

*EXTRACT FROM*

A Personal History of the  
Royal Greenwich Observatory  
at Herstmonceux Castle  
1948 – 1990

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## APPENDIX F. PUBLICATIONS BY THE RGO

### F.1 Series of publications by the RGO (except NAO)

The results of the major observational programmes of the Observatory were published in the annual volumes of *Observations made at the Royal Observatory Greenwich*, which were usually referred to by the short title of *Greenwich Observations*, for the years from 1836 to the year 1946. This last volume was published in 1955; it includes a separate complete list of appendices and reports on special investigations that were included in the annual volumes.

Three new series of publications were introduced in about 1958:

*Royal Observatory Annals*, which contained mainly extensive tabulations of observational or computed data.

*Royal Observatory Bulletins*, which contained mainly observational and theoretical papers by individual astronomers that would previously have been published in the *Monthly Notices of the Royal Astronomical Society* or in other refereed journals. Some of the issues were special publications; for example, no. 82 contained the proceedings of the Tercentenary Symposium on “The Galaxy and the Local Group”.

*Royal Observatory Circulars*, which were intended for the quick publication of current data, such as those for the Greenwich Time Service.

Initially these series used the full name of the Observatory, but ‘Greenwich’ was dropped when these series were also used for the reports of the work at the Royal Observatory at the Cape of Good Hope.

From 1836 until 1964 the work of the Observatory was described in narrative form in *Report of the Astronomer Royal to the Board of Visitors*. These reports were reprinted separately and were widely distributed. They contained details of work on the buildings, changes in the instruments and list of staff, as well as the reports on the astronomical and geophysical work. Summaries were given in *Nature* during the nineteenth century at least.

From 1974 to 1980-09 *Royal Greenwich Observatory Reports* were published annually in separate booklets with illustrated covers; these were similar in detail to the earlier AR’s reports. A single volume called *Royal Greenwich Observatory: telescopes, instruments, research and services* was issued for the period 1980-10 to 1985-09 and another volume was issued for the period 1985-10 to 1987-09. I am not aware of any later reports of this type. Brief notes on the contents of these reports are given in section F.5.

Reports on the work of the Observatory for the years 1961 to 1982 were published in the *Quarterly Journal of the Royal Astronomical Society*, but these were mainly restricted to summarising the scientific work in progress. Comprehensive reports on the work and staff of the Observatory were not published for the period 1965 to 1973 or from 1987-10 onwards. The annual reports that were submitted to the Science Research Council should be available in the RGO Archives in the Cambridge University Library.

### F.2 Other publications by the RGO (except NAO)

**Gemini.** From 1982-05 to 1993-12 the RGO produced and distributed a

quarterly newsletter that was given the name *Gemini* to indicate that it applied to both Herstmonceux and La Palma. At first it was produced by photolithography from typescripts, but later issues were (presumably) produced from computer printouts with a wider range of typefaces and type-sizes. There was a special un-numbered issue for the Royal Inauguration on La Palma in June 1985; this issue has some coloured illustrations. The title page of issue no. 28 for June 1990 has a coloured photograph of the new building at Cambridge.

**spectrum.** This replaced *Gemini* in 1994-01 because a new telescope project for the N & S hemispheres was started. The contents of the last issue for 1998-10 are given in section F.6.

**SLR Technical Notes.** From 1982 onwards *SLR Technical Notes* were issued irregularly (without charge) to disseminate information concerning the satellite laser ranging system that replaced the photographic zenith telescope for the determination of the variations of the rotation of the Earth.

**Forward look.** The A4 booklet *The Royal Greenwich Observatory to 1990* was published in 1983. It gives an overview of the RGO with special emphasis on the future changes due to the coming use of the telescopes and new instruments on La Palma.

**Historical workpacks.** In 1987 onwards the Laurie Project Team (see section 6.3.5.3) produced a series of workpacks that each consisted of about 40 photocopied A4 sheets in a glossy white folder with an RGO heading. I have three packs, but there may have been more. They are illustrated by line drawings. Unfortunately there is no information about the members of the team who produced the first two workpacks, but the final page of the third one has a brief note about the team and the names of the contributors.

WP1. The history of Herstmonceux Castle. 36 pages.

WP2. Voyages of discovery. 50 pages.

WP3? The history of the Royal Observatory and Royal Greenwich Observatory. 40 pages.

### F.3 Publications by H.M. Nautical Almanac Office

The following almanacs were produced by the NAO after it became part of the Royal Observatory in 1937.

