G0.0+0.0

Sgr A East

RA: $17^h45^m44^s$ **1-GHz flux/Jy:** 100? **Size/arcmin:** 3.5×2.5
Dec: $-29°00'$ **Spectral index:** 0.8? **Type:** S

Radio: Non-thermal shell, in complex region, interacting with molecular material to the west.

References:

Ekers *et al.* 1983, A&A, 122, 143. VLA at 1.4 GHz and 5 GHz (both $5'' \times 8''$), $S_{1.4\ \mathrm{GHz}} = 77$ Jy, $S_{5.0\ \mathrm{GHz}} = 31$ Jy.
Pedlar *et al.* 1989, ApJ, 342, 769. VLA at 332 MHz ($12''$), 1.4 GHz ($1''.3 \times 2''.5$) and 5 GHz ($1''.3 \times 2''.5$).
Mezger *et al.* 1989, A&A, 209, 337. Nearby molecular material.
Ho *et al.* 1991, Natur, 350, 309. VLA of NH_3 emission from surroundings.
Anantharamaiah *et al.* 1991, MNRAS, 249, 262. VLA at 330 MHz ($17'' \times 33''$).
Serabyn *et al.* 1992, ApJ, 395, 166. Nearby molecular material.
Gray 1994, MNRAS, 270, 835. MOST at 843 MHz ($43'' \times 88''$).
Yusef-Zadeh & Mehringer 1995, ApJ, 452, L37. VLA of nearby H_2O masers.
Yusef-Zadeh *et al.* 1999, ApJ, 512, 230. OH maser observations.
Coil & Ho 2000, ApJ, 533, 245. NH_3 observations of surroundings.
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).

G0.3+0.0

RA: $17^h46^m15^s$ **1-GHz flux/Jy:** 22 **Size/arcmin:** 15×8
Dec: $-28°38'$ **Spectral index:** 0.6 **Type:** S

Has been called G0.33+0.04 and G0.4+0.1.

Radio: Bilateral shell, near Galactic Centre.

References:

Kassim & Frail 1996, MNRAS, 283, L51. VLA at 333 MHz ($23'' \times 42''$), plus review of flux densities and other observations.
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).

G0.9+0.1

RA: $17^h47^m21^s$ **1-GHz flux/Jy:** 18? **Size/arcmin:** 8
Dec: $-28°09'$ **Spectral index:** varies **Type:** C

Radio: Flat spectrum core within steep spectrum shell.

X-ray: Central core.

References:

Helfand & Becker 1987, ApJ, 314, 203. VLA at 1.4 and 5 GHz, and IPC observations.
Gray 1994, MNRAS, 270, 835. MOST at 843 MHz ($43'' \times 91''$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Mereghetti *et al.* 1998, A&A, 331, L77. X-ray detection.
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).

G1.0−0.1

RA: $17^h48^m30^s$ **1-GHz flux/Jy:** 15 **Size/arcmin:** 8
Dec: $-28°09'$ **Spectral index:** 0.6? **Type:** S

Has been called G1.05−0.1 and G1.05−0.15.

Radio: Incomplete shell, to the S of Sgr D.

References:

Downes *et al.* 1979, A&AS, 35, 1. Review of flux densities.
Anantharamaiah *et al.* 1991, MNRAS, 249, 262. VLA at 330 MHz ($64'' \times 100'' : S = 12.3$ Jy).
Liszt 1992, ApJS, 82, 495. VLA at 1.6 GHz ($13'' \times 23''$).
Gray 1994, MNRAS, 270, 835. MOST at 843 MHz ($43'' \times 91''$).
Mehringer *et al.* 1998, ApJ, 493, 274. VLA at 1.6 GHz ($15'' \times 28''$) and 5 GHz, including masers observations.
Yusef-Zadeh *et al.* 1999, ApJ, 527, 172. VLA of nearby OH masers.
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).

$G1.4-0.1$

RA: $17^h49^m39^s$ **1-GHz flux/Jy:** 2? **Size/arcmin:** 10
Dec: $-27°46'$ **Spectral index:** ? **Type:** S

Radio: Shell, brightest in E.

References:
Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43'' \times 92''$: $S = 2$ Jy).
Yusef-Zadeh *et al.* 1999, ApJ, 527, 172. VLA of nearby OH masers.

$G1.9+0.3$

RA: $17^h48^m45^s$ **1-GHz flux/Jy:** 0.6 **Size/arcmin:** 1.2
Dec: $-27°10'$ **Spectral index:** 0.7 **Type:** S

Radio: Shell, brighter to the N.

References:
Green & Gull 1984, Natur, 312, 527. VLA at 5 GHz ($4''.4 \times 2''$).
Gray 1994, MNRAS, 270, 835. MOST at 843 MHz ($43'' \times 94''$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G3.7-0.2$

RA: $17^h55^m26^s$ **1-GHz flux/Jy:** 2.3 **Size/arcmin:** 14×11
Dec: $-25°50'$ **Spectral index:** 0.65 **Type:** S

Hase been called G003.8−00.3.

Radio: Double arc.

References:
Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43'' \times 99''$: $S = 2.4$ Jy).
Gaensler 1998, ApJ, 493, 781. VLA at 1.4 GHz ($9'' \times 15''$: $S = 1.7 \pm 0.1$ Jy).

$G3.8+0.3$

RA: $17^h52^m55^s$ **1-GHz flux/Jy:** 4? **Size/arcmin:** 18
Dec: $-25°28'$ **Spectral index:** ? **Type:** S?

Radio: Incomplete shell.

References:
Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43'' \times 100''$: $S = 3.5$ Jy).

$G4.2-3.5$

RA: $18^h08^m55^s$ **1-GHz flux/Jy:** 3.2? **Size/arcmin:** 28
Dec: $-27°03'$ **Spectral index:** 0.6? **Type:** S

Radio: Elongated shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

$G4.5+6.8$ Kepler, SN1604, 3C358

RA: $17^h30^m42^s$ **1-GHz flux/Jy:** 19 **Size/arcmin:** 3
Dec: $-21°29'$ **Spectral index:** 0.64 **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, HI observations suggest 4.8 to 6.4 kpc.

References:
van den Bergh & Kamper 1977, ApJ, 218, 617. Optical proper motions.
Leibowitz & Danziger 1983, MNRAS, 204, 273. Optical spectra.
Danziger & Goss 1980, MNRAS, 190, 47P. Revision of distance.
White & Long 1983, ApJ, 264, 196. IPC observations.
Matsui *et al.* 1984, ApJ, 287, 295. VLA at 1.4 ($2''.5\times3''.2$) and 5 GHz ($3''.2\times4''.8$) and HRI map ($5''$).
Dickel *et al.* 1988, ApJ, 330, 254. VLA at 1.4 ($1''.2\times2''.3$) and 5 GHz ($0''.6\times1''.0$) 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.
Bandiera & van den Bergh 1991, ApJ, 374, 186. Optical changes.
van den Bergh 1991, PASP, 103, 194. Optical imaging.
Predehl & Schmitt 1995, A&A, 293, 889. ROSAT of dust scattered halo.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Hughes 1999, ApJ, 527, 298. ROSAT and Einstein image comparison for expansion studies.
Reynoso & Goss 1999, AJ, 118, 926. VLA at 1.4 GHz ($23''\times13''$) for HI studies.
Kinugasa *et al.* 1999, PASJ, 51, 239. ASCA observations.

$G5.2-2.6$

RA: $18^h07^m30^s$ **1-GHz flux/Jy:** 2.6? **Size/arcmin:** 18
Dec: $-25°45'$ **Spectral index:** 0.6? **Type:** S

Radio: Poorly resolved shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

$G5.4-1.2$ Milne 56

RA: $18^h02^m10^s$ **1-GHz flux/Jy:** 35? **Size/arcmin:** 35
Dec: $-24°54'$ **Spectral index:** 0.2? **Type:** C?

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

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

Optical: Detected.

Distance: HI absorption suggests >4.3 kpc.

Point sources: Pulsar associated with flat spectrum source.

References:
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3':S=38$ Jy).
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz ($3'$).
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8:S=21.9\pm2.4$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Zealey *et al.* 1979, A&AS, 38, 39. Optical detection.
Becker & Helfand 1985, Natur, 313, 115. VLA at 1.4 and 5 GHz. Suggest it is not SNR, see Helfand & Becker 1985, Natur, 313, 118.
Manchester *et al.* 1985, MNRAS, 212, 975. Pulsar detection.
Caswell *et al.* 1987, MNRAS, 225, 329. MOST at 843 MHz ($42''\times110''$).
Frail & Kulkarni 1991, Natur, 352, 785. Pulsar and remnant association.
Manchester *et al.* 1991, MNRAS, 253, 7P. Pulsar and remnant association.
Milne *et al.* 1992, MNRAS, 255, 707. Parkes 64-m at 4.75 ($4'.5:S=30.8\pm2.1$ Jy) and 8.4 GHz ($3':S=24\pm3$ Jy), including polarization.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.0\times4'.9:S=38$ Jy).
Frail *et al.* 1994, AJ, 107, 1120. VLA at 327 MHz ($68''\times73''$), plus HI absorption.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Gaensler & Frail 2000, Natur, 406, 158. Pulsar and pulsar nebula observations.

G5.9+3.1

RA: $17^h47^m20^s$ **1-GHz flux/Jy:** 3.3? **Size/arcmin:** 20
Dec: $-22°16'$ **Spectral index:** 0.4? **Type:** S

Radio: Asymmetric shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G6.1+1.2

RA: $17^h54^m55^s$ **1-GHz flux/Jy:** 4.0? **Size/arcmin:** 30×26
Dec: $-23°05'$ **Spectral index:** 0.3? **Type:** F

Has been called G6.1+1.15.

Radio: Faint, diffuse emission.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G6.4−0.1 W28

RA: $18^h00^m30^s$ **1-GHz flux/Jy:** 310 **Size/arcmin:** 42
Dec: $-23°26'$ **Spectral index:** varies **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: Young pulsar near edge of remnant.

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

References:
Kundu & Velusamy 1972, A&A, 20, 237. NRAO 140-ft at 10 GHz ($3'$).
van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Dickel & Milne 1976, AuJPh, 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.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Lozinskaya 1981, SvAL, 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, RMxAA, 8, 155. Optical spectra.
Odenwald *et al.* 1984, ApJ, 279, 162. Nearby IR source.
Andrews *et al.* 1985, AJ, 90, 310. VLA of central component.
Long *et al.* 1991, ApJ, 373, 567. IPC and optical observations.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.1 \times 4'.4 : S = 660$ Jy).
Kaspi *et al.* 1993, ApJ, 409, L57. Pulsar association.
Frail *et al.* 1993, Natur, 365, 136. VLA at 327 MHz (smoothed to $65''$), plus pulsar association.
Frail *et al.* 1994, ApJ, 424, L111. VLA of associated OH masers.
Esposito *et al.* 1996, ApJ, 461, 820. Possible associated γ-ray emission.
Frail *et al.* 1996, AJ, 111, 1651. OH maser emission.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Claussen *et al.* 1997, ApJ, 489, 143. VLA of OH masers.
Claussen *et al.* 1999, ApJ, 522, 349. High resolution observations of OH masers.
Yusef-Zadeh *et al.* 2000, ApJ, 540, 842. VLA at 327 MHz ($2'.6 \times 5'.5$) and 1.48 GHz ($40'' \times 65''$).
Arikawa *et al.* 1999, PASJ, 51, L7. Observations of shocked CO.

G6.4+4.0

RA: $17^h45^m10^s$ **1-GHz flux/Jy:** 1.3? **Size/arcmin:** 31
Dec: $-21°22'$ **Spectral index:** 0.4? **Type:** S

Radio: Faint asymmetric shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G7.0 − 0.1

RA: $18^h01^m50^s$ **1-GHz flux/Jy:** 2.5? **Size/arcmin:** 15
Dec: $-22°54'$ **Spectral index:** 0.5? **Type:** S

Has been called G7.06−0.12.

Radio: Double rim, brightest in W, confused by bright HII region M20 in SE.

References:
Yusef-Zadeh *et al.* 2000, ApJ, 540, 842. VLA at 327 MHz ($2'.6 \times 5'.5$) and 1.48 GHz ($40'' \times 65''$).

G7.7 − 3.7 1814−24

RA: $18^h17^m25^s$ **1-GHz flux/Jy:** 11 **Size/arcmin:** 22
Dec: $-24°04'$ **Spectral index:** 0.32 **Type:** S

Radio: Shell, with high polarization.

References:
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Milne *et al.* 1986, MNRAS, 223, 487. MOST at 843 MHz ($44'' \times 108''$) and Parkes 64-m at 8.4 GHz ($3' : S = 4.6 \pm 0.5$ Jy), with polarization, plus review of flux densities.
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 1.4 GHz ($70'' \times 35'' : S = 9.9 \pm 0.1$ Jy), including polarization.

G8.7 − 5.0

RA: $18^h24^m10^s$ **1-GHz flux/Jy:** 4.4 **Size/arcmin:** 26
Dec: $-23°48'$ **Spectral index:** 0.3 **Type:** S

Radio: Asymmetric shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G8.7 − 0.1 (W30)

RA: $18^h05^m30^s$ **1-GHz flux/Jy:** 80 **Size/arcmin:** 45
Dec: $-21°26'$ **Spectral index:** 0.5 **Type:** S?

Radio: Clumpy non-thermal shell, with low-frequency turnover.

X-ray: Northern edge detected.

Point sources: Pulsar inside western edge.

References:
Odegard 1986, AJ, 92, 1372. TPT at 57.5 MHz ($7'.2 \times 9'.7 : S = 190 \pm 50$ Jy).
Kassim & Weiler 1990, Natur, 343, 146. VLA at 327 MHz ($3'.0 \times 3'.7$).
Kassim & Weiler 1990, ApJ, 360, 184. VLA at 327 MHz ($2'.8 \times 4'.1 : S = 129 \pm 11$ Jy), and part at 1.4 GHz ($0'.9 \times 1'.8$), plus review of flux densities.
Frail *et al.* 1994, AJ, 107, 1120. VLA at 327 MHz ($37'' \times 55''$).
Finley & Ögelman 1994, ApJ, 434, L25. ROSAT observations, including pulsar.

G9.8 + 0.6

RA: $18^h05^m08^s$ **1-GHz flux/Jy:** 3.9 **Size/arcmin:** 12
Dec: $-20°14'$ **Spectral index:** 0.5 **Type:** S

Radio: Asymmetric shell.

References:
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Caswell 1983, MNRAS, 204, 833. Molonglo at 408 MHz ($3' : S = 5.8 \pm 0.6$ Jy).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($41'' \times 63'' : S = 3.5 \pm 0.4$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G10.0 – 0.3

RA: $18^h08^m39^s$	**1-GHz flux/Jy:** 2.9	**Size/arcmin:** 8?
Dec: $-20°25'$	**Spectral index:** 0.8	**Type:** ?

Radio: Not well resolved.

X-ray: X-ray pulsar.

Point sources: X-ray pulsar associated with soft gamma repeater.

Distance: Association with W31 gives 14.5 kpc.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Kulkarni & Frail 1993, Natur, 365, 33. VLA at 330 MHz (smoothed to $2'$) and 1.49 GHz ($40'' \times 65''$), including association with soft gamma repeater.
Sonobe *et al.* 1994, ApJ, 436, L23. X-ray observations.
Kulkarni *et al.* 1994, Natur, 368, 129. VLA at 1.4 GHz ($31''$) and 8.4 GHz ($5''.5$)
Vasisht *et al.* 1995, ApJ, 440, L65. Radio monitoring of core.
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Corbel *et al.* 1997, ApJ, 478, 624. CO observations of surroundings.
Frail *et al.* 1997, ApJ, 480, L129. VLA monitoring of changing core.
Kouveliotou *et al.* 1998, Natur, 393, 235. X-ray pulsar detection.

G11.2 – 0.3

RA: $18^h11^m27^s$	**1-GHz flux/Jy:** 22	**Size/arcmin:** 4
Dec: $-19°25'$	**Spectral index:** 0.49	**Type:** C

Probably associated with the SN of AD386.

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

X-ray: Shell, with hard spectrum centrally brightened region.

Point sources: Central pulsar.

Distance: HI absorption indicates 5 kpc.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Radhakrishnan *et al.* 1972, ApJS, 24, 49. HI absorption.
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz ($3'$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Downes 1984, MNRAS, 210, 845. VLA at 1465 MHz ($20'' \times 25''$) and HRI observations, with review of flux densities.
Becker *et al.* 1985, ApJ, 296, 461. VLA at 1.4 and 5 GHz, plus HI absorption, HRI and IPC observations.
Morsi & Reich 1987, A&AS, 71, 189. Effelsberg 100-m at 32 GHz ($26''.5 : S = 4.04 \pm 0.24$ Jy).
Green *et al.* 1988, MNRAS, 231, 735. VLA at 1.4 and 5 GHz.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.2 \times 4'.1 : S = 39$ Jy).
Reynolds *et al.* 1994, MNRAS, 271, L1. ROSAT image and spectra.
Vasisht *et al.* 1996, ApJ, 456, L59. ASCA observations.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Torii *et al.* 1997, ApJ, 489, L145. ASCA detection of pulsar.
Torii *et al.* 1999, ApJ, 523, L69. X-ray timing observations of pulsar.

G11.4 – 0.1

RA: $18^h10^m47^s$	**1-GHz flux/Jy:** 6	**Size/arcmin:** 8
Dec: $-19°05'$	**Spectral index:** 0.5	**Type:** S?

Radio: Incomplete shell, possibly with central core.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 9.4$ Jy) contaminated by sidelobes of a nearby source, and Parkes 64-m at 5 GHz ($4' : S = 2.8$ Jy).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 2.0 \pm 0.4$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.2 \times 4'.1 : S = 18$ Jy).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($44'' \times 63'' : S = 5.1 \pm 0.6$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G12.0-0.1$

RA: $18^h12^m11^s$ **1-GHz flux/Jy:** 3.5 **Size/arcmin:** 7?
Dec: $-18°37'$ **Spectral index:** 0.7 **Type:** ?

Radio: Incomplete shell, defined in E only.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 6.6$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 1.1$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.2 \times 4'.1$).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($41'' \times 61'' : S = 0.7$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G13.3-1.3$

RA: $18^h19^m20^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 70×40
Dec: $-18°00'$ **Spectral index:** ? **Type:** S?

Radio: Amorphous emission.

X-ray: Elongated emission.

Optical: Filaments in S.

Distance: Absorption indicates 2–4 kpc.

References:

Seward *et al.* 1995, ApJ, 449, 681. ROSAT detection, optical studies and observations of CO.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

$G13.5+0.2$

RA: $18^h14^m14^s$ **1-GHz flux/Jy:** 3.5? **Size/arcmin:** 5×4
Dec: $-17°12'$ **Spectral index:** 1.0? **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 ($S = 0.65 \pm 0.05$ Jy) and 1.4 GHz ($15'' : S = 2.67 \pm 0.5$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G15.1-1.6$

RA: $18^h24^m00^s$ **1-GHz flux/Jy:** 5.5? **Size/arcmin:** 30×24
Dec: $-16°34'$ **Spectral index:** 0.8? **Type:** S

Radio: Elongated, incomplete shell.

References:

Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

$G15.9+0.2$

RA: $18^h18^m52^s$ **1-GHz flux/Jy:** 5 **Size/arcmin:** 7×5
Dec: $-15°02'$ **Spectral index:** 0.6? **Type:** S?

Radio: Incomplete shell, with bright concentration to the E.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 7.7$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 1.9$ Jy).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 1.1 \pm 0.2$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Caswell *et al.* 1982, MNRAS, 200, 1143. FIRST at 1415 MHz ($58'' \times 44''$).
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 330 MHz ($77'' \times 61'' : S = 11.2 \pm 1.0$ Jy), 1.4 GHz ($23'' \times 14'' : S = 3.9 \pm 0.1$ Jy) and 4.9 GHz ($13'' \times 16''$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G16.2 – 2.7

RA: $18^h28^m50^s$	**1-GHz flux/Jy:** 2	**Size/arcmin:** 17
Dec: $-16°11'$	**Spectral index:** 0.5	**Type:** S

Radio: Double rim.

References:
Trushkin 1999, A&A, 352, L103. Review of radio observations.

G16.7 + 0.1

RA: $18^h20^m56^s$	**1-GHz flux/Jy:** 3.0	**Size/arcmin:** 4
Dec: $-14°20'$	**Spectral index:** 0.6	**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 ($5 : S = 0.95$ Jy) and 1.4 GHz ($15'' : S = 2.43$ Jy) and OSRT at 327 MHz ($S = 5.13$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations, including masers.

G16.8 – 1.1

RA: $18^h25^m20^s$	**1-GHz flux/Jy:** 2?	**Size/arcmin:** 30×24?
Dec: $-14°46'$	**Spectral index:** ?	**Type:** ?

Has been called G16.85−1.05.

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

Point sources: Pulsar within boundary of non-thermal emission.

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

G17.4 – 2.3

RA: $18^h30^m55^s$	**1-GHz flux/Jy:** 4.8?	**Size/arcmin:** 24?
Dec: $-14°52'$	**Spectral index:** 0.8?	**Type:** S

Radio: Incomplete, poorly defined shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G17.8 – 2.6

RA: $18^h32^m50^s$	**1-GHz flux/Jy:** 4.0?	**Size/arcmin:** 24
Dec: $-14°39'$	**Spectral index:** 0.3?	**Type:** S

Radio: Well defined shell.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G18.8+0.3$ Kes 67

RA: $18^h23^m58^s$ **1-GHz flux/Jy:** 33 **Size/arcmin:** 17×11
Dec: $-12°23'$ **Spectral index:** 0.4 **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, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S=17 \pm 7$ Jy).
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3' : S=38$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Milne *et al.* 1989, PASAu, 8, 187. Parkes 64-m at 8.4 GHz ($3'.0 : S=12.9 \pm 1.0$ Jy), including polarization.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($2'.9 \times 3'.5 : S=55$ Jy).
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 1.4 GHz ($75'' \times 55'' : S=29.9 \pm 0.3$ Jy).
Dubner *et al.* 1999, AJ, 118, 930. Parkes 64-m at 1.6 GHz ($15''$) for HI, VLA at 1.6 GHz ($17'' \times 12''$) for OH, plus CO observations.

$G18.9-1.1$

RA: $18^h29^m50^s$ **1-GHz flux/Jy:** 37 **Size/arcmin:** 33
Dec: $-12°58'$ **Spectral index:** varies **Type:** C?

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

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

X-ray: Partial shell.

References:

Fürst *et al.* 1985, Natur, 314, 720. Effelsberg 100-m at 4.75 GHz ($2'.4 : S=23.8$ Jy), plus other flux densities.
Odegard 1986, AJ, 92, 1372. TPT at 57.5 MHz ($7'.2 \times 8' : S=82 \pm 15$ Jy), plus review of flux densities.
Barnes & Turtle 1988, in SNRISM, p347. Molonglo at 408 MHz ($2'.9 \times 3'.1 : S=58 \pm 9$ Jy) and Parkes 64-m at 5 GHz ($4'.4 \times 4'.1 : S=23 \pm 6$ Jy).
Patnaik *et al.* 1988, Natur, 332, 136. OSRT at 327 MHz ($0'.6 \times 1'.6$).
Fürst *et al.* 1989, A&A, 209, 361. Effelsberg 100-m at 4.75 GHz ($2'.45 : S=23.8$ Jy) and VLA at 1.5 and 4.9 GHz ($19'' \times 14''$), and Effelsberg 100-m at 1.4 GHz ($9'$) for HI.
Aschenbach *et al.* 1991, A&A, 246, L32. ROSAT observations.
Fürst *et al.* 1997, A&A, 319, 655. ROSAT observations, and Effelsberg 100-m at 10.6 GHz ($1'.1$).

$G20.0-0.2$

RA: $18^h28^m07^s$ **1-GHz flux/Jy:** 10 **Size/arcmin:** 10
Dec: $-11°35'$ **Spectral index:** 0.0 **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 ($7'.2 \times 8' : S=8.5 \pm 2$ Jy), plus review of flux densities.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.

G21.5 – 0.9

RA: $18^h33^m33^s$ **1-GHz flux/Jy:** 6? **Size/arcmin:** 4
Dec: $-10°35'$ **Spectral index:** 0.0 **Type:** C

Early observations relate to the central core only.

