## THE HISTORY OF RADIO ASTRONOMY

A BIBLIOGRAPHY

1898-1983

Compiled by:

Sarah Stevens-Rayburn Librarian National Radio Astronomy Observatory

## INTRODUCTION

The history of radio astronomy - whether one begins with Hertz's experiments, or Lodge's, or Jansky's - is one of fascination and serendipity. The development of the science has been fun and frustrating, often with the theorists two steps behind the observers, but with the former occasionally waiting around the bend of the next revelation smirking "I told you so." It is hoped that the bibliography that follows will give some of the essence of the early days and that the reader will be able to share some of the excitment, both of the early engineers who quickly realized they were onto something theretofore unknown and the later radio astronomers who continued in their footsteps. The attempt has been made to include most of the early engineering papers as well as a sampling of the theoretical ones that tried to explain what the engineers were revealing. In addition, there are included discovery papers for some of radio astronomy's "main events," a sampling of papers that reveal the development of the science in various countries, and books and papers that summarize the history of radio astronomy, or particular aspects of it, up to a certain point.

There are, of course, omissions. Some are deliberate. In order to keep the listing to a manageable size (<350), some things are covered only briefly, such as the numerous radio source catalogs, just to provide examples of the kind of work being done. Other omissions are through ignorance or a biased selectivity. When talking to a scientist knowledgeable in the history of the field, one finds a certain bias toward that individual's own work. When this bias was confirmed through further study, it was included; when not, it was not. But if one had talked to a different subset of scientists, the results would probably have been skewed another way. If what you consider the most important paper in the history of radio astronomy has been omitted, please accept my apologies and let me know what the paper is, so that perhaps a later edition can be better rounded.

The bibliography is divided into two parts. First, there is a chronological list that begins with Wilsing and Scheiner's attempt to detect solar radiation in the late nineteenth century and continues through the discovery of the millisecond pulsar in 1982. The list is alphabetical, by first author, within a particular year. The second part is an alphabetical, by first author, list of all of the papers and books listed in the first part, with SEE references from secondary authors. Numbers to the left of each entry indicate that the item is either a monograph (B) or an article (A, or S if included in Sullivan's Classics in Radio Astronomy (1982)). The format for each item is:

no. Author(s)
"Title"
(publication year) place: publisher (for monographs) or journal title, volume, and inclusive pagination (for articles)

You are invited to peruse the bibliography and encouraged to go back and read the originals. The bibliography gives some of the essence of the history of radio astronomy, but to enjoy the full flavor you must read the papers for yourself. Many are contained in Sullivan's <u>Classics</u> and the majority of the others are likely available in your own library or on interlibrary loan from the National Radio Astronomy Observatory library.

## **ABBREVIATIONS**

AJ Astronomical Journal

Amer. Scientist American Scientist

Ann. d'Astrophys. Annales d'Astrophysique

Ann. Physik u. Chemie Annalen der Physik und Chemie

Annals N.Y. Acad. Sci. Annals of the New York Academy of Sciences

Astr. Tsirk. Astronomicheskii Tsirkuliar

Astr. Zh. Astronomicheskii Zhurnal

Astrophys. J. Astrophysical Journal

Aust. J. Phys. Australian Journal of Physics

Aust. J. Sci. Res. Australian Journal of Scientific Research

BAN Bulletin of the Astronomical Institutes of the Netherlands

Bell Laboratories Record

Comp. Rendus Acad. Sci. (Paris) Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences

Dokl. Akad. nauk SSSR Doklady Akademiia nauk SSSR

Ergebn. Exakt. Naturwiss. Ergebnisse der exakten Naturwissenschaften

Hochfreq. Electroakustik Hochfrequenztechnik und Elektroakustik

Hung. Phys. Acta Hungarica Physica Acta

IAU Symp. International Astronomical Union Symposium

ICC '79 1979 International Conference on Communications (IEEE)

IRE Trans. Ant. Prop. Institute of Radio Engineers Transactions on Antennas

and Propagation

J. Franklin Inst. Journal of the Franklin Institute

J. Phys., USSR Journal of Physics (Akademiia nauk SSSR)

JGR Journal of Geophysical Research

JRASC Journal of the Royal Astronomical Society of Canada

MNRAS Monthly Notices of the Royal Astronomical Society

Naturwiss. Naturwissenschaften

NBS TN National Bureau of Standards Technical Note

Ned. Tijdschr. Natuurk. Nederlandsch Tijdschrift voor Natuurkunde

PASP Publications of the Astronomical Society of the Pacific

Phil. Mag. Philosophical Magazine; a journal of theoretical,

experimental and applied physics

Phys. Rev. Physical Review

Phys. Rev. Lett. Physical Review Letters

Phys. Today Physics Today

Proc. IEEE Proceedings of the Institute of Electrical and Electronics

Engineers

Proc. IRE Proceedings of the Institute of Radio Engineers

Proc. IRE Australia Proceedings of the Institution of Radio Engineers of

Australia

Proc. NAS Proceedings of the National Academy of Sciences

Proc. Phys. Soc. Proceedings of the Physical Society

Proc. Roy. Soc. Proceedings of the Royal Society

QJRAS Quarterly Journal of the Royal Astronomical Society

Rep. Radio Res. Japan Report of Radio Research in Japan

Rev. Astron. (Argentina) Revista Astronomica (Argentina)

Rev. Mod. Phys. Reviews of Modern Physics

Rev. Sci. Instrum. Review of Scientific Instruments

Sci. Amer. Scientific American

Sci. Dimension (Canada) Science Dimension (Canada)

Sci. Monthly Scientific Monthly

Sky Telesc. Sky and Telescope

Sov. Astron. AJ Soviet Astronomy--AJ

Sterne Die Sterne

Telecommun. J. Telecommunication Journal (ITU)

Trudy Fiz. Inst. im. P.N. Lebedeva. Trudy Fizicheskogo Instituta imeni P.N. Lebedeva.

Trudy Sovesch. Vop. Kosmog. Trudy Soveshchaniia po Voprosam Kosmogonii

URSI Spec. Rep. Union Radio Scientifique Internationale Special Report

Vistas Astron. Vistas in Astronomy

Z. Astrophys. Zeitschrift für Astrophysik

Zh. Eksp. Teor. Fiz. Zhurnal Eksperimentalnoi i Teoreticheskoi Fiziki

S22 Wilsing, J., Scheiner, J., "On an attempt to detect electrodynamic solar radiation and on the change in contact resistance when illuminating two conductors by electric radiation = ueber einen Versuch, eine electrodynamische Sonnenstrahlung nachzeweisen, und ueber die Aederung des Uebergangswiderstandes bei Beruehrung zweier Leiter durch electrische Bestrahlung" (1896) Ann. Physik u. Chemie 59: 782-792 A59 Lodge, O.J., "Signalling through space without wires" (1900) The Electrician, 3d ed: 33 S24 Deslandres, H., Decombe, L., "On the search for Hertzian radiation emanating from the sun = Sur la recherche d'un rayonnement Hertzian emane du soleil" (1902) Comp. Rendus Acad. Sci. (Paris) 134: 527-530 S23 Nordmann, C., "A search for Hertzian waves emanating from the sun = Recherche des ondes Hertziennes emanees du soleil" (1902) Comp. Rendus Acad. Sci. (Paris) 134: 273-275 A 292 Oswald, A.A., "Transoceanic telephone service -- short - wave equipment: technical features of the new short-wave radio stations of the Bell System" (1930) Trans. AIEE 49: 629-637 S14 Jansky, K.G., "Directional studies of atmospherics at high frequencies" (1932) Proc. IRE 20: 1920-1932 A72 Anon., "New radio waves traced to centre of the Milky Way" (1933) N.Y. Times 82: 1 (5 May) A169 Jansky, K.G., "Electrical phenomena that apparently are of interstellar origin" (1933) Pop. Astron. 41: 548-555 A61 Jansky, K.G., "Radio waves from outside the solar system" (1933) Nature 132: 66

"Electrical disturbances apparently of extraterrestrial

S 15

Jansky, K.G.,

(1933) Proc. IRE 21: 1387-1398

origin"

S5 Jansky, K.G., "A note on the source of interstellar interference" (1935) Proc. IRE 23: 1158-1163 A 62 Arakawa, D., "Abnoram1 attenuation in short radio wave propagation" (1936) Rep. Radio Res. Japan 6:31-38 (May) A274 Friis, H.T., Feldman, C.B., "A multiple unit steerable antenna for short-wave reception" (1937) Proc. IRE 25: 841-917 A 181 Jansky, K.G., "Minimum noise levels obtained on short-wave radio receiving systems" (1937) Proc. IRE 25: 1517-1530 A 263 Newton, H.W., Barton, H.J., "Bright solar eruptions and radio fading, 1935-1936" (1937) MNRAS 97: 594-611 A 12 Whipple, F.L., Greenstein, J.L., "On the origin of interstellar radio disturbances" (1937) Proc. NAS 23: 177-181 S11 Henyey, L.G., Keenan, P.C., "Interstellar radiation from free electrons and hydrogen atoms" (1940) Astrophys. J. 91: 625-630 516 Reber, G., "Cosmic static" (1940) Proc. IRE 28: 68-70 **S7** Reber, G., "Cosmic static" (1940) Astrophys. J. 91: 621-624 A 166 Baade, W., "The Crab Nebula" (1942) Astrophys. J. 96: 188-198 A 275 Fraenz, K.,

"Measurement of the sensitivity of receivers with short

(1942) Hochfreg. Electroakustik 59: 105-112, 143-144

electric waves [in German]"

A172 Minkowski, R., "The Crab Nebula" (1942) Astrophys. J. 96: 199-213 A 93 Reber, G., "Cosmic static" (1942) Proc. IRE 30: 367-378 S8 Reber, G., "Cosmic static" (1944) Astrophys. J. 100: 279-287 A 100 Appleton, E.V., "Departure of long-wave solar radiation from black-body intensity" (1945) Nature 156: 534-535 A 102 Artsimovich, L.A., Pomeranchuk, I.Ya., "The radiation of fast electrons in a magnetic field" (1945) J. Phys., USSR 9: 267-276 A276 Bakker, C.J., "Radiogolven wit het wereldruim = The reception of radio waves from space" (1945) Ned. Tijdschr. Natuurk. 11: 201-209 S26 Southworth, G.C., "Microwave radiation from the sun" (1945) J. Franklin Inst. 239: 285-297 S 10 Van de Hulst, H.C., "Radiogolven uit het wereldrium; herkomst der radiogolven" (1945) Ned. Tijdschr. Natuurk. 11: 210-221 A 101 Appleton, E.V., Hey, J.S., "Solar radio noise" (1946) Phil. Mag. 37: 73-84 A 108 Appleton, E.V., Hey, J.S., "Circular polarization of solar radio noise" (1946) Nature 158: 339 A 102 Artsimovich, L.A., Pomeranchuk, I.Ya., "The radiation of fast electrons in a magnetic field"

(1946) Zh. Eksp. Terr. Fiz. 16: 379-389

- Dicke, R.H., Beringer, R., Kyhl, R.L., Vane, A.B., A277 "Atmospheric absorption measurements with a microwave radiometer" (1946) Phys. Rew. 70: 340-348 S 20 Dicke, R.H., "The measurement of thermal radiation at microwave frequencies" (1946) Rev. Sci. Instrum. 17: 268-275 S 31 Dicke, R.H., Beringer, R., "Microwave radiation from the sun and moon" (1946) Astrophys. J. 103: 375-376 A 95 Gamow, G., "The expanding universe and the origin of the elements" (1946) Phys. Pev. 70: 572-573 A278 Ginzburg, V.I., "On solar radiation in the radio spectrum [in Russian]" (1946) Dokl. Akad. nauk SSSR 52: 487-490 Greenstein, J.I., Henyey, L.G., Keenan, P.C., A92 "Interstellar origin of cosmic radiation at radio frequencies" (1946) Nature 157: 805 Hey, J.S., Phillips, J.W., Parsons, S.J., A 168 "Cosmic radiations at 5 metres wave-length" (1946) Nature 157: 296-297 S 25 Hey, J.S., "Solar radiations in the 4-6 metre radio wave-length ban d" (1946) Nature 157: 47-48 Hey, J.S., Parsons, S.J., Phillips, J.W., S32 "Fluctuations in cosmic radiation at radio-frequencies" (1946) Nature 158: 234 A279 Martyn, D.F., "Polarization of solar radio-frequency emissions"
- Martyn, D.F.,
  "Temperature radiation from the quiet sun in the radio spectrum"
  (1946) Nature 158: 632-633

(1946) Nature 158: 308

A 183 Moxon, L.A., "Variation of cosmic radiation with frequency" (1946) Nature 158: 758-759 A 173 Pawsey, J.L., Payne-Scott, R., McCready, L.L., "Radio-frequency energy from the sun" (1946) Nature 157: 158-159 S30 Pawsey, J.L., "Observation of million degree thermal radiation from the sun at a wave-length of 1.5 metres" (1946) Nature 158: 633-634 S27 Ryle, M., Vonberg, D.D., "Solar radiation on 175 Mc./s." (1946) Nature 158: 339-340 A280 Saha, M.N., "Origin of radio-waves from the sun and the stars" (1946) Nature 158: 717-718 A184 Sander, K.F., "Measurements of galactic noise at 60 Mc/s" (1946) J. IEF 93: 1487-1496 A103 Shklovsky, I.S., "Ob izluchenii radiovoln galaktikoi i verkhnimi sloiami atmosfery solntsa = On the radiation of radio-waves by the Galaxy and by the upper layers of the solar atmosphere" (1946) Astr. Zh. 23: 333-347 A281 Unsoeld, A., "Die kosmische kurzwellenstrahlung = The cosmic short-wave radiation" (1946) Naturwiss. 33: 37-40 A264 Bay, Z., "Reflection of microwaves from the moon" (1947) Hung. Phys. Acta 1: 1-22 A177 Lovell, A.C.B., "Meteoric ionization and ionospheric abnormalities" (1947) Rep. Prog. Phys. 11: 415-443 S 28 McCready, L.L., Pawsey, J.L., Payne-Scott, R., "Solar radiation at radio frequencies and its relation to

sunspots"

(1947) Proc. Roy. Soc. A 190: 357-375

- Payne-Scott, R., Yabsley, D.E., Bolton, J.G.,
  "Relative times of arrivals of bursts of solar noise on
  different radio frequencies"
  (1947) Nature 160: 256-257
- A174 Reber, G., Greenstein, J.L.,
  "Radio-frequency investigations of astronomical interest"
  (1947). Observatory 67: 15-26
- Nature 159: 506-507
- A282 Schott, E.,
  "175-MHz radiation from the sun [in German]"
  (1947) Phys. Blatt. 3: 159-160
- Bolton, J.G.,
  "Discrete sources of galactic radio frequency noise"
  (1948) Nature 162: 141-142
- Bolton, J.G., Stanley, G.J.,
  "Observations of the variable source of cosmic radio frequency radiation in the constellation of Cygnus"
  (1948) Aust. J. Sci. Res. A1: 58-69
- Bolton, J.G., Stanley, G.J.,
  "Variable source of radio frequency radiation in the constellation of Cygnus"
  (1948) Nature 161: 312-313
- Covington, A.E.,
  "Solar noise observations on 10.7 centimeters"
  (1948) Proc. IRE 36: 454-457
- A185