*The Nautical Almanac and Astronomical Ephemeris*, up to 1959

*Apparent Places of Fundamental Stars*, 1941 to 1959

\**The Astronomical Ephemeris*, 1960 to 1980

\**The Astronomical Almanac*, 1981 to present

\**Astronomical Phenomena*, 1960 to present

*The Abridged Nautical Almanac*, up to 1957

\**The Nautical Almanac*, 1958 to present

*The Air Almanac*, 1937 to 1951

\**The Air Almanac*, 1952 to 1997

*The UK Air Almanac*, 1998 to present

*The Star Almanac*, 1951 to present

These almanacs were published by Her Majesty's Stationery Office (known as The Stationery Office from 1997). Those marked with an asterisk were prepared in

cooperation with the Nautical Almanac Office of the U.S. Naval Observatory and were published jointly with the US Government Printing Office.

The following special publications were prepared by the NAO before the RGO moved to Cambridge in 1990. They were published by Her Majesty's Stationery Office unless otherwise indicated.

1939. *Seven-figure trigonometrical tables for every second of time*. (reprinted 1961)
1947. *Five-figure tables of natural trigonometrical functions (for every 10")*. (reprinted 1956 and 1960)
1952. Reduced observations of lunar occultations for the years 1943-1947. Appendix to *Greenwich Observations for 1939*.
1954. *Improved lunar ephemeris, 1952-1959*. A Joint Supplement to *The American Ephemeris* and *The (British) Nautical Almanac*. (xiv + 422 pages) Published by the US Government Printing Office.
1956. *Interpolation and Allied Tables* (pp. 80). (reprinted several times)
1958. *Subtabulation. A companion booklet to Interpolation and Allied Tables* (pp. 54).
1958. *Planetary Coordinates for the years 1960-1980* (pp. xix + 160).
1961. *Explanatory Supplement to the Astronomical Ephemeris* (pp. xi + 505).
1961. Nutation, 1900-1959. *Royal Observatory Annals*, No.1 (pp. vii + 41).
1968. *Man is not lost: a record of two hundred years of astronomical navigation with the Nautical Almanac 1767-1967*. (pp.44)
1979. *Planetary and Lunar Coordinates for the years 1980-1984* (pp. xiv + 84).
1983. *Planetary and Lunar Coordinates for the years 1984-2000* (pp. xiv + 321).
1985. *Compact Data for Navigation and Astronomy for the years 1986-1990* (pp. xvii + 70).

In addition the NAO produced a series of tables for astronomical navigation in cooperation with the USNAO and the US Hydrographic Office.

- 1951 onwards. *Tables of computed altitude and azimuth*, in six volumes.
- 1953 onwards. *Sight reduction tables for air navigation*, in three volumes.
- 1971 onwards. *Sight reduction tables for marine navigation*, in 6 volumes.

From 1966 ? onwards NAO *Technical Notes* were issued irregularly (without charge) to disseminate information concerning methods of computation, astronomical ephemerides and navigation. (A partial list is given in the 1992 revised edition of the *Explanatory Supplement*. RGO archives class 32 contains only a few issues.)

The NAO also distributed a numbered series of reprints of scientific and technical papers that were published in journals. (RGO archives class 34 contains a set of the reprints up to number 356.)

Post-1990 publications included:

1996. *A Guide to the 1999 Total Eclipse of the Sun*.
1997. *The RGO Guide to the 1999 Total Eclipse of the Sun*. (pp. 28)
2000. *NavPac and Compact Data 2001-2005*. (pp. 132 and a CD-ROM)

#### **F.4 Internal ‘publications’ at Herstmonceux**

##### ***Information Bulletin***

A valuable source of information about the activities and staff is provided by the *Information Bulletins* that were circulated within the Observatory. The first is dated 26 February 1952 and gives only brief reports from the groups that observed the total eclipse of the Sun. The coverage soon became much wider and they were usually issued at intervals of one or two months. They were produced by duplicating typescripts. My set is not quite complete as I ‘inherited’ the early issues from Dr. J G Porter. My set ends with no. 271, dated 1 April 1982. A4 replaced foolscap with the issue for 14 October 1969.

The new series of *Gemini* was started but these did not include the items of local interest about staff changes etc. Consequently, the IBs were followed by *RGO Information Circulars* from May 1982 to October 1985, and then by a new series of IBs until March 1988. In turn, these were followed by a series of sheets of the *Reporter* containing a series of individually numbered items. My set ends with item 89/135 that was issued on 13 July 1989

##### ***Notes for new entrants***

I have a copy of the spiral-bound\* A4 booklet *Notes for new entrants* that was issued in 1974. I do not know if this was the first such document. It is another valuable source of information about the conditions of service of non-industrial staff. (I do not know whether a similar booklet was issued to industrial staff.) It includes background information such as a list of the abbreviations in common use.

\* this may not be the correct term for the use of a plastic ‘comb’.