Radio: Filled-centre, with high frequency turnover.

X-ray: Central core, with extended, faint halo.

Distance: HI absorption indicates 5.5 kpc or more.

References:

Wilson & Weiler 1976, A&A, 53, 89. WSRT at 5 GHz ($6'' \times 35''$).
Becker & Kundu 1976, ApJ, 204, 427. NRAO interferometer at 2.7 GHz ($20'' \times 5''$) and 8 GHz ($7'' \times 2''$), plus review of flux densities.
Altenhoff *et al.* 1979, A&AS, 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, A&AS, 69, 533. Effelsberg 100-m at 32 GHz ($26''.5 : S = 5.64 \pm 0.29$ Jy).
Fürst *et al.* 1988, PASJ, 40, 347. NRO array at 22.3 GHz ($4''.4 \times 7''.3$).
Salter *et al.* 1989, A&A, 225, 167. Observations at 90.7 ($29''.5 : S = 3.8 \pm 0.4$ Jy) and 141.9 GHz ($S = 2.5 \pm 1.2$ Jy).
Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz ($S = 3.94 \pm 0.70$ Jy), plus review of flux densities.
Asaoka & Koyama 1990, PASJ, 42, 625. Ginga X-ray spectrum.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.3 \times 3'.4 : S = 9$ Jy).
Wallace *et al.* 1994, A&A, 286, 565. HI of surroundings.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Slane *et al.* 2000, ApJ, 533, L29. Chandra observations identifying halo.

G21.8 – 0.6 Kes 69

RA: $18^h32^m45^s$ **1-GHz flux/Jy:** 69 **Size/arcmin:** 20
Dec: $-10°08'$ **Spectral index:** 0.5 **Type:** S

Radio: Incomplete shell.

X-ray: Detected.

Distance: H_2CO absorption indicates > 6.3 kpc.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Wilson 1972, A&A, 19, 354. H_2CO absorption.
Kundu *et al.* 1974, AJ, 79, 1332. NRAO 140-ft at 5 GHz ($6'$) and 10 GHz ($3'$).
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft et 2.7 GHz ($5' : S = 42.3 \pm 4.6$ Jy).
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Seward 1990, ApJS, 73, 781. IPC observations.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.3 \times 3'.5 : S = 132$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations, including masers.

G22.7 – 0.2

RA: $18^h33^m15^s$ **1-GHz flux/Jy:** 33 **Size/arcmin:** 26
Dec: $-09°13'$ **Spectral index:** 0.6 **Type:** S?

Radio: Non-thermal ring in complex region, overlapping G23.3–0.3.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.3 \times 3'.4 : S = 82$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G23.3-0.3}$ W41

RA: $18^{\mathrm{h}}34^{\mathrm{m}}45^{\mathrm{s}}$ **1-GHz flux/Jy:** 70 **Size/arcmin:** 27
Dec: $-08^{\circ}48'$ **Spectral index:** 0.5 **Type:** S

Radio: Incomplete ring, in complex region, overlapping G22.7−0.2.

Point sources: Pulsar association suggested.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.3 \times 3'.4 : S = 138$ Jy).
Gaensler & Johnston 1995, MNRAS, 275, L73. Possible pulsar association.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G23.6+0.3}$

RA: $18^{\mathrm{h}}33^{\mathrm{m}}03^{\mathrm{s}}$ **1-GHz flux/Jy:** 8? **Size/arcmin:** 10?
Dec: $-08^{\circ}13'$ **Spectral index:** 0.3 **Type:** ?

Radio: Not well resolved, in complex region.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G24.7-0.6}$

RA: $18^{\mathrm{h}}38^{\mathrm{m}}43^{\mathrm{s}}$ **1-GHz flux/Jy:** 8 **Size/arcmin:** 15?
Dec: $-07^{\circ}32'$ **Spectral index:** 0.5 **Type:** S?

Radio: Incomplete shell, defined in SW.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 12.3$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 3.6$ Jy).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 2.2 \pm 0.5$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($44'' \times 56'' : S = 1.9$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.

$\mathbf{G24.7+0.6}$

RA: $18^{\mathrm{h}}34^{\mathrm{m}}10^{\mathrm{s}}$ **1-GHz flux/Jy:** 20? **Size/arcmin:** 30×15
Dec: $-07^{\circ}05'$ **Spectral index:** 0.2? **Type:** C?

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

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Reich *et al.* 1984, A&A, 133, L4. Effelsberg 100-m at 2.7 GHz ($4.3 : S = 19 \pm 3$ Jy) and 4.75 GHz ($2'.4 : S = 17 \pm 4$ Jy) and NRO 45-m at 10.2 GHz ($2'.7 : S = 15 \pm 3$ Jy).
Becker & Helfand 1987, ApJ, 316, 660. VLA at 1.4 GHz ($12''$), and X-ray upper limit.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.

G27.4+0.0 4C−04.71

RA: $18^h41^m19^s$ **1-GHz flux/Jy:** 6 **Size/arcmin:** 4
Dec: $-04^\circ56'$ **Spectral index:** 0.68 **Type:** S

Early references refer to G27.3−0.1 (Kes 73), a supposed larger remnant.

Radio: Incomplete shell.

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

Point sources: Central long period pulsar.

Distance: HI absorption indicates 6 to 7.5 kpc.

References:

Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$).
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 2.0 \pm 0.5$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3' : S = 4.4$ Jy).
Caswell *et al.* 1982, MNRAS, 200, 1143. FIRST at 1415 MHz ($60'' \times 45'' : S = 3.5$ Jy). Revise $S_{408\ \mathrm{MHz}} = 10.4$ Jy, and $S_{5\ \mathrm{GHz}} = 1.9 \pm 0.2$ Jy.
Kriss *et al.* 1985, ApJ, 288, 703. IPC and HRI observations, plus VLA at 1.4 and 5 GHz ($12''$).
Sanbonmatsu & Helfand 1992, AJ, 104, 2189. VLA at 1.4 GHz for HI absorption.
Helfand *et al.* 1994, ApJ, 434, 627. ROSAT observations, particularly of central source.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations, including nearby masers.
Vasisht & Gotthelf 1997, ApJ, 486, L129. ASCA detection of pulsar.
Gotthelf & Vasisht 1997, ApJ, 486, L133. ASCA observations.
Gotthelf *et al.* 1999, ApJ, 522, L49. X-ray timing observations of pulsar.

G27.8+0.6

RA: $18^h39^m50^s$ **1-GHz flux/Jy:** 30 **Size/arcmin:** 50×30
Dec: $-04^\circ24'$ **Spectral index:** varies **Type:** F

Radio: Filled-centre, with spectral turnover.

References:

Reich *et al.* 1984, A&A, 133, L4. Effelsberg 100-m at 2.7 GHz ($4'.3 : S = 23 \pm 2$ Jy), and 4.75 GHz ($2'.4 : S = 18 \pm 2$ Jy) and NRO 45-m at 10.2 GHz (smoothed to $4'.3 : S = 8.5 \pm 2$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.

G28.8+1.5

RA: $18^h39^m00^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 100?
Dec: $-02^\circ35'$ **Spectral index:** 0.4? **Type:** S?

Radio: Part of rim detected.

X-ray: Diffuse, Centrally brightened.

References:

Schwentker 1994, A&A, 286, L47. ROSAT observations.

G29.6+0.1

RA: $18^h44^m52^s$ **1-GHz flux/Jy:** 1.5? **Size/arcmin:** 5
Dec: $-02^\circ57'$ **Spectral index:** 0.5? **Type:** S

Radio: Diffuse shell.

Point sources: AXP associated.

References:

Gaensler *et al.* 1999, ApJ, 526, L37. VLA at 5 GHz ($13''$) and 8 GHz ($8''$)

$\mathbf{G29.7-0.3}$ Kes 75

RA: $18^{h}46^{m}25^{s}$ **1-GHz flux/Jy:** 10 **Size/arcmin:** 3
Dec: $-02°59'$ **Spectral index:** 0.7 **Type:** C

Radio: Shell with flatter spectrum emission from centre.

X-ray: Thermal shell and non-thermal core.

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

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Milne & Dickel 1974, AuJPh, 27, 549. Parkes 64-m at 2.7 GHz ($8'.4 : S=5\pm20\%$ Jy).
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 ($20''\times7''$) and 8 GHz ($25''\times8''$), plus review of flux densities.
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Becker *et al.* 1983, ApJ, 268, L93. 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, A&AS, 71, 189. Effelsberg 100-m at 32 GHz ($26''.5 : S=1.02\pm0.07$ Jy).
Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz of core, plus review of flux densities.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.4\times3'.7 : S=27.4$ Jy).
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Blanton & Helfand 1996, ApJ, 470, 961. ASCA observations.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G30.7-2.0}$

RA: $18^{h}54^{m}25^{s}$ **1-GHz flux/Jy:** 0.5? **Size/arcmin:** 16
Dec: $-02°54'$ **Spectral index:** 0.7? **Type:** ?

Radio: Poorly defined.

References:

Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G30.7+1.0}$

RA: $18^{h}44^{m}00^{s}$ **1-GHz flux/Jy:** 6 **Size/arcmin:** 24×18
Dec: $-01°32'$ **Spectral index:** 0.4 **Type:** S?

Radio: Non-thermal, highly polarized part shell?

Point sources: Compact source near centre.

References:

Reich *et al.* 1986, A&A, 155, 185. Effelsberg 100-m at 4.75 GHz ($2'.4 : S=3.4\pm0.4$ Jy), plus other flux densities.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.6\times3'.9 : S=8.6$ Jy).
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.

$\mathbf{G31.5-0.6}$

RA: $18^{h}51^{m}10^{s}$ **1-GHz flux/Jy:** 2? **Size/arcmin:** 18?
Dec: $-01°31'$ **Spectral index:** ? **Type:** S?

Has been called G31.55−0.65.

Radio: Distorted shell? near HII region.

References:

Fürst *et al.* 1987, A&AS, 69, 403. Effelsberg 100-m at 4.75 GHz ($2'.4$), plus other flux densities.

G31.9+0.0 3C391

RA: $18^h49^m25^s$ **1-GHz flux/Jy:** 24 **Size/arcmin:** 7×5
Dec: $-00°55'$ **Spectral index:** 0.55 **Type:** S

Radio: Shell, brightest in NW.

X-ray: Diffuse with central core.

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

References:

Radhakrishnan *et al.* 1972, ApJS, 24, 49. HI absorption.
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz ($3'$).
Green *et al.* 1975, A&A, 44, 187. Effelsberg 100-m at 15 GHz ($58'' : S > 1.6$).
Becker & Kundu 1976, ApJ, 204, 427. NRAO interferometer at 2.7 GHz ($20'' \times 23''$) and 8 GHz ($24'' \times 9''$), plus review of flux densities.
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Goss *et al.* 1979, A&A, 78, 75. FIRST at 1.4 GHz ($54'' \times 66'' : S = 20 \pm 2$ Jy) and Effelsberg 100-m at 10.7 GHz ($77'' : S = 7.5 \pm 0.8$ Jy).
Wang & Seward 1984, ApJ, 279, 705. IPC and HRI observations.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.4 \times 3'.7 : S = 44.8$ Jy).
Reynolds & Moffett 1993, AJ, 105, 2226. VLA at 1.4 GHz ($6''$), including possible associated CO.
Moffett & Reynolds 1994, ApJ, 425, 668. VLA at 330 MHz (smoothed to $30'' : S = 38.5 \pm 0.5$ Jy) 1.46 GHz ($6''.7$) and 4.85 GHz ($6''.2 \times 6''.4$), including spectral index and polarization studies.
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant, including masers.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Reach & Rho 1996, A&A, 315, L277. ISO spectroscopy.
Rho & Petre 1996, ApJ, 467, 698. ROSAT observations.
Wilner *et al.* 1998, AJ, 115, 247. CO observations of surroundings.
Reach & Rho 1998, ApJ, 507, L93. ISO observations.
Reach & Rho 1999, ApJ, 511, 836. CO, HCO^+ and CS observations of surroundings.

G32.0−4.9 3C396.1

RA: $19^h06^m00^s$ **1-GHz flux/Jy:** 22? **Size/arcmin:** 60?
Dec: $-03°00'$ **Spectral index:** 0.5? **Type:** S?

Radio: Possible large shell?

References:

Milne & Hill 1969, AuJPh, 22, 211. Parkes 64-m at 635 MHz ($31' : S = 25 \pm 30\%$ Jy), 1410 MHz ($15' : S = 19 \pm 15\%$ Jy) and 2650 MHz ($8'.4 : S = 8.6 \pm 30\%$ Jy). Fluxes if size is 60’, plus review of flux densities.
Caswell 1970, AuJPh, 23, 105. Revision of low frequency flux densities.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 111 MHz ($S = 105 \pm 30$ Jy).

G32.1−0.9

RA: $18^h53^m10^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 40?
Dec: $-01°08'$ **Spectral index:** ? **Type:** C?

Radio: Possible faint shell, not well defined.

X-ray: Diffuse, with clumps.

References:

Folgheraiter *et al.* 1997, MNRAS, 292, 365. ROSAT and ASCA observations.

G32.8−0.1 Kes 78

RA: $18^h51^m25^s$ **1-GHz flux/Jy:** 11? **Size/arcmin:** 17
Dec: $-00°08'$ **Spectral index:** 0.2? **Type:** S?

Part has been called G33.1−0.1.

Radio: Elongated shell?

References:

Velusamy & Kundu 1974, A&A, 32, 375.NRAO 300-ft et 2.7 GHz ($5' : S = 7.2 \pm 0.5$ Jy).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 430 MHz ($S = 19.0 \pm 15.5$ Jy).
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz ($3'$).
Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 12.8$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 7.7$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.6 \times 3'.8 : S = 31.3$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA detection of compact OH emission.

G33.2 – 0.6

RA: $18^h53^m50^s$ **1-GHz flux/Jy:** 3.5 **Size/arcmin:** 18
Dec: $-00°02'$ **Spectral index:** varies **Type:** S

Radio: Incomplete shell.

References:

Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Reich 1982, A&A, 106, 314. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 2.6 \pm 0.3$ Jy) and 4.75 GHz ($2'.5 : S = 1.75 \pm 0.2$ Jy).
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 1.4 GHz ($68'' \times 52'' : S = 2.7 \pm 0.3$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G33.6 + 0.1 Kes 79, 4C00.70, HC13

RA: $18^h52^m48^s$ **1-GHz flux/Jy:** 22 **Size/arcmin:** 10
Dec: $+00°41'$ **Spectral index:** 0.5 **Type:** S

Has been called G33.7+0.0.

Radio: Shell, with bright central region, in complex region.

X-ray: Detected.

Distance: HI absorption gives about 10 kpc.

References:

Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 35.5$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 7.8$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. HI absorption.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}} = 69 \pm 33$ Jy.
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz ($3' : S = 6.8 \pm 1.5$ Jy).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 11.4 \pm 1.1$ Jy).
Caswell *et al.* 1981, MNRAS, 195, 89. FIRST at 1415 MHz ($1'$), plus observations of the nearby point source.
van Gorkom *et al.* 1982, MNRAS, 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, MNRAS, 238, 737. OH absorption.
Frail & Clifton 1989, ApJ, 336, 854. VLA at 1.4 GHz ($1' \times 2'.9$), including HI absorption.
Velusamy *et al.* 1991, AJ, 102, 676. VLA at 327 MHz ($1'$), 1.5 ($7'' \times 14''$) and 5 GHz ($7''$), including spectral comparison.
Green & Dewdney 1992, MNRAS, 254, 686. Observations of adjacent molecular material.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.6 \times 3'.8 : S = 34.8$ Jy).
Seward & Velusamy 1995, ApJ, 439, 715. ROSAT observations.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

$\mathbf{G34.7-0.4}$ W44, 3C392

RA: $18^h56^m00^s$ **1-GHz flux/Jy:** 230 **Size/arcmin:** 35×27
Dec: $+01^\circ22'$ **Spectral index:** 0.30 **Type:** C

Has been called G34.6−0.5.

Radio: Distorted shell, brighter to the E, with pulsar and associated nebula.

X-ray: Centrally concentrated, thermal spectrum, plus pulsar nebula.

Point sources: Pulsar within the boundary of the remnant.

Distance: HI absorption indicates 2.5 kpc.

References:

Kundu & Velusamy 1972, A&A, 20, 237. NRAO 140-ft at 10.7 GHz ($3'$: $S=105\pm7$ Jy).
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$: $S=177\pm10$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. HI absorption.
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3'$: $S=299$ Jy which is less than the 390 Jy found by Kesteven 1968, AuJPh, 21, 739 with the same telescope).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}}=540\pm187$ Jy.
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Smith *et al.* 1985, MNRAS, 217, 99. IPC observations.
Wolszczan *et al.* 1991, ApJ, 372, L99. Pulsar detection.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.6\times3'.8$: $S=469$ Jy).
Jones *et al.* 1993, MNRAS, 265, 631. VLA at 1.4 GHz ($15''$), plus X-ray spectra.
Rho *et al.* 1994, ApJ, 430, 757. Optical and ROSAT observations.
Koo & Heiles 1995, ApJ, 442, 679. HI of surrounding shell.
Esposito *et al.* 1996, ApJ, 461, 820. Possible associated γ-ray emission.
Harrus *et al.* 1996, ApJ, 464, L161. ASCA observations.
Frail *et al.* 1996, ApJ, 464, L165. VLA at 1.5 and 8.4 GHz ($8''.9\times7''.8$) of pulsar nebula.
Frail *et al.* 1996, AJ, 111, 1651. OH maser emission.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Reach & Rho 1996, A&A, 315, L277. ISO spectroscopy.
Harrus *et al.* 1997, ApJ, 488, 781. X-ray observations.
Claussen *et al.* 1997, ApJ, 489, 143. VLA of associated OH masers.
Giacani *et al.* 1997, AJ, 113, 1379. VLA at 1.4 GHz ($15''$), plus optical images.
Seta *et al.* 1998, ApJ, 505, 286. CO observations of surroundings.
Cox *et al.* 1999, ApJ, 524, 179. Revision of distance.

$\mathbf{G36.6-0.7}$

RA: $19^h00^m35^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 25?
Dec: $+02^\circ56'$ **Spectral index:** ? **Type:** S?

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

References:

Fürst *et al.* 1987, A&AS, 69, 403. Effelsberg 100-m at 4.75 GHz ($2'.4$), plus other flux densities.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.4\times3'.7$: $S=6.7$ Jy).
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.

$\mathbf{G36.6+2.6}$

RA: $18^h48^m49^s$ **1-GHz flux/Jy:** 0.7? **Size/arcmin:** 17×13?
Dec: $+04^\circ26'$ **Spectral index:** 0.5? **Type:** S

Radio: Poorly resolved shell.

References:

Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G39.2 – 0.3

3C396, HC24, NRAO 593

RA: $19^h04^m08^s$ **1-GHz flux/Jy:** 18 **Size/arcmin:** 8×6
Dec: $+05°28'$ **Spectral index:** 0.6 **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, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}} = 54 \pm 38$ Jy.
Becker & Kundu 1975, AJ, 80, 679. NRAO 140-ft at 10.6 GHz ($3' : S = 4.1 \pm 1.0$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. HI absorption.
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Caswell *et al.* 1982, MNRAS, 200, 1143. FIRST at 1.4 GHz ($65'' \times 48''$).
Becker & Helfand 1987, AJ, 94, 1629. VLA at 1.4 GHz ($12'' : S = 14$ Jy) and 5 GHz, plus IPC observations.
Patnaik *et al.* 1990, A&A, 232, 467. VLA at 1.5 GHz ($25''$) and 1.4 GHz ($7''.8 \times 7''.5$) and 5 GHz ($25''$) including polarization, plus OSRT at 327 MHz ($100'' \times 31''$), including review of flux densities.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.5 \times 3'.6 : S = 42.5$ Jy).
Anderson & Rudnick 1993, ApJ, 408, 514. VLA at 1.45 and 4.89 GHz for spectral index studies.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.
Harrus & Slane 1999, ApJ, 516, 811. ASCA observations.

G39.7 – 2.0

W50, SS433

RA: $19^h12^m20^s$ **1-GHz flux/Jy:** 85? **Size/arcmin:** 120×60
Dec: $+04°55'$ **Spectral index:** 0.7? **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, 236, L23. Optical in Hα and [SII].
Zealey *et al.* 1980, MNRAS, 192, 731. Optical spectra.
van Gorkom *et al.* 1982, MNRAS, 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, MNRAS, 218, 393. Effelsberg 100-m at 4.75 GHz ($2'.4 : S = 34 \pm 4$ Jy), 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.
Yamauchi *et al.* 1994, PASJ, 46, L109. X-ray spectral observations.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Brinkmann *et al.* 1996, A&A, 312, 306. ROSAT observations.
Kotami *et al.* 1996, PASJ, 48, 619. X-ray line emission from SS433.
Safi-Harb & Ögelman 1997, ApJ, 483, 868. ROSAT observations.
Dubner *et al.* 1998, AJ, 116, 1842. VLA at 328 MHz ($64'' \times 60'' : S = 160 \pm 20$ Jy), and 1.4 GHz ($56'' \times 54''$), plus NRAO 140-ft at 1.4 GHz ($21'$) for HI observations.
Safi-Harb & Petre 1999, ApJ, 512, 784. X-ray observations.

G40.5 – 0.5

RA: $19^h07^m10^s$ | **1-GHz flux/Jy:** 11 | **Size/arcmin:** 22
Dec: $+06°31'$ | **Spectral index:** 0.5 | **Type:** S

Radio: Shell, brightest to the NE.

References:

Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Downes *et al.* 1980, A&A, 92, 47. Effelsberg 100-m at 1.7 GHz ($7'.6 : S = 9.3 \pm 1.3$ Jy), and 2.7 GHz ($4'.4 : S = 7.2 \pm 0.5$ Jy), plus review of flux densities.

G41.1 – 0.3 3C397

RA: $19^h07^m34^s$ | **1-GHz flux/Jy:** 22 | **Size/arcmin:** 4.5×2.5
Dec: $+07°08'$ | **Spectral index:** 0.48 | **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, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 21.3 \pm 1.2$ Jy for both components).
Caswell *et al.* 1975, A&A, 45, 239. HI absorption.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}} = 82 \pm 51$ Jy, also Algonquin 46-m at 10.6 GHz ($3' : S = 12 \pm 2$ Jy), and Haystack 36-m at 15.5 GHz ($2'.3 : S = 8.5 \pm 3.0$ Jy).
Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 29.8$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 8.7$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Caswell *et al.* 1982, MNRAS, 200, 1143. FIRST at 1.4 GHz ($58'' \times 52''$).
Becker *et al.* 1985, ApJ, 296, 461. VLA at 1.4 and 5 GHz ($8''$), plus HRI and IPC observations.
Morsi & Reich 1987, A&AS, 71, 189. Effelsberg 100-m at 32 GHz (smoothed to $30'' : S = 1.10 \pm 0.19$ Jy).
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.5 \times 3'.6 : S = 46.3$ Jy).
Anderson & Rudnick 1993, ApJ, 408, 514. VLA at 1.45 and 4.89 GHz, for spectral index studies.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Chen *et al.* 1999, ApJ, 520, 737. ASCA and ROSAT observations.
Dyer & Reynolds 1999, ApJ, 526, 365. VLA at 1.5 GHz ($6''.9 \times 6''.6$) and 4.8 GHz ($46''.4 \times 5''.6$), including polarization and comparison with ROSAT image.

G42.8 + 0.6

RA: $19^h07^m20^s$ | **1-GHz flux/Jy:** 3? | **Size/arcmin:** 24
Dec: $+09°05'$ | **Spectral index:** 0.5? | **Type:** S

Has been called G42.8+0.65.

Radio: Faint shell.

Point sources: Near soft gamma repeater.

References:

Fürst *et al.* 1987, A&AS, 69, 403. Effelsberg 100-m at 4.75 GHz ($2'.4 : S = 1.5 \pm 0.2$ Jy), plus other flux densities.
Vasisht *et al.* 1994, ApJ, 431, L35. VLA at 327 MHz ($3'.2 \times 3'.4$).
Hurley *et al.* 1996, ApJ, 463, L13. Observations of soft gamma repeater field.

$G43.3-0.2$ W49B

RA: $19^h11^m08^s$ **1-GHz flux/Jy:** 38 **Size/arcmin:** 4×3
Dec: $+09°06'$ **Spectral index:** 0.48 **Type:** S

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

X-ray: Filled-centre.

