EXTRACT FROM

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

By George A. Wilkins

Sidford, Devon: 2009

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APPENDIX B. VARIOUS NOTES AND MEMORANDA

B.1 Notes about Sir Harold Spencer Jones

A personal overall assessment by George A. Wilkins

The following paragraphs were originally written as the conclusion to Chapter 2, but I have accepted Andrew Murray's comment that they were inappropriate (or some such comment) there.

It is very difficult for me to comment on Spencer Jones' term as Astronomer Royal. He initiated and carried through the decision to move the Observatory to Herstmonceux Castle, but the delays caused directly by the war and then by the economic difficulties of the country during the post-war period meant that he had to retire before the equatorial telescopes came back into use. I believe that he was right to wish to move to a new site where all activities (except geomagnetic recording) could be together. I also believe that the chosen site was almost certainly the best available for sky conditions and in respect of its suitability for enabling the oldest scientific establishment in the country to update itself. He should, however, have left some of the old equatorial telescopes at Greenwich; the corresponding savings on construction costs and staff commitments would have allowed him to argue more strongly for the new telescope that was intended to go into the sixth dome. This together with the 26-inch and 36-inch would have been sufficient for a good programme to complement and support the work on the Isaac Newton Telescope.

I believe that he was right in retaining the wide spread of the activities of the RO, and it seems a pity that he did not accept the suggestions that the RGO should also take on some radio-astronomy observations. It would be interesting to know why he allowed five years to elapse before he appointed a second Chief Assistant, especially as he was involved in so many other non-RGO activities. His final choice of Gold was a good one, especially as he brought a programme for cosmic-ray observations, but he did not have time to prove himself before Spencer Jones retired. With hindsight it would, however, have been better if he had appointed, right away, someone to carry through the Isaac Newton Observatory project.

Spencer Jones departed from tradition when he appointed Atkinson and Hulme as Chief Assistants and Smith and Hunter as Assistants. Up to that time most of the staff were recruited at a junior level and the best obtained qualifications by part-time study and worked their way up so that they could supervise the routine work of observing and computation. The only well-qualified members of the staff were the two Chief Assistants, who were recruited at postgraduate level from Cambridge, without experience, and who usually moved back to university after a few years. The introduction of the new grading structure for the Scientific Civil Service in 1947 gave Spencer Jones the opportunity (or did it force him?) to start to change the staff structure more drastically. Wilkins (to NAO), Wayman (to Solar) and Gething (to Meridian) were recruited at post-doctorate level as Scientific Officers in the expectation that they would rise within a few years to 'Head-of-Department' level. There was, as far as I am aware, no suggestion that we were expected to carry out independent research. I saw it that we were expected to improve the quality and effectiveness of the approved programmes of the Observatory, but I do not recall any specific statement or discussion of our objectives.

It is a pity that, as far as I aware, we do not have any record of comments about Spencer Jones' managerial style. He was always very pleasant to the staff, but was he an autocrat who did not consult his senior staff? Did he try to do too much himself and not give his staff the delegated authority and the information that would have allowed them to progress the work more quickly?

B.2 Notes about Sir Richard Woolley

See also section 3.1.1 for brief notes about his previous career and appointment. For further details of Woolley's career see:

Sir William McCrea, 1988. Richard van der Riet Woolley 1906–1986. *Biographical Memoirs of Fellows of the Royal Society,* **34**, 923-982.

B.2.1 Woolley on British participation in space research

The following is a transcript of a copy of a note by Woolley. (Undated, but probably about 1958.) My recollection is that it was written for the Royal Society.

BRITISH PARTICIPATION IN RESEARCH WITH ARTIFICIAL SATELLITES

It is extremely difficult to assess the monetary value of the results of pure research, and therefore difficult to give objective advice about the desirability of committing large sums of Government money to the building of expensive equipment and the maintenance of large teams for pure research.

The astronomical aspects of satellite research concern the figure of the Earth and the far ultra-violet spectrum of the Sun (and possibly of other objects). As regards the former, the figure of the Earth is accessible to surface observation and it should be considered whether a modest fraction of the very large sum to spent on satellite launching would not yield quite satisfactory (possibly more satisfactory) geodetic results if spent on surface observations. Turning to the ultra-violet spectrum of the Sun, this is not accessible to surface investigations but has been observed by vertical rocket flight. One may remark parenthetically that though these observations have been conducted for at least eight years, the published results are meagre, possibly because it is after all extremely difficult to conduct first-class spectroscopic observations in a rocket.

An allied question of interest in the study of solar and terrestrial relations is the determination of the solar spectral regions responsible for the formation of the various layers of the ionosphere. Again it is surprising that more has not been published on this subject. It is accessible to vertical flight, and unique advantage is offered by satellite research over vertical flights only in the possibility of routine observations in the former, after the manner of the spectro-helioscope.

It is impossible for an astronomer to consider the value of this work without reflecting that some of the money involved (if the £9,000,000 mentioned by Professor Massey on page 5 of his memorandum is correct – and one suspects that this is by no means an overestimate) would more than suffice to set up a better astronomical observatory than any now in existence, and to do so in the southern hemisphere while providing every facility for United Kingdom astronomers to use it. Such an installation could include a telescope of more than 200 inches aperture, which would provide the means to carry out first-class research on stellar and galactic problems for at least fifty tears without further capital expense.