  Herbstreit, J.W., Johler, J.R.,

  "Frequency variation of the intensity of cosmic radio noise"

  (1948) Nature 161: 515-516
- Hey, J.S., Parsons, S.J., Phillips, J.W.,
  "An investigation of galactic radiation in the radio spectrum"
  (1948) Proc. Roy. Soc. A192: 425-445
- Hey, J.S., Parsons, S.J., Phillips, J.W.,
  "Some characteristics of solar radio emissions"
  (1948) MNRAS 108: 354-371

- A106 Ivanenko, D.D., Sokolov, A.A.,
  "On the theory of the 'luminous' electron"
  (1948) Dokl. Akad. nauk SSSR 59: 1551-1554
- Martyn, D.F.,
  "Solar radiation in the radio spectrum I. Radiation from
  the quiet sun"
  (1948) Proc. Roy. Soc. A193: 44-59
- Northcott, R.J., Williamson, R.E.,
  "Galactic noise and the plane of the galaxy"
  (1948) JRASC 42: 269-279
- S17 Reber, G.,
  "Cosmic static"
  (1948) Proc. IRE 36: 1215-1218
- Ryle, M.,
  "The generation of radio-frequency radiation in the sun"
  (1948) Proc. Roy. Soc. 195: 82-97
- Ryle, M., Vonberg, D.D.,
  "An investigation of radio-frequency radiation from the sun"
  (1948) Proc. Roy. Soc. A193: 98-120
- Ryle, M., Smith, F.G.,

  "A new intense source of radio-frequency radiation in the constellation of Cassiopeia"

  (1948) Nature 162: 462-463
- Williamson, R.E.,
  "The present state of microwave astronomy"
  (1948) JRASC 42: 9-32
- Alpher, R.A., Herman, R.C.,
  "Remarks on the evolution of the expanding universe"
  (1949) Phys. Rev. 75: 1089-1095
- Bolton, J.G., Stanley, G.J.,
  "The position and probable identification of the source
  of galactic radio-frequency radiation Taurus A"
  (1949) Aust. J. Sci. Res. A2: 139-148
- Bolton, J.G., Stanley, G.J., Slee, O.B.,
  "Positions of three discrete sources of galactic radio-frequency radiation"
  (1949) Nature 164: 101-102

A 162 Hey, J.S., "Reports on the progress of astronomy: radio astronomy" (1949) MNRAS 109: 179-214 A285 Piddington, J.H., Minnett, H.C., "Microwave thermal radiation from the moon" (1949) Aust. J. Sci. Res. A2: 63-77 A 286 Reber, G., "Radio astronomy" (1949) Sci. Amer. 181: 35-41 (Sept.) A269 Ryle, M., "The significance of the observation of intense radio-frequency emission from the sun" (1949) Proc. Phys. Soc. 62A: 483-491 A 270 Ryle, M., "Evidence for the stellar origin of cosmic rays" (1949) Proc. Phys. Soc. 62A: 491-499 A110 Schwinger, J., "On the classical radiation of accelerated electrons" (1949) Phys. Rev. 75: 1912-1925 S 43 Shklovsky, I.S., "Monokhromaticheskoe radioieluchenie galaktiki idvoemozhnost' ego nabliudeniia = Monochromatic radio emission from the galaxy and the possibility of its observation" (1949) Astr. Zh. 26: 10-14 A47 Struve, O., "Progress in radio astronomy - I" (1949) Sky Telesc. 9: 27-30 A 175 Unsoeld, A., "Ueber der Ursprung der Radiofrequenzstrahlung und der Ultrastrahlung in der Milchstrasse" (1949) Z. Astroph. 26: 176-199 S36 Alfven, H., Herlofson, N., "Cosmic radiation and radio stars" (1950) Phys. Rew. 78: 616

"Survey of galactic radio noise at 200 Mc/s"

(1950) Aust. J. Sci. Res. A3: 224-233

Allen, C.W., Gum, C.S.,

A 186

- Bolton, J.G., Westfold, K.C.,
  "Galactic radiation at radio frequencies. III. Galactic
  structure"
  (1950) Aust. J. Sci. Res. A3: 251-264
- Bolton, J.G., Westfold, K.C.,
  "Galactic radiation at radio frequencies. I. 100-Mc/s
  survey"
  (1950) Aust. J. Sci. Res. A3: 19-23
- Bolton, J.G., Westfold, K.C.,
  "Structure of the galaxy and the sense of rotation of spiral nebulae"
  (1950) Nature 165: 487-488
- Brown, R.H., Hazard, C.,

  "Radio-frequency radiation from the great nebula in
  Andromeda (M 31)"

  (1950) Nature 166: 901-902
- Kiepenheuer, K.O.,
  "Cosmic rays as the source of general galactic radio emission"
  (1950) Phys. Rev. 79: 738-739
- A99 Little, C.G., Lovell, A.C.B.,
  "Origin of the fluctuations in the intensity of radio
  waves from galactic sources Jodrell Bank observations"
  (1950) Nature 165: 423-424
- Pawsey, J.L.,
  "Solar radio-frequency radiation"
  (1950) Proc. IEE 97: 290-310
- Ryle, M.,
  "Radio astronomy"
  (1950) Rep. Prog. Phys. 13: 184-246
- Ryle, M., Smith, F.G., Elsmore, B.,
  "A preliminary survey of the radio stars in the northern hemisphere"
  (1950) MNRAS 110: 508-523
- A111 Smerd, S.F.,
  "Radio-frequency radiation from the quiet sun"
  (1950) Aust. J. Sci. Res. A3: 34-59

A98 Smith, F.G., "Origin of the fluctuations in the intensity of radio waves from galactic sources - Cambridge observations" (1950) Nature 165: 422-423 A287 Stanier, H.M., "Distribution of radiation from the undisturbed sun at a wave-length of 60 cm" (1950) Nature 165: 354-355 A 51 Stanley, G.J., Slee, O.B., "Galactic radiation at radio frequencies II. The discrete sources" (1950) Aust. J. Sci. Res. A3: 234-250 A48 Struve, O., "Progress in radio astronomy - II" (1950) Sky Telesc. 9: 55-56 A236 U.R.S.I., "Solar and galactic radio noise" (1950) URSI Spec. Rep. 1 A91 Brown, R.H., Hazard, C., "Radio emission from the Andromeda nebula" (1951) MNRAS 111: 357-367 544 Ewen, H.I., Purcell, E.M., "Observation of a line in the galactic radio spectrum radiation from galactic hydrogen at 1,420 Mc./sec." (1951) Nature 168: 356-357 A 19 Ginzburg, V.L., "Kosmicheskie luchi kak istochnik galakticheskogo radioielueniia = Cosmic rays as the source of galactic radio emission" (1951) Dokl. Akad. nauk SSSR 76: 377-380 A 63 Lovell, A.C.B., "The new science of radio astronomy" (1951) Nature 167: 94-97 A 112 Machin, K.E., Smith, F.G., "A new radio method for measuring the electron density in the solar corona" (1951) Nature 168: 599-600 A288

"Distribution of radiation across the solar disk at a

Machin, K.E.,

frequency of 81.5 Mc./s." (1951) Nature 167: 889-891

- Mills, B.Y., Thomas, A.E.,
  "Observations of the source of radio-frequency radition
  in the constellation of Cygnus"
  (1951) Aust. J. Sci. Res. A4: 158-171
- Muller, C.A., Oort, J.H.,
  "The interstellar hydrogen line at 1,420 Mc./sec., and an
  estimate of galactic rotation"
  (1951) Nature 168: 357-358
- A189 Piddington, J.H.,
  "The origin of galactic radio-frequency radiation"
  (1951) MNRAS 111: 45-63
- A190 Ryle, M., Elsmore, B.,
  "A search for long-period variations in the intensity of radio stars"
  (1951) Nature 168: 555-556
- A191 Smith, F.G.,

  "An attempt to measure the annual parallax or proper motion of four radio stars"

  (1951) Nature 168: 962-963
- Smith, F.G.,

  "An accurate determination of the positions of four radio stars"

  (1951) Nature 168: 555
- Van de Hulst, H.C.,
  "A Course in Radio Astronomy"
  (1951) Harvard lectures (Leiden-mimeo.)
- Westerhout, G., Oort, J.H.,
  "A comparison of the intensity distribution of radio-frequency radiation with a model of the galactic system"
  (1951) BAN 11: 323-333
- A114 Brown, R.H., Hazard, C.,

  "Radio-frequency radiation from Tycho Brahe's supernova
  (A.D. 1572)"

  (1952) Nature 170: 364-365
- Brown, R.H., Hazard, C.,
  "Extragalactic radio-frequency radiation"
  (1952) Phil. Mag. 43: 136-152

S39 Brown, R.H., Jennison, R.C., Das Gupta, M.K., "Apparent angular sizes of discrete radio sources observations at Jodrell Bank, Manchester" (1952) Nature 170: 1061-1063 A 116 Christiansen, W.N., Hindman, J.V., "A preliminary survey of 1420 Mc/s. line emission from galactic hydrogen" (1952) Aust. J. Sci. Res. A5: 437-455 A 290 Getmantsev, G.G., "Cosmic electrons as a source of the radio emission from the galaxy [in Russian]" (1952) Dokl. Akad. nauk SSSR 83: 557-560 A 193 Gum, C.S., "A large H II region at galactic longitude 226" (1952) Observatory 72: 151-154 B24 Lovell, B., Clegg, J.A., "Radio Astronomy" (1952) London: Chapman & Hall A117 Machin, K.E., Smith, F.G., "Occultation of a radio star by the solar corona" (1952) Nature 170: 319-320 A 170 Mills, B.Y., "The positions of six discrete sources of cosmic radio radiation" (1952) Aust. J. Sci. Res. A5: 456-463 A 53 Mills, B.Y., "The distribution of the discrete sources of cosmic radio radiation" (1952) Aust. J. Sci. Res. A5: 266-287 S 40 Mills, B.Y., "Apparent angular sizes of discrete radio sources-observations at Sydney" (1952) Nature 170: 1063-1064 A 195 Piddington, J.H., Minnett, H.C., "Radio-frequency radiation from the constellation of (1952) Aust. J. Sci. Res. A5: 17-34 S21 Ryle, M.,

"A new radio interferomter and its application to the

observation of weak radio stars" (1952) Proc. Roy. Soc. A211: 351-375

- A196 Shklovsky, I.S., Parenago, P.P.,
  "Otozhđestvlemie sverkhnovoi zvezdy 369 goda s moshchnoi
  radiozvezdoi v Kassiopee = Identification of the
  supernova of 369 with an intense radio star in
  Cassiopeia"
  (1952) Astr. Tsirk. 131: 1-2
- A197 Shklovsky, I.S., Kholopov, P.N.,
  "Otozhdestvlenie tumannosti NGC 1316 s radiozvezdoi v
  sozvezdii Pechi = Identification of the nebula NGC 1316
  with the radio star in the constellation of Fornax"
  (1952) Astr. Tsirk. 3: 2-3
- A291 Shklovsky, I.S.,
  "Radio spectroscopy of the galaxy [in Russian]"
  (1952) Astr. Zh. 29: 144-153
- A54 Shklovsky, I.S.,
  "O prirode radioizlucheniia galaktiki = On the nature of
  the radio emission from the Galaxy"
  (1952) Astr. Zh. 29: 418-449
- Smith, F.G.,

  "Apparent angular sizes of discrete radio sources-observations at Cambridge"

  (1952) Nature 170: 1065
- A118 Vitkevich, V.V.,

  "Interferentsionnyi metod v radioastronomii =
  Interferometer methods for radio astronomy"
  (1952) Astr. Zh. 29: 450-462
- A198 Wild, J.P.,
  "The radio-frequency line spectrum of atomic hydrogen and its applications in astronomy"
  (1952) Astrophys. J. 115: 206-221
- A 201

  Brown, R.H., Hazard, C.,

  "An extended radio-frequency source of extragalactic origin"

  (1953) Nature 172: 997-998
- Brown, R.H., Hazard, C.,
  "A survey of 23 localized radio sources in the northern hemisphere"
  (1953) MNRAS 113: 123-133

- A293 Christiansen, W.N.,
  "A high-resolution aerial for radio astronomy"
  (1953) Nature 171: 831-833
- A199 Ginzburg, V.I.,
  "Sverkhnovye i novye zvezdy kak istochniki kosmikheskogo
  i radioizlukhennia = Supernovae and novae as sources of
  cosmic and radio radiation"
  (1953) Dokl. Akad. nauk SSSR 92: 1133-1136
- A200 Greenstein, J.L., Minkowski, R.,
  "The Crab Nebula as a radio source"
  (1953) Astrophys. J. 118: 1-15
- Jennison, R.C., Das Gupta, M.K.,
  "Fine structure of the extra-terrestrial radio source
  Cygnus 1"
  (1953) Nature 172: 996-997
- A202 Kraus, J.D., Ko, H.C.,
  "Radio radiation from the supergalaxy"
  (1953) Nature 172: 538-539
- A119 Mills, B.Y.,
  "The radio brightness distributions over four discrete sources of cosmic noise"
  (1953) Aust. J. Phys. 6: 452-470
- A120 Mills, B.Y., Little, A.G.,
  "A high-resolution aerial system of a new type"
  (1953) Aust. J. Phys. 6: 272-278
- 0'Brien, P.A.,
  "The distribution of radiation across the solar disk at
  metre wave-lengths"
  (1953) MNRAS 113: 597-612
- A178 Pawsey, J.L.,
  "Radio astronomy in Australia"
  (1953) JRASC 47: 137-152
- Sanders, T.M. Jr., Schawlow, A.L., Dousmanis, G.C., Townes, C.H.,
  "A microwave spectrum of the free OH radical"
  (1953) Phys. Rev. 89: 1158-1159
- A204 Scheuer, P.A.G., Ryle, M.,
  "An investigation of the H II regions by a radio method"
  (1953) MNRAS 113: 3-17