Distance: HI absorption indicates 12.5 to 14 kpc.

References:
Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 2.7 GHz ($4'$).
Downes & Wilson 1974, A&A, 34, 133. Effelsberg 100-m at 10.7 GHz ($1'.3$).
Green *et al.* 1975, A&A, 44, 187. Effelsberg 100-m at 15.0 GHz ($58'':S=9.0\pm0.7$ Jy).
Lockhart & Goss 1978, A&A, 67, 355. HI absorption.
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Pye *et al.* 1984, MNRAS, 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, A&AS, 71, 189. Effelsberg 100-m at 32 GHz (smoothed to $30'':S=6.90\pm0.38$ Jy).
Moffett & Reynolds 1994, ApJ, 437, 705. VLA at 330 MHz ($6''.7\times7''.7:S=64.4$ Jy), 1.48 GHz ($4''.8\times5''.2:S=31.8$ Jy) and 4.85 GHz ($4''.0\times4''.1$), including polarization.
Fujimoto *et al.* 1995, PASJ, 47, L31. ASCA observations.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Hwang *et al.* 2000, ApJ, 532, 970. ROSAT image and ASCI spectroscopy.

$G43.9+1.6$

RA: $19^h05^m50^s$ **1-GHz flux/Jy:** 8.6? **Size/arcmin:** 60?
Dec: $+10°30'$ **Spectral index:** 0.2? **Type:** S?

Radio: Large, poorly defined faint shell.

Point sources: Soft gamma repeater nearby.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Vasisht *et al.* 1994, ApJ, 431, L35. VLA at 327 MHz ($3'.2\times3'.4$).
Hurley *et al.* 1996, ApJ, 463, L13. Observations of soft gamma repeater field.

$G45.7-0.4$

RA: $19^h16^m25^s$ **1-GHz flux/Jy:** 4.2? **Size/arcmin:** 22
Dec: $+11°09'$ **Spectral index:** 0.4? **Type:** S

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

References:
Fürst *et al.* 1987, A&AS, 69, 403. Effelsberg 100-m at 4.75 GHz ($2'.4:S=2.6\pm0.3$ Jy), plus other flux densities.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.

$G46.8-0.3$ (HC30)

RA: $19^h18^m10^s$ **1-GHz flux/Jy:** 14 **Size/arcmin:** 17×13
Dec: $+12°09'$ **Spectral index:** 0.5 **Type:** S

Has been called G46.6−0.2.

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

Distance: HI absorption suggests 6.8–8.8 kpc.

References:
Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5':S=9.8\pm0.9$ Jy), and VRO 37-m at 1.7 GHz ($S=14.5\pm5.5$ Jy).
Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3':S=20.3$ Jy) and Parkes 64-m at 5 GHz ($4':S=7.1$ Jy).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}}=46\pm21$ Jy.
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8:S=5.9\pm0.6$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 1.4 GHz ($58''\times53'':S=13.3\pm0.1$ Jy).

$\mathbf{G49.2-0.7}$ (W51)

RA: $19^h23^m50^s$ **1-GHz flux/Jy:** 160? **Size/arcmin:** 30
Dec: $+14°06'$ **Spectral index:** 0.3? **Type:** S?

Radio: In complex region, parameters uncertain.

X-ray: Elongated east–west.

Distance: HI absorption suggests 4.1 kpc.

References:
Shaver & Goss 1970, AuJPA, 14, 133. Parkes 64-m at 5 GHz ($4'$).
Sato 1973, PASJ, 25, 135. HI absorption.
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$), $S = 51.5 \pm 3.2$ Jy, for the non-thermal component, but probably confused.
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Seward 1990, ApJS, 73, 781. IPC observations.
Copetti & Schmidt 1991, MNRAS, 250, 127. CLFST at 151 MHz.
Kassim 1992, AJ, 103, 943. VLA at 327 MHz ($3'.1 \times 3'.5$).
Subrahmanyan & Goss 1995, MNRAS, 275, 755. VLA at 330 MHz ($1'.1$).
Koo *et al.* 1995, ApJ, 447, 211. ROSAT observations.
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. OH masers.
Koo & Moon 1997, ApJ, 475, 194. Arecibo ($3'$) and VLA ($40'' \times 42''$) at 1.4 GHz for HI.
Koo & Moon 1997, ApJ, 485, 263. NRAO 12-m CO and HCO^+ observations.

$\mathbf{G53.6-2.2}$ 3C400.2, NRAO 611

RA: $19^h38^m50^s$ **1-GHz flux/Jy:** 8 **Size/arcmin:** 33×28
Dec: $+17°14'$ **Spectral index:** 0.75 **Type:** S

Has been called G53.7−2.2.

Radio: Ring of emission, with extension to NW.

Optical: Filaments and diffuse emission.

X-ray: Centrally brightened, offset to NW.

Distance: Mean optical velocity indicates 6.7 kpc, HI absorption indicates 2.3 kpc.

References:
Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 5.3 \pm 0.6$ Jy).
van den Bergh 1978, ApJS, 38, 119. Optical.
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 4.8 \pm 0.3$ Jy).
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3' : S = 11.7$ Jy).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}} = 20 \pm 10$ Jy, $S_{318\ \mathrm{MHz}} = 20 \pm 3.6$ Jy.
Goss *et al.* 1975, A&A, 43, 459. WSRT at 610 MHz ($1' \times 3' : S = 13.2 \pm 1.6$ Jy).
Sabbadin & d'Odorico 1976, A&A, 49, 119. Optical spectra.
Rosado 1983, RMxAA, 8, 59. Optical spectra.
Blair & Long 1988, PASP, 100, 461. Optical imaging and spectroscopy.
Long *et al.* 1991, ApJ, 373, 567. IPC and optical observations.
Winkler *et al.* 1993, ApJ, 405, 608. Optical imaging.
Dubner *et al.* 1994, AJ, 108, 207. VLA at 327 MHz ($59''$) and 1.49 GHz ($52''$), plus X-rays.
Saken *et al.* 1995, ApJ, 443, 231. ROSAT observations.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Giacani *et al.* 1998, A&AS, 133, 61. DRAO at 1.4 GHz for HI studies, including distance.

G54.1+0.3

RA: $19^{h}30^{m}31^{s}$ **1-GHz flux/Jy:** 0.5 **Size/arcmin:** 1.5
Dec: $+18^{\circ}52'$ **Spectral index:** 0.1 **Type:** F?

Radio: Filled-centre.

X-ray: Detected.

References:

Green 1985, MNRAS, 216, 691. 5km at 2.7 GHz ($7'' \times 20''$).
Reich *et al.* 1985, A&A, 151, L10. Effelsberg 100-m at 4.75 GHz ($2'.4 : S = 0.37 \pm 0.04$ Jy)
Velusamy & Becker 1988, AJ, 95, 1162. VLA at 1.4 ($14'' : S = 0.48 \pm 0.03$ Jy), 1.6 ($14'' : S = 0.42 \pm 0.03$ Jy) and 5 GHz ($5'' : S = 0.33 \pm 0.02$ Jy), OSRT at 327 MHz ($S = 0.50 \pm 0.08$ Jy), plus review of flux densities.
Seward 1989, AJ, 97, 481. IPC observations
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G54.4−0.3 (HC40)

RA: $19^{h}33^{m}20^{s}$ **1-GHz flux/Jy:** 28 **Size/arcmin:** 40
Dec: $+18^{\circ}56'$ **Spectral index:** 0.5 **Type:** S

Has been called G54.5−0.3.

Radio: Shell, in complex region.

References:

Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 34.4 \pm 5.0$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Caswell 1985, AJ, 90, 1224. DRAO at 1.4 GHz ($1'.3 \times 2'.6 : S = 18 \pm 4$ Jy).
Velusamy *et al.* 1986, JApA, 7, 105. WSRT at 609 MHz ($50'' \times 191''$ smoothed to $100'' \times 200''$).
Junkes *et al.* 1992, A&AS, 96, 1. Surrounding CO.
Junkes *et al.* 1992, A&A, 261, 289. Nearby IRAS sources.

G55.0+0.3

RA: $19^{h}32^{m}00^{s}$ **1-GHz flux/Jy:** 0.5? **Size/arcmin:** 20×15?
Dec: $+19^{\circ}50'$ **Spectral index:** 0.5? **Type:** S

Has been called G55.2+0.5.

Radio: Faint, partial shell.

Distance: Association with HI features implies 14 kpc.

Point sources: Old pulsar nearby.

References:

Matthews *et al.* 1998, ApJ, 493, 312. WSRT at 327 MHz ($1'.0 \times 2'.9 : S = 0.98 \pm 0.15$ Jy), DRAO at 1.4 GHz ($1'.0 \times 2'.9 : S = 0.25 \pm 0.12$ Jy), plus HI observations.

G55.7+3.4

RA: $19^{h}21^{m}20^{s}$ **1-GHz flux/Jy:** 1.4 **Size/arcmin:** 23
Dec: $+21^{\circ}44'$ **Spectral index:** 0.6 **Type:** S

Radio: Incomplete shell.

Point sources: Old pulsar within the boundary of the remnant.

References:

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

G57.2+0.8 (4C21.53)

RA: $19^h34^m59^s$ **1-GHz flux/Jy:** 1.8? **Size/arcmin:** 12?
Dec: $+21°57'$ **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, A&A, 130, 257. Effelsberg 100-m at 1.4 GHz ($8'.8 : 1.34 \pm 0.1$), 2.7 GHz ($4'.3 : 0.86 \pm 0.1$), plus other surveys of the area.
Caswell *et al.* 1985, AJ, 90, 488. DRAO at 1.4 GHz ($1' \times 3'$).

G59.5+0.1

RA: $19^h42^m33^s$ **1-GHz flux/Jy:** 3? **Size/arcmin:** 5
Dec: $+23°35'$ **Spectral index:** ? **Type:** S

Has been called G59.6+0.1.

Radio: Incomplete shell.

References:

Taylor *et al.* 1992, AJ, 103, 931. WSRT at 327 MHz ($1'.0 \times 2'.5 : S = 5.1 \pm 0.2$ Jy), and northern sky survey at 4.9 GHz.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G59.8+1.2

RA: $19^h38^m55^s$ **1-GHz flux/Jy:** 1.6 **Size/arcmin:** 20×16?
Dec: $+24°19'$ **Spectral index:** 0.5 **Type:** ?

Has been called G59.7+1.2.

Radio: Poorly defined source.

References:

Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).

G63.7+1.1

RA: $19^h47^m52^s$ **1-GHz flux/Jy:** 1.8 **Size/arcmin:** 8
Dec: $+27°45'$ **Spectral index:** 0.3 **Type:** F

Radio: Centrally brightened, with core.

References:

Wallace *et al.* 1997, AJ, 114, 2068. WSRT at 1.4 GHz ($14'' \times 26'' : S = 1.63$ Jy), DRAO at 1.4 GHz (smoothed to $2'$), plus review of flux densities and other observations.

G65.1+0.6

RA: $19^h54^m40^s$ **1-GHz flux/Jy:** 6 **Size/arcmin:** 90×50
Dec: $+28°35'$ **Spectral index:** 0.6 **Type:** S

Radio: Large, faint shell.

Point sources: Pulsar nearby.

References:

Landecker *et al.* 1990, A&A, 232, 207. DRAO at 408 MHz ($3'.5 \times 7'.0 : S = 9.5 \pm 0.1$ Jy), and 1.4 GHz ($1'.0 \times 2'.0 : S = 5.4 \pm 1.0$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G65.3+5.7

RA: $19^h33^m00^s$ **1-GHz flux/Jy:** 52? **Size/arcmin:** 310×240
Dec: $+31°10'$ **Spectral index:** 0.6? **Type:** S?

Has been called G65.2+5.7.

Radio: Large, faint ring? near S91 and S94.

Optical: Strong in Hα+[N II] and [O III].

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, A&A, 72, 270. Effelsberg 100-m observations at 1.42 GHz (smoothed to $11'$: $S = 42.4 \pm 1.6$ Jy), estimate $S_{408\ \mathrm{MHz}} = 91 \pm 5$ Jy from previous sky survey.
Lozinskaya 1981, SvAL, 7, 17. Mean optical velocity.
Rosado 1981, ApJ, 250, 222. Optical interferometry.
Fesen *et al.* 1983, ApJS, 51, 337. Deep [O III] imagery.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Seward 1990, ApJS, 73, 781. IPC observations.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.

G65.7+1.2 DA 495

RA: $19^h52^m10^s$ **1-GHz flux/Jy:** 5.1 **Size/arcmin:** 18
Dec: $+29°26'$ **Spectral index:** 0.6 **Type:** ?

Has mistakenly been called G55.7+1.2.

Radio: Filled-centre or thick shell?

References:
Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5'$: $S = 2.8 \pm 0.4$ Jy), and VRO 37-m at 1.7 GHz ($S = 4.4 \pm 0.5$ Jy), plus review of flux densities.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}} = 8.7 \pm 4.9$ Jy, $S_{318\ \mathrm{MHz}} = 9.7 \pm 2.2$ Jy.
Landecker & Caswell 1983, AJ, 88, 1810. DRAO at 1.4 GHz ($0'.9 \times 1'.5$: $S = 4.4 \pm 0.2$ Jy).
Velusamy *et al.* 1989, JApA, 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.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G67.7+1.8

RA: $19^h54^m32^s$ **1-GHz flux/Jy:** 1.4 **Size/arcmin:** 9
Dec: $+31°29'$ **Spectral index:** 0.3 **Type:** S

Radio: Double arc shell.

References:
Taylor *et al.* 1992, AJ, 103, 931. WSRT at 327 MHz ($1'.9 \times 1'.0$: $S = 1.9 \pm 0.1$ Jy), and northern sky survey at 4.9 GHz ($S = 0.42 \pm 0.05$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G68.6−1.2

RA: $20^h08^m40^s$ **1-GHz flux/Jy:** 0.7? **Size/arcmin:** 28×25?
Dec: $+30°37'$ **Spectral index:** 0.0? **Type:** ?

Radio: Faint, poorly defined source.

References:
Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G69.0+2.7 CTB 80

RA: $19^h53^m20^s$ **1-GHz flux/Jy:** 120? **Size/arcmin:** 80?
Dec: $+32°55'$ **Spectral index:** varies **Type:** ?

An association with a SN in AD1408 has been suggested. Has been called G68.8+2.8. 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, A&A, 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, JApA, 3, 253. VLA of compact sources.
Blair *et al.* 1984, ApJ, 282, 161. Optical images and spectra.
Wang & Seward 1984, ApJ, 285, 607. IPC observations.
Strom *et al.* 1984, A&A, 139, 43. Radio observations of flat spectrum component, VLA 5 GHz ($1''.7$) and 1.4 GHz.
Mantovani *et al.* 1985, A&A, 145, 50. Bologna at 408 MHz ($2'.6 \times 4'.9 : S = 67.5 \pm 10.5$ Jy), Effelsberg 100-m at 1.41 ($9' : S = 62 \pm 9$ Jy), 1.72 ($7'.6 : S = 66 \pm 5$ Jy), 2.7 ($4'.5 : S = 52 \pm 4$ Jy) and 4.75 GHz ($2'.4 : S = 44 \pm 3.3$ Jy), plus review of flux densities.
Kulkarni *et al.* 1988, Natur, 331, 50. Pulsar detection.
Angelini *et al.* 1988, ApJ, 330, L43. EXOSAT spectra.
Fesen *et al.* 1988, Natur, 334, 229. IRAS of surrounding shell.
Whitehead *et al.* 1989, MNRAS, 237, 1109. Optical of core.
Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz of core, plus review of flux densities.
Hester & Kulkarni 1989, ApJ, 340, 362. Optical imaging and spectroscopy.
Koo *et al.* 1990, ApJ, 364, 178. Large, expanding HI shell.
Greidanus & Strom 1990, A&A, 240, 376. Optical kinematics of core.
Koo *et al.* 1993, ApJ, 417, 196. VLA at 1.4 GHz of surrounding HI ($1'$), plus IRAS.
Safi-Harb *et al.* 1995, ApJ, 439, 722. ROSAT observations.
Srinivasan 1997, ApJ, 489, 170. γ-ray observations of pulsar.

G69.7+1.0

RA: $20^h02^m40^s$ **1-GHz flux/Jy:** 1.6 **Size/arcmin:** 16
Dec: $+32°43'$ **Spectral index:** 0.8 **Type:** S

Radio: Poorly resolved source.

References:

Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G73.9+0.9

RA: $20^h14^m15^s$ **1-GHz flux/Jy:** 9? **Size/arcmin:** 22?
Dec: $+36°12'$ **Spectral index:** 0.3? **Type:** S?

Radio: Diffuse, centrally brightened to SW.

Optical: Weak shell.

References:

Reich *et al.* 1986, A&A, 155, 185. Effelsberg 100-m at 4.75 GHz ($2'.4 : S = 6.7 \pm 0.5$ Jy), plus other flux densities.
Chastenay & Pineault 1988, in SNRISM, p297. DRAO at 408 MHz ($3'.5 \times 5'.9$) and 1.4 GHz ($1'.0 \times 1'.7$).
Pineault & Chastenay 1990, MNRAS, 246, 169. DRAO at 408 MHz ($3'.4 \times 5'.8 : S = 12.7 \pm 1.2$ Jy) and 1.4 GHz ($1'.0 \times 1'.7 : S = 7.4 \pm 1.0$ Jy).
Lozinskaya *et al.* 1993, ARep, 37, 240. Optical observations.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Pineault *et al.* 1996, AJ, 112, 201. DRAO at 1.4 GHz (smoothed to $2'$) for HI.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G74.0 – 8.5 Cygnus Loop

RA: $20^h51^m00^s$ **1-GHz flux/Jy:** 210 **Size/arcmin:** 230×160
Dec: $+30°40'$ **Spectral index:** varies **Type:** S

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

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, plus X-ray source in S.

Distance: Optical proper motion and shock velocity gives 0.44 kpc.

References:
Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of CL4.
Green 1984, MNRAS, 211, 433. Most of remnant at 408 MHz ($80'' \times 160''$) with OMT.
Charles *et al.* 1985, ApJ, 295, 456. IPC observations.
Braun & Strom 1986, A&A, 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, A&A, 211, 217. [FeX] and [FeXIV] spectroscopy.
Ballet & Rothenflug 1989, A&A, 218, 277. EXOSAT observations.
Green 1990, AJ, 100, 1927. DRAO at 408 MHz ($3'.3 \times 6'.7$) for spectral index study, plus X-ray and optical.
Graham *et al.* 1991, AJ, 101, 175. Shocked molecular H outside rim in NE.
Shull & Clarke 1991, PASP, 103, 811. Optical spectroscopy of nearside filaments.
Blair *et al.* 1991, ApJ, 374, 202. Far UV mapping.
Blair *et al.* 1991, ApJ, 379, L33. UV spectroscopy.
Greidanus & Strom 1992, A&A, 257, 265. Optical kinematics.
Shull & Hippelein 1992, ApJ, 383, 714. Optical kinematics and proper motion.
Fesen *et al.* 1992, AJ, 104, 719. Hα imagery.
Cornett *et al.* 1992, ApJ, 395, L9. UV imagery.
Long *et al.* 1992, ApJ, 400, 214. Optical of Balmer dominated filament.
Arendt *et al.* 1992, ApJ, 400, 562. IRAS observations.
Vancura *et al.* 1993, ApJ, 417, 663. Far UV observations.
Hester *et al.* 1994, ApJ, 420, 721. Hα, [OIII] and other optical observations of Balmer dominated filaments in NE.
Miyata *et al.* 1994, PASJ, 46, L101. X-ray observations of NE.
Graham *et al.* 1995, ApJ, 444, 787. X-ray and optical studies of interaction with surroundings.
Sauvageot & Decourchelle 1995, A&A, 296, 201. [FeX] and [FeXIV] observations.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Levenson *et al.* 1996, ApJ, 468, 323. ROSAT and optical observations of W.
Decourchelle *et al.* 1997, A&A, 326, 811. ROSAT observations of N.
Levenson *et al.* 1997, ApJ, 484, 304. ROSAT observations.
Leahy *et al.* 1997, AJ, 114, 2081. DRAO at 1.4 GHz ($1' \times 2'$), including polarisation.
Miyata *et al.* 1998, PASJ, 50, 257. ASCA observations.
Miyata *et al.* 1998, PASJ, 50, 475. ASCA observations of compact X-ray source in S.
Leahy & Roger 1998, ApJ, 505, 784. DRAO at 1.4 GHz ($1'.0 \times 1'.9$) and 408 MHz ($3'.4 \times 6'.9$), for spectral index studies in comparison with other radio observations.
Levenson *et al.* 1998, ApJS, 118, 541. Optical images.
Roger *et al.* 1999, A&AS, 137, 7. 22 MHz flux density ($S = 1400 \pm 400$ Jy).
Bohigas *et al.* 1999, ApJ, 518, 324. Optical spectroscopy of surroundings.
Levenson *et al.* 1999, ApJ, 526, 874. ROSAT images.
Blair *et al.* 1999, AJ, 118, 942. HST observations, for distance.
Aschenbach & Leahy 1999, A&A, 341, 602. ROSAT image, and comparison with radio.
Sauvageot *et al.* 1999, A&A, 351, 669. [NeV] observations.
Szentgyorgyi *et al.* 2000, ApJ, 529, 279. [NeV] images.
Danforth *et al.* 2000, AJ, 119, 2319. UV, optical and X-ray comparison of selected regions.

G74.9+1.2 CTB 87

RA: $20^h16^m02^s$ **1-GHz flux/Jy:** 9 **Size/arcmin:** 8×6
Dec: $+37°12'$ **Spectral index:** varies **Type:** F

Radio: Filled-centre, with high polarization and high frequency turnover.

X-ray: Centrally brightened.

Distance: HI absorption indicates 12 kpc.

Point sources: Extragalactic compact source is nearby.

References:

Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo $S_{430\ \mathrm{MHz}}=12.2\pm9.7$ Jy, $S_{318\ \mathrm{MHz}}=17.7\pm5.0$ Jy.
Weiler & Shaver 1978, A&A, 70, 389. WSRT at 610 MHz ($57''\times94''$: $S=9.1\pm1.2$ Jy), 1.4 ($24''\times40''$: $S=8.7\pm1.2$ Jy) and 5 GHz ($24''\times40''$: $S=5.6\pm1.3$ Jy).
Geldzahler *et al.* 1980, A&A, 84, 237. Effelsberg 100-m at 2.7 GHz ($4'.4$: $S=7.6\pm0.5$ Jy).
Wilson 1980, ApJ, 241, L19. IPC observations.
van Gorkom *et al.* 1982, MNRAS, 198, 757. WSRT HI absorption of nearby compact source.
Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of nearby source.
Morsi & Reich 1987, A&AS, 69, 533. Effelsberg 100-m at 32 GHz (smoothed to $40''$: $S=1.47\pm0.19$ Jy).
Green & Gull 1989, MNRAS, 237, 555. VLA at 1.4 GHz ($1'.2\times1'.4$) including HI.
Salter *et al.* 1989, ApJ, 338, 171. NRAO 12-m at 84.2 GHz, plus review of flux densities.
Pineault & Chastenay 1990, MNRAS, 246, 169. DRAO at 408 MHz ($3'.4\times5'.8$: $S=11.6\pm0.4$ Jy) and 1.4 GHz ($1'.0\times1'.7$: $S=7.2\pm0.3$ Jy).
Asaoka & Koyama 1990, PASJ, 42, 625. Ginga X-ray spectrum.
Wendker *et al.* 1991, A&A, 241, 551. DRAO at 408 MHz ($3'.5\times5'.2$: $S=13.3\pm0.8$ Jy) and Effelsberg 100-m at 4.8 GHz ($S=7.5\pm0.7$ Jy).
Wallace *et al.* 1994, A&A, 286, 565. HI of surroundings.
Cho *et al.* 1994, AJ, 108, 634. CO of adjacent molecular clouds.
Gorham *et al.* 1996, ApJ, 458, 257. Pulsar search.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Wallace *et al.* 1997, A&A, 317, 212. DRAO at 408 MHz ($3'4\times5'.5$) and 1.4 GHz ($1'.0\times1'.6$) including HI (smoothed to $2'$).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G76.9+1.0

RA: $20^h22^m20^s$ **1-GHz flux/Jy:** 2 **Size/arcmin:** 12×9
Dec: $+38°43'$ **Spectral index:** 0.6 **Type:** ?