#### **F.5 Notes on RGO Annual Reports 1974 to 1987**

The RGO produced Annual Reports for the years 1974-1980 that were printed with coloured, illustrated covers. They are straight text, but with some photographs (indicated by P-) and diagrams on the front and end pages.

The reports for 1981-1995 and 1985-1987 were in two A4 volumes in a new style (“sexy” according to Boksenberg).

As far as I am aware there are no published printed reports for later years, but information is given in the house magazine, whose name was changed from *Gemini* to *spectrum*.

The following lists of the contents of the annual reports include mainly those items that are likely to be relevant to this personal account of the history of the RGO. They might be expanded in due course for general use.

##### **1974**

|    |                                |
|----|--------------------------------|
| FC | INT dome                       |
| 10 | New control room for INT       |
| 25 | 50th anniversary of BBC 6 pips |
| 27 | LLR proposal                   |
| 29 | 1909 replaced by 1903T         |
| 30 | Revision of UDC 52             |
| EP | P- electronographic image tube |

**1975 January – September**

- FC Tercentenary plate
- 7 Decision to move INT assumed, not reported
- 32 Timation 3
- 36 RGO Archives
- 38-42 Tercentenary
- EP P- Anne & AH (+GAW)

**1975 October – 1976 September**

- FC Electronograph of a Seyfert galaxy
- FP P- FGS and AH
- 7 NHO approved
- 33 Work stopped on Danjon astrolabe
- 38 Archives moved to Castle
- EP Time distribution by satellite (diagrams)

**1976/77**

- FC Orion nebula
- 27 Photoheliographic observations stopped
- 33 Exhibition opened
- 35 Libraries and Archives made part of Almanacs and Time Division
- EP Ps- Exhibition  
New prime-focus assembly for INT

**1977/78**

- FC M82
- 25 Remnant of solar activity service included in NAO
- 26 SLR proposal approved
- 50 J Dudley now Head of L&A
- EP P- new mirror for INT

**1978/79** (edited by Wilkins and Yallop)

- FC Velocity map of Crab nebula
- 9 INT closed down
- 13 Preparation of proposal for STARLINK network
- 25 Proposal for Project MERIT
- 27 Solar activity service stopped
- EP P- Telescope simulator  
Butterfly diagram

**1979 October – 1980 September**

- FC 4.2 metre mirror
- 6 New wing to West Building completed
- 11 VAX 11/780 computer installed

36 A R Bish appointed as Senior Conservation Officer

### **1980 October – 1985 September**

- 2-6 Introduction
- 4 Diary of principal events giving month
- 6-7 Inauguration ceremony on La Palma 1985-06-29
- 8-45 Research (mainly astrophysics)
- 38-39 Motions of natural satellites
- 40-41 Inertial frames
- 42-43 Astrometric and space geodesy, inc. PZT, occ'ns, SLR, MERIT, 1884
- 44-45 Rotation of the Earth
- 46-89 Telescopes, instruments and facilities
- 72-73 Smaller telescopes: EQ group , inc Hewitt satellite camera
- 74-75 SLR
- 88-89 Computing at RGO
- 90-105 Services
- 90-91 Greenwich Time Service
- 92-93 NAO
- 94-95 Library and archives
- 104 Public information
- 105 Conferences and Workshops in Castle
- 106-128 Background information
- 106-107 Times of transition in RGO History (by J Dudley)
- 107 Students and the public
- 108-109 25th anniversary of the Clubhouse
- 110-111 RGO manpower and budget
- 112-113 Internal organisation 1985, with staff list
- 115-117 Publications: NAO (inc. TNs), RGO Bulletins etc, LP notes etc
- 118-128 Published papers (in alphabetical order of first-named RGO author)

### **1985 October – 1987 September**

RGO: Telescopes, instruments, research and services

- 4-21 La Palma etc
- 22 Schools and the RGO (Margaret Penston)
- 23-25 SLR
- 28-29 Staff list on 1987-09-30
- 30-31 Publications: almanacs, TNs etc
- 31-36 Published papers (in alphabetical order of first-named RGO author)

### **F.6 Contents list of the last issue of *spectrum* in 1998**

The house journal *spectrum* replaced *Gemini* from 1994-01 to 1998-10, when the RGO was closed at Cambridge. The final issue (16, October 1998) contains many review articles about the work of the RGO at Cambridge. These are listed below.

(Earlier issues not available to me at present.)

Note that the authors are not listed on the contents page, but have been taken from the text. The first number on the title line (in bold) is the page number.

