γ Cygni	G78.2 + 2.1	DR4	G78.2 + 2.1	NRAO 593	G39.2 - 0.3
				NRAO 611	G53.6 - 2.2
1156-62	G296.8 - 0.3	Flo	G40.5 - 0.5		
1814-24	G7.7 - 3.7			OA 184	G166.2 + 2.5
		HB3	G132.7 + 1.3		
3C10	G120.1 + 1.4	HB9	G160.9 + 2.6	PKS 0607+17	G192.8 - 1.1
3C58	G130.7 + 3.1	HB21	G89.0 + 4.7	PKS 0646+06	G206.9 + 2.3
3C144	G184.6 - 5.8			PKS 1209-51/52	G296.5 + 10.0
3C157	G189.1 + 3.0	HC13	G33.6 + 0.1	PKS 1459-41	G327.6 + 14.6
3C358	G4.5 + 6.8	HC24	G39.2 - 0.3		
3C391	G31.9 + 0.0	(HC30)	G46.8 - 0.3	Puppis A	G260.4 - 3.4
3C392	G34.7 - 0.4	(HC40)	G54.4 - 0.3		
3C396	G39.2 - 0.3			R5	G127.1 + 0.5
3C396.1	G32.0 - 4.9	IC443	G189.1 + 3.0		
3C397	G41.1 - 0.3			RCW 86	G315.4 - 2.3
3C400.2	G53.6 - 2.2	Kepler	G4.5 + 6.8	RCW 89	G320.4 - 1.2
3C434.1	G94.0 + 1.0			RCW 103	G332.4 - 0.4
3C461	G111.7 - 2.1	Kes 17	G304.6 + 0.1		
		Kes 27	G327.4 + 0.4	S147	G180.0 - 1.7
4C-04.71	G27.4 + 0.0	Kes 32	G332.4 + 0.1		
4C00.70	G33.6 + 0.1	Kes 40	G337.3 + 1.0	SN185	G315.4 - 2.3
(4C21.53)	G57.2 + 0.8	Kes 41	G337.8 - 0.1	SN1006	G327.6 + 14.6
4C(T)55.38.1	G93.3 + 6.9	Kes 67	G18.8 + 0.3	SN1054	G184.6 - 5.8
		Kes 69	G21.8 - 0.6	SN1181	G130.7 + 3.1
		Kes 75	G29.7 - 0.3	SN1572	G120.1 + 1.4
CTA 1	G119.5 + 10.2	Kes 78	G32.8 - 0.1	SN1604	G4.5 + 6.8
		Kes 79	G33.6 + 0.1		
CTB 1	G116.9 + 0.2			SS433	G39.7 - 2.0
(CTB 33)	G337.0 - 0.1				
CTB 37A	G348.5 + 0.1	Lupus Loop	G330.0 + 15.0		
CTB 37B	G348.7 + 0.3			Sgr A East	G0.0 + 0.0
CTB 80	G69.0 + 2.7	MSH 08-44	G260.4 - 3.4		
CTB 87	G74.9 + 1.2	MSH 10-53	G284.3 - 1.8	Tycho	G120.1 + 1.4
CTB 104A	G93.7 - 0.2	MSH 11-54	G292.0 + 1.8		
CTB 109	G109.1 - 1.0	MSH 11-61A	G290.1 - 0.8	Vela (XYZ)	G263.9 - 3.3
		(MSH 11-62)	G291.0 - 0.1		
Cassiopeia A	G111.7 - 2.1	(MSH 14-57)	G316.3 - 0.0	VRO 42.05.01	G166.0 + 4.3
		MSH 14-63	G315.4 - 2.3		
Crab Nebula	G184.6 - 5.8	MSH 15-52	G320.4 - 1.2	W28	G6.4 - 0.1
		MSH 15-56	G326.3 - 1.8	(W30)	G8.7 - 0.1
Cygnus Loop	G74.0 - 8.5	(MSH 15-57)	G328.4 + 0.2	W41	G23.3 - 0.3
		MSH 16-51	G332.4 + 0.1	W44	G34.7 - 0.4
DA 495	G65.7 + 1.2	MSH 17-39	G357.7 - 0.1	W49B	G43.3 - 0.2
DA 530	G93.3 + 6.9			W50	G39.7 - 2.0
DA 551	G93.7 - 0.2	Milne 56	G5.4 - 1.2	(W51)	G49.2 - 0.7
				W63	G82.2 + 5.3
		Monoceros Nebula	G205.5 + 0.5	W63	G82.2 + 5.3

Journals

AA	Astronomy & Astrophysics
AAS	Astronomy & Astrophysics Supplement
AJ	Astronomical Journal
AJP	Australian Journal of Physics
AJPAS	Australian Journal of Physics Astrophysical Supplement
AL	Astrophysical Letters
ApJ	Astrophysical Journal
ApJS	Astrophysical Journal Supplement
JAA	Journal of Astrophysics & Astronomy
MN	Monthly Notices of the Royal Astronomical Society
PASA	Proceedings of the Astronomical Society of Australia
PASJ	Publications of the Astronomical Society of Japan
PASP	Publications of the Astronomical Society of the Pacific
RMex	Review of Mexican Astronomy & Astrophysics
SA	Soviet Astronomy
SAL	Soviet Astronomy Letters

Proceedings

IAU101	is <i>Supernova Remnants and their X-ray Emission</i> , (IAU Symposium 101), eds Danziger, I.J. & Gorenstein, P., (Reidel, Dordrecht, Holland), 1983.
Crablike	is <i>The Crab Nebula and Related Supernova Remnants</i> , eds Kafatos, M.C. & Henry, R.C.B., (Cambridge University Press), 1985.
SNRISM	is <i>Supernova Remnants and the Interstellar Medium</i> , (IAU Colloquium 101), eds Roger, R.S. & Landecker, T.L., (Cambridge University Press), 1988.
Birthevents	is <i>Supernova Shells and their Birth Events</i> , ed. Kundt, W.R. (Springer-Verlag, Berlin) 1988.

Telescopes: Radio

5km	Cambridge 5-km Telescope
6C	Cambridge low frequency northern survey
CLFST	Cambridge Low Frequency Synthesis Telescope
DRAO	Dominion Radio Astrophysical Observatory
FIRST	Fleurs Synthesis Telescope
FCRAO	Five College Radio Astronomy Observatory
HMT	Cambridge Half-Mile Telescope
MOST	Molonglo Observatory Synthesis Telescope
NRAO	National Radio Astronomy Observatory
NRO	Nobeyama Radio Observatory
OMT	Cambridge One-Mile Telescope
OSRT	Ooty Synthesis Radio Telescope
TPT	Clark Lake TPT telescope
VLA	Very Large Array
VRO	Vermillion River Observatory
WSRT	Westerbork Synthesis Radio Telescope

Telescopes: X-ray

EXOSAT	European X-ray Observatory Satellite
On board Einstein (HEAO-2)	
FPCS	Focal Plane Crystal Spectrometer
HRI	High Resolution Imager
IPC	Imaging Proportional Counter
SSS	Solid State Spectrometer

G0.0 + 0.0

Sgr A East

RA: 17^h42^m33^s
Dec: -28°59'

1-GHz flux (Jy): 100?
Spectral index: 0.8?

Size (arcmin): 3.5 × 2.5
Type: S

Radio: Non-thermal shell, in complex region.

References:

Ekers *et al.* 1983, AA, 122, 143. VLA at 1.4 GHz and 5 GHz (both 5'' × 8''), $S(1.4) = 77$, $S(5.0) = 31$.
Pedlar *et al.* 1989, ApJ, 342, 789. VLA at 332 MHz (12''), 1.4 GHz (1''.3 × 2''.5) and 5 GHz (1''.3 × 2''.5).

G0.9 + 0.1

RA: 17^h44^m12^s
Dec: -28°08'

1-GHz flux (Jy): 18?
Spectral index: varies

Size (arcmin): 8
Type: C

Radio: Flat spectrum core within steep spectrum shell.

X-ray: Possibly detected.

References:

Helfand & Becker 1987, ApJ, 314, 203. VLA at 1.4 and 5 GHz, and IPC observations.

G1.9 + 0.3

RA: 17^h45^m37^s
Dec: -27°09'

1-GHz flux (Jy): 0.6
Spectral index: 0.7

Size (arcmin): 1.2
Type: S

Radio: Shell, brighter to the N.

References:

Green & Gull 1984, Nature, 312, 527. VLA at 5 GHz (4''.4 × 2'').

G4.2 - 3.5

RA: 18^h05^m45^s
Dec: -27°04'

1-GHz flux (Jy): 3.2?
Spectral index: 0.6?

Size (arcmin): 28
Type: S

Radio: Elongated shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.
Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G4.5 + 6.8

Kepler, SN1604, 3C358

RA: 17^h27^m42^s
Dec: -21°27'1-GHz flux (Jy): 19
Spectral index: 0.64Size (arcmin): 3
Type: S

This is the remnant of Kepler's SN of AD1604.

Radio: Incomplete shell, brighter to the N.

Optical: Faint filaments.

X-ray: Shell, brighter to the N.

Distance: Historical observations indicate about 4.4 kpc.

References:

- van den Bergh & Kamper 1977, ApJ, 218, 617. Optical proper motions.
 Danziger & Goss 1980, MN, 190, 47P. Revision of distance.
 White & Long 1983, ApJ, 264, 196. IPC observations.
 Matsui *et al.* 1984, ApJ, 287, 295. VLA at 1.4 (2".5 × 3".2) and 5 GHz (3".2 × 4".8) and HRI map (5").
 Dickel *et al.* 1988, ApJ, 330, 254. VLA at 1.4 (1".2 × 2".3) and 5 GHz (0".6 × 1".0) at two epochs.
 Smith *et al.* 1989, ApJ, 347, 925. EXOSAT observations.
 Hatsukade *et al.* 1990, PASJ, 42, 279. X-ray spectrum.
 Blair *et al.* 1991, ApJ, 366, 484. Optical imaging and spectroscopy.

G5.2 - 2.6RA: 18^h04^m25^s
Dec: -25°45'1-GHz flux (Jy): 2.6?
Spectral index: 0.6?Size (arcmin): 18
Type: S

Radio: Poorly resolved shell.

References:

- Reich *et al.* 1988, in SNRISM. Summary of parameters.
 Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G5.4 - 1.2

Milne 56

RA: 17^h59^m00^s
Dec: -24°55'1-GHz flux (Jy): 35?
Spectral index: 0.2?Size (arcmin): 35
Type: C?

Has been called G5.3-1.0. Has been suggested that this is not a SNR.

Radio: Incomplete shell, including a bright, wide 'v' of emission with small flat-spectrum source at apex.

Optical: Detected.

Point sources: Pulsar, possibly associated with flat spectrum source?

References:

- Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3' : S = 38).
 Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3').
 Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz (6'.8 : S = 21.9 ± 2.4).
 Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
 Zealey *et al.* 1979, AAS, 38, 39. Optical detection.
 Becker & Helfand 1985, Nature, 313, 115. VLA at 1.4 and 5 GHz. Suggest it is not SNR, see Helfand & Becker 1985, Nature, 313, 118.
 Manchester *et al.* 1985, MN, 212, 975. Pulsar detection.
 Caswell *et al.* 1987, MN, 225, 329. MOST at 843 MHz (42" × 110").

G5.9 + 3.1

RA: 17^h44^m20^s
Dec: -22°15'

1-GHz flux (Jy): 3.3?
Spectral index: 0.4?

Size (arcmin): 20
Type: S

Radio: Asymmetric shell.

References:

Reich *et al.* 1988, in SNRISM. Effelsberg 100-m at 2.7 GHz (4'.3).

G6.1 + 1.2

RA: 17^h51^m55^s
Dec: -23°05'

1-GHz flux (Jy): 4.0?
Spectral index: 0.3?

Size (arcmin): 30 × 26
Type: F

Radio: Faint, diffuse emission.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G6.4 - 0.1

W28

RA: 17^h57^m30^s
Dec: -23°25'

1-GHz flux (Jy): 310
Spectral index: varies

Size (arcmin): 42
Type: C

Has been called G6.6-0.2.

Radio: Several non-thermal sources in a ring, with flat spectrum core.

Optical: Filaments.

X-ray: Diffuse emission from most of the remnant.

Point sources: Compact X-ray source near centre.

Distance: Uncertain mean optical velocity indicates 3.5-4 kpc.

References:

Kundu & Velusamy 1972, AA, 29, 23. NRAO 140-ft at 10 GHz (3').

van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.

Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).

Dopita *et al.* 1977, ApJ, 214, 179. Some optical line ratios.

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

Lozinskaya 1981, SAL, 7, 17. Mean optical velocity.

Andrews *et al.* 1983, ApJ, 266, 684. VLA at 1.4 GHz (8'') 4.9 GHz (3'') and 15 GHz (1'') of central region only, plus HRI image of central region.

Bohigas *et al.* 1983, RMex, 8, 155. Optical spectra.

Andrews *et al.* 1984, AJ, 90, 310. VLA of central component.

Matsui & Long 1985, in Crablike. IPC observations.

G6.4 + 4.0

RA: 17^h42^m10^s
Dec: -21°20'

1-GHz flux (Jy): 1.3?
Spectral index: 0.4?

Size (arcmin): 31
Type: S

Radio: Faint asymmetric shell.

References:

Reich *et al.* 1988, in SNRISM. Effelsberg 100-m at 2.7 GHz (4'.3).

G7.7 - 3.7

1814-24

RA: 18^h14^m20^s
Dec: -24°05'1-GHz flux (Jy): 10
Spectral index: 0.32Size (arcmin): 18
Type: S

Radio: Shell, with high polarization.

References:

Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Milne *et al.* 1986, MN, 223, 487. MOST at 843 MHz (44'' × 108'') and Parkes 64-m at 8.4 GHz (3' : $S = 4.6 \pm 0.5$), with polarization, plus review of fluxes.

G8.7 - 5.0RA: 18^h21^m05^s
Dec: -23°50'1-GHz flux (Jy): 4.4
Spectral index: 0.3Size (arcmin): 26
Type: S

Radio: Asymmetric shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.
 Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G8.7 - 0.1

(W30)

RA: 18^h02^m35^s
Dec: -21°25'1-GHz flux (Jy): 90
Spectral index: 0.25Size (arcmin): 45
Type: S?

Radio: Clumpy non-thermal shell.

Point sources: Pulsar near western edge.

References:

Odegard 1986, AJ, 92, 1372. TPT at 57.5 MHz (7'.2 × 9'.7 : $S = 190 \pm 50$).
 Kassim & Weiler 1990, Nature, 343, 146. VLA at 327 MHz (3'.0 × 3'.7).

G9.8 + 0.6RA: 18^h02^m10^s
Dec: -20°14'1-GHz flux (Jy): 3.9
Spectral index: 0.5Size (arcmin): 12
Type: S

Radio: Asymmetric shell.

References:

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
 Caswell 1983, MN, 204, 833. Molonglo at 408 MHz (3' : $S = 5.8 \pm 0.6$).

G10.0 - 0.3RA: 18^h05^m40^s
Dec: -20°26'1-GHz flux (Jy): 2.9
Spectral index: 0.8Size (arcmin): 8?
Type: S?

Radio: Not well resolved.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
 Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

G11.2 - 0.3

RA: $18^{\text{h}}08^{\text{m}}30^{\text{s}}$
Dec: $-19^{\circ}26'$

1-GHz flux (Jy): 22
Spectral index: 0.49

Size (arcmin): 4
Type: S

Probably associated with the SN of AD386.

Radio: Symmetrical clumpy shell, possibly with flatter spectrum core.

X-ray: Shell, brighter to the S.

Distance: HI absorption indicates 5 kpc.

References:

- Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Radhakrishnan *et al.* 1970, ApJS, 24, 49. HI absorption.
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.8 GHz ($3'$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Downes 1984, MN, 210, 845. VLA at 1465 MHz ($20'' \times 25''$) and HRI observations, with review of fluxes.
Becker *et al.* 1985, ApJ, 298, 461. VLA at 1.4 and 5 GHz, plus HI absorption, HRI and IPC observations.
Morsi & Reich 1987, AAS, 71, 189. Effelsberg 100-m at 32 GHz ($26''.5 : S = 4.04 \pm 0.24$).
Green *et al.* 1988, MN, 231, 735. VLA at 1.4 and 5 GHz.

G11.4 - 0.1

RA: $18^{\text{h}}07^{\text{m}}50^{\text{s}}$
Dec: $-19^{\circ}06'$

1-GHz flux (Jy): 6
Spectral index: 0.5

Size (arcmin): 8
Type: S?

Radio: Incomplete shell.

References:

- Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz ($3' : S = 9.4$) contaminated by sidelobes of a nearby source, and Parkes 64-m at 5 GHz ($4' : S = 2.8$).
Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 2.0 \pm 0.4$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).

G12.0 - 0.1

RA: $18^{\text{h}}09^{\text{m}}15^{\text{s}}$
Dec: $-18^{\circ}38'$

1-GHz flux (Jy): 3.5
Spectral index: 0.7

Size (arcmin): 5×4
Type: ?

Radio: Non-thermal source overlapping with thermal source, not well resolved.