Radio: Diffuse, non-thermal, with low frequency turnover.

References:

Landecker *et al.* 1993, A&A, 276, 522. VLA at 1.49 GHz ($14''$), 4.86 GHz ($13''\times16''$) and 8.55 GHz ($11''\times12''$), including polarization and review of flux densities.
Landecker *et al.* 1997, A&AS, 123, 199. Miyun at 232-MHz ($3'.8\times5'.4$).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G78.2+2.1 — DR4, γ Cygni

RA: $20^h20^m50^s$ **1-GHz flux/Jy:** 340 **Size/arcmin:** 60
Dec: $+40°26'$ **Spectral index:** 0.5 **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.

Point sources: γ-ray and X-ray point source in remnant.

References:

Higgs *et al.* 1977, AJ, 82, 718. DRAO at 1.4 GHz ($2' \times 3' : S = 270 \pm 40$ Jy) plus some 10 GHz ($4'$) survey data, reveals true extent of remnant.
d'Odorico & Sabbadin 1977, A&AS, 28, 439. Optical spectra.
van den Bergh 1978, ApJS, 38, 119. Optical.
Landecker *et al.* 1980, A&AS, 39, 133. DRAO HI observations ($2' \times 3'.1$).
Higgs *et al.* 1983, AJ, 88, 97. CO of surroundings.
Bohigas *et al.* 1983, RMxAA, 8, 155. Optical spectra, find thermal only.
Braun & Strom 1986, A&AS, 63, 345. WSRT HI observations.
Fukui & Tatematsu 1988, in SNRISM, p261. CO observations of the vicinity ($2'.7$).
Green 1989, MNRAS, 238, 737. OH observations.
Pineault & Chastenay 1990, MNRAS, 246, 169. DRAO at 408 MHz ($3'.4 \times 5'.8 : S = 480 \pm 60$ Jy) and 1.4 GHz ($1'.0 \times 1'.7 : S = 270 \pm 40$ Jy).
Wendker *et al.* 1991, A&A, 241, 551. DRAO at 408 MHz ($3'.5 \times 5'.2 : S = 540 \pm 40$ Jy) and Effelsberg 100-m at 4.8 GHz ($S = 150 \pm 15$ Jy).
Esposito *et al.* 1996, ApJ, 461, 820. Associated γ-ray emission.
Brazier *et al.* 1996, MNRAS, 281, 1033. γ-ray and X-ray point source.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Zhang *et al.* 1997, A&A, 324, 641. Multi-frequency radio comparison.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Lozinskaya *et al.* 2000, AstL, 26, 77. Hα and X-ray observations.

G82.2+5.3 — W63

RA: $20^h19^m00^s$ **1-GHz flux/Jy:** 120? **Size/arcmin:** 95×65
Dec: $+45°30'$ **Spectral index:** 0.5? **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, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 59.0 \pm 3.5$ Jy).
Sabbadin 1976, A&A, 51, 159. Optical spectra.
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8$). Incomplete mapping.
Rosado & González 1981, RMxAA, 5, 93. Optical spectra.
Seward 1990, ApJS, 73, 781. IPC observations.
Higgs *et al.* 1991, JRASC, 85, 24. DRAO at 408 MHz ($3'.4 \times 5'.0 : S = 165 \pm 21$ Jy), plus review of flux densities.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G84.2−0.8

RA: $20^h53^m20^s$ **1-GHz flux/Jy:** 11 **Size/arcmin:** 20×16
Dec: $+43°27'$ **Spectral index:** 0.5 **Type:** S

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

References:

Matthews *et al.* 1977, A&A, 55, 1. WSRT at 610 MHz ($56'' \times 81'' : S = 12.4 \pm 1.5$ Jy) and Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 6.8 \pm 1.3$ Jy).
Matthews & Shaver 1980, A&A, 87, 255. WSRT at 1415 MHz ($23'' \times 32''$), and Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 5.6 \pm 0.5$ Jy).
Feldt & Green 1993, A&A, 274, 421. DRAO at 1.4 GHz ($1' \times 1'.5$), including HI, plus CO observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

$G84.9+0.5$

RA: $20^h50^m30^s$ **1-GHz flux/Jy:** 0.8 **Size/arcmin:** 6
Dec: $+44°53'$ **Spectral index:** 0.4 **Type:** S

Radio: Incomplete shell.

References:
Taylor *et al.* 1992, AJ, 103, 931. WSRT at 327 MHz ($1'.4\times1'.0: S=1.2\pm0.1$ Jy), and northern sky survey at 4.9 GHz ($S=0.40\pm0.01$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

$G89.0+4.7$ HB21

RA: $20^h45^m00^s$ **1-GHz flux/Jy:** 220 **Size/arcmin:** 120×90
Dec: $+50°35'$ **Spectral index:** 0.40 **Type:** S

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

Optical: Filaments possibly associated.

X-ray: Centrally brightened.

Distance: Various associations suggest 0.8 kpc.

References:
Hirabayashi & Takahashi 1972, PASJ, 24, 231. 30-m dish at 4.2 GHz ($11': S=160\pm40$ Jy).
Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5': S=148\pm16$ Jy), plus optical filaments.
Hill 1974, MNRAS, 169, 59. HMT at 1.4 GHz ($3'\times3'.9$).
Haslam *et al.* 1975, A&A, 39, 453. Effelsberg 100-m at 2.7 GHz ($4'.4$)
Fukui & Tatematsu 1988, in SNRISM, p261. CO observations of the vicinity ($2'.7$).
Tatematsu *et al.* 1990, A&A, 237, 189. DRAO at 408 MHz ($3'.5\times4'.5$) and 1.4 GHz ($1'.0\times1'.3$), including HI, plus CO observations of adjacent molecular cloud.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Leahy & Aschenbach 1996, A&A, 315, 260. ROSAT observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

$G93.3+6.9$ DA 530, 4C(T)55.38.1

RA: $20^h52^m25^s$ **1-GHz flux/Jy:** 9 **Size/arcmin:** 27×20
Dec: $+55°21'$ **Spectral index:** 0.54 **Type:** S

Has been called G93.2+6.7.

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

Distance: HI observations suggest 2.5 kpc.

References:
Roger & Costain 1976, A&A, 51, 151. DRAO at 1.42 GHz ($2'\times2'.4: S=6.9$ Jy).
Haslam *et al.* 1980, A&A, 92, 57. Effelsberg 100-m at 1.72 GHz ($7'.6: S=6.47\pm0.52$ Jy) and 2.7 GHz ($4'.4: S=5.64\pm0.64$ Jy), plus review of flux densities.
Lalitha *et al.* 1984, A&A, 131, 196. Effelsberg 100-m at 4.75 GHz (smoothed to $3': S=4.01\pm0.57$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Landecker *et al.* 1999, ApJ, 527, 866. DRAO at 408 MHz ($3'.5\times4'.3$) and 1.4 GHz ($1'.0\times1'.2$), including polarisation and HI.

$G93.7-0.2$ CTB 104A, DA 551

RA: $21^h29^m20^s$ **1-GHz flux/Jy:** 65 **Size/arcmin:** 80
Dec: $+50°50'$ **Spectral index:** 0.3 **Type:** S

Has been called G93.6−0.2 and G93.7−0.3.

Radio: Faint shell with possible a steep spectrum core.

References:
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5': S=18.4\pm1.0$ Jy).
Mantovani *et al.* 1982, A&A, 105, 176. Effelsberg 100-m at 1.7 GHz ($7'.6: S=53.5\pm5.0$ Jy), plus review of flux densities.
Landecker *et al.* 1985, AJ, 90, 1082. DRAO at 1.4 GHz (smoothed to $2': S=58\pm6$ Jy).
Mantovani *et al.* 1991, A&A, 247, 545. Effelsberg 100-m at 4.75 GHz (smoothed to $3': S=33.5\pm4.0$ Jy), including polarization, plus review of flux densities.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

G94.0+1.0 — 3C434.1

RA: $21^{h}24^{m}50^{s}$ | **1-GHz flux/Jy:** 15 | **Size/arcmin:** 30×25
Dec: $+51°53'$ | **Spectral index:** 0.44 | **Type:** S

Radio: Incomplete shell, in complex region.

References:

Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 6.1 \pm 0.8$ Jy), and VRO 37-m at 1.7 GHz ($S = 11 \pm 3$ Jy).
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 5.8 \pm 0.4$ Jy). Also NRAO 140-ft at 5 GHz ($6'$).
Mantovani *et al.* 1982, A&A, 105, 176. Effelsberg 100-m at 1.7 GHz ($7'.6 : S = 12.0 \pm 1.3$ Jy), plus review of flux densities.
Goss *et al.* 1984, A&A, 138, 469. WSRT at 610 MHz (smoothed to $100'' : S = 16 \pm 1.7$ Jy) and Effelsberg 100-m at 4.75 GHz ($2'.4 : S = 7.2 \pm 0.5$ Jy).
Landecker *et al.* 1985, AJ, 90, 1082. DRAO at 1.4 GHz (smoothed to $2' : S = 16 \pm 3$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G109.1 − 1.0 — CTB 109

RA: $23^{h}01^{m}35^{s}$ | **1-GHz flux/Jy:** 20 | **Size/arcmin:** 28
Dec: $+58°53'$ | **Spectral index:** 0.50 | **Type:** S

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

X-ray: Incomplete shell.

Point sources: Pulsar at W edge.

References:

Hughes *et al.* 1981, ApJ, 246, L127. WSRT at 610 MHz ($1' : S = 40 \pm 5$ Jy) shows bad CLEAN artefacts.
Blair & Kirshner 1981, Natur, 291, 132. Optical spectra.
Downes 1983, MNRAS, 203, 695. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 13.0 \pm 1.5$ Jy).
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 ($20'' : S = 26 \pm 3$ Jy) 1.4 GHz ($10''$), DRAO at 1.4 GHz ($1' \times 1'.2 : S = 16.8 \pm 2$ Jy) and Algonquin 46-m at 6.5 GHz ($4'.5 : S = 6.7 \pm 1$ Jy).
Braun & Strom 1986, A&AS, 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, A&A, 184, 279. CO observations of the surroundings ($2'.7$).
Hanson *et al.* 1988, A&A, 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, MNRAS, 238, 649. IRAS observations of surroundings.
Green 1989, MNRAS, 238, 737. OH observations.
Tatematsu *et al.* 1990, ApJ, 351, 157. CO of surroundings, plus X-ray observations.
Davies & Coe 1991, MNRAS, 249, 313. Optical and IR observations near pulsar.
Hurford & Fesen 1995, MNRAS, 277, 549. ROSAT imaging.
Rho & Petre 1997, ApJ, 484, 828. ROSAT observations.
Parmar *et al.* 1998, A&A, 330, 175. X-ray observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

G111.7 – 2.1 Cassiopeia A, 3C461

RA: $23^h23^m26^s$ **1-GHz flux/Jy:** 2720 **Size/arcmin:** 5
Dec: $+58°48'$ **Spectral index:** 0.77 **Type:** S

Presumably the remnant of a late 17th century SN.

Radio: Bright shell with compact knots and extended plateau of emission.

Optical: Fast knots and quasi-stationary flocculli, with many filaments at large radii.

X-ray: Incomplete shell, with hard spectral component.

Distance: Optical expansion, plus proper motions indicate 2.8 kpc.

References:

Tuffs 1986, MNRAS, 219, 13. Proper motions from 5km maps at 5 GHz ($2'' \times 2''.3$) between 1974 and 1978.
Woan & Duffett-Smith 1990, MNRAS, 243, 87. Structure at 81.5 MHz.
Fesen 1990, AJ, 99, 1904. [NeIII] optical imagery.
Rees 1990, MNRAS, 243, 637. Flux density decrease at 38 MHz.
Anderson *et al.* 1991, ApJ, 373, 146. VLA at 1.4 and 5 GHz ($1''.3$) for spectral variations.
Hook *et al.* 1992, A&A, 255, 285. Flux density decrease at 81.5 MHz.
Holt *et al.* 1994, PASJ, 46, L151. X-ray spectral mapping.
Woan & Duffett-Smith 1993, MNRAS, 260, 693. Deep pulsar search.
Guame *et al.* 1994, ApJ, 425, 127. NH_3 absorption and CO observations.
Iyudin *et al.* 1994, A&A, 284, L1. γ-ray line observations.
Reed *et al.* 1995, ApJ, 440, 706. Optical spectra, for 3-d structure.
Anderson *et al.* 1995, ApJ, 441, 300. VLA at 1.4 GHz and 4.8 GHz (both $1''.3$), for polarization studies.
Anderson & Rudnick 1995, ApJ, 441, 307. VLA at 1.4 GHz and 4.8 GHz, for proper motion studies.
The *et al.* 1995, ApJ, 444, 244. γ-ray observations.
Predehl & Schmitt 1995, A&A, 293, 889. ROSAT of dust scattered halo.
Liszt & Lucas 1995, A&A, 294, 811. NRAO 12-m observations of molecular emission and absorption.
Lawrence *et al.* 1995, AJ, 109, 2635. Optical imaging spectroscopy.
Kassim *et al.* 1995, ApJ, 455, L59. VLA at 74 ($25''$) and 332 MHz ($6''$), including spectral index comparisons.
Anderson & Rudnick 1996, ApJ, 456, 234. VLA for spectral index comparisons.
Agafanov 1996, A&A, 306, 578. Flux density decrease at 102 MHz.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Vink *et al.* 1996, A&A, 307, L41. ASCA spectrum.
Lagage *et al.* 1996, A&A, 315, L273. ISO observations.
Keohane *et al.* 1996, ApJ, 466, 309. Radio and X-ray comparison.
Hurford & Fesen 1996, ApJ, 469, 246. Optical spectroscopy and reddening studies.
Fesen & Gunderson 1996, ApJ, 470, 967. Optical observations of NE ‘jet’.
Allen *et al.* 1997, ApJ, 487, L97. X-ray spectroscopy.
Schwarz *et al.* 1997, A&AS, 123, 43. WST at 1.4 GHz ($30''$) for HI absorption.
Reynoso *et al.* 1997, A&A, 317, 203. VLA at 1.4 GHz ($11'' \times 14''$) for HI absorption.
Favata *et al.* 1997, A&A, 324, L49. X-ray spectroscopy.
Dupraz *et al.* 1997, A&A, 324, 683. γ-ray line detection.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.
Vink *et al.* 1998, A&A, 339, 201. Comparison of ROSAT and Einstein images for expansion studies.
Keohane *et al.* 1998, ApJ, 503, L175. Deep ROSAT image, and comparison with radio.
Koralesky *et al.* 1998, ApJ, 505, L27. Comparison of ROSAT and Einstein images for expansion studies.
Wright *et al.* 1999, ApJ, 518, 284. BIMA at 83 GHz ($6''.5 \times 6''.2$) at 28 GHz, for comparison with other radio images for spectral index studies.
Arendt *et al.* 1999, ApJ, 521, 234. ISO observations.
O’Sullivan & Green 1999, MNRAS, 303, 575. Flux density changes at 13.5, 15.5 and 16.5 GHz.
Agüeros & Green 1999, MNRAS, 305, 957. CLFST at 151 MHz for bulk expansion studies.
Mason *et al.* 1999, AJ, 118, 2908. Flux density at 32 GHz ($S = 194 \pm 5$ Jy).
Vink *et al.* 1999, A&A, 344, 289. X-ray line and continuum observations.
Liszt & Lucas 1999, A&A, 347, 258. NRAO 12-m at 86 GHz ($72'' : S = 101 \pm 3.3$ Jy) and 140 GHz ($44'' : S = 69.6 \pm 6.3$ Jy), plus CO observations.
Douvion *et al.* 1999, A&A, 352, L111. ISO observations.
Hughes *et al.* 2000, ApJ, 528, L109. Chandra observations.
Reichart & Stephens 2000, ApJ, 537, 904. Flux density changes at 1405 MHz.

G112.0 + 1.2

RA: $23^h15^m55^s$ **1-GHz flux/Jy:** 7? **Size/arcmin:** 30?
Dec: $+61°50'$ **Spectral index:** 0.6? **Type:** S?

Radio: Non-thermal source hinted by Bologna survey.

References:

Bonsignori-Facondi & Tomasi 1979, A&A, 77, 93. Bologna at 408 MHz ($4'.2 \times 110' : S = 11 \pm 30\%$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G114.3+0.3

RA: $23^h37^m00^s$ **1-GHz flux/Jy:** 6? **Size/arcmin:** 90×55
Dec: $+61°55'$ **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.

Point sources: Pulsar near centre of remnant.

References:

Reich & Braunsfurth 1981, A&A, 99, 17. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 3.6$ Jy) and $S_{1.4\ \mathrm{GHz}} = 4.4$ Jy from 1.4 GHz survey data, plus HI from Maryland-Green Bank survey.
Kulkarni *et al.* 1993, Natur, 362, 135. Pulsar association.
Fürst *et al.* 1993, A&A, 276, 470. Pulsar association.
Becker *et al.* 1996, A&A, 306, 464. ROSAT of pulsar.
Fesen *et al.* 1997, AJ, 113, 767. Optical observations.

G116.5+1.1

RA: $23^h53^m40^s$ **1-GHz flux/Jy:** 11? **Size/arcmin:** 80×60
Dec: $+63°15'$ **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, A&A, 99, 17. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 4.7 \pm 0.4$ Jy) and $S_{1.4\ \mathrm{GHz}} = 8.0 \pm 0.8$ Jy from 1.4 GHz survey data, plus HI from Maryland-Green Bank survey.
Fesen *et al.* 1997, AJ, 113, 767. Optical observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G116.9+0.2 CTB 1

RA: $23^h59^m10^s$ **1-GHz flux/Jy:** 9? **Size/arcmin:** 34
Dec: $+62°26'$ **Spectral index:** 0.5? **Type:** S

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

Radio: Incomplete shell.

Optical: Filaments on sky survey.

X-ray: Centrally brightened, with NE ‘breakout’.

Point sources: Pulsar to NE.

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

References:

Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 3.9 \pm 1.0$ Jy), and VRO 37-m at 1.7 GHz ($S = 5.5 \pm 2.0$ Jy), plus review of flux densities.
van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 4.2 \pm 0.2$ Jy).
Angerhofer *et al.* 1977, A&A, 55, 11. NRAO 140-ft at 5 GHz ($6'.8 : S = 3.0 \pm 0.3$ Jy).
Dickel & Willis 1980, A&A, 85, 55. WSRT at 610 MHz ($56'' \times 64''$) and 1.4 GHz ($22'' \times 25''$).
Reich & Braunsfurth 1981, A&A, 99, 17. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 4.8 \pm 0.4$ Jy) and $S_{1.4\ \mathrm{GHz}} = 7.8 \pm 0.8$ Jy from 1.4 GHz survey data, plus HI from Maryland-Green Bank survey.
Lozinskaya 1981, SvAL, 7, 17. Mean optical velocity.
Landecker *et al.* 1982, AJ, 87, 1379. DRAO at 1.42 GHz and HI ($2' \times 2'.3 : S = 8.3 \pm 0.5$ Jy), plus review of flux densities.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Hailey & Craig 1994, ApJ, 434, 635. Optical spectroscopy.
Hailey & Craig 1995, ApJ, 455, L151. ROSAT of nearby pulsar.
Fesen *et al.* 1997, AJ, 113, 767. Optical observations.
Craig *et al.* 1997, ApJ, 488, 307. ROSAT observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G117.4+5.0

RA: $23^h54^m20^s$	**1-GHz flux/Jy:** 30?	**Size/arcmin:** 80 × 60?
Dec: +67°30′	**Spectral index:** 0.5?	**Type:** S?

Radio: Non-thermal source hinted by Bologna survey.

References:
Bonsignori-Facondi & Tomasi 1979, A&A, 77, 93. Bologna at 408 MHz (4′.2 × 110′ : $S = 45 \pm 30\%$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G119.5+10.2 CTA 1

RA: $00^h06^m40^s$	**1-GHz flux/Jy:** 36	**Size/arcmin:** 90?
Dec: +72°45′	**Spectral index:** 0.6	**Type:** S

Has been called G119.5+10.3.

Radio: Incomplete shell, with 'breakout' to NW.

Optical: Faint diffuse nebulosities.

X-ray: Centrally brightened.

Point sources: Compact, central X-/γ-ray source.

References:
Sieber *et al.* 1979, A&A, 74, 361. Effelsberg 100-m at 2.7 GHz (4′.4 : $S = 23.6 \pm 2.8$ Jy).
Sieber *et al.* 1981, A&A, 103, 393. Effelsberg 100-m at 2.7 GHz and 1.7 GHz (7′.6 : $S = 31.6 \pm 2.5$ Jy), and 6C at 151 MHz (4′ : $S = 62.6 \pm 6$ Jy).
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.
Simonetti 1992, ApJ, 386, 170. VLA observations of background sources for rotation measure studies.
Pineault *et al.* 1993, AJ, 105, 1060. DRAO at 1.4 GHz (1′ : $S = 34 \pm 4$ Jy), plus HI and IRAS.
Seward *et al.* 1995, ApJ, 453, 284. ROSAT observations.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Slane *et al.* 1997, ApJ, 485, 221. ASCA and ROSAT observations.
Pineault *et al.* 1997, A&A, 324, 1152. DRAO at 408 MHz (3′.5) and 1.4 GHz (1′.0).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Brazier *et al.* 1998, MNRAS, 295, 819. Studies of central, compact γ-ray source.
Mavromatakis *et al.* 2000, A&A, 353, 371. Optical imagery.

G120.1+1.4

Tycho, 3C10, SN1572

RA: $00^h25^m18^s$ **1-GHz flux/Jy:** 56 **Size/arcmin:** 8
Dec: $+64°09'$ **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 NE.

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

Distance: HI absorption gives 4–5 kpc, optical proper motion and modelled shock velocity gives 2.3 kpc.

References:

Duin & Strom 1975, A&A, 39, 33. WSRT at 610 MHz ($57'' \times 64''$) and 5 GHz ($7'' \times 8''$).
Klein *et al.* 1979, A&A, 76, 120. Effelsberg 100-m at 10.7 GHz ($1'.2 : S = 13.1 \pm 0.8$ Jy), plus review of flux densities.
Strom *et al.* 1982, MNRAS, 200, 473. WSRT at 1415 MHz ($27'' \times 31''$) 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, MNRAS, 216, 949. 5km at 2.7 GHz ($4''$) from 1980 and 1983, and OMT at 1.4 GHz ($23''$) from 1965 and 1980, for expansion.
Albinson *et al.* 1986, MNRAS, 219, 427. HI observations.
Green & Gull 1987, MNRAS, 224, 1055. VLA HI absorption observations towards central radio source.
Smith *et al.* 1988, ApJ, 325, 288. EXOSAT spectrum and image (smoothed to $13''$).
Dickel *et al.* 1991, AJ, 101, 2151. VLA at 1.4 and 5 GHz ($1''.5$).
Wood *et al.* 1992, AJ, 103, 1338. VLA at 5 GHz ($1''.5$) polarization studies.
Fink *et al.* 1994, A&A, 283, 635. X-ray spectra.
Vancura *et al.* 1995, ApJ, 441, 680. X-ray spectra and ROSAT image.
Predehl & Schmitt 1995, A&A, 293, 889. ROSAT of dust scattered halo.
Schwarz *et al.* 1995, A&A, 299, 193. WSRT and Effelsberg 100-m at 1.4 GHz ($50''$), and VLA at 1.4 GHz ($13''$), for neutral hydrogen studies.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Hwang & Gotthelf 1997, ApJ, 475, 665. ASCA observations.
Reynoso *et al.* 1997, ApJ, 491, 816. VLA at 1.4 GHz ($1''.4 \times 1''.5$) from 1984 and 1994 for expansion studies.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Reynoso *et al.* 1999, AJ, 117, 1827. VLA at 1.4 GHz ($13''$), for HI studies.
Katz-Stone *et al.* 2000, ApJ, 529, 453. VLA at 333 MHz and 1.4 GHz ($9''.5 \times 7''.7$), for spectral index studies.
Ghavamian *et al.* 2000, ApJ, 535, 266. Optical observations of shock precursors.

G126.2+1.6

RA: $01^h22^m00^s$ **1-GHz flux/Jy:** 7 **Size/arcmin:** 70
Dec: $+64°15'$ **Spectral index:** varies **Type:** S?

Radio: Poorly defined shell.