- Shklovsky, I.S.,
  "O prirode svecheniia Krabovidnoi tumannosti = On the
  nature of the radiation from the Crab Nebula"
  (1953) Dokl. Akad. nauk SSSR 90: 983-986
- A122 Shklovsky, I.S.,
  "The possibility of observing monochromatic radio emission from interstellar molecules [in Russian]"
  (1953) Dokl. Akad. nauk SSSR 92: 25-28
- Shklovsky, I.S.,
  "Problema kosmicheskogo radioizlucheniia = The problem of
  cosmic radio waves"
  (1953) Astr. Zh. 30: 15-36
- Naucouleurs, G. de,
  "Normal and abnormal galaxies as radio sources"
  (1953) Observatory 73: 252-254
- A167 Baade, W., Minkowski, R.,
  "On the identification of radio sources"
  (1954) Astrophys. J. 119: 215-231
- Baade, W., Minkowski, R.,
  "Identification of the radio sources in Cassiopeia,
  Cygnus A, and Puppis A"
  (1954) Astrophys. J. 119: 206-214
- A205 Baldwin, J.E., Elsmore, B.,
  "Radio emission from the Perseus cluster"
  (1954) Nature 173: 818
- A240 Bracewell, R.N., Roberts, J.A.,
  "Aerial smoothing in radio astronomy"
  (1954) Aust. J. Phys. 7: 615-640
- Brown, R.H., Twiss, R.Q.,
  "A new type of interferometer for use in radio astronomy"
  (1954) Phil. Mag. 45: 663-682
- A248 Brown, R.H., Palmer, H.P., Thompson, A.R., "Galactic radio sources of large angular diameter" (1954) Nature 173: 945-946
- Dombrovsky, V.A.,
  "O prirode izlucheniia Krabovidnoi tumannosti = On the
  nature of the radiation from the Crab Nebula"
  (1954) Dokl. Akad. nauk SSSR 94: 1021-1024

- Greenstein, J.L.,
  "Washington conference on radio astronomy--1954, ed. by
  J.L. Greenstein"
  (1954) JGR 59: 149-201
- Haddock, F.T., Mayer, C.H., Sloanaker, R.M.,
  "Radio observations of ionized hydrogen nebulae and other
  discrete sources at a wavelength of 9.4 cm"
  (1954) Nature 174: 176-177
- Haddock, F.T., Mayer, C.H., Sloanaker, R.M.,
  "Radio emission from the Orion Nebula and other sources
  at a wavelength of 9.4 cm"
  (1954) Astrophys. J. 119: 456-459
- Hagen, J.P., McClain, E.F.,
  "Galactic absorption of radio waves"
  (1954) Astrophys. J. 120: 368-370
- A126 Kerr, F.J., Hindman, J.V., Robinson, B.J.,
  "Observations of the 21 cm line from the Magellanic Clouds"
  (1954) Aust. J. Phys. 7: 297-314
- A209 Kwee, K.K., Muller, C.A., Westerhout, G.,
  "The rotation of the inner parts of the galactic system"
  (1954) BAN 12: 211-222
- A210 Shklovsky, I.S.,
  "On the nature of the discrete sources of cosmic radio waves [in Russian]"
  (1954) Dokl. Akad. nauk SSSR 98: 353-356
- Townes, C.H.,
  "Microwave spectra of astrophysical interest"
  (1954) JGR 59: 191
- A 271
  U.R.S.I.,
  "The distribution of radio brightness on the solar disk"
  (1954) URSI Spec. Rep. 4
- U.R.S.I.,
  "Interstellar hydrogen"
  (1954) URSI Spec. Rep. 5
- U.R.S.I.,
  "Discrete sources of extra-terrestrial radio noise"
  (1954) URSI Spec. Rep. 3

- Van de Hulst, H.C., Muller, C.A., Cort, J.H.,
  "The spiral structure of the outer part of the galactic
  system derived from the hydrogen emission at 21-cm
  wavelength"
  (1954) BAN 12: 117-149
- Vashakidze, M.A.,
  "On the degree of polarization of the light near
  extragalactic nebulae and the Crab Nebula [in Russian]"
  (1954) Astr. Tsirk. 147: 11-13
- Williams, D.R.W., Davies, R.D.,
  "A method for the measurement of the distance of radio stars"
  (1954) Nature 173: 1182-1183
- Baldwin, J.E.,
  "The distribution of the galactic radio emission"
  (1955) MNRAS 115: 690-700
- Bok, B.J.,
  "New science of radio astronomy"
  (1955) Sci. Monthly 80: 333-345
- Brown, R.H., Palmer, H.P., Thompson, A.R.,
  "A rotating-lobe interferometer and its application to
  radio astronomy"
  (1955) Phil. Mag. 46: 857-866
- Brown, R.H., Palmer, H.P., Thompson, A.R., "Polarization measurements of three intense radio sources"

  (1955) MNRAS 115: 487-492
- Brown, R.H., Lovell, A.C.B.,
  "Large radio telescopes and their use in radio astronomy"
  (1955) Vistas Astron. 1: 542-560
- Burke, B.F., Franklin, K.L.,
  "Observations of a variable radio source associated with
  the planet Jupiter"
  (1955) JGR 60: 213-217
- Davies, R.D., Williams, D.R.W.,
  "An alternative identification of the radio source in the direction of the galactic centre"
  (1955) Nature 175: 1079-1081
- A215 Greenstein, J.L.,
  "Theoretical problems of discrete radio sources"
  (1955) IAU Symp. 4: 179-191

A296 Hagen, J.P., Lilley, A.F., McClain, E.F., "Absorption of 21-cm radiation by interstellar hydrogen" (1955) Astrophys. J. 122: 361-375 A 2 Hey, J.S., "Solar radio eclipse observations" (1955) Vistas Astron. 1: 521-531 A216 Kaidanovsky, N.L., Kardashev, N.S., Shklovsky, I.S., "Results of observations of discrete sources of cosmic radio waves at 3.2 cm" (1955) Dokl. Akad. nauk SSSR 104: 517-519 A217 McClain, E.F., "An approximate distance determination for radio source Sagittarius A! (1955) Astrophys. J. 122: 376-384 A129 Mills, B.Y., "The observation and interpretation of radio emission from some bright galaxies" (1955) Aust. J. Phys. 8: 368-389 B 19 Pawsey, J.L., Bracewell, R.N., "Radio Astronomy" (1955) Oxford: Clarendon Press A218 Seaton, M.J., "The kinetic temperature of the interstellar gas in regions of neutral hydrogen" (1955) Ann. d'Astrophys. 18: 188-205 A219 Shklovsky, I.S., "On the nature of the radiation from the radio galaxy NGC 4486 [in Russian]" (1955) Astr. Zh. 32: 215-225 A220 Stone, S.N., "A possible extragalactic source of 21-cm radio emission" (1955) PASP 67: 183-185 A 238 AUI,

"Planning document for the establishment and operation of a radio astronomy observatory, prepared for the National

Science Foundation" (1956) NRAO internal rep.

- A 221 Baldwin, J.E., Smith, F.G., "Radio emission from the extragalactic nebula M 87" (1956) Observatory 76: 141-144 A69 Bok, B.J., "A national radio observatory" (1956) Sci. Amer. 195: 56-64 (Oct.) A130 Burbidge, G.R., "On the synchrotron radiation from Messier 87" (1956) Astrophys. J. 124: 416-429 A222 Burke, B.F., "Mills Cross telescopes" (1956) AJ 61: 167-168 A142 Droege, F., Priester, W., "Durchmusterung der allgemeinen Radiofrequenz-Strahlung bei 200 MHz = Distribution of galactic radiation at 200 (1956) Z. Astrophys. 40: 236-248 A67 Emberson, R.M., "National Radio Astronomy Observatory" (1956) Science 130: 1307-1318 A 223 Getmantsev, G.G., Razin, V.A., "On the problem of the polarization of nonthermal cosmic radio emission [in Russian]" (1956) Trudy Soweshch. Vop. Kosmog. 5: 496-505 A 224 Heeschen, D.S., "21-cm line emission from the Coma cluster" (1956) Astrophys. J. 124: 660-662 A247 Jennison, R.C., Das Gupta, M.K., "The measurement of the angular diameter of two intense radio sources I. A radio interferometer using post-detector correlation [and] II. Diameter and structural measurements of the radio stars Cygnus A and Cassiopeia A" (1956) Phil. Mag. 55-75 A 225 Mills, B.Y., "The radio source near the galactic centre" (1956) Observatory 76: 65-67
- B15 Pfeiffer, J.,
  "The Changing Universe"
  (1956) New York: Random House

A115 Piddington, J.H., Trent, G.H., "A survey of cosmic radio emission at 600 Mc/s" (1956) Aust. J. Phys. 9: 481-493 B20 Shklovsky, I.S., "Kosmicheskoe Fadioizluchenie" (1956) Moscow: Gos. Izd. Tek. Lit. A46 Southworth, G.C., "Early history of radio astronomy" (1956) Sci. Monthly 82: 55-66 B 18 Anon., "Symposiuim on Radio Astronomy - C.S.I.P.O. Radiophysics Laboratory, Sydney - September 1956" (1957) Melbourne: CSIRO A226 Barrett, A.H., Lilley, A.E., "A search for the 21-cm line of OH in the interstellar medium" (1957) AJ 62: 5-6 A 113 Blythe, J.H., "A new type of pencil beam aerial for radio astronomy" (1957) MNRAS 117: 644-651 A227 Bolton, J.G., Wild, J.P., "On the possibility of measuring interstellar magnetic fields by 21-cm Zeeman splitting" (1957) Astrophys. J. 125: 296-297 A228 Heeschen, D.S., "Neutral hydrogen in M 32, M 51, and M 81" (1957) Astrophys. J. 126: 471-479 A229 Heeschen, D.S., "Neutral hydrogen emission from the Hercules and Corona Borealis clusters of galaxies" (1957) PASP 69: 350-351 A60 Jansky, C.M. Jr., "The beginnings of radio astronomy" (1957) Amer. Scientist 45: 5-12 A81 Lovell, A.C.E.,

"The Jodrell Bank Radio Telescope"

(1957) Nature 180: 60-62

- Mayer, C.H., McCullough, T.P., Sloanaker, R.M.,
  "Evidence for polarized radio radiation from the Crab
  Nebula"
  (1957) Astrophys. J. 126: 468-470
- Morris, D., Palmer, H.P., Thompson, A.R.,
  "Five radio sources of small angular diameter"
  (1957) Observatory 77: 103-106
- A232 Muller, C.A., Westerhout, G.,
  "A catalogue of 21-cm line profiles"
  (1957) BAN 13: 151-195
- Townes, C.H.,

  "Microwave and radio-frequency resonance lines of interest to radio astronomy"

  (1957) IAU Symp. 4: 92-103
- Van de Hulst, H.C., Raimond, E., Van Woerden, H.,
  "Rotation and density distribution of the Andromeda
  Nebula derived from observations of the 21-cm line"
  (1957) BAN 14: 1-16
- Van de Hulst, H.C.,
  "Radio Astronomy IAU Symp. 4, ed. by H.C. van de Hulst"
  (1957) Cambridge: Cambridge University Press
- Blum, E.J., Denisse, J.F., Steinberg, J.L., "Radio astronomy at the Meudon Observatory" (1958) Proc. IRE 46: 39-43
- A243 Bracewell, R.N.,
  "Radio interferometry of discrete sources"
  (1958) Proc. IRF 46: 97-105
- B14 Brown, R.H., Lovell, A.C.B.,
  "The Exploration of Space by Radio"
  (1958) New York: Wiley
- A68 Emberson, R.M., Ashton, N.L.,
  "The telescope program for the National Radio Astronomy
  Observatory at Green Bank, West Virginia"
  (1958) Proc. IRE 46: 23-35
- A13 Haddock, F.T.,
  "Introduction to radio astronomy"
  (1958) Proc. IRE 46: 3-12
- Haddock, F.T.,
  "Radio astronomy special issue, ed. by F.T. Haddock"
  (1958) Proc. IRE 46: 1-355

- Heeschen, D.S., Dieter, N.H.,
  "Extragalactic 21-CM line studies"
  (1958) Proc. IRE 46: 234-239
- Jansky, C.M. Jr.,
  "The discovery and identification by Karl Guthe Jansky of electromagnetic radiation of extraterrestrial origin in the radio spectrum"
  (1958) Proc. IRE 46: 13-15
- Jennison, R.C.,

  "A phase sensitive interferometer technique for the measurement of the Fourier transforms of spatial brightness distributions of small angular extent"

  (1958) MNRAS 118: 276-284
- A237 Kennelly, A.F.,
  "Radio astronomy in 1890: a proposed experiment"
  (1958) PASP 70: 303-304
- A79 Kraus, J.D.,
  "Radio telescope antennas of large aperture"
  (1958) Proc. IRF 46: 92-97
- Mills, B.Y., Little, A.G., Sheridan, K.V., Slee, O.B.,
  "A high resolution radio telescope for use at 3.5 M"
  (1958) Proc. IRE 46: 67-84
- A233 Oort, J.H., Kerr, F.T., Westerhout, G.,
  "The galactic system as a spiral nebula"
  (1958) MNRAS 118: 379-389
- Reber, G.,
  "Early radio astronomy at Wheaton, Illinois"
  (1958) Proc. IRE 46: 15-23
- A 132 Ryle, M.,
  "The nature of cosmic radio sources"
  (1958) Proc. Roy. Soc. A 248: 289-308
- A78 Shain, C.A.,
  "The Sydney 19.7 Mc radio telescope"
  (1958) Proc. IRE 46: 85-88
- Bracewell, R.N.,
  "Paris Symposium on Radio Astronomy (IAU Symp. 9, URSI
  Symp. 1), ed. by P.N. Bracewell"
  (1959) Stanford: Stanford Univ. Press

B22 Christensen, R., "World Developments in Radio Astronomy" (1959) Santa Barbara: GE A57 Elwert, G, "Die 21 cm-Linie des Wasserstoffs und die Spiralstruktur des Milchstrassenssystems = The 21 cm hydrogen line and galactic spiral structure" (1959) Ergebn. Exakt. Naturwiss. 32: 1-78 A 234 Kerr, F.J., Hindman, J.V., Gum, C.S., "A 21-cm survey of the southern Milky Way" (1959) MNRAS 119: 297-308 В9 Kokurin, Yu.L., "Radioastronomiya: annotirovannyi, bibliograficheskii ukazatel otechestvennoi i inostrannoi literatury, 1932-1958 gg. = Radioastronomy: annotated bibliographical index of native and foreign literature, 1932-1958, ed. by Yu.L. Kokurin" (1960) Moscow: Akad. nauk SSSR A 235 Rougoor, G.W., Oort, J.H., "Distribution and motion of interstellar hydrogen in the Galactic System with particular reference to the region within 3 kpc of the center" (1960) Proc. NAS 46: 1-13 A 133 Ryle, M., Hewish, A., "The synthesis of large radio telescopes" (1960) MNRAS 120: 220-230 A 134 Shklovsky, I.S., "Radiogalaktiki" (1960) Astr. Zh. 37: 945-960 B21 Shklovsky, I.S., "Cosmic Radio Waves" (1960) Cambridge: Harvard Univ. Press B6 Smith, F.G., "Radio Astronomy" (1960) New York: McGraw-Hill B27 Tuve, M.A., "Symposium on Padio Astronomy, delivered before the autumn meeting of the National Academy of Sciences,