References:

- Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz ($3' : S = 6.6$) and Parkes 64-m at 5 GHz ($4' : S = 1.1$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).

G13.5 + 0.2

RA: $18^{\text{h}}11^{\text{m}}20^{\text{s}}$
Dec: $-17^{\circ}13'$

1-GHz flux (Jy): 3.5?
Spectral index: 1.0?

Size (arcmin): 5×4
Type: S

Has been called G13.46+0.16.

Radio: Elongated incomplete shell.

References:

- Helfand *et al.* 1989, ApJ, 341, 151. VLA at 5 GHz ($S = 0.65 \pm 0.05$) and 1.4 GHz ($15'' : S = 2.67 \pm 0.5$).

G15.1 - 1.6

RA: 18^h21^m05^s
Dec: -16°36'

1-GHz flux (Jy): 5.5?
Spectral index: 0.8?

Size (arcmin): 30 × 24
Type: S

Radio: Elongated incomplete shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 833. Effelsberg 100-m at 2.7 GHz (4'.3).

G15.9 + 0.2

RA: 18^h16^m00^s
Dec: -15°03'

1-GHz flux (Jy): 4.5?
Spectral index: 0.7?

Size (arcmin): 7 × 5
Type: S?

Radio: Incomplete shell, brighter to the E.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 7.7$) and Parkes 64-m at 5 GHz (4' : $S = 1.9$).

Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz (6'.8 : $S = 1.1 \pm 0.2$).

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.8).

Caswell *et al.* 1982, MN, 200, 1143. FIRST at 1415 MHz (58'' × 44'').

G16.7 + 0.1

RA: 18^h18^m05^s
Dec: -14°21'

1-GHz flux (Jy): 3.0
Spectral index: 0.6

Size (arcmin): 4
Type: C

Has been called G16.73+0.08.

Radio: Asymmetric shell with flat-spectrum core.

References:

Helfand *et al.* 1989, ApJ, 341, 151. VLA at 5 GHz (5 : $S = 0.95$) and 1.4 GHz (15'' : $S = 2.43$) and OSRT at 327 MHz ($S = 5.13$).

G16.8 - 1.1

RA: 18^h22^m30^s
Dec: -14°48'

1-GHz flux (Jy): 2?
Spectral index: ?

Size (arcmin): 30 × 24?
Type: ?

Radio: Overlapping thermal and non-thermal emission, parameters uncertain.

References:

Reich *et al.* 1986, AA, 155, 185. Effelsberg 100-m at 4.75 GHz (2'.4), plus other observations.

G17.4 - 2.3

RA: 18^h28^m05^s
Dec: -14°54'

1-GHz flux (Jy): 4.8?
Spectral index: 0.8?

Size (arcmin): 24?
Type: S

Radio: Incomplete, poorly defined shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 833. Effelsberg 100-m at 2.7 GHz (4'.3).

G17.8 - 2.6

RA: 18^h30^m00^s
Dec: -14°41'

1-GHz flux (Jy): 4.0?
Spectral index: 0.3?

Size (arcmin): 24
Type: S

Radio: Well defined shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.
Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G18.8 + 0.3

Kes 67

RA: 18^h21^m10^s
Dec: -12°25'

1-GHz flux (Jy): 27
Spectral index: 0.3

Size (arcmin): 18 × 13
Type: S

Has been called G18.9+0.3.

Radio: Incomplete shell, in complex region near the HII region W39.

Distance: HI absorption indicates >9.5 kpc, and possibly <19 kpc.

References:

Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz (5' : S = 17 ± 7).
Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3' : S = 38).
Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Milne *et al.* 1989, PASA, 8, 187. Parkes 64-m at 8.4 GHz (3'.0 : S = 12.9 ± 1.0), including polarization.

G18.9 - 1.1

RA: 18^h27^m00^s
Dec: -13°00'

1-GHz flux (Jy): 37
Spectral index: varies

Size (arcmin): 33
Type: C?

Has been called G18.95-1.1 and G18.94-1.04.

Radio: Non-thermal, diffuse partially limb-brightened, with central ridge.

References:

Fürst *et al.* 1985, Nature, 314, 720. Effelsberg 100-m at 4.75 GHz (2'.4 : S = 23.8), plus other fluxes.
Odegard 1986, AJ, 92, 1372. TPT at 57.5 MHz (7'.2 × 8' : S = 82 ± 15), plus review of fluxes.
Barnes & Turtle 1988, in SNRISM. Molonglo at 408 MHz (2'.9 × 3'.1 : S = 58 ± 9) and Parkes 64-m at 5 GHz (4'.4 × 4'.1 : S = 23 ± 6).
Patnaik *et al.* 1988, Nature, 332, 136. OSRT at 327 MHz (0'.6 × 1'.6).
Fürst *et al.* 1989, AA, 209, 361. Effelsberg 100-m at 4.75 GHz (2'.45 : S = 23.8) and VLA at 1.5 and 4.9 GHz (19'' × 14''), and Effelsberg 100-m at 1.4 GHz (9') for HI.

G20.0 - 0.2

RA: 18^h25^m20^s
Dec: -11°37'

1-GHz flux (Jy): 10
Spectral index: 0.0

Size (arcmin): 10
Type: F

Radio: Faint, filled-centre, polarized.

Point sources: OH source 20.1-0.1 is nearby.

References:

Becker & Helfand 1985, ApJ, 297, L25. VLA at 1.4 and 5 GHz (12'').
Odegard 1986, AJ, 92, 1372. TPT at 57.5 MHz (7'.2 × 8' : S = 8.5 ± 2), plus review of fluxes.

G21.5 - 0.9

RA: 18^h30^m47^s
Dec: -10°37'

1-GHz flux (Jy): 6
Spectral index: 0.0

Size (arcmin): 1.2
Type: F

Radio: Filled-centre, with high frequency turnover.

X-ray: Detected, with power-law spectrum.

Distance: HI absorption indicates 5.5 kpc.

References:

Wilson & Weiler 1976, AA, 53, 89. WSRT at 5 GHz (6" × 35").
Becker & Kundu 1978, ApJ, 204, 427. NRAO interferometer at 2.7 GHz (20" × 5") and 8 GHz (7" × 2"), plus review of fluxes.
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Becker & Szymkowiak 1981, ApJ, 248, L23. VLA at 5 GHz (8"), and HRI and IPC observations.
Davelaar *et al.* 1986, ApJ, 300, L59. EXOSAT X-ray spectrum, and VLA HI observations.
Morsi & Reich 1987, AAS, 69, 533. Effelsberg 100-m at 32 GHz (26".5 : S = 5.64 ± 0.29).
Fürst *et al.* 1988, PASJ, 40, 347. NRO array at 22.3 GHz (4".4 × 7".3).
Salter *et al.* 1989, AA, 225, 167. Observations at 90.7 (29".5 : S = 3.8 ± 0.4) and 141.9 GHz (S = 2.5 ± 1.2).
Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz (S = 3.94 ± 0.70), plus review of fluxes.

G21.8 - 0.6

Kes 69

RA: 18^h30^m00^s
Dec: -10°10'

1-GHz flux (Jy): 69
Spectral index: 0.5

Size (arcmin): 20
Type: S

Radio: Incomplete shell.

X-ray: Detected.

Distance: H₂CO absorption indicates >6.3 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Wilson 1972, AA, 19, 354. H₂CO absorption.
Kundu *et al.* 1974, AJ, 79, 1332. NRAO 140-ft at 5 GHz (6') and 10 GHz (3').
Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5' : S = 42.3 ± 4.6).
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Seward 1990, ApJS, 73, 781. IPC observations.

G22.7 - 0.2

RA: 18^h30^m30^s
Dec: -09°15'

1-GHz flux (Jy): 33
Spectral index: 0.6

Size (arcmin): 26
Type: S?

Radio: Non-thermal ring in complex region.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

G23.3 - 0.3

W41

RA: 18^h32^m00^s
Dec: -08°50'

1-GHz flux (Jy): 70
Spectral index: 0.5

Size (arcmin): 27
Type: S

Radio: Several components suggesting a ring, in complex region.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

G23.6 + 0.3

RA: 18^h30^m20^s
Dec: -08°15'

1-GHz flux (Jy): 8?
Spectral index: 0.3

Size (arcmin): 10?
Type: ?

Radio: Not well resolved, in complex region.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

G24.7 - 0.6

RA: 18^h36^m00^s
Dec: -07°35'

1-GHz flux (Jy): 8
Spectral index: 0.5

Size (arcmin): 15?
Type: S?

Radio: Incomplete shell?

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3'; $S = 12.3$) and Parkes 64-m at 5 GHz (4'; $S = 3.6$).
Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz (8'.8; $S = 2.2 \pm 0.5$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

G24.7 + 0.6

RA: 18^h31^m30^s
Dec: -07°07'

1-GHz flux (Jy): 20?
Spectral index: 0.2?

Size (arcmin): 30 × 15
Type: C?

Radio: Filled-centre, with faint shell, and a compact HII region to the S.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Reich *et al.* 1984, AA, 133, L4. Effelsberg 100-m at 2.7 GHz (4.3; $S = 19 \pm 3$) and 4.75 GHz (2'.4; $S = 17 \pm 4$) and NRO 45-m at 10.2 GHz (2'.7; $S = 15 \pm 3$).
Becker & Helfand 1987, ApJ, 316, 660. VLA at 1.4 GHz (12''), and X-ray upper limit.

G27.4 + 0.0

RA: 18^h38^m40^s
Dec: -04°59'

1-GHz flux (Jy): 6
Spectral index: 0.68

4C-04.71
Size (arcmin): 4
Type: S

Early references refer to the supposed larger remnant G27.3-0.1, but only this component appears to be non-thermal.

Radio: Incomplete shell.

X-ray: Diffuse emission, with central compact component.

Point sources: Compact X-ray source.

References:

Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5').
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz (8'.8; $S = 2.0 \pm 0.5$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3'; $S = 4.4$).
Caswell *et al.* 1982, MN, 200, 1143. FIRST at 1415 MHz (60'' × 45'': $S = 3.5$). Revise $S(408) = 10.4$, and $S(5000) = 1.9 \pm 0.2$.
Kriss *et al.* 1985, ApJ, 288, 703. IPC and HRI observations, plus VLA at 1.4 and 5 GHz (12'').

G27.8 + 0.6

RA: 18^h37^m06^s
Dec: -04°28'

1-GHz flux (Jy): 30
Spectral index: varies

Size (arcmin): 50 × 30
Type: F

Radio: Filled-centre, with spectral turnover.

References:

Reich *et al.* 1984, AA, 133, L4. Effelsberg 100-m at 2.7 GHz (4'.3 : $S = 23 \pm 2$), and 4.75 GHz (2'.4 : $S = 18 \pm 2$) and NRO 45-m at 10.2 GHz (smoothed to 4'.3 : $S = 8.5 \pm 2$).

G29.7 - 0.3

Kes 75

RA: 18^h43^m48^s
Dec: -03°02'

1-GHz flux (Jy): 10
Spectral index: 0.7

Size (arcmin): 3
Type: C?

Radio: Shell with flatter spectrum emission from centre.

X-ray: Detected.

Distance: HI absorption indicates > 9 kpc and possibly at 21 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

Milne & Dickel 1974, AJP, 27, 549. Parkes 64-m at 2.7 GHz (8'.4 : $S = 5 \pm 20\%$).

Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3').

Becker & Kundu 1976, ApJ, 204, 427. NRAO interferometer at 2.7 GHz (20'' × 7'') and 8 GHz (25'' × 8''), plus review of fluxes.

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

Weiler 1983, in IAU101. Includes 5-GHz map (private communication from van Gorkom *et al.*).

Becker *et al.* 1983, ApJ, 268, L83. VLA at 1.4 GHz (3''), plus IPC and HRI.

Becker & Helfand 1984, ApJ, 283, 154. VLA at 5 GHz (2''.6), plus HI.

Morsi & Reich 1987, AAS, 71, 189. Effelsberg 100-m at 32 GHz (26''.5 : $S = 1.02 \pm 0.07$).

Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz of core, plus review of fluxes.

G30.7 - 2.0

RA: 18^h51^m50^s
Dec: -02°58'

1-GHz flux (Jy): 0.5?
Spectral index: 0.7?

Size (arcmin): 16
Type: ?

Radio: Poorly defined.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G30.7 + 1.0

RA: 18^h42^m10^s
Dec: -01°35'

1-GHz flux (Jy): 6
Spectral index: 0.4

Size (arcmin): 24 × 18
Type: S?

Radio: Non-thermal, highly polarized part shell?

Point sources: Compact source near centre.

References:

Reich *et al.* 1986, AA, 155, 185. Effelsberg 100-m at 4.75 GHz (2'.4 : $S = 3.4 \pm 0.4$), plus other fluxes.

G31.5 - 0.6

RA: 18^h48^m35^s
Dec: -01°35'

1-GHz flux (Jy): 2?
Spectral index: ?

Size (arcmin): 18?
Type: S?

Has been called G31.55-0.65.

Radio: Distorted shell? near HII region.

References:

Fürst *et al.* 1987, AAS, 69, 403. Effelsberg 100-m at 4.75 GHz (2'.4), plus other fluxes.

G31.9 + 0.0

3C391

RA: 18^h46^m50^s
Dec: -00°59'

1-GHz flux (Jy): 24
Spectral index: 0.55

Size (arcmin): 5
Type: S

Radio: Incomplete shell.

X-ray: Diffuse shell.

Distance: HI absorption is seen to the tangent point (8.5 kpc).

References:

Radhakrishnan *et al.* 1970, ApJS, 24, 49. HI absorption.

Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3').

Green *et al.* 1975, AA, 44, 187. Effelsberg 100-m at 15 GHz (58'' : $S > 1.6$).

Becker & Kundu 1976, ApJ, 204, 427. NRAO interferometer at 2.7 GHz (20'' × 23'') and 8 GHz (24'' × 9''), plus review of fluxes.

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

Goss *et al.* 1979, AA, 78, 75. FIRST at 1.4 GHz (54'' × 66'' : $S = 20 \pm 2$) and Effelsberg 100-m at 10.7 GHz (77'' : $S = 7.5 \pm 0.8$).

Wang & Seward 1984, ApJ, 279, 705. IPC and HRI observations.

G32.0 - 4.9

3C396.1

RA: 19^h03^m00^s
Dec: -03°00'

1-GHz flux (Jy): 22?
Spectral index: 0.5?

Size (arcmin): 60?
Type: S?

Radio: Possible large shell?

References:

Milne & Hill 1969, AJP, 22, 211. Parkes 64-m at 635 MHz (31' : $S = 25 \pm 30\%$), 1410 MHz (15' : $S = 19 \pm 15\%$) and 2650 MHz (8'.4 : $S = 8.6 \pm 30\%$). Fluxes if size is 60', plus review of fluxes.

Caswell 1970, AJP, 23, 105. Revision of low frequency fluxes.

Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 111 MHz ($S = 105 \pm 30$).

G32.8 - 0.1

Kes 78

RA: 18^h48^m50^s
Dec: -00°12'

1-GHz flux (Jy): 11?
Spectral index: 0.2?

Size (arcmin): 17
Type: S?

Has been called G33.1-0.1, but this does not refer to the whole SNR.

Radio: Elongated shell?

References:

Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5' : $S = 7.2 \pm 0.5$).

Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 430 MHz ($S = 19.0 \pm 15.5$).

Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3').

Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 12.8$) and Parkes 64-m at 5 GHz (4' : $S = 7.7$).

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

G33.2 - 0.6

RA: 18^h51^m12^s
Dec: -00°05'

1-GHz flux (Jy): 5?
Spectral index: varies

Size (arcmin): 18
Type: S

Radio: Incomplete shell.

References:

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Reich 1982, AA, 106, 314. Effelsberg 100-m at 2.7 GHz (4'.4; $S = 2.6 \pm 0.3$) and 4.75 GHz (2'.5; $S = 1.75 \pm 0.2$).

G33.6 + 0.1

RA: 18^h50^m15^s
Dec: +00°37'

1-GHz flux (Jy): 22
Spectral index: 0.5

Kes 79, 4C00.70, HC13

Size (arcmin): 10
Type: S

Has been called G33.7+0.0.

Radio: Shell, in complex region.

X-ray: Detected.

Distance: HI absorption gives about 10 kpc.

References:

Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3'; $S = 35.5$) and Parkes 64-m at 5 GHz (4'; $S = 7.8$).
Caswell *et al.* 1975, AA, 45, 239. HI absorption.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 69 \pm 33$.
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3'; $S = 6.8 \pm 1.5$).
Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz (6'.8; $S = 11.4 \pm 1.1$).
Caswell *et al.* 1981, MN, 195, 89. FIRST at 1415 MHz (1'), plus observations of the nearby point source.
van Gorkom *et al.* 1982, MN, 198, 757. WSRT HI absorption to nearby point source, possibly extragalactic.
Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of nearby source, plus IPC observations.
Green 1989, MN, 238, 737. OH absorption.
Frail & Clifton 1989, ApJ, 336, 854. VLA at 1.4 GHz (1' x 2'.9), including HI absorption.