Optical: Filaments detected.

References:

Reich *et al.* 1979, A&A, 78, L13. Effelsberg 100-m at 1.4 GHz ($9' : S = 6.8 \pm 0.7$ Jy) and 2.7 GHz ($4'.4 : S = 3.9 \pm 0.4$ Jy).
Blair *et al.* 1980, ApJ, 242, 592. Optical detection and spectra.
Rosado 1982, RMxAA, 5, 127. Optical spectra.
Fesen *et al.* 1983, ApJS, 51, 337. Deep [OIII] imagery.
Fürst *et al.* 1984, A&A, 133, 11. Effelsberg 100-m at 2.7 GHz ($4'.4$) and 4.8 GHz ($2'.6$).
Joncas *et al.* 1989, A&A, 219, 303. DRAO at 408 MHz ($3'.5 \times 3'.9 : S = 12 \pm 2.5$ Jy) and part at 1.4 GHz ($1'.1 \times 1'.0$), plus review of flux densities.
Xilouris *et al.* 1993, A&A, 270, 393. Optical imaging.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G127.1+0.5 R5

RA: $01^h28^m20^s$ **1-GHz flux/Jy:** 13 **Size/arcmin:** 45
Dec: $+63°10'$ **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.

Optical: Detected.

Distance: 1.2–1.3 kpc if associated with NGC559.

References:
Caswell 1977, MNRAS, 181, 789. HMT at 1.42 GHz ($3'.5 \times 3'.9$), plus other observations of central source.
Salter *et al.* 1978, A&A, 66, 77. Effelsberg 100-m at 2.7 GHz ($4'.4$), plus 5 and 8.7 GHz of the central source.
Pauls 1977, A&A, 59, L13. Effelsberg 100-m at 1.4 GHz ($9' : S = 8 \pm 1$ Jy).
Reich *et al.* 1979, A&A, 78, L13. Effelsberg 100-m at 1.4 GHz ($9' : S = 10.8 \pm 1.3$ Jy).
Pauls *et al.* 1982, A&A, 112, 120. WSRT at 610 MHz ($56'' \times 62''$) and HI absorption to the point source with the VLA.
Geldzahler & Shaffer 1982, ApJ, 260, L69. Observations of central source.
Fürst *et al.* 1984, A&A, 133, 11. Effelsberg 100-m at 2.7 GHz ($4'.4$) and 4.8 GHz ($2'.6$).
Goss & van Gorkom 1984, JApA, 5, 425. WSRT HI absorption of central source.
Joncas *et al.* 1989, A&A, 219, 303. DRAO at 408 MHz ($3'.5 \times 3'.9 : S = 17.9 \pm 2.0$ Jy) and 1.4 GHz ($1'.13 \times 1'.0 : S = 10.1 \pm 0.8$ Jy), plus review of flux densities.
Xilouris *et al.* 1993, A&A, 270, 393. Optical imaging.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G130.7+3.1 3C58, SN1181

RA: $02^h05^m41^s$ **1-GHz flux/Jy:** 33 **Size/arcmin:** 9×5
Dec: $+64°49'$ **Spectral index:** 0.10 **Type:** F

This is the remnant of the SN of AD1181.

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

Optical: Faint filaments.

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

Point sources: Compact source in X-rays.

Distance: HI absorption indicates 3.2 kpc.

References:
Green *et al.* 1975, A&A, 44, 187. Effelsberg 100-m at 15.0 GHz ($58'' : S = 26.7 \pm 0.5$ Jy).
Wilson & Weiler 1976, A&A, 49, 357. WSRT at 610 MHz ($58'' \times 64''$), 1.4 GHz ($24'' \times 27''$) and 5 GHz ($7'' \times 8''$).
van den Bergh 1978, ApJ, 220, L9. Optical observations.
Becker *et al.* 1982, ApJ, 255, 557. X-ray observations.
Green & Gull 1982, Natur, 299, 606. HI absorption distance.
Fesen 1983, ApJ, 270, L53. Optical spectra.
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, MNRAS, 218, 533. CLFST at 151 MHz ($1'.2 \times 1'.3 : S = 36 \pm 4$ Jy), 5km at 2.7 GHz ($4''$), plus IPC observations for limit on shell.
Green 1987, MNRAS, 225, 11P. Flux density increase at 408 MHz.
Morsi & Reich 1987, A&AS, 69, 533. Effelsberg 100-m at 32 GHz ($26''.5 : S = 24.2 \pm 1.4$ Jy).
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 ($90'' : S = 15.0 \pm 2.0$ Jy), plus review of flux densities.
Asaoka & Koyama 1990, PASJ, 42, 625. Ginga X-ray spectrum.
Green & Scheuer 1992, MNRAS, 258, 833. IRAS upper limits.
Roberts *et al.* 1993, A&A, 274, 427. HI absorption.
Wallace *et al.* 1994, A&A, 286, 565. HI of surroundings.
Helfand *et al.* 1995, ApJ, 453, 741. ROSAT observations.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G132.7+1.3 HB3

RA: $02^h17^m40^s$ **1-GHz flux/Jy:** 45 **Size/arcmin:** 80
Dec: $+62°45'$ **Spectral index:** 0.6 **Type:** S

Has been called G132.4+2.2.

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

Optical: Complete, filamentary shell, shock excited spectra.

X-ray: Partial shell.

Point sources: Pulsar nearby.

Distance: Interaction with surroundings suggests 2.2 kpc.

References:
van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5' : S = 33.8 \pm 7.0$ Jy).
d'Odorico & Sabbadin 1977, A&AS, 28, 439. Optical spectra.
Read 1981, MNRAS, 194, 863. 6C at 151 MHz ($4'.4$) and HMT at 1.4 GHz ($2'$) showing HI shell.
Lozinskaya 1981, SvAL, 7, 17. Mean optical velocity.
Fesen & Gull 1983, PASP, 95, 196. Optical image.
Leahy *et al.* 1985, ApJ, 294, 183. IPC observations.
Landecker *et al.* 1987, AJ, 94, 111. DRAO at 408 MHz ($3'.5 \times 4' : S = 75 \pm 15$ Jy), plus review of flux densities.
Routledge *et al.* 1991, A&A, 247, 529. DRAO at 1.4 GHz ($1'.0 \times 1'.1$) for HI, plus CO observations.
Fesen *et al.* 1995, AJ, 110, 2876. Optical imaging and spectroscopy, DRAO at 408 MHz ($3'.5 \times 4'$) and 1.4 GHz ($1'.0 \times 1'.1$).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA detection of compact OH emission.

G152.2−1.2

RA: $04^h09^m40^s$ **1-GHz flux/Jy:** 16? **Size/arcmin:** 110?
Dec: $+49°30'$ **Spectral index:** 0.7? **Type:** S?

Radio: Non-thermal source hinted by Bologna survey.

References:
Bonsignori-Facondi & Tomasi 1979, A&A, 77, 93. Bologna at 408 MHz ($4'.2 \times 110' : S = 30 \pm 30\%$ Jy).
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G156.2+5.7

RA: $04^h58^m40^s$ **1-GHz flux/Jy:** 5 **Size/arcmin:** 110
Dec: $+51°50'$ **Spectral index:** 0.5 **Type:** S

Radio: Faint shell.

X-ray: Faint shell.

References:
Pfeffermann *et al.* 1991, A&A, 246, L28. ROSAT detection.
Reich *et al.* 1992, A&A, 256, 214. Effelsberg 100-m at 1.4 ($9' : S = 4.2 \pm 1.0$ Jy) and 2.7 GHz ($4'.3 : S = 3.0 \pm 1.0$ Jy), plus HI and IRAS.
Yamauchi *et al.* 1993, PASJ, 45, 795. Hard X-ray observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.
Yamauchi *et al.* 1999, PASJ, 51, 13. ASCA observations of some regions.

G160.9+2.6 HB9

RA: $05^h01^m00^s$ **1-GHz flux/Jy:** 110 **Size/arcmin:** 140×120
Dec: $+46°40'$ **Spectral index:** 0.6 **Type:** S

Has been called G160.5+2.8 and G160.4+2.8.

Radio: Large, filamentary shell.

Optical: Incomplete shell.

X-ray: Centrally brightened.

Point sources: Pulsar within boundary of the remnant, plus several nearby compact radio sources.

Distance: Various observations suggests less than 4 kpc.

References:

d'Odorico & Sabbadin 1977, A&AS, 28, 439. Optical spectra.
Damashek *et al.* 1978, ApJ, 225, L31. Pulsar.
Lozinskaya 1981, SvAL, 7, 17. Mean optical velocity.
Dwarakanath *et al.* 1982, JApA, 3, 207. Radio observations at 34.5 MHz ($26' \times 40' : S = 750 \pm 150$ Jy), plus review of flux densities.
van Gorkom *et al.* 1982, MNRAS, 198, 757. WSRT HI absorption to nearby point source.
Seaquist & Gilmore 1982, AJ, 87, 378. VLA observations of nearby source.
Leahy 1988, ApJ, 322, 917. IPC observations.
Leahy & Roger, 1991, AJ, 101, 1033. DRAO at 408 MHz ($3'.5 \times 4'.8$) and 1.4 GHz ($1'.0 \times 1'.4$), including HI and discussion of distance.
Yamauchi & Koyama 1993, PASJ, 45, 545. Hard X-ray observations.
Leahy & Aschenbach 1995, A&A, 293, 853. ROSAT observations.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Leahy *et al.* 1998, A&A, 339, 601. Miyun at 232 MHz ($3'.8 \times 5'.2$), CLFST at 151 MHz ($4'.2 \times 5'.8$) and Effelsberg 100-m at 4.7 GHz ($2'.5$) for spectral index studies.
Roger *et al.* 1999, A&AS, 137, 7. 22 MHz flux density ($S = 1130 \pm 340$ Jy).

G166.0+4.3 VRO 42.05.01

RA: $05^h26^m30^s$ **1-GHz flux/Jy:** 7? **Size/arcmin:** 55×35
Dec: $+42°56'$ **Spectral index:** 0.4? **Type:** S

Radio: Two arcs of strikingly different radii.

Optical: Nearly complete ring.

X-ray: Predominantly in SW.

Distance: HI indicates 4.5 kpc.

References:

van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 5.2 \pm 1.0$ Jy).
Lozinskaya 1979, AuJPh, 32, 113. Hα interferometry.
Landecker *et al.* 1982, ApJ, 261, L41. DRAO at 1.4 GHz ($1'.0 \times 1'.4$), plus review of flux densities.
Fesen *et al.* 1983, ApJS, 51, 337. Deep [OIII] imagery.
Pineault *et al.* 1985, A&A, 151, 52. VLA at 1.4 GHz ($16'' \times 20''$) of part of remnant, and optical.
Pineault *et al.* 1987, ApJ, 315, 580. DRAO and VLA combined at 1.4 GHz ($20''$).
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Braun & Strom 1986, A&AS, 63, 345. WSRT HI Observations.
Landecker *et al.* 1989, MNRAS, 237, 277. DRAO at 1.4 GHz ($1'.0 \times 1'.4$), including HI.
Burrows & Guo 1994, ApJ, 421, L19. ROSAT images and spectra.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Guo & Burrows 1997, ApJ, 480, L51. ASCA observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G166.2+2.5 OA 184

RA: $05^h19^m00^s$ **1-GHz flux/Jy:** 11 **Size/arcmin:** 90×70
Dec: $+41^\circ 55'$ **Spectral index:** 0.5 **Type:** S

Radio: Large, faint shell.

Optical: Nearly complete ring.

Distance: HI indicates 8 ± 2 kpc.

References:

Willis 1973, A&A, 26, 237. NRAO 300-ft at 2.7 GHz ($5' : S = 6.0 \pm 2.2$ Jy).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo 111 MHz.
Lozinskaya 1981, SvAL, 7, 17. Mean optical velocity.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Routledge *et al.* 1986, MNRAS, 221, 809. DRAO at 1.4 GHz ($1' \times 1'.4 : S = 9.0 \pm 0.5$ Jy) including HI, plus review of flux densities.
Kim *et al.* 1988, AJ, 96, 704. VLA of background sources for magnetic field structure of the remnant.
Leahy & Marshall 1988, MNRAS, 235, 805. IRAS observations.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G179.0+2.6

RA: $05^h53^m40^s$ **1-GHz flux/Jy:** 7 **Size/arcmin:** 70
Dec: $+31^\circ 05'$ **Spectral index:** 0.4 **Type:** S?

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

References:

Fürst & Reich 1986, A&A, 154, 303. Effelsberg 100-m at 1.4 ($9'.4$), 2.7 ($4'.3$) and 4.75 GHz ($2'.4$).
Fürst *et al.* 1989, A&A, 223, 66. Observations of central, extragalactic source.
Lorimer *et al.* 1998, A&A, 331, 1002. Pulsar search.

G180.0−1.7 S147

RA: $05^h39^m00^s$ **1-GHz flux/Jy:** 65 **Size/arcmin:** 180
Dec: $+27^\circ 50'$ **Spectral index:** varies **Type:** S

Radio: Large faint shell, with spectral break.

Optical: Wispy ring.

X-ray: Possible detection.

Point sources: Pulsar within boundary.

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, A&A, 92, 225. Effelsberg 100-m at 2.7 GHz ($5'.5 : S = 34.9 \pm 4$ Jy) and 1.6 GHz ($10' : S = 60.2 \pm 6$ Jy).
Angerhofer & Kundu 1981, AJ, 86, 1003. Arecibo at 430 MHz ($9' : S = 97 \pm 20$ Jy).
Fürst *et al.* 1982, A&A, 115, 428. Observations of compact radio sources near the remnant.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Fürst & Reich 1986, A&A, 163, 185. Effelsberg 100-m at 1.4, 2.7 and 4.7/5.0 GHz ($9'.4, 4'.3$ and $2'.4/2'.6$).
Sauvageot *et al.* 1990, A&A, 227, 183. EXOSAT possible detection.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Anderson *et al.* 1996, ApJ, 468, L55. Pulsar detection.

G182.4+4.3

RA: $06^h08^m10^s$ **1-GHz flux/Jy:** 1.2 **Size/arcmin:** 50
Dec: $+29^\circ 00'$ **Spectral index:** 0.4 **Type:** S

Radio: Incomplete shell.

References:

Kothes *et al.* 1998, A&A, 331, 661. Effelsberg 100-m at 1.4, 2.7, 4.9 and 10.5 GHz ($9'.4 : S = 0.36 \pm 0.08$ Jy, $4'.4 : S = 0.25 \pm 0.04$ Jy, $2'.5 : S = 0.20 \pm 0.02$ Jy and $1'.2 : S = 0.15 \pm 0.03$ Jy), plus X-ray upper limit.

G184.6 – 5.8 Crab Nebula, 3C144, SN1054

RA: $05^h34^m31^s$ **1-GHz flux/Jy:** 1040 **Size/arcmin:** 7×5
Dec: $+22°01'$ **Spectral index:** 0.30 **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: Central ‘torus’ around the pulsar.

Point sources: Pulsar powering the remnant.

Distance: Proper motions and radial velocities give 2 kpc.

References:

Velusamy 1984, Natur, 308, 251. VLA at 1.4 GHz, radio detection of ‘jet’.
Harnden & Seward 1984, ApJ, 283, 279. X-ray observations.
Velusamy 1985, MNRAS, 212, 359. VLA at 1.4 GHz ($15''$).
Aller & Reynolds 1985, ApJ, 293, L73. Flux density decrease.
Fesen & Gull 1986, ApJ, 306, 259. Deep [OIII] imagery of ‘jet’.
Marcelin *et al.* 1990, A&A, 228, 471. Optical of ‘jet’.
Fesen & Blair 1990, ApJ, 351, L45. Optical identification of dust in filaments.
Hester *et al.* 1990, ApJ, 357, 539. Optical and IR images.
Graham *et al.* 1990, ApJ, 352, 172. IR spectroscopy and imaging.
Hickson & van den Bergh 1990, ApJ, 365, 224. Optical polarization.
Bietenholz & Kronberg 1990, ApJ, 357, L13. VLA at 1.4 GHz ($1''.8$).
MacAlpine & Uomoto 1991, AJ, 102, 218. Photometry.
Michel *et al.* 1991, ApJ, 368, 463. Optical photometry.
Bietenholz *et al.* 1991, ApJ, 373, L59. VLA at multiple epochs for expansion studies.
Véron-Cetty & Woltjer 1991, A&A, 251, L31. Limits on optical variations.
Hennessy *et al.* 1992, ApJ, 395, L13. UV imagery.
Fesen *et al.* 1992, ApJ, 399, 599. Optical studies of ‘dark bays’.
Blair *et al.* 1992, ApJ, 399, 611. Far UV observations.
Bietenholz & Kronberg 1992, ApJ, 393, 206. VLA at 1.5 and 5 GHz ($1''.8$) and 1.5 and 14 GHz ($6''.5$) for spectral studies.
Strom & Greidanus 1992, Natur, 358, 654. IRAS observations.
Fesen & Staker 1993, MNRAS, 263, 69. [OIII] imaging of ‘jet’, and proper motion studies.
Kassim *et al.* 1993, AJ, 106, 2218. VLA at 74 MHz ($20''$).
Véron-Cetty & Woltjer 1993, A&A, 270, 370. Continuum and [OIII] photometry.
Nolan *et al.* 1993, ApJ, 409, 697. γ-ray observations.
Strong *et al.* 1993, A&AS, 97, 133. γ-ray observations
Murdin 1994, MNRAS, 269, 89. Deep Hα plates and spectroscopy of halo.
Wallace *et al.* 1994, A&A, 286, 565. HI of surroundings.
MacAlpine *et al.* 1994, ApJ, 432, L131. Prominent optical knots.
Rudy *et al.* 1994, ApJ, 426, 646. IR spectroscopy.
Tanimori *et al.* 1994, ApJ, 429, L61. γ-rays from pulsar.
Predehl & Schmitt 1995, A&A, 293, 889. ROSAT of dust scattered halo.
Lawrence *et al.* 1995, AJ, 109, 2635. Optical imaging spectroscopy.
Frail *et al.* 1995, ApJ, 454, L129. VLA at 333 MHz ($20''$) for limits on shell.
MacAlpine *et al.* 1996, ApJ, 463, 650. Optical spectroscopy of N and S rich filaments.
Nasuti *et al.* 1996, A&A, 314, 849. Spectrophotometry of pulsar.
Bietenholz *et al.* 1997, ApJ, 490, 291. Comparison of VLA observations at 74 MHz, 327 MHz, 1.5 GHz and 5 GHz for spectral index studies.
Blair *et al.* 1997, ApJS, 109, 473. HST imaging.
van der Meulen *et al.* 1998, A&A, 330, 321. γ-ray observations.
Tanimori *et al.* 1998, ApJ, 492, L33. γ-ray observations.
Nugent 1998, PASP, 110, 831. Optical expansion.
Hillas *et al.* 1998, ApJ, 503, 744. γ-ray spectrum.
Sankrit *et al.* 1998, ApJ, 504, 344. HST images.
Wallace *et al.* 1999, ApJS, 124, 181. DRAO at 1.4 GHz ($1'.0 \times 2'.8$), plus Effelsberg 100-m, for HI studies.
Greiveldinger & Aschenbach 1999, ApJ, 510, 305. X-ray variability of torus.
Weisskopf *et al.* 2000, ApJ, 536, L81. Chandra observations.
Sollerman *et al.* 2000, ApJ, 537, 861. HST observations.

G189.1+3.0 IC443, 3C157

RA: $06^h17^m00^s$ **1-GHz flux/Jy:** 160 **Size/arcmin:** 45
Dec: $+22^\circ34'$ **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, A&A, 40, 111. WSRT at 610 MHz ($1' \times 2'.5$), 1415 MHz ($24'' \times 63''$), and part at 5 GHz ($12'' \times 31''$).
Lozinskaya 1981, SvAL, 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 ($13' \times 11'$ to $5'.4 \times 4'.7$), plus review of flux densities.
Braun & Strom 1986, A&A, 164, 193. WSRT at 327 MHz ($72'' \times 185''$) and 1.4 GHz ($17'' \times 43''$), plus HI and IRAS.
Green 1986, MNRAS, 221, 473. CLFST at 151 MHz ($1'.2 \times 3'.1$) and HMT at 1.4 GHz ($2'.1 \times 5'.4$).
Mufson *et al.* 1986, AJ, 92, 1349. Radio, IR, optical, UV and X-ray comparison, including VLA at 1.6 GHz ($3''.8 \times 3''.3$ and $40''$).
Brown *et al.* 1988, ApJ, 334, 852. [FeX] optical imaging.
Dickel *et al.* 1989, AJ, 98, 1363. VLA at 1.4 GHz ($1''.1 \times 1''.2$) of NE.
Petre *et al.* 1988, ApJ, 335, 215. IPC, HRI and other X-ray observations.
Burton *et al.* 1990, ApJ, 355, 197. IR observations of shocked O_2.
Sauvageot *et al.* 1990, A&A, 232, 203. [FeX] and [FeXIV] imaging.
Moorhouse *et al.* 1991, MNRAS, 253, 662. Observations of shocked molecular H_2.
Wood *et al.* 1991, AJ, 102, 224. VLA at 5 GHz ($3''.6 \times 3''.8$) of northeast, including polarization.
Teske 1991, ApJ, 383, 233. [FeX] and [FeXIV] imaging.
Wang & Scoville 1992, ApJ, 386, 158. Observations of shocked molecular species.
Wang *et al.* 1992, PASJ, 44, 303. Ginga X-ray observations.
Turner *et al.* 1992, ApJ, 399, 114. Observations of shocked molecular species.
Dickman *et al.* 1992, ApJ, 400, 203. Observations of shocked molecular species.
Inoue *et al.* 1993, PASJ, 45, 539. Observations of shocked molecular H_2.
van Dishoeck *et al.* 1993, A&A, 279, 541. Observations of shocked molecular species.
Asaoka & Aschenbach 1994, A&A, 284, 573. X-ray, including possible overlapping remnant.
Tauber *et al.* 1994, ApJ, 421, 570. Observations of shocked molecular species.
Richter *et al.* 1995, ApJ, 454, 277. Observations of shocked molecular H_2.
Esposito *et al.* 1996, ApJ, 461, 820. Associated γ-ray emission.
Frail *et al.* 1996, AJ, 111, 1651. OH maser emission.
Keohane *et al.* 1997, ApJ, 484, 350. ASCA observations.
Claussen *et al.* 1997, ApJ, 489, 143. VLA of associated OH masers.
Claussen *et al.* 1997, ApJ, 522, 349. High resolution observations of OH masers.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.
Seta *et al.* 1998, ApJ, 505, 286. CO observations of surroundings.
Oliva *et al.* 1999, A&A, 341, L75. ISO observations.
Cesarsky *et al.* 1999, A&A, 348, 945. ISO observations of shocked molecular H_2.

G192.8−1.1 PKS 0607+17

RA: $06^h09^m20^s$ **1-GHz flux/Jy:** 20? **Size/arcmin:** 78
Dec: $+17^\circ20'$ **Spectral index:** 0.6? **Type:** S

Has been called G193.3−1.5. Has been regarded as part of the Origem Loop, a supposed larger remnant.

Radio: In complex region.

Optical: Encompasses S261 and S254–258.

References:

Milne & Dickel 1974, AuJPh, 27, 549. Parkes 64-m at 2.7 GHz ($9' : S = 13 \pm 15\%$ Jy).
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 318 MHz ($15' : S = 74 \pm 32$ Jy), and $S_{610\ \mathrm{MHz}} = 40$ Jy.
Caswell 1985, AJ, 90, 1076. DRAO at 1.4 GHz ($1' \times 3'.3 : S = 18 \pm 3$ Jy).
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.