Indiana University, Bloomington, November 17, 1959,

Chairman, Merde A. Tuve" (1960) Proc. NAS special reprint

- Bracewell, R.N., Swarup, G.,
  "The Stanford microwave spectroheliograph antenna, a
  microsteradian pencil beam interferometer"
  (1961) IRE Trans. Ant. Prop. AP-9: 23-30
- Burbidge, G.R.,
  "Galactic explosions as sources of radio emission"
  (1961) Nature 190: 1053-1056
- Hazard, C.,
  "Lunar occultation of a radio source"
  (1961) Nature 191: 58
- McKinley, D.W.,
  "Meteor Science and Engineering"
  (1961) New York: McGraw-Hill
- A134 Shklovsky, I.S.,
  "Radio galaxies"
  (1961) Sov. Astron. AJ 4: 885-896
- A242 Swarup, G., Yang, K.S.,
  "Phase adjustment of large antennas"
  (1961) IRE Trans. Ant. Prop. AP-9: 75-81
- A180 Ryle, M.,
  "The new Cambridge radio telescope"
  (1962) Nature 194: 517-518
- A137 Scheuer, P.A.G.,
  "On the use of lunar occultations for investigating the angular structure of radio sources"
  (1962) Aust. J. Phys. 15: 333-343
- A55 Skobel'tsyn, D.V.,
  "Radioastronomiia [special issue]"
  (1962). Trudy Fiz. Inst. im. P.N. Lebedeva 17: 1-190
- Whitford, A.E.,

  "Radio astronomy section Whitford Committee report

  (preliminary edition)"

  (1962) NRAO internal rep.
- Blum, E.J., Boischot, A., Lequeux, J.,
  "Radio astronomy in France"
  (1963) Proc. IRE Australia 24: 208-213

- Bowen, E.G., Minnett, H.C.,
  "The Australian 210-foot radio telescope"
  (1963) Proc. IRE Australia 24: 98-105
- Burbidge, G.R., Burbidge, E.M., Sandage, A.,
  "Evidence for the occurrence of violent events in the
  nuclei of galaxies"
  (1963) Rev. Mod. Phys. 35: 947-972
- A139 Conway, R.G., Kellermann, K.I., Long, R.J.,
  "The radio frequency spectra of discrete radio sources"
  (1963) MNRAS 125: 261-284
- Davies, R.D.,
  "Radio astronomy at Jodrell Bank"
  (1963) Proc. IRE Australia 24: 231-236
- A140 Greenstein, J.L., Matthews, T.A.,
  "Red-shift of the unusual radio source 3C 48"
  (1963) Nature 197: 1041-1042
- A258 Hatanaka, T.,
  "Radio astronomy in Japan"
  (1963) Proc. IRE Australia 24: 243-251
- Hewish, A.,

  "The realisation of giant radio telescopes by synthesis techniques"

  (1963) Proc. IRE Australia 24: 225-231
- A257 Kalachov, P.D.,
  "Some radio telescopes in the U.S.S.R."
  (1963) Proc. IRE Australia 24: 237-242
- Nupen, W.,
  "Bibliography on atmospheric aspects of radio astronomy,
  including selected references to related fields"
  (1963) NBS TN 171: 1-385
- Pawsey, J.L.,
  "Radio astronomy issue, ed. by J.L. Pawsey"
  (1963) Proc. IRE Australia 24: 93-255
- A141 Schmidt, M.,
  "3C 273: a star-like object with large red-shift"
  (1963) Nature 197: 1040

B 16 Steinberg, J.L., Lequeux, J., "Radio Astronomy" (1963) New York: McGraw-Hill A143 Weinreb, S., Barrett, A.H., Meeks, M.L., Henry, J.C., "Radio observations of OH in the interstellar medium" (1963) Nature 200: 829-831 Westerhout, G., A255 "Current radic astronomical research in the Netherlands" (1963) Proc. IRE Australia 24: 214-218 A144 Bolton, J.G., Van Damme, K.J., Gardner, F.F., Robinson, B.J., "Observation of OH absorption lines in the radio spectrum of the galactic centre" (1964) Nature 201: 279 A 145 Hewish, A., Scott, P.F., Wills, D., "Interplanetary scintillation of small diameter radio sources" (1964) Nature 203: 1214-1217 A 252 Kraus, J.D., "Radio and radar astronomy [special issue], ed. by J.D. Kraus" (1964) IEEE Trans. Mil. Flec. MIL-8: 143-301 A56 Kraus, J.D., "Recent advances in radio astronomy" (1964) IEEE Spectrum 1: 78-95 (Sept.) В**7** Smith, F.G., Carr, T.D., "Radio Exploration of the Planetary System" (1964) New York: Van Nostrand B11 Zheleznyakov, V.V., "Radioizluchenie Sclntsa i Planet = Radio Emission of the Sun and Planets" (1964) Moscow: Nauka A146 Dicke, R.H., Peebles, P.J.E., Roll, P.G., Wilkinson, D.T., "Cosmic black-body radiation" (1965) Astrophys. J. 142: 414-419

"Karl Jansky: his career at Bell Telephone Laboratories"

A 182

Friis, H.T.,

(1965) Science 149: 841-842

- Gt. Brit., S.R.C.,

  "Radio astronomy: report of the Committee ... under the chairmanship of Lord Fleck, 1961-1964"

  (1965) London: HMSO
- Penzias, A.A., Wilson, R.W.,
  "A measurement of excess antenna temperature at 4080
  Mc/s"
  (1965) Astrophys. J. 142: 419-421
- Ryle, M., Elsmore, B., Neville, A.C.,
  "High-resolution observations of the radio sources in
  Cygnus and Cassiopeia"
  (1965) Nature 205: 1259-1262
- B13 Kraus, J.D.,
  "Radio Astronomy"
  (1966) New York: McGraw-Hill
- Longair, M.S.,
  "On the interpretation of radio source counts"
  (1966) MNRAS 133: 421-436
- Roll, P.G., Wilkinson, D.T.,
  "Cosmic background radiation at 3.2 cm--support for cosmic black-body radiation"
  (1966) Phys. Rev. Lett. 16: 405-407
- Ze-zong, X., Shu-ren, B.,
  "Ancient novae and supernovae recorded in the annals of
  China, Korea, and Japan and their significance in radio
  astronomy"
  (1966) Science 154: 597-603
- Broten, N.W., Legg, T.H., Locke, J.L., McLeish, C.W., Richards, R.S., Chisholm, R.M., Gush, H.P., Yen, J.L., Galt, J.A.,
  "Long base line interferometry: a new technique"
  (1967) Science 156: 1592-1593
- A 150 Gold, T.,

  "Rotating neutron stars as the origin of the pulsating radio sources"

  (1968) Nature 218: 731-732
- Hewish, A., Bell, S.J., Pilkington, J.D., Scott, P.F., Collins, R.A.,
  "Observation of a rapidly pulsating radio source"
  (1968) Nature 217: 709-713

A152 Large, M.I., Vaughan, A.E., Mills, B.Y., "A pulsar supernova association?" (1968) Nature 220: 340-341 **B4** Lovell, B., "The Story of Jodrell Bank" (1968) New York: Harper & Row A 153 Lyne, A.G., Smith, F.G., "Linear polarization in pulsating radio sources" (1968) Nature 218: 124-126 A 154 Staelin, D.H., Reifenstein, E.C., "Pulsating radio sources near the Crab Nebula" (1968) Science 162: 1481-1483 1262 Swenson, G.W. Jr., Mathur, N.C., "The interferometer in radio astronomy" (1968) Proc. IEEE 56: 2114-2130 A 155 Cocke, W.J., Disney, M.J., Taylor, D.J., "Discovery of optical signals from the pulsar NP 0532" (1969) Nature 221: 525-527 A 160 Smith, F.G., "The pulsars" (1970) Telecommun. J. 37: 750-752 A 3 Westerhout, G., "The early history of radio astronomy" (1972) Annals N.Y. Acad. Sci. 198: 211-218 A 261 Findlay, J.F., "Radio and radar astronomy [special issue], ed. by J.F. Findlay" (1973) Proc. IEEE 61: 1172-1363 B2 Hey, J.S., "The Evolution of Radio Astronomy" (1973) New York: Science History Publ. **B17** Lovell, B., "Out of the Zenith" (1973) Oxford: University Press B25 Brown, R.H., "The Intensity Interferometry - its application to astronomy"

(1974) London: Taylor & Francis

A164 Poppel, W., "Radioastronomia en linea de 21cm del hidrogeno interstelar = Radioastronomy in the 21 cm line of interstellar hydrogen" (1974) Rev. Astron. (Argentina) 46: 23-32 B 1 Edge, D., Mulkay, M.J., "Astronomy Transformed: The Emergence of Radio Astronomy in Britain" (1976) New York: Wiley **B3** Kraus, J., "Big Ear" (1976) Columbus: Cygnus Bks A 1 Edge, D., "The sociology of innovation in modern astronomy" (1977) QJRAS 18: 326-339 A 176 Lovell, B., "The effects of defence science on the advance of astronomy" (1977) J. Hist. Astron. 8: 151-173 A159 Sullivan, W.T. III, "A new look at Karl Jansky's original data" (1978) Sky Telesc. 56: 101-105 A165 Aaronson, S., "Radio astronomy and the big bang" (1979) Bell Lab. Rec. 57: 4-11 A 157 Hagen, J.P., "The CCIR and radio astronomy" (1979) ICC '79 09.4: 1-4 A156 Haines, S.A., "The beginnings of Canadian radio astronomy" (1979) Sci. Dimensions (Canada) 11: 18-20 (no.3) A73 Jansky, C.M. Jr., "My brother Karl Jansky and his discovery of radio waves from beyond the earth" (1979) Cosmic Search 1: 12-16 (fall) A158 Wilson, R.W.,

"The cosmic microwave background" (1979) Rev. Mod. Phys. 51: 435-445

A74 Kraus, J., "The first 50 years of radio astronomy, part 1: Karl Jansky and his discovery of radio waves from our galaxy" (1981) Cosmic Search 3: 8-12 (fall) A86 Baars, J.W.M., "Millimeter-Radioastronomie: ein neues Fenster in den Weltraum" (1982) Sterne 58: 211-220 A297 Backer, D.C., Kulkarni, S.R., Heiles, C., Davis, M.M., Goss, W.M., "A millisecond pulsar" (1982) Nature 300: 615-618 **E84** Guertler, J., "Fuenfzig Jahre Radioastronomie" (1982) Sterne 58: 195-196 A75 Kraus, J., "The first 50 years of radio astronomy, part 2: Grote Reber and the first radio maps of the sky" (1982) Cosmic Search 4: 14-19 (first half) A87 Krueger, A., "Erforschung der Sonne mit Mitteln der Radioastronomie" (1982) Sterne 58: 221-231 A84 Lovell, B., "Die fruehe Geschichte der Radiosternwarte Jodrell Bank" (1982) Sterne 58: 197-205 A 85 Penzias, A.A., "Die Entdeckung der Mikrowellenreststrahlung" (1982) Sterne 58: 206-210 A88 Preuss, E., "Zu Stand und Entwicklung der Radiointerferometrie in der Astronomie" (1982) Sterne 58: 232-251 A 251 Sullivan, W.T. III, "Radio astronomy's golden anniversary" (1982) Sky Telesc. 64: 544-550 B8 Sullivan, W.T. III,

"Classics in Radio Astronomy"

(1982) Dordrecht: D. Reidel

Thaddeus, P.,
"Facilities for US radioastronomy"
(1982) Phys. Today 35: 36-42 (Nov.)

Vallee, J.P.,

"Cinquante annees de radioastronomie: progres,
decouvertes et avenir = fifty years of radioastronomy:
progress, discoveries and prospects"
(1982) JRASC 76: 1-18

A298 Kraus, J.,
"The first 50 years of radio astronomy, part 3: Post-war radio astronomy"
(1983) AstroSearch 1: 5-6

A165 Aaronson, S., "Radio astronomy and the big bang" (1979) Bell Lab. Rec. 57: 4-11 S36 Alfven, H., Herlofson, N., "Cosmic radiation and radio stars" (1950) Phys. Rev. 78: 616 A186 Allen, C.W., Gum, C.S., "Survey of galactic radio noise at 200 Mc/s" (1950) Aust. J. Sci. Res. A3: 224-233 A96 Alpher, R.A., Herman, R.C., "Remarks on the evolution of the expanding universe" (1949) Phys. Rev. 75: 1089-1095 A72 Anon., "New radio waves traced to centre of the Milky Way" (1933) N.Y. Times 82: 1 (5 May) B18 Anon., "Symposiuim on Radio Astronomy - C.S.I.R.O. Radiophysics Laboratory, Sydney - September 1956" (1957) Melbourne: CSIRO A100 Appleton, E.V., "Departure of long-wave solar radiation from black-body intensity" (1945) Nature 156: 534-535 A101 Appleton, E.V., Hey, J.S., "Solar radio noise" (1946) Phil. Mag. 37: 73-84 A108 Appleton, E.V., Hey, J.S., "Circular polarization of solar radio noise" (1946) Nature 158: 339 A62 Arakawa, D., "Abnoram1 attenuation in short radio wave propagation" (1936) Rep. Radio Res. Japan 6:31-38 (May) A 102 Artsimovich, L.A., Pomeranchuk, I.Ya., "The radiation of fast electrons in a magnetic field"

(1945) J. Phys., USSR 9: 267-276

A 102 Artsimovich, L.A., Pomeranchuk, I.Ya., "The radiation of fast electrons in a magnetic field" (1946) Zh. Eksp. Terr. Fiz. 16: 379-389 A68 Ashton, N.L. SEF Emberson, R.M. 1958 A 238 AUI, "Planning document for the establishment and operation of a radio astronomy observatory, prepared for the National Science Foundation" (1956) NRAO internal rep. A 166 Baade, W., "The Crab Nebula" (1942) Astrophys. J. 96: 188-198 A167 Baade, W., Minkowski, R., "On the identification of radio sources" (1954) Astrophys. J. 119: 215-231 S38 Baade, W., Minkowski, R., "Identification of the radio sources in Cassiopeia, Cygnus A, and Puppis A" (1954) Astrophys. J. 119: 206-214 A86 Baars, J.W.M., "Millimeter-Radioastronomie: ein neues Fenster in den Weltraum" (1982) Sterne 58: 211-220 Backer, D.C., Kulkarni, S.R., Heiles, C., Davis, M.M., A297 Goss, W.M., "A millisecond pulsar" (1982) Nature 300: 615-618 A276 Bakker, C.J., "Radiogolven wit het wereldruim = The reception of radio waves from space" (1945) Ned. Tijdschr. Natuurk. 11: 201-209 A205 Baldwin, J.E., Elsmore, B., "Radio emission from the Perseus cluster" (1954) Nature 173: 818 A213 Baldwin, J.E., "The distribution of the galactic radio emission" (1955) MNRAS 115: 690-700

"Radio emission from the extragalactic nebula M 87"