G34.7 - 0.4

RA: 18^h53^m30^s
Dec: +01°18'

1-GHz flux (Jy): 230
Spectral index: 0.30

W44, 3C392

Size (arcmin): 35 x 27
Type: S

Sometimes called G34.6-0.5.

Radio: Distorted shell, brighter to the E.

X-ray: Centrally concentrated.

Distance: HI absorption indicates 3 kpc.

References:

Kundu & Velusamy 1972, AA, 20, 23. NRAO 140-ft at 10.7 GHz (3'; $S = 105 \pm 7$).
Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5'; $S = 177 \pm 10$).
Caswell *et al.* 1975, AA, 45, 239. HI absorption.
Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3'; $S = 299$ which is less than the 390 Jy found by Kesteven 1968, AJP, 21, 739 with the same telescope).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 540 \pm 187$.
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Smith *et al.* 1985, MN, 217, 99. IPC observations.

G36.6 - 0.7

RA: 18^h58^m05^s
Dec: +02°52'

1-GHz flux (Jy): ?
Spectral index: ?

Size (arcmin): 25?
Type: S?

Radio: Polarized arc, possibly part of a larger shell?

References:

Fürst *et al.* 1987, AAS, 69, 403. Effelsberg 100-m at 4.75 GHz (2'.4), plus other fluxes.

G36.6 + 2.6

RA: 18^h46^m20^s
Dec: +04°23'

1-GHz flux (Jy): 0.7?
Spectral index: 0.5?

Size (arcmin): 17 × 13?
Type: S

Radio: Poorly resolved shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 86, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G39.2 - 0.3

RA: 19^h01^m40^s
Dec: +05°23'

1-GHz flux (Jy): 18
Spectral index: 0.6

3C396, HC24, NRAO 593
Size (arcmin): 8 × 6
Type: S

Radio: Shell, brightest to the W, with faint "tail" to E.

X-ray: Centrally brightened.

Distance: HI absorption suggests at least 7.7 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3').

Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 54 \pm 38$.

Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3' : $S = 4.1 \pm 1.0$).

Caswell *et al.* 1975, AA, 46, 239. HI absorption.

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

Caswell *et al.* 1982, MN, 200, 1143. FIRST at 1.4 GHz (65" × 48").

Becker & Helfand 1987, AJ, 94, 1629. VLA at 1.4 GHz (12" : $S = 14$) and 5 GHz, plus IPC observations.

Patnaik *et al.* 1990, AA, 232, 467. VLA at 1.5 GHz (25") and 1.4 GHz (7".8 × 7".5) and 5 GHz (25") including polarization, plus OSRT at 327 MHz (100" × 31"), including review of fluxes.

G39.7 - 2.0

RA: 19^h10^m00^s
Dec: +04°50'

1-GHz flux (Jy): 85?
Spectral index: 0.7?

W50, SS433
Size (arcmin): 120 × 60
Type: ?

Eastern part has been called G40.0-3.1. Is this a SNR?

Radio: Elongated shell, containing SS433, adjacent to the HII region S74.

Optical: Faint filaments at the edge of the radio emission.

X-ray: Emission from SS433 and two lobes.

Point sources: SS433 is the compact source in the centre of the W50.

Distance: Distance to SS433 is 5 kpc.

References:

van den Bergh 1980, ApJ, 263, L23. Optical in H α and [SII].

Zealey *et al.* 1980, MN, 192, 731. Optical spectra.

van Gorkom *et al.* 1982, MN 198, 757. WSRT HI absorption to nearby point source (not SS433).

Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of nearby source.

Watson *et al.* 1983, ApJ, 273, 688. X-ray observations.

Downes *et al.* 1986, MN, 218, 393. Effelsberg 100-m at 4.75 GHz (2'.4 : $S = 34 \pm 4$), plus previous 1.7 and 2.7 GHz data.

Romney *et al.* 1987, ApJ, 321, 822. VLBI of SS433, including distance.

Elston & Baum 1987, AJ, 94, 1633. Mosaic with VLA at 1.4 GHz (30") of fine structure only.

Kawai *et al.* 1989, PASJ, 41, 491. X-ray observations of SS433.

Band 1989, ApJ, 336, 937. Einstein and EXOSAT observations.

G40.5 - 0.5

Flo

RA: 19^h04^m45^s
Dec: +06°26'

1-GHz flux (Jy): 11
Spectral index: 0.5

Size (arcmin): 22
Type: S

Radio: Shell, brightest to the NE.

References:

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Downes *et al.* 1980, AA, 92, 47. Effelsberg 100-m at 1.7 GHz (7'.6 : $S = 9.3 \pm 1.3$), and 2.7 GHz (4'.4 : $S = 7.2 \pm 0.5$), plus review of fluxes.

G41.1 - 0.3

3C397

RA: 19^h05^m08^s
Dec: +07°03'

1-GHz flux (Jy): 22
Spectral index: 0.48

Size (arcmin): 4.5 × 2.5
Type: S

Radio: 3C397 is two sources: the E is the SNR, the W is a HII region.

X-ray: Brighter to the E and W.

Distance: Possible limit of > 7.5 kpc for non-thermal component from HI absorption.

References:

Kundu *et al.* 1974, AJ, 79, 1332. NRAO 140-ft at 10 GHz (3') and 5 GHz (6').
Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5' : $S = 21.3 \pm 1.2$ for both components).
Caswell *et al.* 1975, AA, 45, 239. HI absorption.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 82 \pm 51$, also Algonquin 46-m at 10.6 GHz (3' : $S = 12 \pm 2$), and Haystack 36-m at 15.5 GHz (2'.3 : $S = 8.5 \pm 3.0$).
Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 29.8$) and Parkes 64-m at 5 GHz (4' : $S = 8.7$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Caswell *et al.* 1982, MN, 200, 1143. FIRST at 1.4 GHz (58'' × 52'').
Becker *et al.* 1985, ApJ, 296, 461. VLA at 1.4 and 5 GHz (8''), plus HRI and IPC observations.
Morsi & Reich 1987, AAS, 71, 189. Effelsberg 100-m at 32 GHz (smoothed to 30'' : $S = 1.10 \pm 0.19$).

G42.8 + 0.6

RA: 19^h04^m55^s
Dec: +09°00'

1-GHz flux (Jy): 3?
Spectral index: 0.5?

Size (arcmin): 24
Type: S

Has been called G42.8+0.65.

Radio: Faint shell.

References:

Fürst *et al.* 1987, AAS, 69, 403. Effelsberg 100-m at 4.75 GHz (2'.4 : $S = 1.5 \pm 0.2$), plus other fluxes.

G43.3 - 0.2

W49B

RA: 19^h08^m44^s
Dec: +09°01'

1-GHz flux (Jy): 38
Spectral index: 0.48

Size (arcmin): 4 × 3
Type: S

Radio: Shell, brightest to the SE and W, near the HII region W49A.

X-ray: Filled-centre.

Distance: HI absorption indicates 10 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 2.7 GHz (4').
Downes & Wilson 1974, AA, 34, 133. Effelsberg 100-m at 10.7 GHz (1'.3).
Caswell *et al.* 1975, AA, 45, 239. HI absorption.
Green *et al.* 1975, AA, 44, 187. Effelsberg 100-m at 15.0 GHz (58'' : $S = 9.0 \pm 0.7$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).
Pye *et al.* 1984, MN, 207, 649. HRI and IPC observations, and VLA at 1.4 and 5 GHz (both 12'').
Smith *et al.* 1985, ApJ, 296, 469. EXOSAT spectrum.
Morsi & Reich 1987, AAS, 71, 189. Effelsberg 100-m at 32 GHz (smoothed to 30'' : $S = 6.90 \pm 0.38$).

G43.9 + 1.6

RA: 19^h03^m30^s
Dec: +10°25'

1-GHz flux (Jy): 8.6?
Spectral index: 0.0?

Size (arcmin): 60?
Type: F?

Radio: Large, poorly defined faint source.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G45.7 - 0.4

RA: 19^h14^m05^s
Dec: +11°04'

1-GHz flux (Jy): 4.2?
Spectral index: 0.4?

Size (arcmin): 22
Type: S

Radio: Shell, brightest to the SE, poorly defined in NW.

References:

Fürst *et al.* 1987, AAS, 69, 403. Effelsberg 100-m at 4.75 GHz (2'.4; $S = 2.6 \pm 0.3$), plus other fluxes.

G46.8 - 0.3

(HC30)

RA: 19^h15^m50^s
Dec: +12°04'

1-GHz flux (Jy): 14
Spectral index: 0.42

Size (arcmin): 17 × 13
Type: S

Has been called G46.6-0.2.

Radio: Shell, two bright arcs to the NNW and SSE.

Distance: HI absorption suggests 6.8-8.8 kpc.

References:

Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz (5'; $S = 9.8 \pm 0.9$), and VRO 37-m at 1.7 GHz ($S = 14.5 \pm 5.5$).

Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3'; $S = 20.3$) and Parkes 64-m at 5 GHz (4'; $S = 7.1$).

Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 46 \pm 21$.

Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz (6'.8; $S = 5.9 \pm 0.6$).

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

Sato 1979, AL, 20, 43. HI absorption.

G49.2 - 0.7

(W51)

RA: 19^h21^m30^s
Dec: +14°00'

1-GHz flux (Jy): 160?
Spectral index: 0.3?

Size (arcmin): 25?
Type: S?

Radio: In complex region, parameters uncertain.

X-ray: Detected.

Distance: HI absorption suggests 4.1 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Parkes 64-m at 5 GHz (4').

Sato 1973, PASJ, 25, 135. HI absorption.

Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5'), $S = 51.5 \pm 3.2$, for the non-thermal component, but probably confused.

Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.6).

Seward 1990, ApJS, 73, 781. IPC observations.

G53.6 - 2.2

3C400.2, NRAO 611

RA: 19^h36^m30^s
Dec: +17°08'1-GHz flux (Jy): 8
Spectral index: 0.6Size (arcmin): 28
Type: S

Has been called G53.7-2.2.

Radio: Incomplete ring of emission, in complex region.**Optical:** Filaments and diffuse emission.**X-ray:** Detected.**Distance:** Mean optical velocity indicates 6.7 kpc.**References:**

Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz ($5'$: $S = 5.3 \pm 0.6$).
 van den Bergh 1978, ApJS, 38, 119. Optical.
 Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$: $S = 4.8 \pm 0.3$).
 Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz ($3'$: $S = 11.7$).
 Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 20 \pm 10$, $S(318) = 20 \pm 3.6$.
 Goss *et al.* 1975, AA, 43, 459. WSRT at 610 MHz ($1' \times 3'$: $S = 13.2 \pm 1.6$).
 Sabbadin & d'Odorico 1976, AA, 49, 119. Optical spectra.
 Rosado 1983, RMex, 8, 59. Optical spectra.
 Blair & Long 1988, PASP, 100, 461. Optical imaging and spectroscopy.
 Matsui & Long 1985, in Crablike. IPC observations.

G54.1 + 0.3RA: 19^h28^m28^s
Dec: +18°46'1-GHz flux (Jy): 0.5
Spectral index: 0.1Size (arcmin): 1.5
Type: F?**Radio:** Filled-centre.**X-ray:** Detected.**References:**

Green 1985, MN, 216, 691. 5km at 2.7 GHz ($7'' \times 20''$).
 Reich *et al.* 1985, AA, 151, L10. Effelsberg 100-m at 4.75 GHz ($2'.4$: $S = 0.37 \pm 0.04$)
 Velusamy & Becker 1988, AJ, 95, 1162. VLA at 1.4 ($14''$: $S = 0.48 \pm 0.03$), 1.6 ($14''$: $S = 0.42 \pm 0.03$) and 5 GHz
 ($5''$: $S = 0.33 \pm 0.02$), OSRT at 327 MHz ($S = 0.50 \pm 0.08$), plus review of fluxes.
 Seward 1989, AJ, 97, 481. IPC observations

G54.4 - 0.3

(HC40)

RA: 19^h31^m10^s
Dec: +18°50'1-GHz flux (Jy): 28
Spectral index: 0.5Size (arcmin): 40
Type: S

Has been called G54.5-0.3.

Radio: Shell, in complex region.**References:**

Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$: $S = 34.4 \pm 5.0$).
 Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
 Caswell 1985, AJ, 90, 1224. DRAO at 1.4 GHz ($1'.3 \times 2'.6$: $S = 18 \pm 4$).
 Velusamy *et al.* 1988, JAA, 7, 105. WSRT at 609 MHz ($50'' \times 191''$ smoothed to $100'' \times 200''$).

G55.7 + 3.4RA: 19^h19^m10^s
Dec: +21°38'1-GHz flux (Jy): 1.4
Spectral index: 0.6Size (arcmin): 23
Type: S**Radio:** Incomplete shell.**Point sources:** Pulsar PSR 1919+21 in within the boundary of the remnant.**References:**

Goss *et al.* 1977, AA, 61, 93. WSRT observations at 610 MHz ($57'' \times 156''$: $S = 1.9 \pm 0.2$) and 1415 MHz ($27'' \times 72''$:
 $S = 1.0 \pm 0.1$).

G57.2 + 0.8			(4C21.53)
RA: 19 ^h 32 ^m 50 ^s	1-GHz flux (Jy): 1.8?	Size (arcmin): 12?	
Dec: +21°50'	Spectral index: ?	Type: S?	

Radio: Extended non-thermal arc.
Point sources: Near the millisecond pulsar, but not thought to be related.

References:
 Sieber & Seiradakis 1984, AA, 130, 257. Effelsberg 100-m at 1.4 GHz (8'.8 : 1.34 ± 0.1), 2.7 GHz (4'.3 : 0.86 ± 0.1), plus other surveys of the area.
 Caswell *et al.* 1985, AJ, 90, 488. DRAO at 1.4 GHz (1' × 3').

G59.8 + 1.2			
RA: 19 ^h 36 ^m 50 ^s	1-GHz flux (Jy): 1.6	Size (arcmin): 20 × 16?	
Dec: +24°12'	Spectral index: 0.5	Type: ?	

Radio: Poorly defined source.

References:
 Reich *et al.* 1988, in SNRISM. Summary of parameters.
 Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G65.1 + 0.6			
RA: 19 ^h 52 ^m 30 ^s	1-GHz flux (Jy): 6	Size (arcmin): 90 × 50	
Dec: +28°25'	Spectral index: 0.6	Type: S	

Radio: Large, faint shell.

References:
 Landecker *et al.* 1990, AA, 232, 207. DRAO at 408 MHz (3'.5 × 7'.0 : S = 9.5 ± 0.1), and 1.4 GHz (1'.0 × 2'.0 : S = 5.4 ± 1.0).

G65.3 + 5.7			
RA: 19 ^h 31 ^m 00 ^s	1-GHz flux (Jy): 52?	Size (arcmin): 310 × 240	
Dec: +31°05'	Spectral index: 0.6?	Type: S?	

Has been called G65.6+5.7.

Radio: Large, faint ring? near S91 and S94.
Optical: Strong in H α + [NII] and [OIII].
X-ray: Detected.
Distance: Mean optical velocity suggests 0.8 kpc.

References:
 Gull *et al.* 1977, ApJ, 215, L69. Optical plates.
 Reich *et al.* 1979, AA, 72, 270. Effelsberg 100-m observations at 1.42 GHz (smoothed to 11' : S = 42.4 ± 1.6), estimate S(408) = 91 ± 5 from previous sky survey.
 Lozinskaya 1981, SAL, 7, 17. Mean optical velocity.
 Rosado 1981, ApJ, 250, 222. Optical interferometry.
 Fesen *et al.* 1983, ApJS, 51, 337. Deep [OIII] imagery.
 Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
 Seward 1990, ApJS, 73, 781. IPC observations.

G65.7 + 1.2

DA 495

RA: 19^h50^m10^s
Dec: +29°18'

1-GHz flux (Jy): 5.1
Spectral index: 0.6

Size (arcmin): 18
Type: ?

Has mistakenly been called G55.7+1.2.

Radio: Filled-centre or thick shell?

References:

Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 2.8 \pm 0.4$), and VRO 37-m at 1.7 GHz ($S = 4.4 \pm 0.5$), plus review of fluxes.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 8.7 \pm 4.9$, $S(318) = 9.7 \pm 2.2$.
Landecker & Caswell 1983, AJ, 88, 1810. DRAO at 1.4 GHz ($0'.9 \times 1'.5 : S = 4.4 \pm 0.2$).
Velusamy *et al.* 1989, JAA, 10, 161. OSRT at 327 MHz ($36'' \times 64''$), WSRT at 610 MHz ($62''$) and VLA at 1.4 GHz ($36''$ and $12''$), including IRAS imaging.

G68.6 - 1.2

RA: 20^h06^m40^s
Dec: +30°28'

1-GHz flux (Jy): 0.7?
Spectral index: 0.0?

Size (arcmin): 28 × 25?
Type: ?

Radio: Faint, poorly defined source.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.
Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G69.0 + 2.7

CTB 80

RA: 19^h51^m30^s
Dec: +32°45'

1-GHz flux (Jy): 120?
Spectral index: varies

Size (arcmin): 80?
Type: ?

Has been associated with a SN in AD1408, although the evidence for this is uncertain. Is it a SNR?

Radio: Compact core, flat spectrum plateau, and steeper spectrum extensions, with spectral break?