$G205.5+0.5$ — Monoceros Nebula

RA: $06^h39^m00^s$ **1-GHz flux/Jy:** 160 **Size/arcmin:** 220
Dec: $+06°30'$ **Spectral index:** 0.5 **Type:** S

Radio: In complex region, parts may be HII 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, AuJPh, 27, 549. Parkes 64-m at 2.7 GHz ($9'$).
Velusamy & Kundu 1974, A&A, 32, 375. NRAO 300-ft at 2.7 GHz ($5'$), part only.
Dickel & DeNoyer 1975, AJ, 80, 437. Arecibo at 111 MHz ($1' : S = 462 \pm 180$ Jy) and $S_{610\ \mathrm{MHz}} = 245$ Jy.
Davies *et al.* 1978, A&AS, 31, 271. Deep optical plates.
Lozinskaya 1981, SvAL, 7, 17. Mean optical velocity.
Graham *et al.* 1982, A&A, 109, 145. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 97.6 \pm 12.5$ Jy), plus review of flux densities.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Leahy *et al.* 1986, MNRAS, 220, 501. IPC observations.
Odegard 1986, ApJ, 301, 813. TPT at 20.6, 25.6 and 30.9 MHz ($24', 19'$ and $16'$).
Esposito *et al.* 1996, ApJ, 461, 820. Possible associated γ-ray emission.
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.
Oliver *et al.* 1996, A&A, 315, 578. CO observations of some of surroundings.
Jaffe *et al.* 1997, ApJ, 484, L129. γ-ray detection.

$G206.9+2.3$ — PKS 0646+06

RA: $06^h48^m40^s$ **1-GHz flux/Jy:** 6 **Size/arcmin:** 60×40
Dec: $+06°26'$ **Spectral index:** 0.5 **Type:** S?

Radio: Diffuse source near the Monoceros Nebula.

Optical: Filaments detected.

X-ray: Possibly detected.

References:

Davies & Meaburn 1978, A&A, 69, 443. Optical.
Nousek *et al.* 1981, ApJ, 248, 152. HEAO-1 X-ray limit.
Graham *et al.* 1982, A&A, 109, 145. Effelsberg 100-m at 2.7 GHz ($4'.4 : S = 4.1 \pm 0.6$ Jy), plus review of flux densities.
Rosado 1982, RMxAA, 5, 127. Optical.
Fesen *et al.* 1985, ApJ, 292, 29. Optical spectra.
Leahy *et al.* 1986, MNRAS, 220, 501. IPC observations.
Odegard 1986, ApJ, 301, 813. TPT at 20.6, 25.6 and 30.9 MHz ($24', 19'$ and $16'$).
Biggs & Lyne 1996, MNRAS, 282, 691. Pulsar search.

$G211.7-1.1$

RA: $06^h45^m40^s$ **1-GHz flux/Jy:** 15? **Size/arcmin:** 70?
Dec: $+00°20'$ **Spectral index:** 0.5? **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, A&A, 77, 93. Bologna at 408 MHz ($4'.2 \times 110' : S = 23 \pm 20\%$ Jy).

$\mathbf{G260.4-3.4}$ Puppis A, MSH 08−44

RA: $08^h22^m10^s$ **1-GHz flux/Jy:** 130 **Size/arcmin:** 60×50
Dec: $-43°00'$ **Spectral index:** 0.5 **Type:** S

This remnant overlaps the Vela SNR (G263.9−3.3).

Radio: Angular shell, brightest to the E, poorly defined to the W.

Optical: Nebulosity and wisps.

X-ray: Brightest to the E.

Point sources: Central pulsar in X-rays.

Distance: Association with HI gives 2.2 ± 0.3 kpc.

References:
Green 1971, AuJPh, 24, 773. Molonglo at 408 MHz ($3' : S=198\pm20$ Jy).
Goudis & Meaburn 1978, A&A, 62, 283. Hα+NII] optical image.
Winkler *et al.* 1981, ApJ, 245, 574. X-ray spectroscopy of O lines.
Winkler *et al.* 1981, ApJ, 245, L27. X-ray spectrum.
Petre *et al.* 1982, ApJ, 258, 22. HRI observations.
Milne *et al.* 1983, MNRAS, 204, 237. FIRST at 1415 MHz ($50''$), large scale emission missing.
Teske & Petre 1987, ApJ, 318, 370. Coronal optical line emission.
Dubner & Arnal 1988, A&AS, 75, 363. HI and CO observations of surroundings.
Arendt *et al.* 1990, ApJ, 350, 266. MOST at 843 MHz ($44''\times65''$), with large scale emission added, plus IR, optical and X-ray observations.
Dubner *et al.* 1991, AJ, 101, 1466. VLA at 327 MHz ($43''\times73''$) and 1.5 GHz ($43''\times77''$).
Arendt *et al.* 1991, ApJ, 368, 474. IR observations.
Milne *et al.* 1993, MNRAS, 261, 366. Parkes 64-m at 4.75 ($4'.5 : S=59\pm5$ Jy) and 8.4 GHz ($3' : S=38\pm4$ Jy), plus polarization.
Berthiaume *et al.* 1994, ApJ, 425, 132. X-ray spectroscopy.
Sutherland & Dopita 1995, ApJ, 439, 365. Spectrophotometry.
Reynoso *et al.* 1995, AJ, 110, 318. VLA at 1.4 GHz ($90''$) including neutral hydrogen.
Blair *et al.* 1995, ApJ, 454, L35. Far UV spectroscopy.
Petre *et al.* 1996, ApJ, 465, L43. ROSAT of central source.
Bock *et al.* 1998, AJ, 116, 1886. MOST at 843 MHz ($43''\times60''$).
Pavlov *et al.* 1999, ApJ, 511, L45. Pulsation detection from central X-ray source.
Zavlin *et al.* 1999, ApJ, 525, 959. X-ray observations of central source.
Bocchino *et al.* 2000, A&A, 359, 316. Optical studies of selected filaments in N.
Gaensler *et al.* 2000, ApJ, 537, L35. Pulsar nebula search.

$\mathbf{G261.9+5.5}$

RA: $09^h04^m20^s$ **1-GHz flux/Jy:** 10? **Size/arcmin:** 40×30
Dec: $-38°42'$ **Spectral index:** 0.4? **Type:** S

Radio: Faint shell with little limb brightening.

References:
Hill 1967, AuJPh, 20, 297. Parkes 64-m at 2650 MHz ($7'.5 : S=7$ Jy) also $S_{1410\ \mathrm{MHz}}=8$ Jy, $S_{81.5\ \mathrm{MHz}}=25$ Jy.
Colomb & Dubner 1980, A&A, 82, 244. Argentine 30-m dish at 1.4 GHz, for HI possibly associated with remnant.
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44''\times71''$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G263.9 – 3.3 Vela (XYZ)

RA: $08^h34^m00^s$ **1-GHz flux/Jy:** 1750 **Size/arcmin:** 255
Dec: $-45°50'$ **Spectral index:** varies **Type:** C

This refers to the whole Vela XYZ complex, of which X has at times been classified as a separate (filled-centre) remnant. This remnant is overlapped by G260.4−3.4 and G266.2−1.2.

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

Optical: Filaments.

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

Point sources: Pulsar within Vela X, with one-sided 'jet'.

Distance: Vela pulsar implies 0.5 kpc, optical spectra and HI studies suggest 0.25 kpc.

References:

Milne 1968, AuJPh, 21, 201. Parkes 64-m at various frequencies, including 408 MHz ($48' : S = 2300 \pm 300$ Jy), 635 MHz ($31' : S = 2360 \pm 300$ Jy), 1410 MHz ($14' : S = 1640 \pm 300$ Jy) and 2650 MHz ($7'.5 : S = 1400 \pm 250$ Jy), plus discussion of the distance.
van den Bergh *et al.* 1973, ApJS, 26, 19. Optical.
Dopita *et al.* 1977, ApJ, 214, 179. Optical spectroscopy.
Hearn *et al.* 1980, ApJ, 235, L67. X-ray map.
Milne 1980, A&A, 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, A&A, 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.
Dwarakanath 1991, JApA, 12, 199. Gauribidanur 'T' array at 34.5 MHz ($26' \times 84' : S = 1800$ Jy for Vela X and $S = 3900$ Jy for Vela YZ), plus review of flux densities.
Bietenholz *et al.* 1991, ApJ, 376, L41. VLA at 5 GHz in vicinity of pulsar.
Raymond *et al.* 1991, ApJ, 383, 226. UV spectroscopy.
Willmore *et al.* 1992, MNRAS, 254, 139. Hard X-ray observations.
Dubner *et al.* 1992, A&AS, 96, 505. Argentine 30-m at 1.4 GHz ($30'$) of surrounding HI.
Oberlack *et al.* 1994, ApJS, 92, 433. γ-ray observations.
Bocchino *et al.* 1994, ApJ, 437, 209. ROSAT observations of NE.
Aschenbach *et al.* 1995, Natur, 373, 587. ROSAT of X-ray extensions.
Strom *et al.* 1995, Natur, 373, 590. Radio of X-ray extensions.
Markwardt & Ögelman 1995, Natur, 375, 40. X-ray jet from pulsar.
Jenkins & Wallerstein 1995, ApJ, 440, 227. Optical absorption of associated neutral carbon cloud.
Milne 1995, MNRAS, 277, 1435. Parkes 64-m at 8.4 GHz ($3'$), inlcuding polarization, of Vela X.
Duncan *et al.* 1996, MNRAS, 280, 252. Parkes 64-m at 2.4 GHz ($8'.9$).
Danks & Sembach 1995, AJ, 109, 2627. Optical spectroscopy of background stars.
de Jager *et al.* 1996, ApJ, 460, 729. γ-ray detection.
Blair *et al.* 1995, AJ, 110, 312. UV spectroscopy.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 62''$) of part.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m and ATCA OH observations.
Frail *et al.* 1997, ApJ, 475, 224. VLA at 330 MHz ($1' \times 1'.8$) and comparison with ROSAT observations of Vela X.
Markwardt & Ögelman 1997, ApJ, 480, L13. ASCA observations of pulsar 'jet'.
Raymond *et al.* 1997, ApJ, 482, 881. UV spectroscopy.
Yoshikoshi *et al.* 1997, ApJ, 487, L65. γ-ray observations of pulsar.
Jenkins *et al.* 1998, ApJ, 492, L147. UV absorption to background star.
Dubner *et al.* 1998, AJ, 116, 813. Parkes 64-m at 1.4 GHz ($15'$) for HI studies.
Bock *et al.* 1998, AJ, 116, 1886. MOST at 843 MHz ($43'' \times 60''$).
Cha *et al.* 1999, ApJ, 515, L25. Optical spectra, for distance.

G266.2 – 1.2

RA: $08^h52^m00^s$ **1-GHz flux/Jy:** 50? **Size/arcmin:** 120
Dec: $-46°20'$ **Spectral index:** 0.3? **Type:** S

This remnant overlaps the Vela SNR (G263.9−3.3).

Radio: Incomplete shell, confused by the Vela SNR.

X-ray: Harder spectrum shell, confused by the Vela SNR.

Distance: X-ray data suggest an upper limit of 1 kpc.

References:

Aschenbach 1998, Natur, 396, 141. ROSAT identification.
Iyudin *et al.* 1998, Natur, 396, 142. γ-ray observations.
Combi *et al.* 1999, ApJ, 519, L177. Radio observations.

G272.2 − 3.2

RA: $09^h06^m50^s$ **1-GHz flux/Jy:** 0.4 **Size/arcmin:** 15?
Dec: $-52°02'$ **Spectral index:** 0.6 **Type:** S?

Radio: Diffuse shell.

X-ray: Centrally brightened.

Optical: Detected.

References:

Greiner *et al.* 1994, A&A, 286, L35. ROSAT observations, plus optical.
Duncan *et al.* 1997, MNRAS, 289, 97. Parkes 64-m at 1.4 GHz ($18'$: $S = 0.38 \pm 0.09$ Jy) 2.4 GHz ($10'.6$: $S = 0.25 \pm 0.04$ Jy) and 4.8 GHz ($5'.7$: $S = 0.17 \pm 0.02$ Jy), MOST at 843 MHz ($45'' \times 70''$: $S = 0.45 \pm 0.10$ Jy), and ATCA at 2.4 GHz ($37'' \times 52''$), plus ROSAT observations.

G279.0 + 1.1

RA: $09^h57^m40^s$ **1-GHz flux/Jy:** 30? **Size/arcmin:** 95
Dec: $-53°15'$ **Spectral index:** 0.6? **Type:** S

Radio: Faint, incomplete shell.

Point sources: Pulsar nearby.

References:

Woermann & Jonas 1988, MNRAS, 234, 971. Hartesbeesthoek 26-m at 1.6 ($30'$: $S = 25.2 \pm 4$ Jy) and 2.3 GHz ($20'$: $S = 20.7 \pm 3$ Jy).
Duncan *et al.* 1995, MNRAS, 277, 319. Parkes 64-m at 1.4 ($18'$: $S = 28 \pm 3$ Jy) and 2.4 GHz ($11'$: $S = 20 \pm 2$ Jy), including polarization.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 53''$) of part.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G284.3 − 1.8 MSH 10−5*3*

RA: $10^h18^m15^s$ **1-GHz flux/Jy:** 11? **Size/arcmin:** 24?
Dec: $-59°00'$ **Spectral index:** 0.3? **Type:** S

Has been called G284.2−1.8.

Radio: Incomplete, poorly defined shell.

References:

Ruiz & May 1986, ApJ, 309, 667. CO and optical observations.
Milne *et al.* 1989, PASAu, 8, 187. MOST at 843 MHz ($43'' \times 50''$) and Parkes 64-m at 8.4 GHz ($3'$: $S = 5.4 \pm 0.8$ Jy) including polarization, plus earlier flux densities.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m and ATCA OH observations.

G286.5 − 1.2

RA: $10^h35^m40^s$ **1-GHz flux/Jy:** 1.4? **Size/arcmin:** 26×6
Dec: $-59°42'$ **Spectral index:** ? **Type:** S?

Radio: Double, elongated arc.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 50''$: $S = 1.6$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G289.7 − 0.3

RA: $11^h01^m15^s$ **1-GHz flux/Jy:** 6.2 **Size/arcmin:** 18×14
Dec: $-60°18'$ **Spectral index:** 0.2? **Type:** S

Radio: Incomplete shell.

Point sources: Compact radio source near centre.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 50''$: $S = 6.4 \pm 0.5$ Jy), plus Parkes 64-m at 4.5 GHz ($S = 7.5 \pm 2.5$ Jy) and 8.55 GHz ($S = 3.6 \pm 0.9$ Jy).

$\mathbf{G290.1-0.8}$ MSH 11−61A

RA: $11^h03^m05^s$ **1-GHz flux/Jy:** 42 **Size/arcmin:** 19×14
Dec: $-60°56'$ **Spectral index:** 0.4 **Type:** S

Radio: Elongated, clumpy shell.

Optical: Filaments detected.

X-ray: Detected.

Point sources: Pulsar nearby.

References:
Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4 : S = 20.2$ Jy).
Elliot & Malin 1979, MNRAS, 186, 45P. Optical image and spectra.
Kirshner & Winkler 1979, ApJ, 227, 853. Optical.
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 50''$).
Milne *et al.* 1989, PASAu, 8, 187. MOST at 843 MHz ($43'' \times 49'' : S = 45 \pm 11$ Jy), and Parkes 64-m at 8.4 GHz ($3' : S = 19.5 \pm 1.0$ Jy), including polarization.
Seward 1990, ApJS, 73, 781. IPC observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49'' : S = 43$ Jy).
Rosado *et al.* 1996, A&A, 315, 243. Optical kinematics.
Kaspi *et al.* 1997, ApJ, 485, 820. Pulsar detection.
Gotthelf & Kaspi 1998, ApJ, 497, L29. ASCA observations of pulsar.

$\mathbf{G291.0-0.1}$ (MSH 11−62)

RA: $11^h11^m54^s$ **1-GHz flux/Jy:** 16 **Size/arcmin:** 15×13
Dec: $-60°38'$ **Spectral index:** 0.29 **Type:** C

Radio: Centrally brightened core, with surrounding arcs.

X-ray: Centrally brightened.

Point sources: Central compact X-ray source.

References:
Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Roger *et al.* 1986, MNRAS, 219, 815. MOST at 843 MHz ($43'' \times 50'' : S = 17.2 \pm 1.0$ Jy), and Parkes 64-m at 5 and 8.4 GHz ($4'.6$ and $3' : S = 10.4 \pm 0.4$ Jy and $9'.1 \pm 0.2$), with polarization.
Wilson 1986, ApJ, 302, 718. IPC observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49'' : S = 12.7$ Jy).
Harrus *et al.* 1998, ApJ, 499, 273. ASCA observations.

$\mathbf{G292.0+1.8}$ MSH 11−54

RA: $11^h24^m36^s$ **1-GHz flux/Jy:** 15 **Size/arcmin:** 12×8
Dec: $-59°16'$ **Spectral index:** 0.4 **Type:** C?

Radio: Centrally brightened source surrounded by a plateau of faint emission.

Optical: Oxygen rich.

X-ray: Ring of emission.

References:
Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Goss *et al.* 1979, MNRAS, 188, 357. Optical spectra.
Lockhart *et al.* 1977, MNRAS, 179, 147. Fleurs at 1415 MHz ($50'' : S = 13.0$ Jy).
Clark *et al.* 1980, MNRAS, 193, 129. X-ray spectrum.
Tuohy *et al.* 1982, ApJ, 260, L65. HRI observations.
Dopita & Tuohy 1984, ApJ, 282, 135. Optical spectra.
Braun *et al.* 1986, A&A, 162, 259. MOST at 843 MHz ($0'.8$) and IRAS.
Hughes & Singh 1994, ApJ, 422, 126. EXOSAT spectrum.
Sutherland & Dopita 1995, ApJ, 439, 365. Spectrophotometry.

$G293.8+0.6$

RA: $11^{h}35^{m}00^{s}$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 20
Dec: $-60°54'$ **Spectral index:** 0.6? **Type:** C

Radio: Central source, with faint extended plateau.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 9.0$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 2.1$ Jy).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 51''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49'' : S = 2.6$ Jy).

$G294.1-0.0$

RA: $11^{h}36^{m}10^{s}$ **1-GHz flux/Jy:** >2? **Size/arcmin:** 40
Dec: $-61°38'$ **Spectral index:** ? **Type:** S

Radio: Faint shell.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49'' : S > 2$).

$G296.1-0.5$

RA: $11^{h}51^{m}10^{s}$ **1-GHz flux/Jy:** 8? **Size/arcmin:** 37×25
Dec: $-62°34'$ **Spectral index:** 0.6? **Type:** S

Incorporates the previously catalogued remnant G296.1−0.7. Has been called G296.05−0.50.

Radio: Irregular shell, with nearby HII regions.

Optical: Detected.

X-ray: Detected.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 6.9$ Jy) and Parkes 64-m at 5 GHz ($4' : S > 0.74$) poor 5-GHz map (of G296.1−0.7).
Longmore *et al.* 1977, MNRAS, 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 ($3' : S = 12.4$ Jy).
Bignami *et al.* 1986, ApJ, 302, 606. EXOSAT, IPC and HRI observations.
Hwang & Markert 1994, ApJ, 431, 819. ROSAT observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S > 2.4$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G296.5+10.0 PKS 1209−51/52

RA: $12^h09^m40^s$ **1-GHz flux/Jy:** 48 **Size/arcmin:** 90×65
Dec: $-52°25'$ **Spectral index:** 0.5 **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: Central neutron star.

References:

Irvine & Irvine 1974, ApJ, 192, L111. Optical.
Danziger & Dennefeld 1976, PASP, 88, 44. Optical spectra.
Dickel & Milne 1976, AuJPh, 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, MNRAS, 225, 199. EXOSAT of the west of the remnant, including the compact source.
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 56''$).
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 ($44'' \times 56''$).
Bignami *et al.* 1992, ApJ, 389, L67. Optical in vicinity of X-ray source.
Milne & Haynes 1994, MNRAS, 270, 106. Parkes 64-m at 2.4 GHz ($8'.3 : S = 33 \pm 3$ Jy), 4.8 GHz ($4'.5 : S = 23.3 \pm 3$ Jy) and 8.4 GHz ($3'.0 : 18.8 \pm 3$), including polarization and review of flux densities.
Mereghetti *et al.* 1996, ApJ, 464, 842. Radio, optical and X-tray observations of central source.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m and ATCA OH observations.
Vasisht *et al.* 1997, ApJ, 476, L43. ASCA observations of neutron star.
Zavlin *et al.* 1998, A&A, 331, 821. ROSAT and ASCA observations of neutron star.
Giacani *et al.* 2000, AJ, 119, 281. ATCA at 1.4 GHz ($2'.7 \times 4'.0$) for HI studies.

G296.8−0.3 1156−62

RA: $11^h58^m30^s$ **1-GHz flux/Jy:** 9 **Size/arcmin:** 20×14
Dec: $-62°35'$ **Spectral index:** 0.6 **Type:** S

Radio: Shell, brighter to the NW.

Distance: HI absorption gives 9.6 ± 0.6 kpc.

X-ray: Detected.

References:

Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 15.0$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 3.2$ Jy).
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Hwang & Markert 1994, ApJ, 431, 819. ROSAT observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S = 9.2$ Jy).
Gaensler *et al.* 1998, MNRAS, 296, 813. ATCA at 1.3 GHz ($22'' \times 24'' : S = 7.0 \pm 0.3$ Jy), including polarisation and HI observations, plus review of flux densities.

G298.5−0.3

RA: $12^h12^m40^s$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 5?
Dec: $-62°52'$ **Spectral index:** 0.4? **Type:** ?

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

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Hwang & Markert 1994, ApJ, 431, 819. ROSAT upper limit.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S = 1.8$ Jy).

G298.6 − 0.0

RA: $12^h13^m41^s$ | **1-GHz flux/Jy:** 5? | **Size/arcmin:** 12×9
Dec: $-62°37'$ | **Spectral index:** 0.3 | **Type:** S

Has been called G298.6−0.1.

Radio: Incomplete shell, in complex region.

References:
Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44''\times50''$).
Hwang & Markert 1994, ApJ, 431, 819. ROSAT upper limit.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times48'':S=7.4$ Jy).

G299.2 − 2.9

RA: $12^h15^m13^s$ | **1-GHz flux/Jy:** 0.5? | **Size/arcmin:** 18×11
Dec: $-65°30'$ | **Spectral index:** ? | **Type:** S

Radio: Faint source.

X-ray: Centrally brightened.

Optical: Filaments in W.

References:
Busser *et al.* 1996, A&A, 310, L1. ROSAT detection, plus optical studies.
Slane *et al.* 1996, ApJ, 465, 840. Einstein, IRAS and radio observations.
Bai & Wang 2000, ApJ, 539, 760. ASCA observations.

G299.6 − 0.5

RA: $12^h21^m45^s$ | **1-GHz flux/Jy:** 1.0? | **Size/arcmin:** 13
Dec: $-63°09'$ | **Spectral index:** ? | **Type:** S

Radio: Faint shell, brightest to E.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times48'':S=1.1$ Jy).

G301.4 − 1.0

RA: $12^h37^m55^s$ | **1-GHz flux/Jy:** 2.1? | **Size/arcmin:** 37×23
Dec: $-63°49'$ | **Spectral index:** ? | **Type:** S

Radio: Faint, incomplete shell, with possible extensionm to southwest.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times48'':S=2.3$ Jy).

G302.3 + 0.7

RA: $12^h45^m55^s$ | **1-GHz flux/Jy:** 5? | **Size/arcmin:** 17
Dec: $-62°08'$ | **Spectral index:** 0.4? | **Type:** S

Radio: Distorted shell, in complex region, with possibly associated filament.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3':S=7.5$ Jy) and Parkes 64-m at 5 GHz ($4':S=3.0$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times49'':S=3.2$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.

G304.6+0.1 Kes 17

RA: $13^{\mathrm{h}}05^{\mathrm{m}}59^{\mathrm{s}}$ **1-GHz flux/Jy:** 14 **Size/arcmin:** 8
Dec: $-62°42'$ **Spectral index:** 0.5 **Type:** S

Radio: Incomplete shell.

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

References:
Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4 : S = 6.9$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S = 18$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.

G308.1−0.7

RA: $13^{\mathrm{h}}37^{\mathrm{m}}37^{\mathrm{s}}$ **1-GHz flux/Jy:** 1.2? **Size/arcmin:** 13
Dec: $-63°04'$ **Spectral index:** ? **Type:** S

Radio: Faint shell.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S = 1.3$ Jy).

G308.8−0.1

RA: $13^{\mathrm{h}}42^{\mathrm{m}}30^{\mathrm{s}}$ **1-GHz flux/Jy:** 15? **Size/arcmin:** 30×20?
Dec: $-62°23'$ **Spectral index:** 0.4? **Type:** C?

Incorporates previous catalogued remnant G308.7+0.0.

Radio: Bright ridge in north, and arc to south.