- 5. The RGO 1978-98; A Personal View.** Jasper Wall, Director of RGO, 1995–1998  
From rocky summit in 1975 to leading international observatory in 1998, the creation of the observatory on La Palma will live as a major achievement of the RGO.
- 8. Gemini – RGO’s Contribution.** Neil Parker, RGO. Eventually, the MOU [memorandum of understanding] and work package agreements were signed and the contracts that were under negotiation were converted into work packages.
- 13. Report of the ING Visiting Panel, April 1998** [ING = Isaac Newton Group] Rene Rutten, ING. Summary, principal conclusions and recommendations of the report.
- 15. Prime Time Telescope Stories.** Sue Worswick, RGO. Good image quality was required for direct imaging, while the use of fibres to feed a spectrograph also needed a large field and a means to correct atmospheric dispersion.
- 17. RGO CCDs – Review, Highlights and Update.** Paul Jorden, Paddy Oates, Percy Terry, RGO. Clearly the 2k x 4k chip is going to be the ‘industry standard’ for some time to come — at least for major observatories.
- 17. The Evolution of Computers at the RGO.** Ralph Martin, RGO. In less than a single generation, our computer systems have changed from isolated islands to interconnected meshes with 10 000 fold increase in network capacity.
- 20. The INT Wide Field Camera.** Derek Ives, ATC (formerly RGO). These new devices give the camera increased sky coverage, better resolution with faster readout rates and lower readout noise with the added benefits of using commercial devices.
- 22. Fun and Games with WYFFOS/AUTOFIB-2.** Terry Bridges, IoA (formerly RGO). It is certainly extremely gratifying to see about 100 simultaneous spectra, and to get literally thousands of spectra during an observing run.
- 26. Extending the Wavebands at ING.** Shaun Hughes, IoA (formerly RGO). Since its commissioning, WHIRCAM has been used to observe such diverse objects as Neptune’s rings, accretion discs, young stellar objects, brown dwarfs, cataclysmic variables, cepheids, Miras, galaxy bulges and haloes.
- 27. RGO, AAO, and the City of London.** Paul Jorden, RGO. The AAO and the RGO have a long tradition of co-operation, particularly with software systems for astronomical data acquisition.
- 30. The ING Archive and RGO Data Centre.** Jim Lewis and Ed Zuiderwijk, RGO.
- 31. Astronomy Research at the RGO.** Max Pettini, RGO. In the period 1993-95 papers written by astronomers at the two Royal Observatories attracted more citations per paper than any other astronomical institution in the world.
- 34. A Staff Photograph 1996.**
- 36. The Herstmonceux Conference Series.** Margaret Penston, RGO.
- 38. RGO Preprints.** Julie Loaker, RGO.



- 40. Holding the PATT baby.** Bill Martin, RGO. By about version 5, the schedules are ready for their first release.
- 41. Towards a 3D Stellar Reference Frame.** F. van Leeuwen, RGO. Measuring a stellar distance through measuring its parallax is doing trigonometry on a grand scale.
- 42. The UK Satellite Laser Ranging Facility.** Graham Appleby, RGO. Successful tracking of Lageos meant that the new UK SLR system had arrived on the international scene.
- 48. Eclipses and the Rotation of the Earth.** L. V. Morrison, RGO, and F. R. Stephenson, Durham University. Eclipses can be a tool for measuring the length of the day.
- 52. The NAO – Past and Present.** Catherine Hohenlerk, RGO. Since we have been in Cambridge we have managed to increase our income to over £220,000 per year.
- 54. New Generation Robotic Telescopes.** Anon.
- 55. All Astronomers Royal; the legacy of Airy.** Adam Perkins, RGO. “Sir George Airy single-handedly under-took duties fulfilling which today collectively occupies the resources of several entire research councils.” Sir William McCrea, 1990.
- 58. Historical Artefacts at the RGO.** Robin Catchpole, RGO. All the chronometers and clocks have detailed histories and several of the chronometers date back to the series of sea trials held in 1796 and 1797 aboard the Sans Pareil.
- 59. Public Understanding of Science.** Margaret Penston, RGO. One never knows what to expect when the phone rings or on opening a letter.
- 61. The Interview.** Margaret Carter, ex-RGO, and Robin Catchpole, RGO.
- 61. Spelling Existence.** A poem by Anne Reynolds, RGO.
- 62. The Equatorial Group, Herstmonceux, 1958-63.** Derek Jones, IoA, formerly RGO. Another afternoon I showed Mars to the famous Radio Astronomer, Sir Martin Ryle, who confessed that it was the first time he had looked through an optical telescope.
- 64. Views of Gemini.** Two photographs.
- 65. Bread and Cheese Lunch.** Andrew Johnson, RGO.
- 65. First Sighting.** An appreciative letter.
- 66. Friday the 13th.** Bernard Yallop, RGO (retired).
- 67. Cambridge Young Astronomers at the RGO.** Peter Ingram, Cambridge Young Astronomers. We estimate that over the years we have provided an insight to the workings of the universe to about 500 or so children.