Baldwin, J.E., Smith, F.G.,

(1956). Observatory 76: 141-144

A 221

A226 Barrett, A.H., Lilley, A.E., "A search for the 21-cm line of OH in the interstellar medium" (1957) AJ 62: 5-6 A143 Barrett, A.H. SEE Weinreb. S. 1963 A 263 Barton, H.J. SEE Newton, H.W. 1937 A264 Bay, Z., "Reflection of microwaves from the moon" (1947) Hung. Phys. Acta 1: 1-22 A 151 Bell, S.J. SEE Hewish, A. 1968 A277 Beringer, R. SEE Dicke, R.H. 1946 Beringer, R. SEE Dicke, R.H. 531 1946 A 76 Blum, E.J., Denisse, J.F., Steinberg, J.L., "Radio astronomy at the Meudon Observatory" (1958) Proc. IRE 46: 39-43 A254 Blum, E.J., Boischot, A., Lequeux, J., "Radio astronomy in France" (1963) Proc. IRE Australia 24: 208-213 A113 Blythe, J.H., "A new type of pencil beam aerial for radio astronomy" (1957) MNRAS 117: 644-651 Boischot, A. SEE Blum, E.J. 1963 A254 A71 Bok, B.J., "New science of radio astronomy" (1955) Sci. Monthly 80: 333-345 A69 Bok, B.J., "A national radio observatory" (1956) Sci. Amer. 195: 56-64 (Oct.) Bolton, J.G. SEE Payne-Scott, R. 1947 A266 A89 Bolton, J.G., "Discrete sources of galactic radio frequency noise" (1948) Nature 162: 141-142 A 90 Bolton, J.G., Stanley, G.J., "Observations of the variable source of cosmic radio frequency radiation in the constellation of Cygnus"

(1948) Aust. J. Sci. Res. A1: 58-69

- Bolton, J.G., Stanley, G.J.,
  "Variable source of radio frequency radiation in the constellation of Cygnus"
  (1948) Nature 151: 312-313
- Bolton, J.G., Stanley, G.J.,
  "The position and probable identification of the source of galactic radio-frequency radiation Taurus A"
  (1949) Aust. J. Sci. Res. A2: 139-148
- Bolton, J.G., Stanley, G.J., Slee, O.B.,
  "Positions of three discrete sources of galactic radio-frequency radiation"
  (1949) Nature 164: 101-102
- Bolton, J.G., Westfold, K.C.,
  "Galactic radiation at radio frequencies. III. Galactic
  structure"
  (1950) Aust. J. Sci. Res. A3: 251-264
- Bolton, J.G., Westfold, K.C.,
  "Galactic radiation at radio frequencies. I. 100-Mc/s
  survey"
  (1950) Aust. J. Sci. Res. A3: 19-23
- Bolton, J.G., Westfold, K.C.,
  "Structure of the galaxy and the sense of rotation of spiral nebulae"
  (1950) Nature 165: 487-488
- Bolton, J.G., Wild, J.P.,
  "On the possibility of measuring interstellar magnetic fields by 21-cm Zeeman splitting"
  (1957) Astrophys. J. 125: 296-297
- Bolton, J.G., Van Damme, K.J., Gardner, F.F.,
  Robinson, B.J.,
  "Observation of OH absorption lines in the radio spectrum
  of the galactic centre"
  (1964) Nature 201: 279
- Bowen, E.G., Minnett, H.C.,
  "The Australian 210-foot radio telescope"
  (1963) Proc. IRE Australia 24: 98-105
- A240 Bracewell, R.N., Roberts, J.A.,
  "Aerial smoothing in radio astronomy"
  (1954) Aust. J. Phys. 7: 615-640

- B19 Bracewell, R.N. SEE Pawsey, J.L. 1955
- A243 Bracewell, R.N.,
  "Radio interferometry of discrete sources"
  (1958). Proc. IRE 46: 97-105
- Bracewell, R.N.,
  "Paris Symposium on Radio Astronomy (IAU Symp. 9, URSI Symp. 1), ed. by R.N. Bracewell"
  (1959) Stanford: Stanford Univ. Press
- Bracewell, R.N., Swarup, G.,
  "The Stanford microwave spectroheliograph antenna, a
  microsteradian pencil beam interferometer"
  (1961) IFE Trans. Ant. Prop. AP-9: 23-30
- Broten, N.W., Legg, T.H., Locke, J.L., McLeish, C.W., Richards, R.S., Chisholm, R.M., Gush, H.P., Yen, J.L., Galt, J.A.,
  "Long base line interferometry: a new technique"
  (1967) Science 156: 1592-1593
- A97 Brown, R.H., Hazard, C.,
  "Radio-frequency radiation from the great nebula in
  Andromeda (M 31)"
  (1950) Nature 156: 901-902
- Brown, R.H., Hazard, C.,
  "Radio emission from the Andromeda nebula"
  (1951) MNRAS 111: 357-367
- A114 Brown, R.H., Hazard, C.,

  "Radio-frequency radiation from Tycho Brahe's supernova
  (A.D. 1572)"

  (1952) Nature 170: 364-365
- Brown, R.H., Hazard, C.,
  "Extragalactic radio-frequency radiation"
  (1952) Phil. Mag. 43: 136-152
- Brown, R.H., Jennison, R.C., Das Gupta, M.K.,
  "Apparent angular sizes of discrete radio sources observations at Jodrell Bank, Manchester"
  (1952) Nature 170: 1061-1063
- Brown, R.H., Hazard, C.,
  "An extended radio-frequency source of extragalactic origin"
  (1953) Nature 172: 997-998

- Brown, R.H., Hazard, C.,
  "A survey of 23 localized radio sources in the northern hemisphere"
  (1953) MNRAS 113: 123-133
- A123 Brown, R.H., Twiss, R.Q.,
  "A new type of interferometer for use in radio astronomy"
  (1954) Phil. Mag. 45: 663-682
- A248 Brown, R.H., Palmer, H.P., Thompson, A.R.,
  "Galactic radio sources of large angular diameter"
  (1954) Nature 173: 945-946
- Brown, R.H., Palmer, H.P., Thompson, A.R.,
  "A rotating-lobe interferometer and its application to
  radio astronomy"
  (1955). Phil. Mag. 46: 857-866
- Brown, R.H., Palmer, H.P., Thompson, A.R., "Polarization measurements of three intense radio sources"
  (1955) MNRAS 115: 487-492
- Brown, R.H., Lovell, A.C.B.,
  "Large radio telescopes and their use in radio astronomy"
  (1955) Vistas Astron. 1: 542-560
- B14 Brown, R.H., Lovell, A.C.B.,
  "The Exploration of Space by Radio"
  (1958) New York: Wiley
- Brown, R.H.,
  "The Intensity Interferometry its application to
  astronomy"
  (1974) London: Taylor & Francis
- A138 Burbidge, E.M. SEE Burbidge, G.R. 1963
- Burbidge, G.R.,
  "On the synchrotron radiation from Messier 87"
  (1956) Astrophys. J. 124: 416-429
- Burbidge, G.R.,

  "Galactic explosions as sources of radio emission"
  (1961) Nature 190: 1053-1056
- Burbidge, G.R., Burbidge, E.M., Sandage, A.,
  "Evidence for the occurrence of violent events in the
  nuclei of galaxies"
  (1963) Rev. Mod. Phys. 35: 947-972

- Burke, B.F., Franklin, K.L.,
  "Observations of a variable radio source associated with
  the planet Jupiter"
  (1955) JGR 60: 213-217
- Burke, B.F.,
  "Mills Cross telescopes"
  (1956) AJ 61: 167-168
- B7 Carr, T.D. SEE Smith, F.G. 1964
- A244 Chisholm, R.M. SEE Broten, N.W. 1967
- B22 Christensen, R.,
  "World Developments in Padio Astronomy"
  (1959) Santa Barbara: GE
- A116 Christiansen, W.N., Hindman, J.V.,

  "A preliminary survey of 1420 Mc/s. line emission from galactic hydrogen"

  (1952) Aust. J. Sci. Res. A5: 437-455
- A293 Christiansen, W.N.,
  "A high-resolution aerial for radio astronomy"
  (1953) Nature 171: 831-833
- B24 Clegg, J.A. SEE Lovell, B. 1952
- A155 Cocke, W.J., Disney, M.J., Taylor, D.J.,
  "Discovery of optical signals from the pulsar NP 0532"
  (1969) Nature 221: 525-527
- A151 Collins, R.A. SEE Hewish, A. 1968
- A139 Conway, R.G., Kellermann, K.I., Long, R.J.,
  "The radio frequency spectra of discrete radio sources"
  (1963). MNRAS 125: 261-284
- Covington, A.F.,
  "Solar noise observations on 10.7 centimeters"
  (1948) Proc. IRE 36: 454-457
- Das Gupta, M.K. SEE Brown, R.H. 1952
- Das Gupta, M.K. SEE Jennison, R.C. 1953
- A247 Das Gupta, M.K. SEF Jennison, R.C. 1956

A 212 Davies, R.D. SEE Williams, D.R.W. 1954 A214 Davies, R.D., Williams, D.R.W., "An alternative identification of the radio source in the direction of the galactic centre" (1955) Nature 175: 1079-1081 A256 Davies, R.D., "Radio astronomy at Jodrell Bank" (1963) Proc. IRE Australia 24: 231-236 A297 Davis, M.M. SEE Backer, D.C. 1982 524 Decombe, L. SEE Deslandres, H. 1902 A76 Denisse, J.F. SEE Blum, E.J. 1958 S24 Deslandres, H., Decombe, L., "On the search for Hertzian radiation emanating from the sun = Sur la recherche d'un rayonnement Hertzian emane du soleil" (1902). Comp. Rendus Acad. Sci. (Paris) 134: 527-530 A277 Dicke, R.H., Beringer, R., Kyhl, R.L., Vane, A.B., "Atmospheric absorption measurements with a microwave radiometer" (1946) Phys. Rew. 70: 340-348 S20 Dicke, R.H., "The measurement of thermal radiation at microwave frequencies" (1946) Rev. Sci. Instrum. 17: 268-275 S31 Dicke, R.H., Beringer, R., "Microwave radiation from the sun and moon" (1946) Astrophys. J. 103: 375-376 Dicke, R.H., Peebles, P.J.E., Roll, P.G., Wilkinson, D.T., A146 "Cosmic black-body radiation" (1965). Astrophys. J. 142: 414-419 **084** Dieter, N.H. SEE Heeschen, D.S. 1958 A 155 Disney, M.J. SEE Cocke, W.J. 1969 A124 Dombrovsky, V.A., "O prirode izlucheniia Krabovidnoi tumannosti = On the nature of the radiation from the Crab Nebula" (1954) Dokl. Akad. nauk SSSR 94: 1021-1024

Dousmanis, G.C. SEE Sanders, T.M. Jr. 1953

A 203

A 142 Droege, F., Priester, W., "Durchmusterung der allgemeinen Radiofrequenz-Strahlung bei 200 MHz = Distribution of galactic radiation at 200 MHz" (1956) Z. Astrophys. 40: 236-248 B 1 Edge, D., Mulkay, M.J., "Astronomy Transformed: The Emergence of Radio Astronomy in Britain" (1976) New York: Wiley A 1 Edge, D., "The sociology of innovation in modern astronomy" (1977) QJRAS 18: 326-339 A 52 Elsmore, B. SEE Ryle, M. 1950 A 190 Elsmore, B. SEE Ryle, M. 1951 A205 Elsmore, B. SEE Baldwin, J.E. 1954 A246 Elsmore, B. SEE Ryle, M. 1965 A57 Elwert, G, "Die 21 cm-Limie des Wasserstoffs und die Spiralstruktur des Milchstrassenssystems = The 21 cm hydrogen line and galactic spiral structure" (1959) Ergebn. Exakt. Naturwiss. 32: 1-78 A67 Emberson, R.M., "National Radio Astronomy Observatory" (1956) Science 130: 1307-1318 A68 Emberson, R.M., Ashton, N.L., "The telescope program for the National Radio Astronomy Observatory at Green Bank, West Virginia" (1958) Proc. IRE 46: 23-35 544 Ewen, H.I., Purcell, E.M., "Observation of a line in the galactic radio spectrum radiation from galactic hydrogen at 1,420 Mc./sec." (1951) Nature 168: 356-357 A274 Feldman, C.B. SEE Friis, H.T. 1937 A 261 Findlay, J.F., "Radio and radar astronomy [special issue], ed. by J.F. Findlay" (1973) Proc. IEEE 61: 1172-1363 A275 Fraenz, K., "Measurement of the sensitivity of receivers with short

electric waves [in German]"

(1942) Hochfreg. Electroakustik 59: 105-112, 143-144

A 128 Franklin, K.L. SEE Burke, B.F. 1955 A 274 Friis, H.T., Feldman, C.B., "A multiple unit steerable antenna for short-wave reception" (1937) Proc. IRE 25: 841-917 A 182 Friis, H.T., "Karl Jansky: his career at Bell Telephone Laboratories" (1965) Science 149: 841-842 A244 Galt, J.A. SEE Broten, N.W. 1967 A 95 Gamow, G., "The expanding universe and the origin of the elements" (1946) Phys. Rev. 70: 572-573 A144 Gardner, F.F. SEE Bolton, J.G. 1964 A 290 Getmantsev, G.G., "Cosmic electrons as a source of the radio emission from the galaxy [in Russian]" (1952) Dokl. Akad. nauk SSSR 83: 557-560 A 223 Getmantsev, G.G., Razin, V.A., "On the problem of the polarization of nonthermal cosmic radio emission [in Russian]" (1956) Trudy Soveshch. Vop. Kosmog. 5: 496-505 A278 Ginzburg, V.L., "On solar radiation in the radio spectrum [in Russian]" (1946) Dokl. Akad. nauk SSSR 52: 487-490 A19 Ginzburg, V.I., "Kosmicheskie luchi kak istochnik galakticheskogo radioielueniia = Cosmic rays as the source of galactic radio emission" (1951) Dokl. Akad. nauk SSSR 76: 377-380 A 199 Ginzburg, V.I., "Sverkhnovye i novye zvezdy kak istochniki kosmikheskogo i radioizlukhennia = Supernovae and novae as sources of cosmic and radio radiation" (1953) Dokl. Akad. nauk SSSR 92: 1133-1136 A150 Gold, T., "Rotating neutron stars as the origin of the pulsating

radio sources"

(1968) Nature 218: 731-732

A297 Goss, W.M. SEE Backer, D.C. 1982 A 12 Greenstein, J.L. SEE Whipple, F.I. 1937 A92 Greenstein, J.L., Henyey, L.G., Keenan, P.C., "Interstellar origin of cosmic radiation at radio frequencies" (1946) Nature 157: 805 Greenstein, J.L. SEE Reber, G. 1947 A174 Greenstein, J.L., Minkowski, R., A 20 C "The Crab Nebula as a radio source" (1953) Astrophys. J. 118: 1-15 **A70** Greenstein, J.L., "Washington conference on radio astronomy--1954, ed. by J.L. Greenstein" (1954) JGR 59: 149-201 A215 Greenstein, J.L., "Theoretical problems of discrete radio sources" (1955) IAU Symp. 4: 179-191 A 140 Greenstein, J.L., Matthews, T.A., "Red-shift of the unusual radio source 3C 48" (1963) Nature 197: 1041-1042 B12 Gt. Brit., S.R.C., "Radio astronomy: report of the Committee ... under the chairmanship of Lord Fleck, 1961-1964" (1965) London: HMSO Guertler, J., A83 "Fuenfzig Jahre Radioastronomie" (1982) Sterne 58: 195-196 A186 Gum, C.S. SEE Allen, C.W. 1950 A193 Gum, C.S., "A large H II region at galactic longitude 226" (1952) Observatory 72: 151-154 A234 Gum, C.S. SEE Kerr, F.J. 1959 A244 Gush, H.P. SEE Broten, N.W. 1967 A 20 6 Haddock, F.T., Mayer, C.H., Sloanaker, P.M., "Radio observations of ionized hydrogen nebulae and other discrete sources at a wavelength of 9.4 cm" (1954) Nature 174: 176-177