Optical: Expanding nebulosity near centre, with filaments to the SW and far NE.

X-ray: Diffuse emission with compact source.

Point sources: Pulsar at western edge of core.

References:

Angerhofer *et al.* 1981, AA, 94, 313. WSRT at 610 MHz ($56'' \times 103''$) 1.4 GHz ($24'' \times 44''$) and 5 GHz ($7'' \times 13''$), plus optical.
Becker *et al.* 1982, ApJ, 255, 557. X-ray observations.
Sofue *et al.* 1983, PASJ, 35, 437. NRO 45-m at 10.2 GHz ($2'.7$).
Velusamy & Kundu 1983, JAA, 3, 253. VLA of compact sources.
Wang & Seward 1984, ApJ, 275, 608. IPC observations.
Strom *et al.* 1984, AA, 139, 43. Radio observations of flat spectrum component, VLA 5 GHz ($1''.7$) and 1.4 GHz.
Mentovani *et al.* 1985, AA, 145, 50. Bologna at 408 MHz ($2'.6 \times 4'.9 : S = 67.5 \pm 10.5$), Effelsberg 100-m at 1.41 ($9' : S = 62 \pm 9$), 1.72 ($7'.6 : S = 66 \pm 5$), 2.7 ($4'.5 : S = 52 \pm 4$) and 4.75 GHz ($2'.4 : S = 44 \pm 3.3$), plus review of fluxes.
Kulkarni *et al.* 1988, Nature, 331, 50. Pulsar detection.
Angelini *et al.* 1988, ApJ, 330, L43. EXOSAT spectra.
Fesen *et al.* 1988, Nature, 334, 229. IRAS of surrounding shell.
Whitehead *et al.* 1989, MN, 237, 1109. Optical of core.
Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz of core, plus review of fluxes.
Hester & Kulkarni 1989, ApJ, 340, 362. Optical imaging and spectroscopy.
Koo *et al.* 1990, ApJ, 364, 178. Large, expanding HI shell.
Greidanus & Strom 1990, AA, 240, 376. Optical kinematics of core.

G69.7 + 1.0

RA: 20^h00^m45^s
Dec: +32°35'

1-GHz flux (Jy): 1.6
Spectral index: 0.8

Size (arcmin): 16
Type: S

Radio: Poorly resolved source.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.
Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G73.9 + 0.9

RA: 20^h12^m20^s
Dec: +36°03'

1-GHz flux (Jy): 9?
Spectral index: 0.3?

Size (arcmin): 22?
Type: S?

Radio: Incomplete clumpy shell.

References:

Reich *et al.* 1986, AA, 155, 185. Effelsberg 100-m at 4.75 GHz (2'.4; $S = 6.7 \pm 0.5$), plus other fluxes.
Chastenay & Pineault 1988, in SNRISM. DRAO at 408 MHz (3'.5 × 5'.9) and 1.4 GHz (1'.0 × 1'.7).
Pineault & Chastenay 1990, MN, 246, 169. DRAO at 408 MHz (3'.4 × 5'.8; $S = 12.7 \pm 1.2$) and 1.4 GHz (1'.0 × 1'.7; $S = 7.4 \pm 1.0$).

G74.0 - 8.5

Cygnus Loop

RA: 20^h49^m00^s
Dec: +30°30'

1-GHz flux (Jy): 210
Spectral index: varies

Size (arcmin): 230 × 160
Type: S

Radio: Shell, brightest to the NE, with fainter breakout region to S, with spectral variations and possible spectral break.

Optical: Large filamentary loop, brightest to the NE, not well defined to the S or W.

X-ray: Shell in soft X-rays.

Point sources: Several compact radio sources within the boundary of the remnant, including CL4.

References:

Keen *et al.* 1973, AA, 28 197. Effelsberg 100-m at 2.7 GHz (4'.8), NE at 10.7 GHz (1'.25).
Dickel & Willis 1980, AA, 85, 55. WSRT at 610 MHz (56'' × 107'') of NE area (NGC6992) only.
Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of CL4.
Fesen *et al.* 1982, ApJ, 262, 171. Optical spectroscopy.
Hester *et al.* 1983, ApJ, 278, 219. Optical imagery.
Ku *et al.* 1984, ApJ, 278, 615. IPC and HRI X-ray observations.
Green 1984, MN, 211, 433. Most of remnant at 408 MHz (80'' × 160'') with OMT.
Charles *et al.* 1985, ApJ, 295, 456. IPC observations.
Braun & Strom 1986, AA, 164, 208. IRAS observations.
Straka *et al.* 1986, ApJ, 306, 266. Radio and optical comparison of NE. VLA at 1.6 GHz (4''.7) plus optical.
Raymond *et al.* 1988, ApJ, 324, 869. Detailed optical study of filaments.
Ballet *et al.* 1989, AA, 211, 217. [FeX] and [FeXIV] spectroscopy.
Ballet & Rothenflug 1989, AA, 218, 227. EXOSAT observations.
Green 1990, AJ, 100, 1927. DRAO at 408 MHz (3'.3 × 8'.7) for spectral index study, plus X-ray and optical.
Graham *et al.* 1991, AJ, 101, 175. Shocked molecular H outside rim in NE.

G74.9 + 1.2

CTB 87

RA: 20^h14^m10^s
Dec: +37°03'1-GHz flux (Jy): 9
Spectral index: variesSize (arcmin): 8 × 6
Type: F**Radio:** Filled-centre, with high polarization and high frequency turnover.**X-ray:** Centrally brightened.**Distance:** HI absorption indicates 12 kpc.**Point sources:** Nearby, extragalactic compact source.**References:**

- Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S(430) = 12.2 \pm 9.7$, $S(318) = 9.7 \pm 2.2$.
 Weiler & Shaver 1978, AA, 70, 389. WSRT at 610 MHz ($57'' \times 94''$; $S = 9.1 \pm 1.2$), 1.4 ($24'' \times 40''$; $S = 8.7 \pm 1.2$) and 5 GHz ($24'' \times 40''$; $S = 5.6 \pm 1.3$).
 Geldzahler *et al.* 1980, AA, 84, 237. Effelsberg 100-m at 2.7 GHz ($4'.4$; $S = 7.6 \pm 0.5$).
 Wilson 1980, ApJ, 241, L19. IPC observations.
 van Gorkom *et al.* 1982, MN, 198, 757. WSRT HI absorption of nearby compact source.
 Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of nearby source.
 Morsi & Reich 1987, AAS, 69, 533. Effelsberg 100-m at 32 GHz (smoothed to $40''$; $S = 1.47 \pm 0.19$).
 Green & Gull 1989, MN, 237, 555. VLA at 1.4 GHz ($1'.2 \times 1'.4$) including HI.
 Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz, plus review of fluxes.
 Pineault & Chastenay 1990, MN, 246, 169. DRAO at 408 MHz ($3'.4 \times 5'.8$; $S = 11.6 \pm 0.4$) and 1.4 GHz ($1'.0 \times 1'.7$; $S = 7.2 \pm 0.3$).

G78.2 + 2.1DR4, γ CygniRA: 20^h19^m00^s
Dec: +40°15'1-GHz flux (Jy): 340
Spectral index: 0.7Size (arcmin): 60
Type: S

Has been called G78.1+1.8.

Radio: In complex region (early catalogues refer to other proposed remnants in this region).**Optical:** Faint filaments, spectra indicate a SNR superposed on a HII region.**X-ray:** Weak emission from the SE of the remnant.**References:**

- Higgs *et al.* 1977, AJ, 82, 718. DRAO at 1.4 GHz ($2' \times 3'$; $S = 270 \pm 40$) plus some 10 GHz ($4'$) survey data, reveals true extent of remnant.
 d'Odorico & Sabbadin 1977, AAS, 28, 439. Optical spectra.
 van den Bergh 1978, ApJS, 38, 119. Optical.
 Landecker *et al.* 1980, AAS, 39, 133. DRAO HI observations ($2' \times 3'.1$).
 Higgs *et al.* 1983, in IAU101. IPC observations.
 Bohigas *et al.* 1983, RMex, 8, 155. Optical spectra, find thermal only.
 Braun & Strom 1986, AAS, 63, 345. WSRT HI observations.
 Fukui & Tatematsu 1988, in SNRISM. CO observations of the vicinity ($2'.7$).
 Green 1989, MN, 238, 737. OH observations.
 Pineault & Chastenay 1990, MN, 246, 169. DRAO at 408 MHz ($3'.4 \times 5'.8$; $S = 480 \pm 60$) and 1.4 GHz ($1'.0 \times 1'.7$; $S = 270 \pm 40$).

G82.2 + 5.3

W63

RA: 20^h17^m30^s
Dec: +45°20'1-GHz flux (Jy): 120?
Spectral index: 0.7?Size (arcmin): 95 × 65
Type: S**Radio:** Shell in the Cygnus X complex.**Optical:** In complex region, but spectra indicate SNR filaments.**X-ray:** Detected.**References:**

- Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$; $S = 59.0 \pm 3.5$).
 Sabbadin 1978, AA, 51, 159. Optical spectra.
 Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz ($6'.8$). Incomplete mapping.
 Rosado & González 1981, RMex, 5, 93. Optical spectra.
 Seward 1990, ApJS, 73, 781. IPC observations.

G84.2 - 0.8

RA: 20^h51^m30^s
Dec: +43°16'

1-GHz flux (Jy): 11
Spectral index: 0.5

Size (arcmin): 20 × 16
Type: S

Radio: Elongated shell, with a filament aligned with the major axis.

References:

Matthews *et al.* 1977, AA, 55, 1. WSRT at 610 MHz (56'' × 81'' : $S = 12.4 \pm 1.5$) and Effelsberg 100-m at 2.7 GHz (4'.4 : $S = 6.8 \pm 1.3$).
Matthews & Shaver 1980, AA, 87, 255. WSRT at 1415 MHz (23'' × 32''), and Effelsberg 100-m at 2.7 GHz (4'.4 : $S = 5.6 \pm 0.5$).

G89.0 + 4.7

HB21

RA: 20^h43^m30^s
Dec: +50°25'

1-GHz flux (Jy): 220
Spectral index: 0.40

Size (arcmin): 120 × 90
Type: S

Radio: Distorted shell (4C50.52, an extragalactic double, is within the boundary of the remnant).

Optical: Filaments possibly associated.

X-ray: Detected from incomplete mapping.

References:

Hirabayashi & Takahashi 1972, PASJ, 24, 231. 30-m dish at 4.2 GHz (11' : $S = 160 \pm 40$).
Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz (5' : $S = 148 \pm 16$), plus optical filaments.
Hill 1974, MN, 169, 59. HMT at 1.4 GHz (3' × 3'.9).
Haslam *et al.* 1975, AA, 39, 453. Effelsberg 100-m at 2.7 GHz (4'.4).
Reich *et al.* 1983, in IAU101. Effelsberg 100-m at 4.75 GHz (2'.5).
Leahy 1987, MN, 228, 907. IPC observations.
Fukui & Tatematsu 1988, in SNRISM. CO observations of the vicinity (2'.7).
Tatematsu *et al.* 1990, AA, 237, 189. DRAO at 408 MHz (3'.5 × 4'.5) and 1.4 GHz (1'.0 × 1'.3), including H_I, plus CO observations of adjacent molecular cloud.

G93.3 + 6.9

DA 530, 4C(T)55.38.1

RA: 20^h51^m00^s
Dec: +55°10'

1-GHz flux (Jy): 9
Spectral index: 0.54

Size (arcmin): 27 × 20
Type: S

Has been called G93.2+6.7.

Radio: Shell, with two bright limbs, highly polarized.

References:

Roger & Costain 1976, AA, 51, 151. DRAO at 1.42 GHz (2' × 2'.4 : $S = 6.9$).
Haslam *et al.* 1980, AA, 92, 57. Effelsberg 100-m at 1.72 GHz (7'.6 : $S = 6.47 \pm 0.52$) and 2.7 GHz (4'.4 : $S = 5.64 \pm 0.64$), plus review of fluxes.
Lalitha *et al.* 1984, AA, 131, 196. Effelsberg 100-m at 4.75 GHz (smoothed to 3' : $S = 4.01 \pm 0.57$).

G93.7 - 0.2

CTB 104A, DA 551

RA: 21^h27^m45^s
Dec: +50°35'

1-GHz flux (Jy): 65
Spectral index: 0.3

Size (arcmin): 80
Type: S

Has been called G93.6-0.2 or G93.7-0.3.

Radio: Faint shell with possible a steep spectrum core.

References:

Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5' : $S = 18.4 \pm 1.0$).
Mantovani *et al.* 1982, AA, 105, 176. Effelsberg 100-m at 1.7 GHz (7'.6 : $S = 53.5 \pm 5.0$), plus review of fluxes.
Landecker *et al.* 1985, AJ, 90, 1082. DRAO at 1.4 GHz (smoothed to 2' : $S = 58 \pm 6$).

G94.0 + 1.0

3C434.1

RA: 21^h23^m10^s
Dec: +51°40'

1-GHz flux (Jy): 15
Spectral index: 0.44

Size (arcmin): 30 × 25
Type: S

Radio: Incomplete shell, in complex region.

References:

Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz (5' : $S = 6.1 \pm 0.8$), and VRO 37-m at 1.7 GHz ($S = 11 \pm 3$).
Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5' : $S = 5.8 \pm 0.4$). Also NRAO 140-ft at 5 GHz (6').
Mantovani *et al.* 1982, AA, 105, 176. Effelsberg 100-m at 1.7 GHz (7'.6 : $S = 12.0 \pm 1.3$), plus review of fluxes.
Goss *et al.* 1984, AA, 138, 469. WSRT at 610 MHz (smoothed to 100'' : $S = 16 \pm 1.7$) and Effelsberg 100-m at 4.75 GHz (2'.4 : $S = 7.2 \pm 0.5$).
Landecker *et al.* 1985, AJ, 90, 1082. DRAO at 1.4 GHz (smoothed to 2' : $S = 16 \pm 3$).

G109.1 - 1.0

CTB 109

RA: 22^h59^m30^s
Dec: +58°37'

1-GHz flux (Jy): 20
Spectral index: 0.50

Size (arcmin): 28
Type: S

Radio: Semicircular shell, with the Molecular cloud S152 is to the immediate W.

X-ray: Incomplete shell, with X-ray pulsar near centre.

Point sources: Pulsar detected.

References:

Hughes *et al.* 1981, ApJ, 246, L127. WSRT at 610 MHz (1' : $S = 40 \pm 5$) shows bad CLEAN artefacts.
Blair & Kirshner 1981, Nature, 291, 132. Optical spectra.
Downes 1983, MN, 203, 695. Effelsberg 100-m at 2.7 GHz (4'.4 : $S = 13.0 \pm 1.5$).
Gregory *et al.* 1983, in IAU101. VLA at 1.4 GHz (1'), NRAO 300-ft at 5 GHz (3') and IPC observations.
Sofue *et al.* 1983, PASJ, 35, 447. NRO 45-m at 10.2 GHz (2'.7).
Hughes *et al.* 1984, ApJ, 283, 147. WSRT at 610 MHz (20'' : $S = 26 \pm 3$) 1.4 GHz (10''), DRAO at 1.4 GHz (1' × 1'.2 : $S = 16.8 \pm 2$) and Algonquin 46-m at 6.5 GHz (4'.5 : $S = 6.7 \pm 1$).
Braun & Strom 1986, AAS, 63, 345. WSRT HI observations.
Tatematsu *et al.* 1987, PASJ, 39, 755. NRO 45-m at 10 GHz (2'.7), plus polarization.
Tatematsu *et al.* 1987, AA, 184, 279. CO observations of the surroundings (2'.7).
Hanson *et al.* 1988, AA, 195, 114. EXOSAT of pulsar.
Morini *et al.* 1988, ApJ, 333, 777. EXOSAT observations.
Koyama *et al.* 1989, PASJ, 41, 461. X-ray observations of pulsar.
Coe *et al.* 1989, MN, 238, 649. IRAS observations of surroundings.
Green 1989, MN, 238, 737. OH observations.
Tatematsu *et al.* 1990, ApJ, 351, 157. CO of surroundings, plus X-ray observations.