Point sources: Pulsar near centre of remnant.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 16.7$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 7.0$ Jy).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4 : S = 6.5$ Jy).
Caswell *et al.* 1981, MNRAS, 195, 89. FIRST at 1415 MHz ($50''$).
Wilson 1986, ApJ, 302, 718. Lack of detection with IPC.
Caswell *et al.* 1992, ApJ, 399, L151. MOST at 843 MHz ($43'' \times 49''$).
Kaspi *et al.* 1992, ApJ, 399, L155. Pulsar observations.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G309.2−0.6

RA: $13^{\mathrm{h}}46^{\mathrm{m}}31^{\mathrm{s}}$ **1-GHz flux/Jy:** 7? **Size/arcmin:** 15×12
Dec: $-62°54'$ **Spectral index:** 0.4? **Type:** S

Has been called G309.2−0.7.

Radio: Distorted shell.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 10.0$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 3.9$ Jy).
Caswell *et al.* 1981, MNRAS, 195, 89. FIRST at 1415 MHz ($1'.5$).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 50''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S = 6$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Gaensler *et al.* 1998, MNRAS, 299, 812. ATCA at 1.3 GHz ($24'' \times 23'' : S = 5.2 \pm 0.2$ Jy).

G309.8+0.0

RA: $13^h50^m30^s$ **1-GHz flux/Jy:** 17 **Size/arcmin:** 25×19
Dec: $-62°05'$ **Spectral index:** 0.5 **Type:** S

Radio: Distorted shell.

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

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3'$: $S = 26.4$ Jy) and Parkes 64-m at 5 GHz ($4'$: $S = 7.4$ Jy).
Caswell *et al.* 1980, MNRAS, 190, 881. FIRST at 1415 MHz ($1'$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49''$: $S > 8.8$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G310.6 – 0.3 Kes 20B

RA: $13^h58^m00^s$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 8
Dec: $-62°09'$ **Spectral index:** ? **Type:** S

Radio: Asymmetric shell.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49''$: $S = 5.4$ Jy).

G310.8 – 0.4 Kes 20A

RA: $14^h00^m00^s$ **1-GHz flux/Jy:** 6? **Size/arcmin:** 12
Dec: $-62°17'$ **Spectral index:** ? **Type:** S

Radio: Arc in E, in complex region.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49''$: $S = 6.9$ Jy).

G311.5 – 0.3

RA: $14^h05^m38^s$ **1-GHz flux/Jy:** 3? **Size/arcmin:** 5
Dec: $-61°58'$ **Spectral index:** 0.5 **Type:** S

Radio: Shell, not well resolved.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Caswell & Barnes 1985, MNRAS, 216, 753. Molonglo at 408 MHz ($3'$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49''$: $S = 2.9$ Jy).

G312.4 – 0.4

RA: $14^h13^m00^s$ **1-GHz flux/Jy:** 45 **Size/arcmin:** 38
Dec: $-61°44'$ **Spectral index:** 0.36 **Type:** S

Radio: Irregular, incomplete shell.

References:

Caswell & Barnes 1985, MNRAS, 216, 753. Molonglo at 408 MHz ($3'$: $S = 56$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49''$: $S > 19$), plus Parkes 64-m at 4.5 GHz ($S = 30 \pm 2$ Jy) and 8.55 GHz ($S = 17 \pm 4$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Roberts *et al.* 1999, ApJ, 515, 712. MOST at 843 MHz ($43'' \times 49''$).

G315.4 – 2.3 RCW 86, MSH 14–63

RA: $14^h43^m00^s$ **1-GHz flux/Jy:** 49 **Size/arcmin:** 42
Dec: $-62°30'$ **Spectral index:** 0.6 **Type:** S

Possibly 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, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 86$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 18.2$ Jy).
Dickel & Milne 1976, AuJPh, 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, MNRAS, 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, A&A, 183, 118. MOST at 843 MHz ($44'' \times 50''$).
Long & Blair 1990, ApJ, 358, L13. Balmer dominated optical filaments.
Greidanus & Strom 1990, A&A, 240, 385. IRAS observations.
Kaastra *et al.* 1992, A&A, 264, 654. Ginga X-ray spectra.
Strom 1994, MNRAS, 268, L5. Historical association
Chin & Huang 1994, Natur, 371, 398. Questioning of historical association.
Schaefer 1995, AJ, 110, 1793. Questioning of historical association.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 48'' : S > 22$).
Rosado *et al.* 1996, A&A, 315, 243. Optical kinematics.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Smith *et al.* 1997, AJ, 114, 2664. Observations of Balmer dominated filaments.
Vink *et al.* 1997, A&A, 328, 628. ASCA spectroscopy.
Bocchino *et al.* 2000, A&A, 360, 671. ASCA observations of N and SW.

G315.4 – 0.3

RA: $14^h35^m55^s$ **1-GHz flux/Jy:** 8 **Size/arcmin:** 24×13
Dec: $-60°36'$ **Spectral index:** 0.4 **Type:** ?

Radio: Irregular non-thermal emission, with HII region superposed in E.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 15.9$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 4.9$ Jy).
Caswell *et al.* 1981, MNRAS, 195, 89. FIRST at 1415 MHz ($50'' : S = 6.25$ Jy), re-assessment of earlier flux densities.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 49'' : S = 3.1$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.

G315.9 – 0.0

RA: $14^h38^m25^s$ **1-GHz flux/Jy:** 0.8? **Size/arcmin:** 25×14
Dec: $-60°11'$ **Spectral index:** ? **Type:** S

Has been called G315.8–0.0.

Radio: Faint, distorted shell, with steep-spectrum ‘jet’?

References:

Kesteven *et al.* 1987, AuJPh, 40, 855. MOST at 843 MHz ($44'' \times 50''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 50'' : S = 0.9$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m and ATCA OH observations.

$\mathbf{G316.3-0.0}$ (MSH 14−57)

RA: $14^h41^m30^s$ **1-GHz flux/Jy:** 20? **Size/arcmin:** 29×14
Dec: $-60°00'$ **Spectral index:** 0.4 **Type:** S

Radio: Distorted shell, with possible 'blowout'.

Distance: HI absorption data suggests >7.2 kpc.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4: S=16.7$ Jy).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44''\times51''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times50'': S=20$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G317.3-0.2}$

RA: $14^h49^m40^s$ **1-GHz flux/Jy:** 4.7? **Size/arcmin:** 11
Dec: $-59°46'$ **Spectral index:** ? **Type:** S

Radio: Incomplete shell.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times50'': S=5.2$ Jy).

$\mathbf{G318.2+0.1}$

RA: $14^h54^m50^s$ **1-GHz flux/Jy:** >3.9? **Size/arcmin:** 40×35
Dec: $-59°04'$ **Spectral index:** ? **Type:** S

Radio: Faint shell, with central HII region.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times50'': S>4.3$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G318.9+0.4}$

RA: $14^h58^m30^s$ **1-GHz flux/Jy:** 4? **Size/arcmin:** 30×14
Dec: $-58°29'$ **Spectral index:** 0.2? **Type:** C

May not be a SNR?

Radio: Complex arcs, with off-centre core.

References:

Whiteoak 1990, Natur, 347, 157. MOST at 843 MHz ($43''\times51''$).
Whiteoak 1993, ApJ, 415, 701. MOST at 843 MHz ($43''\times51'': S=4.8\pm0.6$ Jy), Parkes 64-m at 4.5 GHz ($4'.7: S=3.7\pm0.2$ Jy) and 8.4 GHz ($2'.8: S=3.0\pm0.4$ Jy) including polarization, and ATCA at 1.4 GHz and 4.8 GHz ($11''\times13''$) of core.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times50'': S=4.8$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G320.4 – 1.2 MSH 15−52, RCW 89

RA: $15^h14^m30^s$ **1-GHz flux/Jy:** 60? **Size/arcmin:** 35
Dec: $-59°08'$ **Spectral index:** 0.4 **Type:** C

Has been suggested as the remnant of the SN of AD185?

Radio: Ragged shell.

Optical: RCW 89 is the Hα emitting region to the NW.

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

Point sources: Radio and X-ray pulsar, plus IR compact source.

Distance: HI absorption indicates 5.2 kpc.

References:

Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Dickel & Milne 1976, AuJPh, 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, MNRAS, 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.
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.
Lortet *et al.* 1987, A&A, 180, 65. Optical observations.
Trussoni *et al.* 1990, A&A, 234, 403. EXOSAT observations.
Asaoka & Koyama 1990, PASJ, 42, 625. Ginga X-ray spectrum.
Arendt 1991, AJ, 101, 2160. IRAS observations, including compact source.
Milne *et al.* 1993, MNRAS, 264, 853. Parkes 64-m at 4.8 GHz ($4'.5 : S = 37 \pm 7$ Jy) and 8.4 GHz ($3'.0 : S = 24 \pm 4$ Jy), including polarization and review of flux densities.
Strom 1994, MNRAS, 268, L5. Historical association.
Chin & Huang 1994, Natur, 371, 398. Questioning of historical association.
Matz *et al.* 1994, ApJ, 434, 288. X-ray observations of pulsar.
Schaefer 1995, AJ, 110, 1793. Questioning of historical association.
Du Plessis *et al.* 1995, ApJ, 453, 746. Hartesbeesthoek 26-m at 2.3, 5 and 8.5 GHz ($S = 42, 35.6, 14.5$ Jy).
Greiveldinger *et al.* 1995, ApJ, 454, 855. ROSAT observations.
Trassoni *et al.* 1996, A&A, 306, 581. ROSAT observations.
Tamura *et al.* 1996, PASJ, 48, L33. ASCA observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 50'' : S = 62$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Marsden *et al.* 1997, ApJ, 491, L39. X-ray spectroscopy.
Brazier & Becker 1997, MNRAS, 284, 335. ROSAT observations.
Gaensler *et al.* 1999, MNRAS, 305, 724. ATCA at 1.4 GHz ($24'' \times 21''$), plus HI observations, and 5.3 GHz ($15'' \times 10''$).

G320.6 – 1.6

RA: $15^h17^m50^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 60×30
Dec: $-59°16'$ **Spectral index:** ? **Type:** S

Radio: Faint shell, overlapping G320.4−1.2 in W.

References:

Milne *et al.* 1993, MNRAS, 264, 853. Parkes 64-m at 4.8 GHz ($4'.5$) and 8.4 GHz ($3'.0$), including polarization.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 50'' : S > 9.3$).

G321.9 – 1.1

RA: $15^h23^m45^s$ **1-GHz flux/Jy:** >3.4? **Size/arcmin:** 28
Dec: $-58°13'$ **Spectral index:** ? **Type:** S

Radio: Faint shell.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 51'' : S > 3.8$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G321.9 − 0.3

RA: $15^h20^m40^s$ **1-GHz flux/Jy:** 13 **Size/arcmin:** 31×23
Dec: $-57°34'$ **Spectral index:** 0.3 **Type:** S

Radio: Shell brighter to the W, with Cir X-1 to N.

Point sources: Compact, probably thermal source at S edge.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 18.3$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 7.8$ Jy).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 52''$).
Stewart *et al.* 1993, MNRAS, 261, 593. ATCA at 1.5 GHz ($21''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 51'' : S > 8.3$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G322.5 − 0.1

RA: $15^h23^m23^s$ **1-GHz flux/Jy:** 1.5 **Size/arcmin:** 15
Dec: $-57°06'$ **Spectral index:** 0.4 **Type:** C

Radio: Shell with central extended source.

Point sources: PN Pe 2-8 within boundary.

References:
Whiteoak 1992, MNRAS, 256, 121. MOST at 843 MHz ($43'' \times 51'' : S = 2.0 \pm 0.3$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 51'' : S = 1.7$ Jy), plus Parks 64-m at 4.5 GHz ($= 0.89 \pm 0.13$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G323.5 + 0.1

RA: $15^h28^m42^s$ **1-GHz flux/Jy:** 3? **Size/arcmin:** 13
Dec: $-56°21'$ **Spectral index:** 0.4? **Type:** S

Radio: Distorted shell, confused with thermal emission.

Point sources: Compact, probably thermal source near centre.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 4.2$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 1.5$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 52'' : S = 4.2$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G326.3 − 1.8 MSH 15−5*6*

RA: $15^h53^m00^s$ **1-GHz flux/Jy:** 145 **Size/arcmin:** 38
Dec: $-56°10'$ **Spectral index:** varies **Type:** C

Has been called G326.2−1.7.

Radio: Shell, with flat spectrum core.

Optical: Emission around the shell.

X-ray: Shell, with central extended emission.

References:
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3' : S = 180$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Milne *et al.* 1979, MNRAS, 188, 437. FIRST at 1415 MHz ($0'.8 : S > 95$) and Parkes 64-m at 14.7 GHz ($2'.2 : S = 69 \pm 8$ Jy).
van den Bergh 1979, ApJ, 227, 497. Optical observations.
Zealey *et al.* 1979, A&AS, 38, 39. Optical observations.
Dennefeld 1980, PASP, 92, 603. Optical spectra.
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 53''$).
Milne *et al.* 1989, PASAu, 8, 187. MOST at 843 MHz ($43'' \times 52'' : S = 153 \pm 40$ Jy), and Parkes 64-m at 8.4 GHz ($3' : S = 68 \pm 5$ Jy), including polarization.
Seward 1990, ApJS, 73, 781. IPC observations.
Kassim *et al.* 1993, ApJ, 419, 733. ROSAT image.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 52'' : S > 130$).
Rosado *et al.* 1996, A&A, 315, 243. Optical kinematics.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G327.1-1.1$

RA: $15^{h}54^{m}25^{s}$ **1-GHz flux/Jy:** 7? **Size/arcmin:** 18
Dec: $-55°09'$ **Spectral index:** ? **Type:** C

Radio: Shell, with off-centre core.

X-ray: Diffuse, with core.

References:

Milne & Dickel 1974, AuJPh, 27, 549. Parkes 64-m at 2.7 GHz ($8'.4 : S = 10 \pm 15\%$ Jy).
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 10.6$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 4.3$ Jy).
Lamb & Markert 1981, ApJ, 244, 94. IPC observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 52'' : S = 7.6$ Jy).
Seward *et al.* 1996, ApJ, 471, 887. ROSAT observations.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Sun *et al.* 1999, ApJ, 511, 274. ASCA and ROSAT observations.

$G327.4+0.4$ Kes 27

RA: $15^{h}48^{m}20^{s}$ **1-GHz flux/Jy:** 30? **Size/arcmin:** 21
Dec: $-53°49'$ **Spectral index:** 0.6 **Type:** S

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

Radio: Incomplete, multi-arc shell, brightest to the SE.

X-ray: Diffuse, best defined to E.

References:

Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 58$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 12.4$ Jy).
Dickel & Milne 1976, AuJPh, 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, A&A, 183, 118. MOST at 843 MHz ($44'' \times 55''$).
Milne *et al.* 1989, PASAu, 8, 187. MOST at 843 MHz ($43'' \times 53'' : S = 32.2 \pm 6$ Jy), and Parkes 64-m at 8.4 GHz ($3' : S = 9.4 \pm 0.8$ Jy), including polarization.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 53'' : S = 25$ Jy).
Seward *et al.* 1996, ApJ, 471, 887. ROSAT observations.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m and ATCA OH observations.

$G327.4+1.0$

RA: $15^{h}46^{m}48^{s}$ **1-GHz flux/Jy:** 1.9? **Size/arcmin:** 14
Dec: $-53°20'$ **Spectral index:** ? **Type:** S

Radio: Asymmetric shell.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 54'' : S = 2.1$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G327.6+14.6 SN1006, PKS 1459−41

RA: $15^h02^m50^s$ **1-GHz flux/Jy:** 19 **Size/arcmin:** 30
Dec: $-41°56'$ **Spectral index:** 0.6 **Type:** S

This is the remnant of the SN of AD1006.

Radio: Shell, with two bright arcs.

Optical: Filaments to the NW, with broad Hα component.

X-ray: Thermal shell, with non-thermal limb-brightened arcs.

Point sources: The background Schweizer–Middleditch star is near the middle of the remnant.

Distance: Optical spectra and proper motion indicate 1.7–3.1 kpc, modelling spectra gives 1.8 ± 0.3 kpc.

References:

van den Bergh 1976, ApJ, 208, L17. Optical.
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Becker *et al.* 1980, ApJ, 240, L33. X-ray spectroscopy.
Schweizer & Middleditch 1980, ApJ, 241, 1039. Possible stellar remnant.
Pye *et al.* 1981, MNRAS, 194, 569. IPC observations.
Caswell *et al.* 1983, MNRAS, 204, 921. FIRST at 1415 MHz ($77''$).
Reynolds & Gilmore 1986, AJ, 92, 1138. VLA at 1.37 and 1.67 GHz ($16'' \times 20''$).
Kirshner *et al.* 1987, ApJ, 315, L135. Broad Hα optical component.
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 66''$).
Fesen *et al.* 1988, ApJ, 327, 164. UV absorption spectra of the Schweizer-Middleditch star.
Roger *et al.* 1988, ApJ, 332, 940. MOST at 843 MHz ($44'' \times 66'' : S = 17.5 \pm 1.5$ Jy).
Long *et al.* 1988, ApJ, 333, 749. Optical proper motion for distance.
Jones & Pye 1989, MNRAS, 238, 567. EXOSAT observations.
Leahy *et al.* 1991, ApJ, 374, 218. HEAO-1 X-ray spectra.
Wu *et al.* 1993, ApJ, 416, 247. UV spectra.
Ozaki *et al.* 1994, PASJ, 46, 367. X-ray observations.
Reynolds & Gilmore 1993, AJ, 106, 272. VLA at 1.37 and 1.67 GHz ($24''$), including polarization.
Moffett *et al.* 1993, AJ, 106, 1566. VLA at 1.37 and 1.67 GHz ($10'' \times 14''$), for proper motion studies.
Raymond *et al.* 1995, ApJ, 454, L31. Far UV spectroscopy.
Koyama *et al.* 1995, Natur, 378, 255. ASCA observations.
Willingale *et al.* 1996, MNRAS, 278, 749. ROSAT observations.
Blair *et al.* 1996, ApJ, 468, 871. Optical absorption studies.
Laming *et al.* 1996, ApJ, 472, 267. Modelling of optical spectra, including distance.
Wu *et al.* 1997, ApJ, 477, L53. Far UV absorption spectra of the Schweizer-Middleditch star.
Winkler & Long 1997, ApJ, 486, L137. UV absorption spectra of background quasar.
Winkler & Long 1997, ApJ, 491, 829. ROSAT and optical images.
Tanimori *et al.* 1998, ApJ, 497, L25. γ-ray detection.
Vink *et al.* 2000, A&A, 354, 931. X-ray spectroscopy.
Burleigh *et al.* 2000, A&A, 356, 585. Optical spectroscopy of the Schweizer-Middleditch star.

G328.4+0.2 (MSH 15−57)

RA: $15^h55^m30^s$ **1-GHz flux/Jy:** 16? **Size/arcmin:** 6
Dec: $-53°17'$ **Spectral index:** 0.2 **Type:** F

Radio: Amorphous emission.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Caswell *et al.* 1980, MNRAS, 190, 881. FIRST at 1415 MHz ($50''$).
Wilson 1986, ApJ, 302, 718. Lack of detection with IPC.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 54'' : S = 15$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G329.7+0.4

RA: $16^h01^m20^s$ **1-GHz flux/Jy:** >34? **Size/arcmin:** 40×33
Dec: $-52°18'$ **Spectral index:** ? **Type:** S

Radio: Diffuse shell, in complex region.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 53'' : S > 38$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G330.0+15.0 Lupus Loop

RA: $15^h10^m00^s$ **1-GHz flux/Jy:** 350? **Size/arcmin:** 180?
Dec: $-40°00'$ **Spectral index:** 0.5? **Type:** S

Radio: Low surface brightness loop with HI shell.

X-ray: Detected.

References:

Milne 1971, AuJPh, 24, 757. Parkes 64-m at 408 MHz (48′), 635 MHz (31′) and 1410 MHz (15′).
Milne & Dickel 1974, AuJPh, 27, 549. Parkes 64-m at 2.7 GHz ($8'.4 : S = 120 \pm 30\%$ Jy).
Toor 1980, A&A, 85, 184. X-ray image and spectrum.
Colomb & Dubner 1982, A&A, 112, 141. Argentine 30-m dish at 1.42 GHz (30′), HI observations.
Leahy *et al.* 1991, ApJ, 374, 218. HEAO-1 X-ray spectra.
Ozaki *et al.* 1994, PASJ, 46, 367. X-ray observations.

G330.2+1.0

RA: $16^h01^m06^s$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 11
Dec: $-51°34'$ **Spectral index:** 0.3 **Type:** S?

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

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 8.6$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 4.0$ Jy).
Caswell *et al.* 1983, MNRAS, 204, 915. FIRST at 1415 MHz ($52'' \times 47''$), and MOST at 843 MHz ($43'' \times 55''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 55'' : S = 4.7$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G332.0+0.2

RA: $16^h13^m17^s$ **1-GHz flux/Jy:** 8? **Size/arcmin:** 12
Dec: $-50°53'$ **Spectral index:** 0.5 **Type:** S

Radio: Incomplete shell.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz (3′) and Parkes 64-m at 5 GHz (4′).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 57''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 55'' : S = 8.9$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G332.4-0.4$ RCW 103

RA: $16^h17^m33^s$ **1-GHz flux/Jy:** 28 **Size/arcmin:** 10
Dec: $-51°02'$ **Spectral index:** 0.5 **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: Central X-ray source, and nearby pulsar.

Distance: HI absorption indicates 3.3 kpc.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Tuohy & Garmire 1980, ApJ, 239, L107. HRI detection of X-ray point source.
Caswell *et al.* 1980, MNRAS, 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.
Leibowitz & Danziger 1983, MNRAS, 204, 273. Optical spectra.
Nugent *et al.* 1984, ApJ, 284, 612. X-ray spectrum (and HRI image from Tuohy, private communication).
Meaburn & Allen 1986, MNRAS, 222, 593. Optical spectra.
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44'' \times 57''$).
Oliva *et al.* 1990, A&A, 240, 453. IR spectroscopy.
Dickel *et al.* 1996, AJ, 111, 340. ATCA at 1.36 ($8''$) and 2.37 GHz ($4''.5''$), including polarization.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 55'' : S = 34$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Gotthelf *et al.* 1997, ApJ, 487, L175. ASCA observations of compact X-ray source.
Torii *et al.* 1998, ApJ, 494, L207. ASCA detection of nearby pulsar.
Kaspi *et al.* 1998, ApJ, 503, L161. Pulsar observations.
Gotthelf *et al.* 1999, ApJ, 514, L107. X-ray variability of central source.
Oliva *et al.* 1999, A&A, 343, 943. ISO spectroscopy.

$G332.4+0.1$ MSH 16−5*1*, Kes 32

RA: $16^h15^m17^s$ **1-GHz flux/Jy:** 26 **Size/arcmin:** 15
Dec: $-50°42'$ **Spectral index:** 0.5 **Type:** S

Has been called G332.4+0.2.

Radio: Distorted shell, with thermal jet and plume adjacent.

Point sources: Pulsar nearby.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Roger *et al.* 1985, Natur, 316, 44. MOST at 843 MHz ($44'' \times 57''$).
Caraveo 1993, ApJ, 415, L111. Nearby pulsar.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 56'' : S = 29$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.
Brinkmann *et al.* 1999, A&A, 346, 599. ROSAT image of remnant and nearby pulsar.

$G335.2+0.1$

RA: $16^h27^m45^s$ **1-GHz flux/Jy:** 16 **Size/arcmin:** 21
Dec: $-48°47'$ **Spectral index:** 0.5 **Type:** S

Radio: Well defined shell.

Point sources: Old pulsar within remnant boundary.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 27.1$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 8.6$ Jy).
Kaspi *et al.* 1996, AJ, 111, 2028. Pulsar observations.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 57'' : S = 16$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G336.7+0.5

RA: $16^h32^m11^s$ **1-GHz flux/Jy:** 6 **Size/arcmin:** 14×10
Dec: $-47°19'$ **Spectral index:** 0.5 **Type:** S

Radio: Irregular shell.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44''\times60''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times58'':S=6.1$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G337.0−0.1 (CTB 33)

RA: $16^h35^m57^s$ **1-GHz flux/Jy:** 1.5 **Size/arcmin:** 1.5
Dec: $-47°36'$ **Spectral index:** 0.6? **Type:** S

This entry refers to a small ($1'.5$) SNR, not the larger previously catalogued G337.0−0.1.