A207 Haddock, F.T., Mayer, C.H., Sloanaker, R.M., "Radio emission from the Orion Nebula and other sources at a wavelength of 9.4 cm" (1954) Astrophys. J. 119: 456-459 A 13 Haddock, F.T., "Introduction to radio astronomy" (1958). Proc. IRE 46: 3-12 A66 Haddock, F.T., "Radio astronomy special issue, ed. by F.T. Haddock" (1958) Proc. IRE 46: 1-355 A 125 Hagen, J.P., McClain, E.F., "Galactic absorption of radio waves" (1954) Astrophys. J. 120: 368-370 A296 Hagen, J.P., Lilley, A.E., McClain, E.F., "Absorption of 21-cm radiation by interstellar hydrogen" (1955) Astrophys. J. 122: 361-375 A 157 Hagen, J.P., "The CCIR and radio astronomy" (1979) ICC 179 09.4: 1-4 A156 Haines, S.A., "The beginnings of Canadian radio astronomy" (1979) Sci. Dimensions (Canada) 11: 18-20 (no.3) A258 Hatanaka, T., "Radio astronomy in Japan" (1963) Proc. IRE Australia 24: 243-251 A 97 Hazard, C. SEE Brown, R.H. 1950 A91 Hazard, C. SEE Brown, R.H. 1951 A114 Hazard, C. SEE Brown, R.H. 1952 A194 Hazard, C. SEE Brown, R.H. 1952 A201 Hazard, C. SEE Brown, R.H. 1953 A241 Hazard, C. SEE Brown, R.H. 1953 A 136 Hazard, C., "Lunar occultation of a radio source" (1961) Nature 191: 58

A224 Heeschen, D.S., "21-cm line emission from the Coma cluster" (1956) Astrophys. J. 124: 660-662 A228 Heeschen, D.S., "Neutral hydrogen in M 32, M 51, and M 81" (1957) Astrophys. J. 126: 471-479 A229 Heeschen, D.S., "Neutral hydrogen emission from the Hercules and Corona Borealis clusters of galaxies" (1957) PASP 69: 350-351 A80 Heeschen, D.S., Dieter, N.H., "Extragalactic 21-CM line studies" (1958) Proc. IRE 46: 234-239 Heiles, C. SEE Backer, D.C. A297 1982 A143 Henry, J.C. SEE Weinreb, S. 1963 S11 Henyey, L.G., Keenan, P.C., "Interstellar radiation from free electrons and hydrogen (1940) Astrophys. J. 91: 625-630 Henyey, L.G. SEE Greenstein, J.L. 1946 A 92 A 185 Herbstreit, J.W., Johler, J.R., "Frequency variation of the intensity of cosmic radio noise" (1948) Nature 161: 515-516 **S36** Herlofson, N. SEE Alfven, H. 1950 A 96 Herman, R.C. SEE Alpher, R.A. 1949 Hewish, A. SEE Ryle, M. 1960 A 133 A260 Hewish, A., "The realisation of giant radio telescopes by synthesis techniques" (1963) Proc. IRE Australia 24: 225-231 A145 Hewis,h, A., Scott, P.F., Wills, D., "Interplanetary scintillation of small diameter radio sources" (1964) Nature 203: 1214-1217

A 151 Hewish, A., Bell, S.J., Pilkington, J.D., Scott, P.F., Collins, R.A., "Observation of a rapidly pulsating radio source" (1968) Nature 217: 709-713 A 101 Hey, J.S. SEE Appleton, E.V. 1946 A108 Hey, J.S. SEE Appleton, E.V. 1946 A 168 Hey, J.S., Phillips, J.W., Parsons, S.J., "Cosmic radiations at 5 metres wave-length" (1946) Nature 157: 296-297 S25 Hey, J.S., "Solar radiations in the 4-6 metre radio wave-length band" (1946) Nature 157: 47-48 S 32 Hey, J.S., Parsons, S.J., Phillips, J.W., "Fluctuations in cosmic radiation at radio-frequencies" (1946) Nature 158: 234 A 105 Hey, J.S., Parsons, S.J., Phillips, J.W., "An investigation of galactic radiation in the radio spectrum" (1948) Proc. Roy. Soc. A192: 425-445 A265 Hey, J.S., Parsons, S.J., Phillips, J.W., "Some characteristics of solar radio emissions" (1948) MNRAS 108: 354-371 A 162 Hey, J.S., "Reports on the progress of astronomy: radio astronomy" (1949) MNRAS 109: 179-214 A 2 Hey, J.S., "Solar radio eclipse observations" (1955) Vistas Astron. 1: 521-531 B2 Hey, J.S., "The Evolution of Radio Astronomy" (1973) New York: Science History Publ. A116 Hindman, J.V. SEE Christiansen, W.N. 19 52 Hindman, J.V. SEE Kerr, F.J. 1954 A126 Hindman, J.V. SEE Kerr, F.J. 1959 A234 A 106 Ivanenko, D.D., Sokolov, A.A., "On the theory of the 'luminous' electron" (1948) Dokl. Akad. nauk SSSR 59: 1551-1554

A 60 Jansky, C.M. Jr., "The beginnings of radio astronomy" (1957) Amer. Scientist 45: 5-12 A64 Jansky, C.M. Jr., "The discovery and identification by Karl Guthe Jansky of electromagnetic radiation of extraterrestrial origin in the radio spectrum" (1958) Proc. IRE 46: 13-15 A73 Jansky, C.M. Jr., "My brother Karl Jansky and his discovery of radio waves from beyond the earth" (1979) Cosmic Search 1: 12-16 (fall) 514 Jansky, K.G., "Directional studies of atmospherics at high frequencies" (1932) Proc. IRE 20: 1920-1932 A169 Jansky, K.G., "Electrical phenomena that apparently are of interstellar origin" (1933) Pop. Astron. 41: 548-555 A61 Jansky, K.G., "Radio waves from outside the solar system" (1933) Nature 132: 66 S 15 Jansky, K.G., "Electrical disturbances apparently of extraterrestrial origin" (1933) Proc. IRE 21: 1387-1398 S5 Jansky, K.G., "A note on the source of interstellar interference" (1935) Proc. IRE 23: 1158-1163 A181 Jansky, K.G., "Minimum noise levels obtained on short-wave radio receiving systems" (1937) Proc. IRE 25: 1517-1530 **S39** Jennison, R.C. SEE Brown, R.H. 1952 542 Jennison, R.C., Das Gupta, M.K., "Fine structure of the extra-terrestrial radio source Cygnus 1" (1953) Nature 172: 996-997

A247 Jennison, R.C., Das Gupta, M.K., "The measurement of the angular diameter of two intense radio sources I. A radio interferometer using post-detector correlation [and] II. Diameter and structural measurements of the radio stars Cygnus A and Cassiopeia A" (1956) Phil. Mag. 55-75 A 188 Jennison, R.C., "A phase sensitive interferometer technique for the measurement of the Fourier transforms of spatial brightness distributions of small angular extent" (1958) MNRAS 118: 276-284 A 185 Johler, J.R. SEF Herbstreit, J.W. A216 Kaidanovsky, N.L., Kardashev, N.S., Shklovsky, I.S., "Results of observations of discrete sources of cosmic radio waves at 3.2 cm" (1955) Dokl. Akad. nauk SSSR 104: 517-519 A 257 Kalachov, P.D., "Some radio telescopes in the U.S.S.R." (1963) Proc. IRE Australia 24: 237-242 Kardashev, N.S. SEF Kaidanovsky, N.L. 1955 A216 S 11 Keenan, P.C. SEE Henyey, L.G. 1940 A92 Keenan, P.C. SEE Greenstein, J.L. 1946 A139 Kellermann, K.I. SEE Conway, R.G. 1963 A237 Kennelly, A.E., "Radio astronomy in 1890: a proposed experiment" (1958) PASP 70: 303-304 A 126 Kerr, F.J., Hindman, J.V., Robinson, B.J., "Observations of the 21 cm line from the Magellanic Clouds" (1954) Aust. J. Phys. 7: 297-314 A234 Kerr, F.J., Hindman, J.V., Gum, C.S., "A 21-cm survey of the southern Milky Way" (1959) MNRAS 119: 297-308 A233 Kerr, F.T. SEE Cort, J.H. 1958 A197 Kholopov, P.N. SEE Shklovsky, I.S. 1952 S 18 Kiepenheuer, K.O., "Cosmic rays as the source of general galactic radio

(1950) Phys. Rew. 79: 738-739

```
A202
           Ko, H.C. SEE Kraus, J.D. 1953
B9
           Kokurin, Yu.L.,
              "Radioastronomiya: annotirovannyi, bibliograficheskii
              ukazatel otechestvennoi i inostrannoi literatury,
              1932-1958 gg. = Radioastronomy: annotated bibliographical
             index of native and foreign literature, 1932-1958, ed. by
              Yu. L. Kokurin"
            (1960) Moscow: Akad. nauk SSSR
B3
           Kraus, J.,
             "Big Ear"
            (1976) Columbus: Cygnus Bks
A74
           Kraus, J.,
             "The first 50 years of radio astronomy, part 1: Karl
             Jansky and his discovery of radio waves from our galaxy"
            (1981) Cosmic Search 3: 8-12 (fall)
A 75
           Kraus, J.,
             "The first 50 years of radio astronomy, part 2: Grote
             Reber and the first radio maps of the sky"
            (1982) Cosmic Search 4: 14-19 (first half)
A298
           Kraus, J.,
             "The first 50 years of radio astronomy, part 3: Post-war
             radio astronomy"
           (1983) AstroSearch 1: 5-6
A202
           Kraus, J.D., Ko, H.C.,
             "Radio radiation from the supergalaxy"
           (1953) Nature 172: 538-539
A79
           Kraus, J.D.,
             "Padio telescope antennas of large aperture"
           (1958) Proc. IRE 46: 92-97
A 252
           Kraus, J.D.,
             "Radio and radar astronomy [special issue], ed. by J.D.
           (1964) IFEE Trans. Mil. Elec. MIL-8: 143-301
A56
           Kraus, J.D.,
             "Recent advances in radio astronomy"
           (1964). IEEE Spectrum 1: 78-95 (Sept.)
B 13
           Kraus, J.D.,
             "Radio Astronomy"
```

(1966) New York: McGraw-Hill

- Krueger, A.,
  "Erforschung der Sonne mit Mitteln der Radioastronomie"
  (1982) Sterne 58: 221-231
- A297 Kulkarni, S.R. SEE Backer, D.C. 1982
- Kwee, K.K., Muller, C.A., Westerhout, G., "The rotation of the inner parts of the galactic system" (1954) BAN 12: 211-222
- A277 Kyhl, R.L. SEE Dicke, R.H. 1946
- A152 Large, M.I., Vaughan, A.E., Mills, B.Y.,
  "A pulsar supernova association?"
  (1968) Nature 220: 340-341
- A244 Legg, T.H. SEE Broten, N.W. 1967
- A254 Lequeux, J. SEE Blum, E.J. 1963
- B16 Lequeux, J. SEE Steinberg, J.L. 1963
- A296 Lilley, A.E. SEE Hagen, J.P. 1955
- A226 Lilley, A.E. SEF Barrett, A.H. 1957
- A120 Little, A.G. SEE Mills, B.Y. 1953
- A77 Little, A.G. SEE Mills, B.Y. 1958
- Little, C.G., Lovell, A.C.B.,
  "Origin of the fluctuations in the intensity of radio
  waves from galactic sources Jodrell Bank observations"
  (1950) Nature 165: 423-424
- A244 Locke, J.L. SEE Broten, N.W. 1967
- Lodge, O.J.,
  "Signalling through space without wires"
  (1900) The Electrician, 3d ed: 33
- A139 Long, R.J. SEE Conway, R.G. 1963
- Longair, M.S.,
  "On the interpretation of radio source counts"
  (1966) MNRAS 133: 421-436
- A177 Lovell, A.C.B.,
  "Meteoric ionization and ionospheric abnormalities"
  (1947) Rep. Prog. Phys. 11: 415-443

	A 99	Lovell, A.C.B. SEE Little, C.G. 1950
	A63	Lovell, A.C.P., "The new science of radio astronomy" (1951) Nature 167: 94-97
	A65	Lovell, A.C.B. SEE Brown, R.H. 1955
	A81	Lovell, A.C.B., "The Jodrell Bank Radio Telescope" (1957) Nature 180: 60-62
	В14	Lovell, A.C.B. SEE Brown, R.H. 1958
	B24	Lovell, B., Clegg, J.A., "Radio Astronomy" (1952) London: Chapman & Hall
	в4	Lovell, B., "The Story of Jodrell Bank" (1968) New York: Harper & Row
	B <b>17</b>	Lovell, B., "Out of the Zenith" (1973) Oxford: University Press
	<b>176</b>	Lovell, B., "The effects pf defence science on the advance of astronomy" (1977) J. Hist. Astron. 8: 151-173
j	A 8 4	Lovell, B., "Die fruehe Geschichte der Radiosternwarte Jodrell Bank" (1982) Sterne 58: 197-205
1	153	Lyne, A.G., Smith, F.G., "Linear polarization in pulsating radio sources" (1968) Nature 218: 124-126
A	112	Machin, K.E., Smith, F.G.,  "A new radio method for measuring the electron density in the solar corona"  (1951) Nature 168: 599-600
A	288	Machin, K.E., "Distribution of radiation across the solar disk at a frequency of 81.5 Mc./s." (1951) Nature 167: 889-891