G111.7 - 2.1		Cassiopeia A, 3C461
RA: 23 ^h 21 ^m 10 ^s	1-GHz flux (Jy): 2720	Size (arcmin): 5
Dec: +58°32'	Spectral index: 0.77	Type: S
Presumably the remnant of a 17th century SN.		
Radio: Bright shell with compact knots and extended plateau of emission.		
Optical: Fast knots and quasi-stationary flocculi, with many filaments at large radii, and a "flare" to the NE.		
X-ray: Incomplete shell.		
Distance: Optical expansion, plus proper motions indicate 2.8 kpc.		
References:		
Bell <i>et al.</i> 1975, <i>Nature</i> , 257, 463. 5km at 5 GHz (2'' × 2''.3).		
Green <i>et al.</i> 1975, <i>AA</i> , 44, 187. Effelsberg 100-m at 15.0 GHz (58'' : $S = 419.1 \pm 1.7$).		
Fabian <i>et al.</i> 1980, <i>MN</i> , 193, 175. HRI observations.		
Dickel <i>et al.</i> 1982, <i>ApJ</i> , 257, 145. Comparison of X-ray, Radio and HRI.		
Kemper & van den Bergh 1983, in IAU101. Optical expansion.		
Markert <i>et al.</i> 1983, <i>ApJ</i> , 268, 778. X-ray asymmetry.		
Kennedy & Dent 1985, <i>ApJ</i> , 298, 644. FCRAO 14-m at 86 GHz (1'), incomplete mapping.		
Tuffs 1986, <i>MN</i> , 219, 13. Proper motions from 5km maps at 5 GHz (2'' × 2''.3) between 1974 and 1978.		
Mezger <i>et al.</i> 1986, <i>AA</i> , 167, 145. 247-GHz map (70'').		
Tsunemi <i>et al.</i> 1986, <i>ApJ</i> , 306, 248. X-ray spectrum.		
Fesen <i>et al.</i> 1987, <i>ApJ</i> , 313, 378. Optical, of fast moving flocculi.		
Fesen <i>et al.</i> 1988, <i>ApJ</i> , 329, L89. Optical, flocculi, and "flare".		
Jansen <i>et al.</i> 1988, <i>ApJ</i> , 331, 949. EXOSAT observations.		
Woan & Duffet-Smith 1990, <i>MN</i> , 243, 87. Structure at 81.5 MHz.		
Fesen 1990, <i>AJ</i> , 99, 1904. [NeIII] optical imagery.		
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G112.0 + 1.2		
RA: 23 ^h 13 ^m 40 ^s	1-GHz flux (Jy): ??	Size (arcmin): 30?
Dec: +61°30'	Spectral index: 0.6?	Type: S?
Radio: Non-thermal source hinted by Bologna survey.		
References:		
Bonsignori-Facondi & Tomasi 1979, <i>AA</i> , 77, 93. Bologna at 408 MHz (4'.2 × 110' : $S = 11 \pm 30\%$).		
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G114.3 + 0.3		
RA: 23 ^h 34 ^m 45 ^s	1-GHz flux (Jy): 6?	Size (arcmin): 90 × 55
Dec: +61°38'	Spectral index: 0.3?	Type: S
Radio: Shell, with HII region S165 within the boundary of the remnant.		
Distance: Possible association with HI features suggests 3.0-3.8 kpc.		
References:		
Reich & Braunsfurth 1981, <i>AA</i> , 99, 17. Effelsberg 100-m at 2.7 GHz (4'.4 : $S = 3.8$) and $S(1.4) = 4.4$ from 1.4 GHz survey data, plus HI from Maryland-Green Bank survey.		
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G116.5 + 1.1		
RA: 23 ^h 51 ^m 20 ^s	1-GHz flux (Jy): 11?	Size (arcmin): 80 × 60
Dec: +62°58'	Spectral index: 0.8?	Type: S
Radio: Distinct shell, with high polarization.		
Distance: Possible association with HI features suggests 3.6-5.2 kpc.		
References:		
Reich & Braunsfurth 1981, <i>AA</i> , 99, 17. Effelsberg 100-m at 2.7 GHz (4'.4 : $S = 4.7 \pm 0.4$) and $S(1.4) = 8.0 \pm 0.8$ from 1.4 GHz survey data, plus HI from Maryland-Green Bank survey.		

G116.9 + 0.2

CTB 1

RA: 23^h56^m40^s
Dec: +62°10'

1-GHz flux (Jy): 9?
Spectral index: 0.5?

Size (arcmin): 34
Type: S

Has been called G117.3+0.1 or G116.9+0.1.

Radio: Incomplete shell.

Optical: Filaments on sky survey.

Distance: Possible association with HI features suggests 2.8–4.0 kpc, mean optical velocity suggests 2.7 kpc.

References:

Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 3.9 \pm 1.0$), and VRO 37-m at 1.7 GHz ($S = 5.5 \pm 2.0$), plus review of fluxes.

van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.

Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 4.2 \pm 0.2$).

Angerhofer *et al.* 1977, AA, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 3.0 \pm 0.3$).

Dickel & Willis 1980, AA, 85, 55. WSRT at 610 MHz ($56'' \times 64''$) and 1.4 GHz ($22'' \times 25''$).

Reich & Braunsfurth 1981, AA, 99, 17. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 4.8 \pm 0.4$) and $S(1.4) = 7.8 \pm 0.8$ from 1.4 GHz survey data, plus HI from Maryland-Green Bank survey.

Lozinskaya 1981, SAL, 7, 17. Mean optical velocity.

Landecker *et al.* 1982, AJ, 87, 1379. DRAO at 1.42 GHz and HI ($2' \times 2'.3 : S = 8.3 \pm 0.5$), plus review of fluxes.

Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.

G117.4 + 5.0

RA: 23^h52^m30^s
Dec: +67°30'

1-GHz flux (Jy): 30?
Spectral index: 0.5?

Size (arcmin): 60 × 80?
Type: S?

Radio: Non-thermal source hinted by Bologna survey.

References:

Bonsignori-Facondi & Tomasi 1979, AA, 77, 93. Bologna at 408 MHz ($4'.2 \times 110' : S = 45 \pm 30\%$).

G119.5 + 10.2

CTA 1

RA: 00^h04^m00^s
Dec: +72°30'

1-GHz flux (Jy): 36
Spectral index: 0.3

Size (arcmin): 90
Type: S

Radio: Incomplete shell.

Optical: Faint diffuse nebulosities.

X-ray: Detected.

References:

Sieber *et al.* 1979, AA, 74, 361. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 23.6 \pm 2.8$).

Sieber *et al.* 1981, AA, 103, 393. Effelsberg 100-m at 2.7 GHz and 1.7 GHz ($7'.6 : S = 31.6 \pm 2.5$), and 6C at 151 MHz ($4' : S = 62.6 \pm 6$).

Fesen *et al.* 1981, ApJ, 247, 148. Optical, including spectra.

Fesen *et al.* 1983, ApJS, 51, 337. Deep [OIII] imagery.

Seward 1990, ApJS, 73, 781. IPC observations.

G120.1 + 1.4		Tycho, 3C10, SN1572	
RA: 00 ^h 22 ^m 30 ^s	1-GHz flux (Jy): 56	Size (arcmin): 8	
Dec: +63°52'	Spectral index: 0.61	Type: S	

This is the remnant of the Tycho's SN of AD1572.

Radio: Shell, brightest to the NE.

Optical: Faint filaments/knots to the NNW, NE and E.

X-ray: Shell, coincident with the radio shell, brighter to the NW, spectra show lines of S, Si and Fe.

Point sources: Faint radio source near centre of the remnant, thought to be extragalactic.

Distance: HI absorption gives 2.0–2.5 kpc, optical proper motion and modelled shock velocity gives 2.3 kpc.

References:
 Duin & Strom 1975, AA, 39, 33. WSRT at 610 MHz (57'' × 64'') and 5 GHz (7'' × 8'').
 Klein *et al.* 1979, AA, 70, 120. Effelsberg 100-m at 10.7 GHz (1'.2 : S = 13.1 ± 0.8), plus review of fluxes.
 Strom *et al.* 1982, MN, 200, 473. WSRT at 1415 MHz (27'' × 31'') from 1971 and 1979, for expansion.
 Dickel *et al.* 1982, ApJ, 257, 145. Comparison of Radio, X-ray and Optical.
 Reid *et al.* 1982, ApJ, 261, 485. IPC observations.
 Seward *et al.* 1983, ApJ, 266, 287. HRI observations.
 Tan & Gull 1985, MN, 216, 949. 5km at 2.7 GHz (4'') from 1980 and 1983, and OMT at 1.4 GHz (23'') from 1985 and 1980, for expansion.
 Albinson *et al.* 1986, MN, 219, 427. HI observations.
 Green & Gull 1987, MN, 224, 1055. VLA HI absorption observations towards central radio source.
 Smith *et al.* 1988, ApJ, 325, 288. EXOSAT spectrum and image (smoothed to 13'').

G126.2 + 1.6		Size (arcmin): 70	
RA: 01 ^h 18 ^m 30 ^s	1-GHz flux (Jy): 7	Type: S?	
Dec: +64°00'	Spectral index: varies		

Radio: Poorly defined shell.

Optical: Filaments detected.

References:
 Reich *et al.* 1979, AA, 78, L13. Effelsberg 100-m at 1.4 GHz (9' : S = 6.8 ± 0.7) and 2.7 GHz (4'.4 : S = 3.9 ± 0.4).
 Blair *et al.* 1980, ApJ, 242, 592. Optical detection and spectra.
 Rosado 1982, RMex, 5, 127. Optical spectra.
 Feen *et al.* 1983, ApJS, 51, 337. Deep [OIII] imagery.
 Fürst *et al.* 1984, AA, 133, 11. Effelsberg 100-m at 2.7 GHz (4'.4) and 4.8 GHz (2'.6).
 Joncas *et al.* 1989, AA, 219, 303. DRAO at 408 MHz (3'.5 × 3'.9 : S = 12 ± 2.5) and part at 1.4 GHz (1'.1 × 1'.0), plus review of fluxes.

G127.1 + 0.5		R5	
RA: 01 ^h 25 ^m 00 ^s	1-GHz flux (Jy): 13	Size (arcmin): 45	
Dec: +62°55'	Spectral index: 0.6	Type: S	

Has been called G127.3+0.7.

Radio: Distinct shell, with bright central source.

Point sources: Flat radio spectrum (extragalactic) source at centre of remnant.

Distance: 1.2–1.3 kpc if associated with NGC559.

References:
 Caswell 1977, MN, 181, 789. HMT at 1.42 GHz (3'.5 × 3'.9), plus other observations of central source.
 Salter *et al.* 1978, AA, 66, 77. Effelsberg 100-m at 2.7 GHz (4'.4), plus 5 and 8.7 GHz of the central source.
 Pauls 1977, AA, 59, L13. Effelsberg 100-m at 1.4 GHz (9' : S = 8 ± 1).
 Reich *et al.* 1979, AA, 78, L13. Effelsberg 100-m at 1.4 GHz (9' : S = 10.8 ± 1.3).
 Pauls *et al.* 1982, AA, 112, 120. WSRT at 610 MHz (56'' × 62'') and HI absorption to the point source with the VLA.
 Geldzahler & Shaffer 1982, ApJ, 260, L69. Observations of central source.
 Fürst *et al.* 1984, AA, 133, 11. Effelsberg 100-m at 2.7 GHz (4'.4) and 4.8 GHz (2'.6).
 Goss & van Gorkom 1984, JAA, 5, 425. WSRT HI absorption of central source.
 Joncas *et al.* 1989, AA, 219, 303. DRAO at 408 MHz (3'.5 × 3'.9 : S = 17.9 ± 2.0) and 1.4 GHz (1'.13 × 1'.0 : S = 10.1 ± 0.8), plus review of fluxes.

G130.7 + 3.1

3C58, SN1181

RA: 02^h01^m55^s
Dec: +64°35'1-GHz flux (Jy): 33
Spectral index: 0.10Size (arcmin): 9 × 5
Type: F

This is the remnant of the SN of AD1181.

Radio: Filled-centre, highly polarized, with possible high frequency turnover.

Optical: Faint filaments.

X-ray: Centrally brightened with power-law spectrum.

Point sources: Indication of a point source in X-ray observations.

Distance: HI absorption indicates 2.6 kpc.

References:

- Green *et al.* 1975, AA, 44, 187. Effelsberg 100-m at 15.0 GHz (58'' : $S = 28.7 \pm 0.5$).
 Wilson & Weiler 1976, AA, 49, 357. WSRT at 610 MHz (58'' × 64''), 1.4 GHz (24'' × 27'') and 5 GHz (7'' × 8'').
 van den Bergh 1978, ApJ, 220, L9. Optical observations.
 Becker *et al.* 1982, ApJ, 255, 557. X-ray observations.
 Green & Gull 1982, Nature, 299, 606. HI absorption distance.
 Fesen 1983, ApJ, 270, L53. Optical spectra.
 Aller & Reynolds 1985, in Crablike. Flux increase at 8 GHz.
 Reynolds & Aller 1985, AJ, 90, 2312. VLA at 1.4 GHz (2'), for limits of shell.
 Davelaar *et al.* 1986, ApJ, 300, L59. EXOSAT spectrum.
 Green 1986, MN, 218, 533. CLFST at 151 MHz (1'.2 × 1'.3 : $S = 36 \pm 4$), 5km at 2.7 GHz (4''), plus IPC observations for limit on shell.
 Green 1987, MN, 225, 11P. Flux increase at 408 MHz.
 Morsi & Reich 1987, AAS, 69, 533. Effelsberg 100-m at 32 GHz (26''.5 : $S = 24.2 \pm 1.4$).
 Reynolds & Aller 1988, ApJ, 327, 845. VLA at 1.4 (2''.4) and 4.9 GHz (2''.5).
 Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz (90'' : $S = 15.0 \pm 2.0$), plus review of fluxes.

G132.7 + 1.3

HB3

RA: 02^h14^m00^s
Dec: +62°30'1-GHz flux (Jy): 45
Spectral index: 0.6Size (arcmin): 80
Type: S

Has been called G132.4+2.2.

Radio: Faint shell, adjacent to W3/4/5 complex.

Optical: Incomplete shell, shock excited spectra.

X-ray: Partial shell.

Distance: Mean optical velocity indicates 3 kpc.

References:

- van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
 Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5' : $S = 33.8 \pm 7.0$).
 d'Odorico & Sabbadin 1977, AAS, 28, 439. Optical spectra.
 Read 1981, MN, 194, 863. 6C at 151 MHz (4'.4) and HMT at 1.4 GHz (2') showing HI shell.
 Lozinskaya 1981, SAL, 7, 17. Mean optical velocity.
 Fesen & Gull 1983, PASP, 95, 198. Optical image.
 Leahy *et al.* 1985, ApJ, 294, 183. IPC observations.
 Landecker *et al.* 1987, AJ, 94, 111. DRAO at 408 MHz (3'.5 × 4' : $S = 75 \pm 15$), plus review of fluxes.

G152.2 - 1.2RA: 04^h05^m30^s
Dec: +48°24'1-GHz flux (Jy): 16?
Spectral index: 0.7?Size (arcmin): 110?
Type: S?

Radio: Non-thermal source hinted by Bologna survey.

References:

- Bonsignori-Facondi & Tomasi 1979, AA, 77, 93. Bologna at 408 MHz (4'.2 × 110' : $S = 30 \pm 30\%$).

G160.9 + 2.6		HB9
RA: 04 ^h 57 ^m 00 ^s	1-GHz flux (Jy): 110	Size (arcmin): 140 × 120
Dec: +46°36'	Spectral index: 0.6	Type: S
<p>Has been called G160.5+2.8 or G160.4+2.8.</p> <p>Radio: Large shell.</p> <p>Optical: Incomplete shell.</p> <p>X-ray: Detected.</p> <p>Point sources: Pulsar within the boundary of the remnant, plus several nearby compact radio sources.</p> <p>Distance: Mean optical velocity suggests 2 kpc.</p> <p>References: d'Odorico & Sabbadin 1977, AAS, 28, 439. Optical spectra. Damashek <i>et al.</i> 1978, ApJ, 225, L31. Pulsar. Lozinskaya 1981, SAL, 7, 17. Mean optical velocity. Dwarakanath <i>et al.</i> 1982, JAA, 3, 207. Radio observations at 34.5 MHz (26' × 40'; $S = 750 \pm 150$), plus review of fluxes. van Gorkom <i>et al.</i> 1982, MN 198, 757. WSRT H_i absorption to nearby point source. Sequist & Gilmore 1982, AJ, 87, 378. VLA observations of nearby source. Reich <i>et al.</i> 1983, in IAU101. Effelsberg 100-m at 2.7 GHz (4'.5). Roger & Leahy 1988, in SNRISM. DRAO at 408 MHz (3'.5 × 4'.8) and 1.4 GHz (smoothed to 2'). Krymkin <i>et al.</i> 1988, SA, 32, 634. Observations at 12.6 and 25 MHz, plus review of fluxes. Leahy 1988, ApJ, 322, 917. IPC observations.</p>		
G166.0 + 4.3		VRO 42.05.01
RA: 05 ^h 23 ^m 00 ^s	1-GHz flux (Jy): 7?	Size (arcmin): 55 × 35
Dec: +42°52'	Spectral index: 0.4?	Type: S
<p>Radio: Two arcs of different radii.</p> <p>Optical: Nearly complete ring.</p> <p>Distance: H_i indicates 4.5 kpc.</p> <p>References: van den Bergh <i>et al.</i> 1973, ApJS, 26, 19. Optical. Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz (5'; $S = 5.2 \pm 1.0$). Lozinskaya 1979, AJP, 32, 113. H_α interferometry. Landecker <i>et al.</i> 1982, ApJ, 261, L41. DRAO at 1.4 GHz (1'.0 × 1'.4), plus review of fluxes. Fesen <i>et al.</i> 1983, ApJS, 51, 337. Deep [OIII] imagery. Pineault <i>et al.</i> 1985, AA, 151, 52. VLA at 1.4 GHz (16'' × 20'') of part of remnant, and optical. Pineault <i>et al.</i> 1987, ApJ, 315, 580. DRAO and VLA combined at 1.4 GHz (20''). Fesen <i>et al.</i> 1985, ApJ, 292, 29. Optical spectra. Braun & Strom 1986, AAS, 63, 345. WSRT H_i Observations. Landecker <i>et al.</i> 1989, MN, 237, 277. DRAO at 1.4 GHz (1'.0 × 1'.4), including H_i.</p>		
G166.2 + 2.5		OA 184
RA: 05 ^h 15 ^m 30 ^s	1-GHz flux (Jy): 11	Size (arcmin): 90 × 70
Dec: +41°50'	Spectral index: 0.5	Type: S
<p>Radio: Large, faint shell.</p> <p>Optical: Nearly complete ring.</p> <p>Distance: H_i indicates 4.5 kpc.</p> <p>References: Willis 1973, AA, 26, 237. NRAO 300-ft at 2.7 GHz (5'; $S = 6.0 \pm 2.2$). Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo 111 MHz. Lozinskaya 1981, SAL, 7, 17. Mean optical velocity. Fesen <i>et al.</i> 1985, ApJ, 292, 29. Optical spectra. Routledge <i>et al.</i> 1986, MN, 221, 809. DRAO at 1.4 GHz (1' × 1'.4; $S = 9.0 \pm 0.5$) including H_i, plus review of fluxes. Kim <i>et al.</i> 1988, AJ, 96, 704. VLA of background sources for magnetic field structure of the remnant. Leahy & Marshall 1988, MN, 235, 805. IRAS observations. Landecker <i>et al.</i> 1989, MN, 237, 277. DRAO at 1.4 GHz (1'.0 × 1'.4), including H_i.</p>		

G179.0 + 2.6

RA: 05^h50^m30^s
Dec: +31°05'

1-GHz flux (Jy): 7
Spectral index: 0.4

Size (arcmin): 70
Type: S?