Radio: Shell, in a complex region.

Distance: Assocition with CTB 33 gives 11 kpc.

Point sources: Associated with a soft gamma repeater.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times58'':S=21$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant, including masers.
Sarma *et al.* 1997, ApJ, 483, 335. ATCA at 1.4 GHz ($12''$) including HI, and 8.9 GHz ($13''\times15''$) for recomination lines, clarifying extent of the remnant.
Woods *et al.* 1999, ApJ, 519, L139. Soft gamma repeater observations.

G337.2−0.7

RA: $16^h39^m28^s$ **1-GHz flux/Jy:** 2? **Size/arcmin:** 6
Dec: $-47°51'$ **Spectral index:** 0.7 **Type:** S

Radio: Shell, not well resolved.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3':S=3.8$ Jy) and Parkes 64-m at 5 GHz ($4':S=0.70$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times58'':S=2.0$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G337.3+1.0 Kes 40

RA: $16^h32^m39^s$ **1-GHz flux/Jy:** 16 **Size/arcmin:** 15×12
Dec: $-46°36'$ **Spectral index:** 0.55 **Type:** S

Radio: Nearly complete shell.

References:

Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3':S=24.6$ Jy) and Parkes 64-m at 5 GHz ($4':S=7.2$ Jy).
Dickel & Milne 1976, AuJPh, 29, 435. Comparison of earlier Parkes 64-m maps at 2.7 GHz ($8'.4$) and 5 GHz ($4'.4$).
Kesteven & Caswell 1987, A&A, 183, 118. MOST at 843 MHz ($44''\times61''$).
Milne *et al.* 1989, PASAu, 8, 187. MOST at 843 MHz ($43''\times59'':S=14.8\pm3.0$ Jy), and Parkes 64-m at 8.4 GHz ($3':S=5.1\pm0.6$ Jy), including polarization.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times59'':S=20$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G337.8-0.1$ Kes 41

RA: $16^{h}39^{m}01^{s}$ **1-GHz flux/Jy:** 18 **Size/arcmin:** 9×6
Dec: $-46°59'$ **Spectral index:** 0.5 **Type:** S

Radio: Distorted shell.

Distance: HI absorption suggests >9.3 kpc.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times59''$: $S=18$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA detection of compact OH emission.

$G338.1+0.4$

RA: $16^{h}37^{m}59^{s}$ **1-GHz flux/Jy:** 4? **Size/arcmin:** 15?
Dec: $-46°24'$ **Spectral index:** 0.4 **Type:** S

Radio: Arc in NE, merging with thermal emission in S.

Optical: Detected.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Zealey *et al.* 1979, A&AS, 38, 39. Optical detection.
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times59''$: $S=3.8$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G338.3-0.0$

RA: $16^{h}41^{m}00^{s}$ **1-GHz flux/Jy:** 7? **Size/arcmin:** 8
Dec: $-46°34'$ **Spectral index:** ? **Type:** S

Radio: Irregular shell, in complex region.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times59''$: $S=7.4$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G338.5+0.1$

RA: $16^{h}41^{m}09^{s}$ **1-GHz flux/Jy:** 12? **Size/arcmin:** 9
Dec: $-46°19'$ **Spectral index:** ? **Type:** ?

Radio: Circle of non-thermal emission in complex region, not well defined.

References:

Shaver & Goss 1970, AuJPA, 14, 133. Molonglo at 408 MHz ($3'$) and Parkes 64-m at 5 GHz ($4'$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times59''$: $S=13$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$G340.4+0.4$

RA: $16^{h}46^{m}31^{s}$ **1-GHz flux/Jy:** 5 **Size/arcmin:** 10×7
Dec: $-44°39'$ **Spectral index:** 0.4 **Type:** S

Radio: Distorted shell, elongated east–west.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3'$: $S=8.2$ Jy) and Parkes 64-m at 5 GHz ($4'$: $S=2.9$ Jy).
Caswell *et al.* 1983, MNRAS, 203, 595. FIRST at 1415 MHz ($50''$).
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 330 MHz ($75''\times48''$: $S=9.8\pm0.9$ Jy) and 1.4 GHz ($27''\times9''$: $S=3.6\pm0.1$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times61''$: $S=5.9$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G340.6+0.3

RA: $16^h47^m41^s$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 6
Dec: $-44°34'$ **Spectral index:** 0.4? **Type:** S

Radio: Incomplete shell.

Optical: Possible associated filaments.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 7.0$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 2.8$ Jy).
Caswell *et al.* 1983, MNRAS, 203, 595. FIRST at 1415 MHz ($50''$).
Zealey *et al.* 1979, A&AS, 38, 39. Optical.
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 330 MHz ($75'' \times 48'' : S = 9.2 \pm 0.9$ Jy) and 1.4 GHz ($27'' \times 9'' : S = 5.8 \pm 0.1$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 61'' : S = 4.5$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

G341.2+0.9

RA: $16^h47^m35^s$ **1-GHz flux/Jy:** 1.5? **Size/arcmin:** 16×22
Dec: $-43°47'$ **Spectral index:** 0.6? **Type:** C?

Radio: Incomplete shell, with extension to SW.

Point sources: Pulsar in W.

References:

Frail *et al.* 1994, ApJ, 437, 781. VLA at 330 MHz ($54'' \times 116'' : S = 3.0 \pm 0.1$ Jy) and 1.4 GHz ($21'' \times 25'' : S = 12.5 \pm 0.05$ Jy).

G341.9−0.3

RA: $16^h55^m01^s$ **1-GHz flux/Jy:** 2.5 **Size/arcmin:** 7
Dec: $-44°01'$ **Spectral index:** 0.5 **Type:** S

Radio: Incomplete shell, brightest to NE.

References:

Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 7.4$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 1.7$ Jy), see Caswell & Clark 1975, AuJPA, 37, 57 for the maps.
Caswell *et al.* 1983, MNRAS, 203, 595. FIRST at 1415 MHz ($50''$), revision of previous flux densities.
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 1.4 GHz ($35'' \times 11'' : S = 2.2 \pm 0.1$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 62'' : S = 2.7$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

G342.0−0.2

RA: $16^h54^m50^s$ **1-GHz flux/Jy:** 3.5? **Size/arcmin:** 12×9
Dec: $-43°53'$ **Spectral index:** 0.4? **Type:** S

Radio: Distorted shell.

References:

Caswell *et al.* 1983, MNRAS, 203, 595. FIRST at 1415 MHz ($50''$), estimate $S_{408\ \mathrm{MHz}} = 5$ Jy, $S_{5\ \mathrm{GHz}} = 2$ Jy from previous maps.
Dubner *et al.* 1996, AJ, 111, 1304. VLA at 1.4 GHz ($35'' \times 11''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 62'' : S = 3.5$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

G342.1+0.9

RA: $16^h50^m43^s$ **1-GHz flux/Jy:** 0.5? **Size/arcmin:** 10×9
Dec: $-43°04'$ **Spectral index:** ? **Type:** S

Radio: Incomplete shell.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 63'' : S = 0.6$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G343.1 – 2.3

RA: $17^h08^m00^s$ **1-GHz flux/Jy:** 8? **Size/arcmin:** 32?
Dec: $-44°16'$ **Spectral index:** 0.5? **Type:** C?

Radio: Incomplete shell?

Point sources: Pulsar near edge.

References:

McAdam *et al.* 1993, Natur, 361, 516. MOST at 843 MHz (smoothed to $2'$).
Frail *et al.* 1994, ApJ, 437, 781. VLA at 330 MHz ($56'' \times 111'' : S = 10.6$ Jy) and 1.4 GHz ($22'' \times 27''$) near pulsar.
Becker *et al.* 1995, A&A, 298, 528. ROSAT of pulsar, and limit for remnant.

G343.1 – 0.7

RA: $17^h00^m25^s$ **1-GHz flux/Jy:** 7.8 **Size/arcmin:** 27×21
Dec: $-43°14'$ **Spectral index:** 0.55 **Type:** S

Radio: Shell, with smaller thermal shell adjacent.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 63'' : S8.5 \pm 0.6$), plus Parkes 64-m at 4.5 GHz ($S = 3.9 \pm 0.6$ Jy) and 8.55 GHz ($S = 2.4 \pm 0.5$ Jy)
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

G344.7 – 0.1

RA: $17^h03^m51^s$ **1-GHz flux/Jy:** 2.5? **Size/arcmin:** 10
Dec: $-41°42'$ **Spectral index:** 0.5 **Type:** C?

Radio: Aysmmetric shell, with possible core.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 4.7$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 1.3$ Jy).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($30'' \times 43'' : S = 1.7 \pm 0.1$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 65'' : S = 2.5$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G345.7 – 0.2

RA: $17^h07^m20^s$ **1-GHz flux/Jy:** 0.6? **Size/arcmin:** 6
Dec: $-40°53'$ **Spectral index:** ? **Type:** S

Radio: Poorly defined diffuse shell.

Point sources: Old pulsar nearby.

References:

Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 66'' : S = 0.7$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G346.6 – 0.2

RA: $17^h10^m19^s$ **1-GHz flux/Jy:** 8? **Size/arcmin:** 8
Dec: $-40°11'$ **Spectral index:** 0.5? **Type:** S

Radio: Irregular shell.

References:

Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 14.9$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 4.3$ Jy).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($31'' \times 43'' : S = 8.1 \pm 0.9$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 67'' : S = 8.7$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA detection of compact OH emission.

$\mathbf{G347.3-0.5}$

RA: $17^h13^m50^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 65×55
Dec: $-39°45'$ **Spectral index:** ? **Type:** S?

Radio: Faint emission.

X-ray: Non-thermal, limb-brightended to W, with central source.

Distance: Association with molecular clouds, and HII region, suggests 6 kpc.

References:
Koyama *et al.* 1997, PASJ, 49, L7. ASCA of NW.
Slane *et al.* 1999, ApJ, 525, 357. ASCA and other observations.

$\mathbf{G348.5-0.0}$

RA: $17^h15^m26^s$ **1-GHz flux/Jy:** 10? **Size/arcmin:** 10?
Dec: $-38°28'$ **Spectral index:** 0.4? **Type:** S?

Radio: Arc, overlapping G348.5+0.1.

References:
Kassim *et al.* 1991, ApJ, 374, 212. VLA at 333 MHz ($46'' \times 53''$), 1.4 GHz ($18'' \times 33''$) and part at 5 GHz ($2''.5 \times 3''.9$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 69'' : S = 10.2$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant, including masers.
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

$\mathbf{G348.5+0.1}$ CTB 37A

RA: $17^h14^m06^s$ **1-GHz flux/Jy:** 72 **Size/arcmin:** 15
Dec: $-38°32'$ **Spectral index:** 0.3 **Type:** S

Radio: Shell, poorly define to S and W, overlapping G348.5−0.0 in E.

Distance: HI absorption indicates 10.2±3.5 kpc.

References:
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3' : S = 97$ Jy).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4 : S = 43$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Milne *et al.* 1979, MNRAS, 188, 437. FIRST at 1415 MHz ($0'.8 : S > 50$) and Parkes 64-m at 14.7 GHz ($2'.2 : S = 18 \pm 5$ Jy).
Downes 1984, MNRAS, 210, 845. VLA at 1465 MHz ($20'' \times 45''$).
Kassim *et al.* 1991, ApJ, 374, 212. VLA at 333 MHz ($46'' \times 53''$), 1.4 GHz ($18'' \times 33''$) and part at 5 GHz ($2''.5 \times 3''.9$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 69'' : S = 71$ Jy).

$\mathbf{G348.7+0.3}$ CTB 37B

RA: $17^h13^m55^s$ **1-GHz flux/Jy:** 26 **Size/arcmin:** 17?
Dec: $-38°11'$ **Spectral index:** 0.3 **Type:** S

Radio: Incomplete shell with faint eastern extensions.

Distance: HI absorption indicates 10.2±3.5 kpc.

References:
Clark *et al.* 1975, AuJPA, 37, 75. Molonglo at 408 MHz ($3' : S = 34$ Jy).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4 : S = 32$ Jy).
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Milne *et al.* 1979, MNRAS, 188, 437. FIRST at 1415 MHz ($0'.8 : S > 20$) and Parkes 64-m at 14.7 GHz ($2'.2 : S = 8 \pm 3$ Jy).
Downes 1984, MNRAS, 210, 845. VLA at 1465 MHz ($20'' \times 45''$).
Kassim *et al.* 1991, ApJ, 374, 212. VLA at 333 MHz ($46'' \times 53''$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43'' \times 69'' : S = 33$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.

G349.2 − 0.1

RA: $17^h17^m15^s$ **1-GHz flux/Jy:** 1.4? **Size/arcmin:** 9×6
Dec: $-38°04'$ **Spectral index:** ? **Type:** S

Radio: Elongated shell, adjacent to bright HII region.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times70''$: $S=1.6$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant.

G349.7 + 0.2

RA: $17^h17^m59^s$ **1-GHz flux/Jy:** 20 **Size/arcmin:** 2.5×2
Dec: $-37°26'$ **Spectral index:** 0.5 **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, AuJPA, 37, 39. Molonglo at 408 MHz ($3'$: $S=31.0$ Jy) and Parkes 64-m at 5 GHz ($4'$: $S=9.1$ Jy), no maps.
Caswell *et al.* 1975, A&A, 45, 239. Parkes HI absorption.
Shaver *et al.* 1985, Natur, 313, 113. VLA at 1.4 GHz ($3''.4\times14''.5$).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times71''$: $S=22$ Jy).
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant, including masers.

G350.0 − 2.0

RA: $17^h27^m50^s$ **1-GHz flux/Jy:** 26 **Size/arcmin:** 45
Dec: $-38°32'$ **Spectral index:** 0.4 **Type:** S

Incorporates the previously catalogued G350.0−1.8 in the NW.

Radio: Shell, brightest in NW.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3'$: $S=49.5$ Jy) and Parkes 64-m at 5 GHz ($4'$: $S=13.6$ Jy).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4$).
Gaensler 1998, ApJ, 493, 781. VLA and Parkes 64-m at 1.4 GHz ($18''\times21''$: $S=22.3\pm0.3$ Jy), clarifying extent of remnant.

G351.2 + 0.1

RA: $17^h22^m27^s$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 7
Dec: $-36°11'$ **Spectral index:** 0.4 **Type:** C?

Has been called G351.3+0.2.

Radio: Distorted shell, with possible flat-spectrum core.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3'$: $S=8.1$ Jy) and Parkes 64-m at 5 GHz ($4'$: $S=3.1$ Jy).
Caswell *et al.* 1984, PASAu, 5, 227. MOST at 843 MHz ($43''\times77''$).
Becker & Helfand 1988, AJ, 95, 883. VLA at 5 GHz ($15''$), and at 15 GHz of core.
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($32''\times36''$: $S=4.8\pm0.2$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times73''$: $S=5.5$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

G351.7 + 0.8

RA: $17^h21^m00^s$ **1-GHz flux/Jy:** 10? **Size/arcmin:** 18×14
Dec: $-35°27'$ **Spectral index:** ? **Type:** S

Radio: Elongated shell, adjacent to bright HII region.

Point sources: Pulsar nearby.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times74''$: $S=11$ Jy).

$G351.9-0.9$

RA: $17^h28^m52^s$ **1-GHz flux/Jy:** 1.8? **Size/arcmin:** 12×9
Dec: $-36°16'$ **Spectral index:** ? **Type:** S

Radio: Asymmetric shell.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times73''$: $S=2.0$ Jy).

$G352.7-0.1$

RA: $17^h27^m40^s$ **1-GHz flux/Jy:** 4 **Size/arcmin:** 8×6
Dec: $-35°07'$ **Spectral index:** 0.6 **Type:** S

Radio: Distorted shell.

X-ray: Detected.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3'$: $S=9.6$ Jy) and Parkes 64-m at 5 GHz ($4'$: $S=2.3$ Jy).
Caswell *et al.* 1983, MNRAS, 203, 595. FIRST at 1415 MHz ($1'.1$).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($34''$: $S=3.4\pm0.4$ Jy).
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times75''$: $S=4.4$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Kinugasa *et al.* 1998, PASJ, 50, 249. ASCA observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

$G354.1+0.1$

RA: $17^h30^m28^s$ **1-GHz flux/Jy:** ? **Size/arcmin:** 15×3?
Dec: $-33°46'$ **Spectral index:** varies? **Type:** C?

Is this a SNR?

Radio: Elongated N–S.

Point sources: Pulsar at S tip.

References:
Frail *et al.* 1994, ApJ, 437, 781. VLA at 330 MHz ($47''\times99''$) and 1.4 GHz ($8''.8\times21''$).

$G354.8-0.8$

RA: $17^h36^m00^s$ **1-GHz flux/Jy:** 2.8? **Size/arcmin:** 19
Dec: $-33°42'$ **Spectral index:** ? **Type:** S

Radio: Distorted shell.

References:
Whiteoak & Green 1996, A&AS, 118, 329. MOST at 843 MHz ($43''\times78''$: $S=3.1$ Jy).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.
Koralesky *et al.* 1998, AJ, 116, 1323. VLA search for OH emission.

$G355.6-0.0$

RA: $17^h35^m16^s$ **1-GHz flux/Jy:** 3? **Size/arcmin:** 8×6
Dec: $-32°38'$ **Spectral index:** ? **Type:** S

Radio: Well defined shell.

References:
Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43''\times80''$: $S=2.6$ Jy).

$\mathbf{G355.9-2.5}$

RA: $17^h45^m53^s$ **1-GHz flux/Jy:** 8 **Size/arcmin:** 13
Dec: $-33°43'$ **Spectral index:** 0.5 **Type:** S

Radio: Distorted shell, brightest to SE.

References:
Clark *et al.* 1975, AuJPA, 37, 1. Molonglo at 408 MHz ($3' : S = 12.3$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 3.4$ Jy).
Caswell *et al.* 1984, PASAu, 5, 227. MOST at 843 MHz ($43'' \times 77''$).
Dubner *et al.* 1993, AJ, 105, 2251. VLA at 1.47 GHz ($32'' \times 34'' : S = 5.0 \pm 0.3$ Jy).
Gray 1994, MNRAS, 270, 836. MOST at 843 MHz ($43'' \times 77''$).
Green *et al.* 1997, AJ, 114, 2058. Parkes 64-m OH observations.

$\mathbf{G356.3-0.3}$

RA: $17^h37^m56^s$ **1-GHz flux/Jy:** 3? **Size/arcmin:** 11×7
Dec: $-32°16'$ **Spectral index:** ? **Type:** S

Radio: Elongated shell, brighter in N.

References:
Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43'' \times 81'' : S = 2.6$ Jy).

$\mathbf{G356.3-1.5}$

RA: $17^h42^m35^s$ **1-GHz flux/Jy:** 3? **Size/arcmin:** 20×15
Dec: $-32°52'$ **Spectral index:** ? **Type:** S

Radio: Double arc.

References:
Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43'' \times 79'' : S = 2.8$ Jy).

$\mathbf{G357.7-0.1}$ MSH 17−39

RA: $17^h40^m29^s$ **1-GHz flux/Jy:** 37 **Size/arcmin:** 8×3?
Dec: $-30°58'$ **Spectral index:** 0.4 **Type:** ?

Has been suggested that this is not a SNR.

Radio: Multiple arcs and filaments.

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

References:
Caswell *et al.* 1975, AuJPA, 37, 39. Molonglo at 408 MHz ($3' : S = 54.2$ Jy) and Parkes 64-m at 5 GHz ($4' : S = 18.5$ Jy).
Milne & Dickel 1975, AuJPh, 28, 209. Parkes 64-m at 5 GHz ($4'.4 : S = 14.6$ Jy).
Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6$).
Caswell *et al.* 1980, MNRAS, 190, 881. FIRST at 1415 MHz ($50''$).
Weiler & Panagia 1980, A&A, 90, 269. Effelsberg 100-m at 9 GHz ($1'.5$) (private communication from Baker).
Shaver *et al.* 1985, Natur, 313, 113. VLA at 1.4 GHz ($3''.8 \times 10''.9$) and 5 GHz ($12'' \times 26''$).
Becker & Helfand 1985, Natur, 313, 115. VLA at 1.4 GHz and 5 GHz, suggest it is not a SNR, see Helfand & Becker 1985 Natur, 313, 118.
Shaver *et al.* 1985, A&A, 147, L23. Observations of peripheral compact source.
Caswell *et al.* 1989, PASAu, 8, 184. MOST at 843 MHz ($43'' \times 83''$).
Gray 1994, MNRAS, 270, 836. MOST at 843 MHz ($43'' \times 84''$).
Stewart *et al.* 1994, ApJ, 432, L39. ATCA at 4.79 and 5.84 GHz ($12'' \times 22''$) and Effelsberg 100-m at 10.6 GHz ($1'$), including polarization.
Frail *et al.* 1996, AJ, 111, 1651. OH emission near remnant, including masers.
Yusef-Zadeh *et al.* 1999, ApJ, 527, 172. VLA of nearby OH masers.
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).

$\mathbf{G357.7+0.3}$

RA: $17^h38^m35^s$ **1-GHz flux/Jy:** 10 **Size/arcmin:** 24
Dec: $-30°44'$ **Spectral index:** 0.4? **Type:** S

Radio: Non-thermal shell in complex region.

References:
Reich & Fürst 1984, A&AS, 57, 165. Effelsberg 100-m at 2.7 GHz ($4'.3 : S = 7 \pm 1.5$ Jy), $S_{5\ \mathrm{GHz}} = 5.5 \pm 1.5$ Jy from surveys.
Gray 1994, MNRAS, 270, 836. MOST at 843 MHz ($43'' \times 84''$).
Yusef-Zadeh *et al.* 1999, ApJ, 527, 172. VLA of nearby OH masers.

G359.0 – 0.9

RA: $17^h46^m50^s$ **1-GHz flux/Jy:** 23 **Size/arcmin:** 23
Dec: $-30°16'$ **Spectral index:** 0.5 **Type:** S

Radio: Incomplete shell.

X-ray: Partial shell.

References:

Reich *et al.* 1988, in SNRISM, p293. Summary of parameters.
Reich *et al.* 1990, A&AS, 85, 633. Effelsberg 100-m at 2.7 GHz ($4'.3$).
Gray 1994, MNRAS, 270, 836. MOST at 843 MHz ($43'' \times 86''$).
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).
Bamba *et al.* 2000, PASJ, 52, 259. ASCA observations.

G359.1 – 0.5

RA: $17^h45^m30^s$ **1-GHz flux/Jy:** 14 **Size/arcmin:** 24
Dec: $-29°57'$ **Spectral index:** 0.4? **Type:** S

Radio: Non-thermal shell in complex region, crossed by the ‘snake’.

X-ray: Centrally brightened.

Point sources: Several compact radio sources near centre, OH masers around edge.

References:

Downes *et al.* 1979, A&AS, 35, 1. From observations by Altenhoff *et al.* 1979, A&AS, 35, 23. Effelsberg 100-m at 4.9 GHz ($2'.6 : S = 13$ Jy).
Reich & Fürst 1984, A&AS, 57, 165. Effelsberg 100-m at 2.7 GHz ($4'.3 : S = 10 \pm 1.5$ Jy) and 4.8 GHz ($2'.4 : S = 8.1 \pm 0.5$ Jy).
Uchida *et al.* 1992, ApJ, 398, 128. VLA at 1.5 GHz ($11'' \times 10''$), and observations of nearby molecular material.
Uchida *et al.* 1992, AJ, 104, 1533. VLA at 1.4 GHz.
Gray 1994, MNRAS, 270, 836. MOST at 843 MHz ($43'' \times 85''$).
Yusef-Zadeh *et al.* 1995, Sci, 270, 1801. VLA at 1.4 GHz ($33'' \times 31''$), and 1.7 GHz for OH survey.
LaRosa *et al.* 2000, AJ, 119, 207. VLA at 333 MHz ($43'' \times 24''$).
Bamba *et al.* 2000, PASJ, 52, 259. ASCA observations.

G359.1 + 0.9

RA: $17^h39^m36^s$ **1-GHz flux/Jy:** 5? **Size/arcmin:** 12×11
Dec: $-29°11'$ **Spectral index:** ? **Type:** S

Radio: Shell, brightest in E.

References:

Gray 1994, MNRAS, 270, 847. MOST at 843 MHz ($43'' \times 88'' : S = 4.3$ Jy).