A117 Machin, K.E., Smith, F.G., "Occultation of a radio star by the solar corona" (1952) Nature 170: 319-320 A 279 Martyn, D.F., "Polarization of solar radio-frequency emissions" (1946) Nature 158: 308 S 29 Martyn, D.F., "Temperature radiation from the quiet sun in the radio spectrum" (1946) Nature 158: 632-633 A107 Martyn, D.F., "Solar radiation in the radio spectrum I. Radiation from the quiet sun" (1948) Proc. Roy. Soc. A193: 44-59 A 262 Mathur, N.C. SEE Swenson, G.W. Jr. A 140 Matthews, T.A. SEE Greenstein, J.L. 1963 A 206 Mayer, C.H. SEE Haddock, F.T. 1954 A207 Mayer, C.H. SEE Haddock, F.T. 1954 A 231 Mayer, C.H., McCullough, T.P., Sloanaker, R.M., "Evidence for polarized radio radiation from the Crab Nebula" (1957) Astrophys. J. 126: 468-470 A 125 McClain, E.F. SEE Hagen, J.P. 1954 A217 McClain, E.F., "An approximate distance determination for radio source Sagittarius A" (1955) Astrophys. J. 122: 376-384 A296 McClain, E.F. SEE Hagen, J.P. 1955 McCready, L.L. SEE A173 Pawsey, J.L. 1946 528 McCready, L.L., Pawsey, J.L., Payne-Scott, R., "Solar radiation at radio frequencies and its relation to sunspots" (1947) Proc. Roy. Soc. A190: 357-375 A 231 McCullough, T.P. SEE Mayer, C.H. 1957 **B**5 McKinley, D.W.,

"Meteor Science and Engineering"

(1961) New York: McGraw-Hill

A244 McLeish, C.W. SEE Broten, N.W. 1967 A143 Meeks, M.L. SEE Weinreb, S. 1963 A289 Mills, B.Y., Thomas, A.B., "Observations of the source of radio-frequency radition in the constellation of Cygnus" (1951) Aust. J. Sci. Res. A4: 158-171 A170 Mills, B.Y., "The positions of six discrete sources of cosmic radio radiation" (1952) Aust. J. Sci. Res. A5: 456-463 A53 Mills, B.Y., "The distribution of the discrete sources of cosmic radio radiation" (1952) Aust. J. Sci. Res. A5: 266-287 S 40 Mills, B.Y., "Apparent angular sizes of discrete radio sources-observations at Sydney" (1952) Nature 170: 1063-1064 Mills, B.Y., A119 "The radio brightness distributions over four discrete sources of cosmic noise" (1953) Aust. J. Phys. 6: 452-470 A120 Mills, B.Y., Little, A.G., "A high-resolution aerial system of a new type" (1953) Aust. J. Phys. 6: 272-278 A 129 Mills, B.Y., "The observation and interpretation of radio emission from some bright galaxies" (1955) Aust. J. Phys. 8: 368-389 A225 Mills, B.Y., "The radio source near the galactic centre" (1956) Observatory 76: 65-67 Mills, B.Y., Little, A.G., Sheridan, K.V., Slee, O.B., A77 "A high resolution radio telescope for use at 3.5 M" (1958) Proc. IRE 46: 67-84 A 152 Mills, B.Y. SEE Large, M.I. 1968 A 172 Minkowski, R.,

"The Crab Nebula"

(1942) Astrophys. J. 96: 199-213

A 20 C	Minkowski, R. SEE Greenstein, J.L. 1953
A 167	Minkowski, R. SEE Baade, W. 1954
538	Minkowski, R. SEE Baade, W. 1954
A 285	Minnett, H.C. SEE Piddington, J.H. 1949
A 195	Minnett, H.C. SEE Piddington, J.H. 1952
A259	Minnett, H.C. SEE Bowen, E.G. 1963
A 249	Morris, D., Palmer, H.P., Thompson, A.R., "Five radio sources of small angular diameter" (1957) Observatory 77: 103-106
A 183	Moxon, L.A., "Variation of cosmic radiation with frequency" (1946) Nature 158: 758-759
В1	Mulkay, M.J. SEF Edge, D. 1976
s45	Muller, C.A., Ocrt, J.H., "The interstellar hydrogen line at 1,420 Mc./sec., and an estimate of galactic rotation" (1951) Nature 168: 357-358
A 208	Muller, C.A. SEF Van de Hulst, H.C. 1954
1209	Muller, C.A. SEE Kwee, K.K. 1954
A 232	Muller, C.A., Westerhout, G., "A catalogue of 21-cm line profiles" (1957) BAN 13: 151-195
A246	Neville, A.C. SEE Ryle, M. 1965
A 263	Newton, H.W., Barton, H.J., "Bright solar eruptions and radio fading, 1935-1936" (1937) MNRAS 97: 594-611
S23	Nordmann, C., "A search for Hertzian waves emanating from the sun = Recherche des ondes Hertziennes emanees du soleil" (1902) Comp. Rendus Acad. Sci. (Paris) 134: 273-275

Northcott, R.J., Williamson, R.E., "Galactic noise and the plane of the galaxy" (1948) JRASC 42: 269-279

A283

A 58 Nupen, W., "Bibliography on atmospheric aspects of radio astronomy, including selected references to related fields" (1963) NBS TN 171: 1-385 A 294 O'Brien, P.A., "The distribution of radiation across the solar disk at metre wave-lengths" (1953) MNRAS 113: 597-612 A192 SEE Westerhout, G. 1951 Oort, J.H. S45 Oort, J.H. SEE Muller, C.A. 1951 A 208 Oort. J.H. SEE Van de Hulst, H.C. A 233 Oort, J.H., Kerr, F.T., Westerhout, G., "The galactic system as a spiral nebula" (1958) MNRAS 118: 379-389 Oort, J.H. SEE Rougoor, G.W. 1960 A 235 A292 Oswald, A.A., "Transoceanic telephone service -- short-wave equipment: technical features of the new short-wave radio stations of the Bell System" (1930) Trans. AIEE 49: 629-637 Palmer, H.P. SEE Brown, R.H. 1954 A248 A127 Palmer, H.P. SEE Brown, R.H. 1955 1250 Palmer, H.P. SEE Brown, R.H. 1955 A249 Palmer, H.P. Morris, D. 1957 SEE 1952 Shklovsky, I.S. A 196 Parenago, P.P. SEE Parsons, S.J. SEE Hey, J.S. 1946 A 168 S32 Parsons, S.J. SEE Hey, J.S. 1946 A 105 Parsons, S.J. SEE Hey, J.S. 1948 1948 A 265 Parsons, S.J. SEE Hey, J.S. Pawsey, J.L., Payne-Scott, R., McCready, L.L., A173 "Radio-frequency energy from the sun" (1946) Nature 157: 158-159 530 Pawsey, J.L., "Observation of million degree thermal radiation from the

sun at a wave-length of 1.5 metres"

(1946) Nature 158: 633-634

S28 Pawsey, J.L. SEE McCready, L.L. 1947 A 163 Pawsey, J.L., "Solar radio-frequency radiation" (1950) Proc. IEE 97: 290-310 A178 Pawsey, J.L., "Radio astronomy in Australia" (1953) JRASC 47: 137-152 B 19 Pawsey, J.L., Bracewell, R.N., "Radio Astronomy" (1955) Oxford: Clarendon Press A253 Pawsey, J.L., "Radio astronomy issue, ed. by J.L. Pawsey" (1963) Proc. IRE Australia 24: 93-255 £173 Payne-Scott, R. SEF Pawsey, J.L. 1946 Payne-Scott, R., Yabsley, D.E., A266 Bolton, J.G., "Relative times of arrivals of bursts of solar noise on different radio frequencies" (1947) Nature 160: 256-257 S 28 Payne-Scott, R. SEE McCready, L.I. 1947 A 146 Peebles, P.J.E. SEE Dicke, R.H. 1965 A94 Penzias, A.A., Wilson, R.W., "A measurement of excess antenna temperature at 4080 (1965) Astrophys. J. 142: 419-421 A 85 Penzias, A.A., "Die Entdeckung der Mikrowellenreststrahlung" (1982) Sterne 58: 206-210 **B15** Pfeiffer, J., "The Changing Universe" (1956) New York: Random House A168 Phillips, J.W. SEE Hey, J.S. 1946 532 Phillips, J.W. SEE Hey, J.S. 1946 A 105 Phillips, J.W. SEE Hey, J.S. 1948 Phillips, J.W. A 265 SEE Hey, J.S. 1948 A 285 Piddington, J.H., Minnett, H.C., "Microwave thermal radiation from the moon"

(1949) Aust. J. Sci. Res. A2: 63-77

Piddington, J.H., A 189 "The origin of galactic radio-frequency radiation" (1951) MNRAS 111: 45-63 A195 Piddington, J.H., Minnett, H.C., "Radio-frequency radiation from the constellation of Cygnus" (1952) Aust. J. Sci. Res. A5: 17-34 A115 Piddington, J.H., Trent, G.H., "A survey of cosmic radio emission at 600 Mc/s" (1956) Aust. J. Phys. 9: 481-493 A 151 Pilkington, J.D. SEE Hewish, A. A102 Pomeranchuk, I.Ya. SEE Artsimovich, L.A. 1945 A 102 Pomeranchuk, I.Ya. SEE Artsimovich, L.A. 1946 A 164 Poppel, W., "Radioastronomia en linea de 21cm del hidrogeno interstelar = Radioastronomy in the 21 cm line of interstellar hydrogen" (1974) Rev. Astron. (Argentina) 46: 23-32 A88 Preuss. E.. "Zu Stand und Entwicklung der Radiointerferometrie in der Astronomie" (1982) Sterne 58: 232-251 A142 Priester, W. SEE Droege, F. 544 Purcell, E.M. SEE Ewen, H.I. 1951 A230 Raimond, E. SEE Van de Hulst, H.C. 19 57 A 223 Razin, V.A. SEE Getmantsev, G.G. 1956 S16 Reber, G., "Cosmic static" (1940) Proc. IRE 28: 68-70 **S7** Reber, G., "Cosmic static" (1940) Astrophys. J. 91: 621-624 A93 Reber, G., "Cosmic static"

(1942) Proc. IRE 30: 367-378

- Reber, G.,
  "Cosmic static"
  (1944) Astrophys. J. 100: 279-287

  Reber, G., Greenstein, J.L.,
  "Radio-frequency investigations of astronomical interest"
  (1947) Observatory 67: 15-26
- S17 Reber, G.,
  "Cosmic static"
  (1948) Proc. IRE 36: 1215-1218
- Reber, G.,
  "Radio astronomy"
  (1949) Sci. Amer. 181: 35-41 (Sept.)
- Reber, G.,
  "Early radio astronomy at Wheaton, Illinois"
  (1958) Proc. IRE 46: 15-23
- A154 Reifenstein, E.C. SEF Staelin, D.H. 1968
- A244 Richards, R.S. SEE Broten, N.W. 1967
- A240 Roberts, J.A. SFE Bracewell, R.N. 1954
- A126 Robinson, B.J. SEE Kerr, F.J. 1954
- A144 Robinson, B.J. SEE Bolton, J.G. 1964
- A146 Roll, P.G. SEE Dicke, R.H. 1965
- Roll, P.G., Wilkinson, D.T.,
  "Cosmic background radiation at 3.2 cm--support for cosmic black-body radiation"
  (1966) Phys. Rev. Lett. 16: 405-407
- Rougoor, G.W., Oort, J.H.,
  "Distribution and motion of interstellar hydrogen in the
  Galactic System with particular reference to the region
  within 3 kpc of the center"
  (1960) Proc. NAS 46: 1-13
- S27 Ryle, M., Vonberg, D.D.,
  "Solar radiation on 175 Mc./s."
  (1946) Nature 158: 339-340
- Ryle, M.,
  "The generation of radio-frequency radiation in the sun"
  (1948) Proc. Roy. Soc. 195: 82-97

- A50 Ryle, M., Vonberg, D.D.,
  "An investigation of radio-frequency radiation from the sun"
  (1948) Proc. Roy. Soc. A193: 98-120
- Ryle, M., Smith, F.G.,
  "A new intense source of radio-frequency radiation in the constellation of Cassiopeia"
  (1948) Nature 162: 462-463
- Ryle, M.,
  "The significance of the observation of intense radio-frequency emission from the sun"
  (1949) Proc. Phys. Soc. 62A: 483-491
- Ryle, M.,
  "Evidence for the stellar origin of cosmic rays"
  (1949) Proc. Phys. Soc. 62A: 491-499
- A49 Ryle, M.,
  "Radio astronomy"
  (1950) Rep. Prog. Phys. 13: 184-246
- Ryle, M., Smith, F.G., Elsmore, B.,
  "A preliminary survey of the radio stars in the northern hemisphere"
  (1950) MNRAS 110: 508-523
- A190 Ryle, M., Elsmore, B.,

  "A search for long-period variations in the intensity of radio stars"

  (1951) Nature 168: 555-556
- Ryle, M.,

  "A new radio interferomter and its application to the observation of weak radio stars"

  (1952) Proc. Roy. Soc. A211: 351-375
- A204 Ryle, M. SEE Scheuer, P.A.G. 1953
- A132 Ryle, M.,
  "The nature of cosmic radio sources"
  (1958) Proc. Roy. Soc. A248: 289-308
- A 133 Ryle, M., Hewish, A.,
  "The synthesis of large radio telescopes"
  (1960) MNRAS 120: 220-230
- A 180 Ryle, M.,
  "The new Cambridge radio telescope"
  (1962) Nature 194: 517-518

- Ryle, M., Elsmore, B., Neville, A.C.,
  "High-resolution observations of the radio sources in
  Cygnus and Cassiopeia"
  (1965) Nature 205: 1259-1262

  Saha, M.N.,
- Naha, M.N.,
  "Origin of radio-waves from the sun and the stars"
  (1946) Nature 158: 717-718
- A138 Sandage, A. SEE Burbidge, G.R. 1963
- A 184 Sander, K.F.,
  "Measurements of galactic noise at 60 Mc/s"
  (1946) J. IEE 93: 1487-1496
- A 179 Sander, K.F.,
  "Radio noise from the sun at 3.2 cm"
  (1947) Nature 159: 506-507
- A203 Sanders, T.M. Jr., Schawlow, A.L., Dousmanis, G.C., Townes, C.H.,
  "A microwave spectrum of the free OH radical"
  (1953) Phys. Rev. 89: 1158-1159
- A203 Schawlow, A.L. SEE Sanders, T.M. Jr. 1953
- S22 Scheiner, J. SEE Wilsing, J. 1896
- A204 Scheuer, P.A.G., Ryle, M.,
  "An investigation of the H II regions by a radio method"
  (1953) MNRAS 113: 3-17
- A137 Scheuer, P.A.G.,
  "On the use of lunar occultations for investigating the angular structure of radio sources"
  (1962) Aust. J. Phys. 15: 333-343
- A 141 Schmidt, M.,
  "3C 273: a star-like object with large red-shift"
  (1963) Nature 197: 1040
- A282 Schott, E.,
  "175-MHz radiation from the sun [in German]"
  (1947) Phys. Blatt. 3: 159-160
- A110 Schwinger, J.,
  "On the classical radiation of accelerated electrons"
  (1949) Phys. Rev. 75: 1912-1925

- A145 Scott, P.F. SEF Hewish, A. 1964
- A151 Scott, P.F. SEE Hewish, A. 1968
- Seaton, M.J.,
  "The kinetic temperature of the interstellar gas in regions of neutral hydrogen"
  (1955) Ann. d'Astrophys. 18: 188-205
- A78 Shain, C.A.,
  "The Sydney 19.7 Mc radio telescope"
  (1958) Proc. IRE 46: 85-88
- A77 Sheridan, K.V. SEE Mills, B.Y. 1958
- Shklovsky, I.S.,