Radio: Thick shell, with background extragalactic sources near centre.

References:

Fürst & Reich 1986, AA, 154, 303. Effelsberg 100-m at 1.4 (9'.4), 2.7 (4'.3) and 4.75 GHz (2'.4).
Fürst *et al.* 1989, AA, 223, 66. Observations of central, extragalactic source.

G180.0 - 1.7

S147

RA: 05^h36^m00^s
Dec: +27°50'

1-GHz flux (Jy): 65
Spectral index: varies

Size (arcmin): 180
Type: S

Radio: Large faint shell, with spectral break.

Optical: Wispy ring.

X-ray: Possible detection.

References:

van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Sofue *et al.* 1980, PASJ, 32, 1. Effelsberg 100-m at 5 GHz (2'.6) of parts.
Kundu *et al.* 1980, AA, 92, 225. Effelsberg 100-m at 2.7 GHz (5'.5 : $S = 34.9 \pm 4$) and 1.6 GHz (10' : $S = 60.2 \pm 6$).
Angerhofer & Kundu 1981, AJ, 86, 1003. Arecibo at 430 MHz (9' : $S = 97 \pm 20$).
Fürst *et al.* 1982, AA, 115, 428. Observations of compact radio sources near the remnant.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Fürst & Reich 1986, AA, 163, 186. Effelsberg 100-m at 1.4, 2.7 and 4.7/5.0 GHz (9'.4, 4'.3 and 2'.4/2'.6).
Sauvaget *et al.* 1990, AA, 227, 183. EXOSAT possible detection.

G184.6 - 5.8

Crab Nebula, 3C144, SN1054

RA: 05^h31^m30^s
Dec: +21°59'

1-GHz flux (Jy): 1040
Spectral index: 0.30

Size (arcmin): 7 × 5
Type: F

This is the remnant of the SN of AD1054.

Radio: Filled-centre, central pulsar, with faint "jet" (or tube) extending from the N edge.

Optical: Strongly polarized filaments, diffuse synchrotron emission, with "jet" faintly visible.

X-ray: Centrally brightened around the pulsar.

Point sources: Pulsar powering the remnant.

Distance: Proper motions and radial velocities give 2 kpc.

References:

Trimble & Woltjer 1971, ApJ, 163, L97. Optical expansion for distance.
Green *et al.* 1975, AA, 44, 187. Effelsberg 100-m at 15.0 GHz (58'' : $S = 499.3 \pm 1.0$).
Swinbank & Pooley 1979, MN, 186, 775. 5km at 2.7 GHz (3''.7 × 10'').
Clark *et al.* 1983, MN, 204, 415. 3-D optical structure.
Velusamy 1984, Nature, 308, 251. VLA at 1.4 GHz, radio detection of "jet".
Harnden & Seward 1984, ApJ, 283, 279. X-ray observations.
Velusamy 1985, MN, 212, 359. VLA at 1.4 GHz (15'').
Aller & Reynolds 1985, ApJ, 293, L73. Flux density decrease.
Mezger *et al.* 1986, AA, 167, 145. 249-GHz map (120'').
Fesen & Gull 1986, ApJ, 306, 259. Deep [OIII] imagery of "jet".
Morsi & Reich 1987, AAS, 89, 533. Effelsberg 100-m at 32 GHz (26''.5 : $S < 417$).
Marcelin *et al.* 1990, AA, 228, 471. Optical of "jet".
Fesen & Blair 1990, ApJ, 351, L45. Optical identification of dust in filaments.
Graham *et al.* 1990, ApJ, 352, 172. Infrared spectroscopy and imaging.
Bietenholz & Kronberg 1990, ApJ, 357, L13. VLA at 1.4 GHz (1''.8).

G189.1 + 3.0		IC443, 3C157
RA: 06 ^h 14 ^m 00 ^s	1-GHz flux (Jy): 160	Size (arcmin): 45
Dec: +22°36'	Spectral index: 0.36	Type: S

Radio: Limb-brightened to NE, with faint extension to the E.
Optical: Brightest to the NE, with faint filaments outside the NE boundary.
X-ray: Shell, brightest to the NE.
Distance: Mean optical velocity suggests 0.7–1.5 kpc, association with S249 gives 1.5–2 kpc.

References:
 Duin & van der Laan 1975, AA, 40, 111. WSRT at 610 MHz (1' × 2'.5), 1415 MHz (24'' × 63''), and part at 5 GHz (12'' × 31'').
 Lozinskaya 1981, SAL, 7, 17. Mean optical velocity.
 Fesen 1984, ApJ, 281, 658. Optical of filament to far NE.
 Erickson & Mahoney 1985, ApJ, 290, 596. TPT at 4 frequencies between 31 and 74 MHz (13' × 11' to 5'.4 × 4'.7), plus review of fluxes.
 Braun & Strom 1986, AA, 164, 193. WSRT at 327 MHz (72'' × 185'') and 1.4 GHz (17'' × 43''), plus HI and IRAS.
 Green 1986, MN, 221, 473. CLFST at 151 MHz (1'.2 × 3'.1) and HMT at 1.4 GHz (2'.1 × 5'.4).
 Mufson *et al.* 1986, AJ, 92, 1349. Radio, IR, optical, UV and X-ray comparison, including VLA at 1.6 GHz (3''.8 × 3''.3 and 40'').
 White *et al.* 1987, AA, 173, 337. Observations of shocked molecular species.
 Graham *et al.* 1987, ApJ, 313, 847. IR spectroscopy.
 Burton *et al.* 1988, MN, 231, 617. Molecular hydrogen imaging of shocked material.
 Brown *et al.* 1988, ApJ, 334, 852. [Fex] optical imaging.
 Dickel *et al.* 1989, AJ, 98, 1363. VLA at 1.4 GHz (1''.1 × 1''.2) of NE.
 Petre *et al.* 1988, ApJ, 335, 215. IPC, HRI, SSS and other X-ray observations.
 Ziurys *et al.* 1989, ApJ, 341, 857. Observations of shocked molecular species.
 Burton *et al.* 1990, ApJ, 355, 197. Infrared observations of shocked O.

G192.8 - 1.1		PKS 0607+17
RA: 06 ^h 06 ^m 30 ^s	1-GHz flux (Jy): 20?	Size (arcmin): 78
Dec: +17°20'	Spectral index: 0.6?	Type: S

Has been called G193.3–1.5.

Radio: In complex region, has also been regarded as part of the Origem Loop, a larger, supposed remnant.

Optical: Encompasses S261 and S254–258.

References:

Milne & Dickel 1974, AJP, 27, 549. Parkes 64-m at 2.7 GHz (9' : S = 13 ± 15%).
 Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 318 MHz (15' : S = 74 ± 32), and S(610) = 40.
 Caswell 1985, AJ, 90, 1076. DRAO at 1.4 GHz (1' × 3'.3 : S = 18 ± 3).

G205.5 + 0.5		Monoceros Nebula
RA: 06 ^h 36 ^m 00 ^s	1-GHz flux (Jy): 160	Size (arcmin): 220
Dec: +06°30'	Spectral index: 0.5	Type: S

Radio: In complex region, parts may be III regions.

Optical: Large ring, near Rosette nebula.

X-ray: Possibly detected.

Distance: Mean optical velocity suggests 0.8 kpc, low frequency radio absorption suggests 1.6 kpc.

References:

Milne & Dickel 1974, AJP, 27, 549. Parkes 64-m at 2.7 GHz (9').
 Velusamy & Kundu 1974, AA, 32, 375. NRAO 300-ft at 2.7 GHz (5'), part only.
 Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 111 MHz (1' : S = 462 ± 180) and S(610) = 245.
 Davies *et al.* 1978, AAS, 31, 271. Deep optical plates.
 Lozinskaya 1981, SAL, 7, 17. Mean optical velocity.
 Graham *et al.* 1982, AA, 109, 145. Effelsberg 100-m at 2.7 GHz (4'.4 : S = 97.6 ± 12.5), plus review of fluxes.
 Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
 Leahy *et al.* 1985, MN, 220, 501. IPC observations.
 Odegard 1986, ApJ, 301, 813. TPT at 20.6, 25.6 and 30.9 MHz (24', 19' and 16').

G206.9 + 2.3

PKS 0646+06

RA: 06^h46^m00^s
Dec: +06°30'1-GHz flux (Jy): 6
Spectral index: 0.5Size (arcmin): 60 × 40
Type: S?**Radio:** Diffuse source near the Monoceros Nebula.**Optical:** Filaments detected.**X-ray:** Possibly detected.**References:**

Davies & Meaburn 1978, AA, 69, 443. Optical.
 Nousek *et al.* 1981, ApJ, 248, 152. HEAO-1 X-ray limit.
 Graham *et al.* 1982, AA, 109, 145. Effelsberg 100-m at 2.7 GHz (4'.4 : $S = 4.1 \pm 0.6$), plus review of fluxes.
 Rosado 1982, RMex, 5, 127. Optical.
 Feasen *et al.* 1985, ApJ, 292, 29. Optical spectra.
 Leahy *et al.* 1985, MN, 220, 501. IPC observations.
 Odegard 1986, ApJ, 301, 813. TPT at 20.8, 25.6 and 30.9 MHz (24', 19' and 16').

G211.7 - 1.1RA: 06^h43^m10^s
Dec: +00°24'1-GHz flux (Jy): 15?
Spectral index: 0.5?Size (arcmin): 70?
Type: S?**Radio:** Non-thermal source hinted by Bologna survey.**Optical:** Coincides with S284, filamentary ring with brighter central area.**References:**

Bonsignori-Facondi & Tomasi 1979, AA, 77, 93. Bologna at 408 MHz (4'.2 × 110' : $S = 23 \pm 20\%$).

G240.9 - 0.9RA: 07^h40^m30^s
Dec: -25°06'1-GHz flux (Jy): 24?
Spectral index: 0.1?Size (arcmin): 95?
Type: S?

Is this a SNR?

Radio: Non-thermal source hinted by Bologna Survey.**References:**

Bonsignori-Facondi & Tomasi 1979, AA, 77, 93. Bologna at 408 MHz (4'.2 × 110' : $S = 27 \pm 15\%$).

G260.4 - 3.4

Puppis A, MSH 08-44

RA: 08^h20^m30^s
Dec: -42°50'1-GHz flux (Jy): 130
Spectral index: 0.5Size (arcmin): 60 × 50
Type: S**Radio:** Angular shell, brightest to the E, poorly defined to the W.**Optical:** Nebulosity and wisps.**X-ray:** Brightest to the E.**References:**

Green 1971, AJP, 24, 773. Molonglo at 408 MHz (3' : $S = 198 \pm 20$).
 Dickel & Milne 1976, AJP, 29, 436. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Goudis & Meaburn 1978, AA, 62, 283. H α +NII optical image.
 Winkler *et al.* 1981, ApJ, 245, 574. FPCS, Oxygen lines.
 Winkler *et al.* 1981, ApJ, 245, L27. X-ray spectrum.
 Petre *et al.* 1982, ApJ, 258, 22. HRI observations.
 Milne *et al.* 1983, MN, 204, 237. FIRST at 1415 MHz (50''), large scale emission missing.
 Teske & Petre 1987, ApJ, 318, 370. Coronal optical line emission.
 Dubner & Arnal 1988, AAS, 75, 363. HI and CO observations of surroundings.
 Arendt *et al.* 1990, ApJ, 350, 286. MOST at 843 MHz (44'' × 65''), with large scale emission added, plus infrared, optical and X-ray observations.

G261.9 + 5.5

RA: 09^h02^m20^s
Dec: -38°30'

1-GHz flux (Jy): 10?
Spectral index: 0.4?

Size (arcmin): 40 × 30
Type: S

Radio: Faint shell with little limb brightening.

References:

Hill 1967, AJP, 20, 297. Parkes 64-m at 2650 MHz (7'.5 : $S = 7$) also $S(1410) = 8$, $S(81.5) = 25$.
Colomb & Dubner 1980, AA, 82, 244. Argentine 30-m dish at 1.4 GHz, for H_I possibly associated with remnant.
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" × 71").

G263.9 - 3.3

RA: 08^h32^m30^s
Dec: -45°35'

1-GHz flux (Jy): 1750
Spectral index: varies

Vela (XYZ)
Size (arcmin): 255
Type: C

This refers to the whole Vela XYZ complex, of which X has at times been classified as a separate (filled-centre) remnant.

Radio: Large shell, with flatter spectrum component (Vela X).

Optical: Filaments.

X-ray: Patchy shell, with central nebula and pulsar.

Point sources: Pulsar possibly associated with Vela X.

Distance: Vela pulsar suggests 0.5 kpc.

References:

Milne 1968, AJP, 21, 201. Parkes 64-m at various frequencies, including 408 MHz (48' : $S = 2300 \pm 300$), 635 MHz (31' : $S = 2360 \pm 300$), 1410 MHz (14' : $S = 1640 \pm 300$) and 2650 MHz (7'.5 : $S = 1400 \pm 250$), plus discussion of the distance.
van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Dopita *et al.* 1977, ApJ, 214, 179. Some optical line ratios.
Hearn *et al.* 1980, ApJ, 255, L67. X-ray map.
Milne 1980, AA, 81, 293. Maps of Vela X with Parkes 64-m at 1.66, 2.7 and 5 GHz (12', 8'.4 and 4'.4).
Weiler & Panagia 1980, AA, 90, 269. Clarify notation of this region and review previous observations.
Kahn *et al.* 1985, ApJ, 299, 821. IPC observations.
Harnden *et al.* 1985, ApJ, 299, 828. IPC and HRI observations of Vela X and pulsar.
Bignami & Caraveo 1988, ApJ, 325, L5. Pulsar proper motion from optical observations.

G279.0 + 1.1

RA: 09^h56^m00^s
Dec: -53°00'

1-GHz flux (Jy): 30?
Spectral index: 0.6?

Size (arcmin): 95
Type: S

Radio: Faint, incomplete shell shell.

References:

Woermann & Jonas 1988, MN, 234, 971. Hartesbeesthoek 26-m at 1.6 (30' : $S = 25.2 \pm 4$) and 2.3 GHz (20' : $S = 20.7 \pm 3$).

G284.3 - 1.8

RA: 10^h16^m30^s
Dec: -58°45'

1-GHz flux (Jy): 11?
Spectral index: 0.3?

MSH 10-53
Size (arcmin): 24?
Type: S

Radio: Incomplete, poorly defined shell.

References:

Milne *et al.* 1989, PASA, 8, 187. MOST at 843 MHz (43" × 50") and Parkes 64-m at 8.4 GHz (3' : $S = 5.4 \pm 0.8$) including polarization, plus earlier fluxes.

G290.1 - 0.8

MSH 11-61A

RA: 11^h01^m00^s
Dec: -60°40'1-GHz flux (Jy): 42
Spectral index: 0.4Size (arcmin): 15 × 10
Type: S**Radio:** Elongated, clumpy shell.**Optical:** Filaments detected.**X-ray:** Detected.**References:**

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : S = 20.2).

Elliot & Malin 1979, MN, 186, 45P. Optical image and spectra.

Kirshner & Winkler 1979, ApJ, 227, 853. Optical.

Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 50'').

Milne *et al.* 1989, PASA, 8, 187. MOST at 843 MHz (43'' × 49'' : S = 45 ± 11), and Parkes 64-m at 8.4 GHz (3' : S = 19.5 ± 1.0), including polarization.

Seward 1990, ApJS, 73, 781. IPC observations.

G291.0 - 0.1

(MSH 11-62)

RA: 11^h09^m45^s
Dec: -60°22'1-GHz flux (Jy): 16
Spectral index: 0.29Size (arcmin): 10
Type: F**Radio:** Elongated, filled-centre.**X-ray:** Centrally brightened.**References:**

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

Roger *et al.* 1986, MN, 219, 815. MOST at 843 MHz (43'' × 50'' : S = 17.2 ± 1.0), and Parkes 64-m at 5 and 8.4 GHz (4'.6 and 3' : S = 10.4 ± 0.4 and 9'.1 ± 0.2), with polarization.

Wilson 1986, ApJ, 302, 718. IPC observations.

G292.0 + 1.8

MSH 11-54

RA: 11^h22^m20^s
Dec: -59°00'1-GHz flux (Jy): 15
Spectral index: 0.4Size (arcmin): 12 × 8
Type: C?**Radio:** Centrally brightened source surrounded by a plateau of faint emission.**Optical:** Oxygen rich.**X-ray:** Possible ring of emission, spectrum shows overabundance of S.**References:**

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

Goss *et al.* 1979, MN, 188, 357. Optical spectra.Lockhart *et al.* 1977, MN, 179, 147. Fleurs at 1415 MHz (50'' : S = 13.0).Clark *et al.* 1980, MN, 193, 129. SSS spectrum.Tuohy *et al.* 1982, ApJ, 260, L65. HRI observations.Braun *et al.* 1983, in IAU101. Optical spectra.

Dopita & Tuohy 1984, ApJ, 282, 135. Optical spectra.

Braun *et al.* 1986, AA, 162, 259. MOST at 843 MHz (0'.8) and IRAS.

Class 1988, in Birthevents. EXOSAT observations.

G293.8 + 0.6RA: 11^h32^m40^s
Dec: -60°37'1-GHz flux (Jy): 5.5?
Spectral index: 0.6?Size (arcmin): 20
Type: C**Radio:** Central source, with faint extended plateau.**References:**Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 9.0) and Parkes 64-m at 5 GHz (4' : S = 2.1).

Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 51'').

G296.1 - 0.5

RA: 11^h48^m40^s
Dec: -62°17'

1-GHz flux (Jy): 8?
Spectral index: 0.6?

Size (arcmin): 33?
Type: S

This incorporates the previously catalogued remnant G296.1-0.7. Has also been called G296.05-0.50.

Radio: A ring of emission confused by nearby HII regions.

Optical: Detected.

X-ray: Detected.

References:

- Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 6.9$) and Parkes 64-m at 5 GHz (4' : $S > 0.74$) poor 5-GHz map (of G296.1-0.7).
Longmore *et al.* 1977, MN, 181, 541. Optical spectra.
van den Bergh 1978, ApJS, 38, 119. Optical.
Markert *et al.* 1981, ApJ, 248, L17. IPC observations.
Caswell & Barnes 1983, ApJ, 271, L55. Molonglo at 408 MHz (3' : $S = 12.4$).
Bignami *et al.* 1986, ApJ, 302, 606. EXOSAT, IPC and HRI observations.

G296.5 + 10.0

PKS 1209-51/52

RA: 12^h07^m00^s
Dec: -52°10'

1-GHz flux (Jy): 48
Spectral index: 0.5

Size (arcmin): 90 × 65
Type: S

Has been called G296.5+9.7

Radio: Shell with two bright limbs.

Optical: Detected.

X-ray: Incomplete shell, with central compact source.

Point sources: Compact X-ray source detected within the remnant.

References:

- Irvine & Irvine 1974, ApJ, 192, L111. Optical.
Danziger & Dennefeld 1976, PASP, 88, 44. Optical spectra.
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
Tuohy *et al.* 1979, ApJ, 230, L27. X-ray detection with HEAO-1 A2 experiment.
Ruiz 1983, AJ, 88, 1210. Optical spectra.
Dubner *et al.* 1986, AJ, 91, 343. Argentine 30-m dish at 1.4 GHz (34'), plus HI.
Kellett *et al.* 1987, MN, 225, 199. EXOSAT of the west of the remnant, including the compact source.
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" × 56").
Matsui *et al.* 1988, ApJ, 329, 838. IPC and HRI observations, including compact source.
Roger *et al.* 1988, ApJ, 332, 940. MOST at 843 MHz (44" × 56").

G296.8 - 0.3

1156-62

RA: 11^h56^m00^s
Dec: -62°18'

1-GHz flux (Jy): 9
Spectral index: 0.6

Size (arcmin): 14
Type: S

Radio: Shell, brighter to the NW.

References:

- Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 15.0$) and Parkes 64-m at 5 GHz (4' : $S = 3.2$).
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).

G298.5 - 0.3

RA: 12^h10^m00^s
Dec: -62°35'

1-GHz flux (Jy): 5
Spectral index: 0.4

Size (arcmin): 5?
Type: ?

Radio: Not well resolved, may be part of a larger ring?

References:

- Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

G298.6 - 0.0

RA: 12^h11^m00^s
Dec: -62°20'

1-GHz flux (Jy): 4.3
Spectral index: 0.3

Size (arcmin): 12 × 8?
Type: S

Has been called G298.6-0.1.

Radio: Elongated shell, not well defined.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 50'').

G299.0 + 0.2

RA: 12^h15^m00^s
Dec: -62°12'

1-GHz flux (Jy): 9?
Spectral index: ?

Size (arcmin): 11?
Type: S?

Radio: Possible shell, with thermal peak to the S, poorly defined.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 12.6) and Parkes 64-m at 5 GHz (4' : S = 4.7).

G302.3 + 0.7

RA: 12^h42^m55^s
Dec: -61°52'

1-GHz flux (Jy): 5.5
Spectral index: 0.4

Size (arcmin): 15
Type: S

Radio: Shell, brightest to the NE and SW.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 7.5) and Parkes 64-m at 5 GHz (4' : S = 3.0).

G304.6 + 0.1

Kes 17

RA: 13^h02^m50^s
Dec: -62°26'

1-GHz flux (Jy): 14
Spectral index: 0.5

Size (arcmin): 8?
Type: S?

Radio: Incomplete shell, not well resolved.

Distance: Possible limit of >9.7 kpc from HI absorption.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : S = 6.9).
Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.

G308.7 + 0.0

RA: 13^h38^m00^s
Dec: -62°00'

1-GHz flux (Jy): 12
Spectral index: 0.4

Size (arcmin): 17 × 7
Type: F?

Radio: Amorphous source, with possible thermal component.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 16.7) and Parkes 64-m at 5 GHz (4' : S = 7.0).
Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : S = 6.5).
Caswell *et al.* 1981, MN, 195, 89. FIRST at 1415 MHz (50'').
Wilson 1986, ApJ, 302, 718. Lack of detection with IPC.

G309.2 - 0.6

RA: 13^h43^m00^s
Dec: -62°39'

1-GHz flux (Jy): 7?
Spectral index: 0.4?

Size (arcmin): 17 × 13
Type: S

Has been called G309.2-0.7.

Radio: Distorted shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 10.0$) and Parkes 64-m at 5 GHz (4' : $S = 3.9$).
Caswell *et al.* 1981, MN, 195, 89. FIRST at 1415 MHz (1'.5).
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" × 50").

G309.8 + 0.0

RA: 13^h47^m00^s
Dec: -61°50'

1-GHz flux (Jy): 17
Spectral index: 0.5

Size (arcmin): 24
Type: S

Radio: Incomplete shell.

Point sources: Steep radio spectrum source near the centre of the remnant.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 26.4$) and Parkes 64-m at 5 GHz (4' : $S = 7.4$).
Caswell *et al.* 1980, MN, 190, 881. FIRST at 1415 MHz (1').

G311.5 - 0.3

RA: 14^h02^m00^s
Dec: -61°44'

1-GHz flux (Jy): 3.7
Spectral index: 0.5

Size (arcmin): 3?
Type: ?

Radio: Not well resolved.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Caswell & Barnes 1985, MN, 216, 753. Molonglo at 408 MHz (3').

G312.4 - 0.4

RA: 14^h09^m20^s
Dec: -61°29'

1-GHz flux (Jy): 44?
Spectral index: 0.3?

Size (arcmin): 36 × 27
Type: S

Radio: Incomplete shell.

References:

Caswell & Barnes 1985, MN, 216, 753. Molonglo at 408 MHz (3' : $S = 56$).

G315.4 - 2.3

RCW 86, MSH 14-63, SN185

RA: 14^h39^m00^s
Dec: -62°17'1-GHz flux (Jy): 49
Spectral index: 0.6Size (arcmin): 40
Type: S

Probably the remnant of the SN of AD185.

Radio: Shell, brightest to the SW.**Optical:** Bright, radiative filaments, with some faint Balmer dominated filaments.**X-ray:** Partial shell, with bright patch.**Distance:** Possible association with OB stars suggests 2.5 kpc.**References:**

van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
 Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 86$) and Parkes 64-m at 5 GHz (4' : $S = 18.2$).
 Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Winkler 1978, ApJ, 221, 220. X-ray detection.
 Leibowitz & Danziger 1983, MN, 204, 273. Optical spectra.
 Pisarski *et al.* 1984, ApJ, 277, 710. IPC and HRI observations
 Nugent *et al.* 1984, ApJ, 284, 612. X-ray spectrum.
 Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 50'').
 Long & Blair 1990, ApJ, 358, L13. Balmer dominated optical filaments.
 Greidanus & Strom 1990, AA, 240, 385. IRAS observations.

G315.4 - 0.3RA: 14^h32^m10^s
Dec: -60°23'1-GHz flux (Jy): 8
Spectral index: 0.4Size (arcmin): 15 × 10
Type: S**Radio:** Faint shell? with HII region superposed to the E.**References:**

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 15.9$) and Parkes 64-m at 5 GHz (4' : $S = 4.9$).
 Caswell *et al.* 1981, MN, 195, 89. FIRST at 1415 MHz (50'' : $S = 6.25$), re-assessment of earlier fluxes.

G316.3 - 0.0

(MSH 14-57)

RA: 14^h37^m40^s
Dec: -59°47'1-GHz flux (Jy): 24
Spectral index: 0.4Size (arcmin): 25 × 15
Type: S**Radio:** Distorted shell, with possible "blowout".**Distance:** HI absorption data suggests >7.2 kpc.**References:**

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
 Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
 Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : $S = 16.7$).
 Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 51'').
 Milne *et al.* 1988, in Birthevents. MOST at 843 MHz (43'' × 49'' : $S = 19.0 \pm 3.0$), and Parkes 64-m at 5 (4'.6 : $S = 14.7 \pm 2.0$) and 8.4 GHz (3'.0 : $S = 11.6 \pm 1.5$), including polarization.

G320.4 - 1.2

MSH 15-52, RCW 89

RA: 15^h10^m30^s
Dec: -58°58'

1-GHz flux (Jy): 60?
Spectral index: 0.4?

Size (arcmin): 30
Type: C

Radio: Ragged shell.

Optical: RCW 89 is the H α emitting region to the NW.

X-ray: Partial shell, central nebula and pulsar.

Point sources: Radio and X-ray pulsar.

Distance: HI absorption indicates 4.2 kpc.

References:

- Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
 Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Dopita *et al.* 1977, ApJ, 214, 179. Optical spectra.
 Caswell *et al.* 1981, MN, 195, 89. FIRST at 1415 MHz (50").
 Seward & Harnden 1982, ApJ, 256, L45. X-ray of pulsar.
 Manchester *et al.* 1982, ApJ, 262, L31. Radio of pulsar.
 Manchester & Durdin 1983, in IAU101. MOST at 843 MHz (43" x 50").
 Seward *et al.* 1983, ApJ, 267, 698. X-ray, Optical and IR.
 van den Bergh & Kamper 1984, ApJ, 280, L51. Optical expansion.
 Seward *et al.* 1984, ApJ, 281, 650. X-ray observations of pulsar and nebulosity.
 Trussoni *et al.* 1990, AA, 234, 403. EXOSAT observations.

G321.9 - 0.3

RA: 15^h16^m45^s
Dec: -57°23'

1-GHz flux (Jy): 13
Spectral index: 0.3

Size (arcmin): 30 x 20
Type: S

Radio: Shell brighter to the NW.

References:

- Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 18.3) and Parkes 64-m at 5 GHz (4' : S = 7.8).
 Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" x 52").

G323.5 + 0.1

RA: 15^h24^m50^s
Dec: -56°11'

1-GHz flux (Jy): 3?
Spectral index: 0.4?

Size (arcmin): 10?
Type: S

Radio: Shell, confused with thermal emission.

References:

- Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 4.2) and Parkes 64-m at 5 GHz (4' : S = 1.5).

G326.3 - 1.8

MSH 15-56

RA: 15^h49^m00^s
Dec: -56°00'

1-GHz flux (Jy): 145
Spectral index: varies

Size (arcmin): 36
Type: C

Has been called G326.2-1.7.

Radio: Shell, with flat spectrum core.

Optical: Emission around the shell.

X-ray: Detected.

References:

- Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3' : $S = 180$).
 Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
 Milne *et al.* 1979, MN, 186, 437. FIRST at 1415 MHz (0'.8 : $S > 95$) and Parkes 64-m at 14.7 GHz (2'.2 : $S = 69 \pm 8$).
 van den Bergh 1979, ApJ, 227, 497. Optical observations.
 Zealey *et al.* 1979, AAS, 38, 39. Optical observations.
 Dennefeld 1980, PASP, 92, 603. Optical spectra.
 Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' x 53'').
 Milne *et al.* 1989, PASA, 8, 187. MOST at 843 MHz (43'' x 52'' : $S = 153 \pm 40$), and Parkes 64-m at 8.4 GHz (3' : $S = 68 \pm 5$), including polarization.
 Seward 1990, ApJS, 73, 781. IPC observations.

G327.1 - 1.1

RA: 15^h50^m30^s
Dec: -55°00'

1-GHz flux (Jy): 8?
Spectral index: ?

Size (arcmin): 14?
Type: S?

Radio: Possible shell, but low and high frequency maps disagree.

X-ray: Detected.

References:

- Milne & Dickel 1974, AJP, 27, 549. Parkes 64-m at 2.7 GHz (8'.4 : $S = 10 \pm 15\%$).
 Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 10.6$) and Parkes 64-m at 5 GHz (4' : $S = 4.3$).
 Lamb & Markert 1981, ApJ, 244, 94. IPC observations.

G327.4 + 0.4

Kes 27

RA: 15^h44^m30^s
Dec: -53°40'

1-GHz flux (Jy): 34
Spectral index: 0.6

Size (arcmin): 20
Type: S

Has been called G327.3+0.4 and G327.3+0.5.

Radio: Partial shell, brightest to the SE.

X-ray: Compact and extended emission near centre of remnant.

References:

- Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 58$) and Parkes 64-m at 5 GHz (4' : $S = 12.4$).
 Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Lamb & Markert 1981, ApJ, 244, 94. IPC observations.
 Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' x 55'').
 Milne *et al.* 1989, PASA, 8, 187. MOST at 843 MHz (43'' x 53'' : $S = 32.2 \pm 6$), and Parkes 64-m at 8.4 GHz (3' : $S = 9.4 \pm 0.8$), including polarization.

G327.6 + 14.6

SN1006, PKS 1459-41

RA: 14^h59^m35^s
Dec: -41°44'1-GHz flux (Jy): 19
Spectral index: 0.6Size (arcmin): 30
Type: S

This is the remnant of the SN of AD1006.

Radio: Shell, with two bright arcs.**Optical:** Filaments to the NW, with broad H α component.**X-ray:** Shell, limb brightened as in radio.**Point sources:** The Schweizer-Middleditch star is near the middle of the remnant.**Distance:** Optical spectra and proper motion indicate 1.7-3.1 kpc.**References:**

- van den Bergh 1976, ApJ, 208, L17. Optical.
 Dickel & Milne 1976, AJP, 28, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
 Pskovskii 1978, SA, 22, 420. Distance from historical records.
 Becker *et al.* 1980, ApJ, 230, L33. SSS and other X-ray spectra.
 Schweizer & Middleditch 1980, ApJ, 241, 1039. Possible stellar remnant.
 Pye *et al.* 1981, MN, 194, 569. IPC observations.
 Caswell *et al.* 1983, MN, 204, 921. FIRST at 1415 MHz (77").
 Reynolds & Gilmore 1986, AJ, 92, 1138. VLA at 1.37 and 1.67 GHz (16" x 20").
 Kirshner *et al.* 1987, ApJ, 315, L135. Broad H α optical component.
 Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" x 66").
 Fesen *et al.* 1988, ApJ, 327, 184. UV absorption spectra to the Schweizer-Middleditch star.
 Roger *et al.* 1988, ApJ, 332, 940. MOST at 843 MHz (44" x 66": $S = 17.5 \pm 1.5$).
 Long *et al.* 1988, ApJ, 333, 749. Optical proper motion for distance.
 Jones & Pye 1989, MN, 238, 567. EXOSAT observations.