  "Ob izluchenii radiovoln galaktikoi i verkhnimi sloiami atmosfery solntsa = On the radiation of radio-waves by the Galaxy and by the upper layers of the solar atmosphere"

  (1946) Astr. Zh. 23: 333-347
- Shklovsky, I.S.,
  "Monokhromaticheskoe radioieluchenie galaktiki
  idvoemozhnost ego nabliudeniia = Monochromatic radio
  emission from the galaxy and the possibility of its
  observation"
  (1949) Astr. Zh. 26: 10-14
- A196 Shklovsky, I.S., Parenago, P.P.,
  "Otozhdestvlenie sverkhnovoi zvezdy 369 goda s moshchnoi
  radiozvezdoi v Kassiopee = Identification of the
  supernova of 369 with an intense radio star in
  Cassiopeia"
  (1952) Astr. Tsirk. 131: 1-2
- Shklovsky, I.S., Kholopov, P.N.,
  "Otozhdestvlenie tumannosti NGC 1316 s radiozvezdoi v
  sozvezdii Pechi = Identification of the nebula NGC 1316
  with the radio star in the constellation of Fornax"
  (1952) Astr. Tsirk. 3: 2-3
- A291 Shklovsky, I.S.,
  "Radio spectroscopy of the galaxy [in Russian]"
  (1952) Astr. Zh. 29: 144-153
- A54 Shklovsky, I.S.,
  "O prirode radioizlucheniia galaktiki = On the nature of
  the radio emission from the Galaxy"
  (1952) Astr. Zh. 29: 418-449

A 121 Shklovsky, I.S., "O prirode svecheniia Krabovidnoi tumannosti = On the nature of the radiation from the Crab Nebula" (1953) Dokl. Akad. nauk SSSR 90: 983-986 A122 Shklovsky, I.S., "The possibility of observing monochromatic radio emission from interstellar molecules [in Russian]" (1953) Dokl. Akad. nauk SSSR 92: 25-28 A 295 Shklovsky, I.S., "Problema kosmicheskogo radioizlucheniia = The problem of cosmic radio waves" (1953) Astr. Zh. 30: 15-36 A210 Shklovsky, I.S., "On the nature of the discrete sources of cosmic radio waves [in Russian]" (1954) Dokl. Akad. nauk SSSR 98: 353-356 A216 Shklovsky, I.S. SEE Kaidanovsky, N.L. 1955 A219 Shklovsky, I.S., "On the nature of the radiation from the radio galaxy NGC 4486 [in Russian]" (1955) Astr. Zh. 32: 215-225 B 20 Shklovsky, I.S., "Kosmicheskoe Padioizluchenie" (1956) Moscow: Gos. Izd. Tek. Lit. A 134 Shklovsky, I.S., "Radiogalaktiki" (1960) Astr. Zh. 37: 945-960 B 21 Shklovsky, I.S., "Cosmic Radio Waves" (1960) Cambridge: Harvard Univ. Press A 134 Shklovsky, I.S., "Radio galaxies" (1961) Sov. Astron. AJ 4: 885-896 A 4 Shu-ren, B. SEE Ze-zong, X. 1966 A55 Skobel'tsyn, D.V., "Radioastronomiia [special issue]" (1962) Trudy Fiz. Inst. im. P.N. Lebedeva 17: 1-190

1949

Slee, O.B. SEE Bolton, J.G.

S35

A:51	Slee, O.B. SEE Stanley, G.J. 1950
A 77	Slee, O.B. SEE Mills, P.Y. 1958
A 20 6	Sloanaker, R.M. SEE Haddock, F.T. 1954
A 207	Sloanaker, R.M. SEF Haddock, F.T. 1954
A231	Slcanaker, R.M. SEE Mayer, C.H. 1957
A 111	Smerd, S.F., "Radio-frequency radiation from the quiet sun" (1950) Aust. J. Sci. Res. A3: 34-59
S 34	Smith, F.G. SEE Ryle, M. 1948
A52	Smith, F.G. SEE Ryle, M. 1950
A98	Smith, F.G., "Origin of the fluctuations in the intensity of radio waves from galactic sources - Cambridge observations" (1950) Nature 165: 422-423
A 112	Smith, F.G. SEE Machin, K.E. 1951
A 191	Smith, F.G., "An attempt to measure the annual parallax or proper motion of four radio stars" (1951) Nature 168: 962-963
S37	Smith, F.G., "An accurate determination of the positions of four radio stars" (1951) Nature 168: 555
A 117	Smith, F.G. SEE Machin, K.E. 1952
S 4 1	Smith, F.G., "Apparent angular sizes of discrete radio sources-obserwations at Cambridge" (1952) Nature 170: 1065
A 221	Smith, F.G. SEE Baldwin, J.E. 1956
B <b>6</b>	Smith, F.G., "Radio Astronomy" (1960) New York; McGraw-Hill
В <b>7</b>	Smith, F.G., Carr, T.D., "Radio Exploration of the Planetary System" (1964) New York: Van Nostrand

1968

Smith, F.G. SEE Lyne, A.G.

A 153

```
A 160
            Smith, F.G.,
              "The pulsars"
            (1970) Telecommun. J. 37: 750-752
A 106
            Sokolov, A.A. SEE
                                Ivanenko, D.D.
                                                 1948
S26
            Southworth, G.C.,
              "Microwave radiation from the sun"
            (1945) J. Franklin Inst. 239: 285-297
A46
            Southworth, G.C.,
              "Early history of radio astronomy"
            (1956) Sci. Monthly 82: 55-66
A154
            Staelin, D.H., Reifenstein, E.C.,
              "Pulsating radio sources near the Crab Nebula"
            (1968) Science 162: 1481-1483
A287
            Stanier, H.M.,
              "Distribution of radiation from the undisturbed sun at a
              wave-length of 60 cm"
            (1950) Nature 165: 354-355
A90
            Stanley, G.J.
                           SEE
                               Bolton, J.G.
                                               1948
S33
           Stanley, G.J.
                           SEE
                                Bolton, J.G.
                                               1948
A 109
           Stanley, G.J.
                           SEE
                                Bolton, J.G.
                                               1949
           Stanley, G.J.
S35
                           SEE
                                Bolton, J.G.
                                               19 49
A 51
           Stanley, G.J., Slee, O.B.,
              "Galactic radiation at radio frequencies II. The discrete
              sources"
            (1950) Aust. J. Sci. Res. A3: 234-250
A76
           Steinberg, J.L. SEE Blum, E.J. 1958
B16
           Steinberg, J.L., Lequeux, J.,
              "Radio Astronomy"
           (1963) New York: McGraw-Hill
A220
           Stone, S.N.,
             "A possible extragalactic source of 21-cm radio emission"
           (1955) PASP 67: 183-185
A47
           Struve, C.,
             "Progress in radio astronomy - I"
```

(1949) Sky Telesc. 9: 27-30

A48 Struve, O., "Progress in radio astronomy - II" (1950) Sky Telesc. 9: 55-56 A159 Sullivan, W.T. III, "A new look at Karl Jansky's original data" (1978) Sky Telesc. 56: 101-105 A251 Sullivan, W.T. III, "Radio astronomy's golden anniversary" (1982) Sky Telesc. 64: 544-550 B8 Sullivan, W.T. III, "Classics in Radio Astronomy" (1982) Dordrecht: D. Reidel A242 Swarup, G., Yang, K.S., "Phase adjustment of large antennas" (1961) IRE Trans. Ant. Prop. AP-9: 75-81 A 245 Swarup, G. SEE Bracewell, R.N. 1961 A262 Swenson, G.W. Jr., Mathur, N.C., "The interferometer in radio astronomy" (1968) Proc. IEEE 56: 2114-2130 A 155 Taylor, D.J. SEF Cocke, W.J. 1969 A239 Thaddeus, P., "Facilities for US radioastronomy" (1982) Phys. Today 35: 36-42 (Nov.) A289 Thomas, A.B. SEE Mills, B.Y. A 248 Thompson, A.R. SEE Brown, R.H. 1954 A 127 Thompson, A.R. Brown, R.H. SEE 1955 A250 Thompson, A.R. SEE Brown, R.H. 1955 A249 Thompson, A.R. SEE Morris, D. 1957 A 203 Townes, C.H. SEE Sanders, T.M. Jr. 1953 A211 Townes, C.H., "Microwave spectra of astrophysical interest" (1954) JGR 59: 191 A 131 Townes, C.H., "Microwave and radio-frequency resonance lines of

interest to radio astronomy"

(1957) IAU Symp. 4: 92-103

A115 Trent, G.H. SEE Piddington, J.H. 1956 B27 Tuve, M.A., "Symposium on Radio Astronomy, delivered before the autumn meeting of the National Academy of Sciences, Indiana University, Bloomington, November 17, 1959, Chairman, Merle A. Tuve" (1960) Proc. NAS special reprint A 123 Twiss, R.Q. SEE Brown, R.H. 1954 A 236 U.R.S.I., "Solar and galactic radio noise" (1950) URSI Spec. Rep. 1 A 271 U.R.S.I. "The distribution of radio brightness on the solar disk" (1954) URSI Spec. Rep. 4 A 272 U.R.S.I., "Interstellar hydrogen" (1954) URSI Spec. Rep. 5 A273 U.R.S.I., "Discrete sources of extra-terrestrial radio noise" (1954) URSI Spec. Rep. 3 A281 Unsoeld, A., "Die kosmische kurzwellenstrahlung = The cosmic short-wave radiation" (1946) Naturwiss. 33: 37-40 A175 Unsoeld, A., "Ueber der Ursprung der Radiofrequenzstrahlung und der Ultrastrahlung in der Milchstrasse" (1949) Z. Astroph. 26: 176-199 A82 Vallee, J.P., "Cinquante annees de radioastronomie: progres, decouvertes et avenir = fifty years of radioastronomy: progress, discoveries and prospects" (1982) JRASC 76: 1-18 S 10 Van de Hulst, H.C., "Radiogolven uit het wereldrium; herkomst der radiogolven" (1945) Ned. Tijdschr. Natuurk. 11: 210-221 B23 Van de Hulst, H.C.,

"A Course in Radio Astronomy"

(1951) Harvard lectures (Leiden-mimeo.)

- Van de Hulst, H.C., Muller, C.A., Oort, J.H.,
  "The spiral structure of the outer part of the galactic
  system derived from the hydrogen emission at 21-cm
  wavelength"
  (1954) BAN 12: 117-149
- Van de Hulst, H.C., Raimond, E., Van Woerden, H.,
  "Rotation and density distribution of the Andromeda
  Nebula derived from observations of the 21-cm line"
  (1957) BAN 14: 1-16
- Van de Hulst, H.C.,
  "Radio Astronomy IAU Symp. 4, ed. by H.C. van de Hulst"
  (1957) Cambridge: Cambridge University Press
- A144 Van Damme, K.J. SEE Bolton, J.G. 1964
- A230 Van Woerden, H. SEE Van de Hulst, H.C. 1957
- A277 Vane, A.B. SEE Dicke, R.H. 1946
- Vashakidze, M.A.,
  "On the degree of polarization of the light near
  extragalactic nebulae and the Crab Nebula [in Russian]"
  (1954) Astr. Tsirk. 147: 11-13
- Vaucouleurs, G. de,
  "Normal and abnormal galaxies as radio sources"
  (1953) Observatory 73: 252-254
- A152 Vaughan, A.E. SFE Large, M.I. 1968
- \*\*Notation Notation N
- S27 Vonberg, D.D. SEE Ryle, M. 1946
- A50 Vonberg, D.D. SEE Ryle, M. 1948
- Neinreb, S., Barrett, A.H., Meeks, M.L., Henry, J.C., "Radio observations of OH in the interstellar medium" (1963) Nature 200: 829-831
- Westerhout, G., Oort, J.H.,
  "A comparison of the intensity distribution of radio-frequency radiation with a model of the galactic system"

  (1951) BAN 11: 323-333

A 209	Westerhout, G. SEE Kwee, K.K. 1954
A232	Westerhout, G. SEE Muller, C.A. 1957
A233	Westerhout, G. SEE Oort, J.H. 1958
A 255	Westerhout, G., "Current radio astronomical research in the Netherlands" (1963) Proc. IRE Australia 24: 214-218
A 3	Westerhout, G., "The early history of radio astronomy" (1972) Annals N.Y. Acad. Sci. 198: 211-218
A 171	Westfold, K.C. SEE Bolton, J.G. 1950
A 187	Westfold, K.C. SEE Bolton, J.G. 1950
A 267	Westfold, K.C. SEE Bolton, J.G. 1950
A 12	Whipple, F.I., Greenstein, J.L., "On the origin of interstellar radio disturbances" (1937) Proc. NAS 23: 177-181
A161	Whitford, A.E., "Radio astronomy section - Whitford Committee report (preliminary edition)" (1962) NRAO internal rep.
A 198	<pre>Wild, J.P.,   "The radio-frequency line spectrum of atomic hydrogen and   its applications in astronomy" (1952) Astrophys. J. 115: 206-221</pre>
A227	Wild, J.P. SEE Bolton, J.G. 1957
A146	Wilkinson, D.T. SEE Dicke, R.H. 1965
A 149	Wilkinson, D.T. SEE Roll, P.G. 1966
A 212	Williams, D.R.W., Davies, R.D., "A method for the measurement of the distance of radio stars" (1954) Nature 173: 1182-1183
A 214	Williams, D.R.W. SEE Davies, R.D. 1955
A283	Williamson, R.E. SEE Northcott, R.J. 1948
A 284	Williamson, R.E., "The present state of microwave astronomy" (1948) JRASC 42: 9-32

- A145 Wills, D. SEE Hewish, A. 1964
- Wilsing, J., Scheiner, J.,

  "On an attempt to detect electrodynamic solar radiation and on the change in contact resistance when illuminating two conductors by electric radiation = ueber einen Versuch, eine electrodynamische Sonnenstrahlung nachzeweisen, und ueber die Aederung des Uebergangswiderstandes bei Beruehrung zweier Leiter durch electrische Bestrahlung"

  (1896) Ann. Physik u. Chemie 59: 782-792
- A94 Wilson, R.W. SEE Penzias, A.A. 1965
- A158 Wilson, R.W.,
  "The cosmic microwave background"
  (1979) Rev. Mod. Phys. 51: 435-445
- A266 Yabsley, D.E. SEE Payne-Scott, R. 1947
- A242 Yang, K.S. SEE Swarup, G. 1961
- A244 Yen, J.L. SEE Broten, N.W. 1967
- Ze-zong, X., Shu-ren, B.,
  "Ancient novae and supernovae recorded in the annals of
  China, Korea, and Japan and their significance in radio
  astronomy"
  (1966) Science 154: 597-603
- B11 Zheleznyakov, V.V.,
  "Radioizluchenie Solntsa i Planet = Radio Emission of the
  Sun and Planets"
  (1964) Moscow: Nauka