G328.0 + 0.3RA: 15^h49^m30^s
Dec: -53°20'1-GHz flux (Jy): 2.4?
Spectral index: 0.6?Size (arcmin): 6?
Type: ?**Radio:** Not well resolved.**References:**

- Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
 Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.

G328.4 + 0.2

(MSH 15-57)

RA: 15^h51^m40^s
Dec: -53°08'1-GHz flux (Jy): 16
Spectral index: 0.2Size (arcmin): 6
Type: F**Radio:** Amorphous emission.**References:**

- Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
 Caswell *et al.* 1980, MN, 190, 881. FIRST at 1415 MHz (50").
 Wilson 1988, ApJ, 302, 718. Lack of detection with IPC.

G330.0 + 15.0

Lupus Loop

RA: 15^h05^m00^s
Dec: -39°30'1-GHz flux (Jy): 350?
Spectral index: 0.5?Size (arcmin): 180?
Type: S**Radio:** Low surface brightness loop with HI shell.**X-ray:** Detected.**References:**

- Milne 1971, AJP, 24, 757. Parkes 64-m at 408 MHz (48'), 635 MHz (31') and 1410 MHz (15').
 Milne & Dickel 1974, AJP, 27, 549. Parkes 64-m at 2.7 GHz (8'.4: $S = 120 \pm 30\%$).
 Toor 1980, AA, 85, 184. X-ray image and spectrum.
 Colomb & Dubner 1982, AA, 112, 141. Argentine 30-m dish at 1.42 GHz (30'), HI observations.

G330.2 + 1.0

RA: 15^h57^m20^s
Dec: -51°26'

1-GHz flux (Jy): 7
Spectral index: 0.3

Size (arcmin): 10
Type: S?

Radio: Clumpy non-thermal emission, possibly a shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 8.6$) and Parkes 64-m at 5 GHz (4' : $S = 4.0$).
Caswell *et al.* 1983, MN, 204, 915. FIRST at 1415 MHz (52'' × 47''), and MOST at 843 MHz (43'' × 55'').

G332.0 + 0.2

RA: 16^h09^m30^s
Dec: -50°45'

1-GHz flux (Jy): 9
Spectral index: 0.5

Size (arcmin): 10
Type: S

Radio: Incomplete shell.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 57'').

G332.4 - 0.4

RCW 103

RA: 16^h13^m45^s
Dec: -50°55'

1-GHz flux (Jy): 28
Spectral index: 0.5

Size (arcmin): 9
Type: S

Radio: Shell, brightest to the S.

Optical: Filaments correspond well to the radio shell.

X-ray: Detected, with point source near centre.

Point sources: Detected in X-rays.

Distance: HI absorption indicates 3.3 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
Tuohy & Garmire 1980, ApJ, 239, L107. HRI detection of X-ray point source.
Caswell *et al.* 1980, MN, 190, 881. FIRST at 1415 MHz (50'').
Lamb & Markert 1981, ApJ, 244, 94. IPC observations.
Ruiz 1983, AJ, 88, 1210. Optical spectra.
Tuohy *et al.* 1983, ApJ, 268, 778. X-ray observations.
Nugent *et al.* 1984, ApJ, 284, 612. X-ray spectrum (and HRI image from Tuohy, private communication).
Meaburn & Allen 1988, MN, 222, 593. Optical spectra.
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44'' × 57'').

G332.4 + 0.1

MSH 16-51, Kes 32

RA: 16^h11^m30^s
Dec: -50°35'

1-GHz flux (Jy): 26
Spectral index: 0.5

Size (arcmin): 15
Type: S

Has been called G332.4+0.2.

Radio: Incomplete shell, with jet and plume?

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Roger *et al.* 1985, Nature, 316, 44. MOST at 843 MHz (44'' × 57'').
Milne *et al.* 1989, in Birthevents. Parkes 64-m at 5 (4'.6 : $S = 16.5 \pm 2.0$) and 8.4 GHz (3' : $S = 13.0 \pm 1.5$), including polarization, plus $S = 37 \pm 3$ at 843 MHz.

G335.2 + 0.1

RA: 16^h24^m00^s
Dec: -48°40'

1-GHz flux (Jy): 18
Spectral index: 0.5

Size (arcmin): 19
Type: S

Radio: Well defined shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 27.1) and Parkes 64-m at 5 GHz (4' : S = 8.6).

G336.7 + 0.5

RA: 16^h28^m30^s
Dec: -47°13'

1-GHz flux (Jy): 6
Spectral index: 0.5

Size (arcmin): 13 × 10
Type: S

Radio: Incomplete shell.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" × 60").

G337.0 - 0.1

(CTB 33)

RA: 16^h32^m10^s
Dec: -47°27'

1-GHz flux (Jy): 17?
Spectral index: 0.5?

Size (arcmin): 14?
Type: S?

Radio: Possible shell, confused by nearby thermal sources.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

G337.2 - 0.7

RA: 16^h35^m45^s
Dec: -47°45'

1-GHz flux (Jy): 2.1
Spectral index: 0.7

Size (arcmin): 4?
Type: ?

Radio: Not well resolved.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 3.8) and Parkes 64-m at 5 GHz (4' : S = 0.70).

G337.3 + 1.0

Kes 40

RA: 16^h29^m00^s
Dec: -46°30'

1-GHz flux (Jy): 16
Spectral index: 0.5

Size (arcmin): 11
Type: S

Radio: Nearly complete shell.

References:

Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : S = 24.6) and Parkes 64-m at 5 GHz (4' : S = 7.2).
Dickel & Milne 1976, AJP, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz (8'.4) and 5 GHz (4'.4).
Kesteven & Caswell 1987, AA, 183, 118. MOST at 843 MHz (44" × 61").
Milne *et al.* 1989, PASA, 8, 187. MOST at 843 MHz (43" × 59" : S = 14.8 ± 3.0), and Parkes 64-m at 8.4 GHz (3' : S = 5.1 ± 0.6), including polarization.

G337.8 - 0.1

Kes 41

RA: 16^h35^m20^s

1-GHz flux (Jy): 18

Size (arcmin): 7?

Dec: -46°53'

Spectral index: 0.5

Type: ?

Radio: Not well resolved.

Distance: HI absorption suggests >9.3 kpc.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.**G338.1 + 0.4**RA: 16^h34^m20^s

1-GHz flux (Jy): 4.5

Size (arcmin): 12

Dec: -46°18'

Spectral index: 0.4

Type: S

Radio: Not well defined, in complex region.

Optical: Detected.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').
Zealey *et al.* 1979, AAS, 38, 39. Optical detection.**G338.3 - 0.0**RA: 16^h37^m20^s

1-GHz flux (Jy): 15?

Size (arcmin): 8?

Dec: -46°28'

Spectral index: 0.7?

Type: S?

Radio: Possible shell, in complex region.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

G338.5 + 0.1RA: 16^h37^m30^s

1-GHz flux (Jy): 28?

Size (arcmin): 8?

Dec: -46°13'

Spectral index: 0.3?

Type: ?

Radio: In complex region, not well defined.

References:

Shaver & Goss 1970, AJPAS, 14, 133. Molonglo at 408 MHz (3') and Parkes 64-m at 5 GHz (4').

G340.4 + 0.4RA: 16^h42^m55^s

1-GHz flux (Jy): 6

Size (arcmin): 6

Dec: -44°34'

Spectral index: 0.4

Type: S

Radio: Distorted shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : S = 8.2) and Parkes 64-m at 5 GHz (4' : S = 2.9).
Caswell *et al.* 1983, MN, 203, 595. FIRST at 1415 MHz (50'').

G340.6 + 0.3

RA: $16^{\text{h}}44^{\text{m}}05^{\text{s}}$
Dec: $-44^{\circ}29'$

1-GHz flux (Jy): 5.1
Spectral index: 0.4

Size (arcmin): 5
Type: S

Radio: Incomplete shell.

Optical: Possible associated filaments.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz ($3' : S = 7.0$) and Parkes 64-m at 5 GHz ($4' : S = 2.8$).
Caswell *et al.* 1983, MN, 203, 595. FIRST at 1415 MHz ($50''$).
Zealey *et al.* 1979, AAS, 38, 39. Optical.

G341.9 - 0.3

RA: $16^{\text{h}}51^{\text{m}}25^{\text{s}}$
Dec: $-43^{\circ}56'$

1-GHz flux (Jy): 3.2
Spectral index: 0.5

Size (arcmin): 6
Type: S

Radio: Incomplete shell.

References:

Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz ($3' : S = 7.4$) and Parkes 64-m at 5 GHz ($4' : S = 1.7$), see
Caswell & Clark 1975, AJPAS, 37, 57 for the maps.
Caswell *et al.* 1983, MN, 203, 595. FIRST at 1415 MHz ($50''$), revision of previous flux.

G342.0 - 0.2

RA: $16^{\text{h}}51^{\text{m}}15^{\text{s}}$
Dec: $-43^{\circ}48'$

1-GHz flux (Jy): 3.5?
Spectral index: 0.4?

Size (arcmin): 11×7
Type: S?

Radio: Faint extended source.

References:

Caswell *et al.* 1983, MN, 203, 595. FIRST at 1415 MHz ($50''$), estimate $S(408) = 5$, $S(5000) = 2$ from previous maps.

G344.7 - 0.1

RA: $17^{\text{h}}00^{\text{m}}20^{\text{s}}$
Dec: $-41^{\circ}38'$

1-GHz flux (Jy): 3.0
Spectral index: 0.5

Size (arcmin): 8?
Type: S?

Radio: Possible shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz ($3' : S = 4.7$) and Parkes 64-m at 5 GHz ($4' : S = 1.3$).

G346.6 - 0.2

RA: $17^{\text{h}}06^{\text{m}}50^{\text{s}}$
Dec: $-40^{\circ}07'$

1-GHz flux (Jy): 10
Spectral index: 0.5

Size (arcmin): 8
Type: S

Radio: Incomplete shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz ($3' : S = 14.9$) and Parkes 64-m at 5 GHz ($4' : S = 4.3$).

G348.5 + 0.1

CTB 37A

RA: 17^h10^m40^s
Dec: -38°29'1-GHz flux (Jy): 72
Spectral index: 0.3Size (arcmin): 10
Type: S**Radio:** Shell with eastern extension.**Distance:** HI absorption indicates 10.2±3.5 kpc.**References:**

Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3' : $S = 97$).
 Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : $S = 43$).
 Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
 Milne *et al.* 1979, MN, 186, 437. FIRST at 1415 MHz (0'.8 : $S > 50$) and Parkes 64-m at 14.7 GHz (2'.2 : $S = 18 \pm 5$).
 Downes 1984, MN, 210, 845. VLA at 1465 MHz (20'' × 45'').

G348.7 + 0.3

CTB 37B

RA: 17^h10^m30^s
Dec: -38°08'1-GHz flux (Jy): 26
Spectral index: 0.3Size (arcmin): 10
Type: S**Radio:** Incomplete shell with eastern extension.**Distance:** HI absorption indicates 10.2±3.5 kpc.**References:**

Clark *et al.* 1975, AJPAS, 37, 75. Molonglo at 408 MHz (3' : $S = 34$).
 Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : $S = 32$).
 Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
 Milne *et al.* 1979, MN, 186, 437. FIRST at 1415 MHz (0'.8 : $S > 20$) and Parkes 64-m at 14.7 GHz (2'.2 : $S = 8 \pm 3$).
 Downes 1984, MN, 210, 845. VLA at 1465 MHz (20'' × 45'').

G349.7 + 0.2RA: 17^h14^m35^s
Dec: -37°23'1-GHz flux (Jy): 20
Spectral index: 0.5Size (arcmin): 2.5 × 2
Type: S?**Radio:** Incomplete clumpy shell, with enhancement to the S.**Distance:** HI absorption indicates 18.3±4.6 kpc.**References:**

Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz (3').
 Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 31.0$) and Parkes 64-m at 5 GHz (4' : $S = 9.1$), no maps.
 Caswell *et al.* 1975, AA, 45, 239. Parkes HI absorption.
 Shaver *et al.* 1985, Nature, 313, 113. VLA at 1.4 GHz (3''.4 × 14''.5).

G350.0 - 1.8RA: 17^h23^m40^s
Dec: -38°20'1-GHz flux (Jy): 31
Spectral index: 0.5Size (arcmin): 30?
Type: S?**Radio:** Arc, possibly part of a larger remnant.**References:**

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 49.5$) and Parkes 64-m at 5 GHz (4' : $S = 13.6$).
 Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4).

G351.2 + 0.1

RA: 17^h19^m05^s
Dec: -36°08'

1-GHz flux (Jy): 5.8
Spectral index: 0.4

Size (arcmin): 7
Type: C

Has been called G351.3+0.2.

Radio: Incomplete shell, with flat-spectrum core.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 8.1$) and Parkes 64-m at 5 GHz (4' : $S = 3.1$).
Caswell *et al.* 1984, PASA, 5, 227. MOST at 843 MHz (43'' × 77'').
Becker & Helfand 1988, AJ, 95, 883. VLA at 5 GHz (15''), and at 15 GHz of core.

G352.7 - 0.1

RA: 17^h24^m20^s
Dec: -35°05'

1-GHz flux (Jy): 6?
Spectral index: 0.6?

Size (arcmin): 6 × 5
Type: S?

Radio: Possible shell, not well defined, near thermal sources.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 9.6$) and Parkes 64-m at 5 GHz (4' : $S = 2.3$).
Caswell *et al.* 1983, MN, 203, 595. FIRST at 1415 MHz (1'.1).

G355.9 - 2.5

RA: 17^h42^m35^s
Dec: -33°42'

1-GHz flux (Jy): 8
Spectral index: 0.5

Size (arcmin): 13
Type: S

Radio: Distorted shell.

References:

Clark *et al.* 1975, AJPAS, 37, 1. Molonglo at 408 MHz (3' : $S = 12.3$) and Parkes 64-m at 5 GHz (4' : $S = 3.4$).
Caswell *et al.* 1984, PASA, 5, 227. MOST at 843 MHz (43'' × 77'').

G357.7 - 0.1

MSH 17-39

RA: 17^h37^m15^s
Dec: -30°56'

1-GHz flux (Jy): 37
Spectral index: 0.4

Size (arcmin): 3 × 8?
Type: ?

Has been suggested that this is not a SNR.

Radio: Multiple arcs and filaments.

Point sources: Peripheral compact source (a compact HII region?).

References:

Caswell *et al.* 1975, AJPAS, 37, 39. Molonglo at 408 MHz (3' : $S = 54.2$) and Parkes 64-m at 5 GHz (4' : $S = 18.5$).
Milne & Dickel 1975, AJP, 28, 209. Parkes 64-m at 5 GHz (4'.4 : $S = 14.6$).
Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.8).
Caswell *et al.* 1980, MN, 190, 881. FIRST at 1415 MHz (50'').
Weiler & Panagia 1980, AA, 90, 269. Effelsberg 100-m at 9 GHz (1'.5) (private communication from Baker).
Shaver *et al.* 1985, Nature, 313, 113. VLA at 1.4 GHz (3''.8 × 10''.9) and 5 GHz (12'' × 26'').
Becker & Helfand 1985, Nature, 313, 115. VLA at 1.4 GHz and 5 GHz, suggest it is not a SNR, see Helfand & Becker 1985 Nature, 313, 118.
Shaver *et al.* 1985, AA, 147, L23. Observations of peripheral compact source.
Caswell *et al.* 1989, PASA, 8, 184. MOST at 843 MHz (43'' × 83'').

G357.7 + 0.3

RA: 17^h35^m20^s
Dec: -30°42'

1-GHz flux (Jy): 10
Spectral index: 0.4?

Size (arcmin): 24
Type: S

Radio: Non-thermal shell in complex region.

References:

Reich & Fürst 1984, AAS, 57, 165. Effelsberg 100-m at 2.7 GHz (4'.3 : $S = 7 \pm 1.5$), $S(5000) = 5.5 \pm 1.5$ from surveys.

G358.4 - 1.9

RA: 17^h46^m05^s
Dec: -31°16'

1-GHz flux (Jy): 12.57
Spectral index: 0.5?

Size (arcmin): 40 × 36
Type: S

Radio: Asymmetric shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G359.0 - 0.9

RA: 17^h43^m35^s
Dec: -30°15'

1-GHz flux (Jy): 23
Spectral index: 0.5

Size (arcmin): 23
Type: S

Radio: Incomplete shell.

References:

Reich *et al.* 1988, in SNRISM. Summary of parameters.

Reich *et al.* 1990, AAS, 85, 633. Effelsberg 100-m at 2.7 GHz (4'.3).

G359.1 - 0.5

RA: 17^h42^m20^s
Dec: -29°56'

1-GHz flux (Jy): 14
Spectral index: 0.4?

Size (arcmin): 24
Type: S

Radio: Non-thermal shell in complex region.

References:

Downes *et al.* 1979, AAS, 35, 1. From observations by Altenhoff *et al.* 1978, AAS, 35, 23. Effelsberg 100-m at 4.9 GHz (2'.8 : $S = 13$).

Reich & Fürst 1984, AAS, 57, 165. Effelsberg 100-m at 2.7 GHz (4'.3 : $S = 10 \pm 1.5$) and 4.8 GHz (2'.4 : $S = 8.1 \pm 0.5$).