To call attention to this is to invite comparison between the study of the stars, of the Magellanic clouds, of the galaxy and its dimensions and rotation, and the study of all galaxies outside our own, on the one hand, with the routine study of variations in high energy phenomena on the other.

It will no doubt be said that Government money could be given to satellite research which would not be available for scientific education or for pure research in other fields such as galactic astronomy. If this is the case, we are asked to say whether the scientific results of satellite research are worth £9,000,000 without any standard of comparison – which is to my mind a question which one cannot answer. If, however, comparisons are allowed I must, so far as British astronomy is concerned, call attention to the research value, which is far greater pound for pound in my opinion, of spending money on large telescopes, especially in the southern hemisphere, rather than on artificial satellites. Accordingly, in my opinion, one cannot really quote astronomy in support of a proposal to spend large sums of money on satellite research, especially when enormous strides are being made in astronomy in the understanding of the nature of stellar evolution and the properties of the galaxy. No one who has handled the large telescopes necessary for observing distant, and therefore faint, objects will easily suppose that instruments of this sort can be operated in Sputniks in the near future.

No doubt similar financial comparisons are available from every field in physics, and there seems to be no scientific reason for the Government to select the launching of artificial satellites as an object for its especial benefactions, though there may be military reasons and a desire to support something of great popular appeal.

B.2.2 Woolley and Australia

The following is a quotation from "Under the Southern Cross: A brief history of astronomy in Australia" by R Bhathal & G. White, Kangaroo Press 1991.

pp. 58-59. "Richard van de Riet Woolley, who succeeded Duffield [as director of the Commonwealth Solar Observatory, later the Mount Stromlo Observatory], proved to be a critical figure in changing the entire direction of the scientific work of the observatory from solar and geophysical research to stellar and galactic astronomy. He was also responsible for the transfer of the MSO from the Department of the Interior to the Australian National University, despite resistance to the amalgamation from some members of the staff. In fact, the matter had to be resolved by the intervention of the Prime Minister, R. G. Menzies. This was perhaps Woolley's greatest contribution to the observatory and to Australian astronomy."

There is a photograph of Woolley with Spencer Jones taken in the basement of the observatory in 1947.

The following notes are based on quotations from a review of a book about the Mount Stromlo Observatory.

" a building was finally achieved in 1924 with Duffield as director of the Commonwealth Solar Observatory on Mount Stromlo. British astrophysicist Richard Woolley was elected director in 1939. As he was not interested in continuing solar work, the word was deleted from the title ….

… Bart Bok, a former Harvard Professor, became Woolley's hated successor. … The last few years of Bok's administration were darkened by controversies between him and Woolley regarding a proposed 150-inch Anglo-Australian Telescope. Bok resigned. His

successor was astrophysicist Olin Eggen. Like Bok, Eggen finally resigned because of controversies about the Anglo-Australian Telescope. …"

Dorrit Hoffleit, 2004. Review of *Stromlo: An Australian Observatory,* by Tom Frame and Don Faulkner, Allen and Unwin, 2003, in *Astronomy and Geophysics* 45(1), 1.34.

B.2.3 A letter to Professor McCrea

The following is a transcript of the letter that I wrote to Professor W M McCrea on 1988 March 18 in response to his request for my "candid opinion of Woolley as Astronomer Royal, particularly in his dealings with the work of your Office". At the time he was writing an obituary of Woolley for the Royal Society. Unfortunately, I deleted the original letter from my Amstrad PCW word-processor and so I have used my penultimate typescript on which changes are marked. George A. Wilkins.

I am writing to you from my home about Sir Richard Woolley so that I can write more freely in responding to your request for a candid opinion about his dealings with the work of the NAO and in answering your other questions about him. I also know that if I do not answer your letter right away there would be a considerable delay before I would put pen to paper – or rather finger to keyboard since I am using my Amstrad word-processor.

As you will soon realize I had quite different scientific interests from Woolley and I had little sympathy with the way he treated many of his staff. I must also admit that I have personal reasons to be critical of him, since he tried to block the confirmation of my promotion after I had replaced Donald Sadler as Superintendent. You should bear my bias in mind when you read the rest of this letter; I hope, however, that my bias has not affected my recollection of the facts.

Woolley did not appear to me to take much interest in the work of the Office since he clearly recognized that he could rely on Sadler to see that the work would be done efficiently. Even in 1970 he did not appreciate the fundamental role of the Astronomical Ephemeris in our work and in our relationships with the NAO of the United States Naval Observatory; he was prepared to allow the SRC to stop its publication at short notice and to replace it with an "Observer's Almanac". Eventually it was agreed that we should produce both, and even today we still compute and distribute data for selected observatories.

He was certainly not prepared to allow the NAO to expand its activities into the area of the computation of the orbits of artificial satellites. When the first Sputnik was launched it was clear that the NAO was the most appropriate place to provide a national prediction service, but the task was transferred to the Royal Aircraft Establishment within a few months. Some years later he did agree that a kine-theodolite for satellite tracking should be based at Herstmonceux, but he took the opportunity to fill the extra complement places with staff for whom he did not have appropriate jobs elsewhere. His attitude was consistent with his well known antipathy to space activities of any kind. A few years ago there was an informal meeting at the Royal Society of those who were involved in space activities at the time of the launch of Sputnik 1. I went along in place of Sadler and was interested to hear the scathing comments of Sir Harrie Massey about the disastrous effects that Woolley's negative advice had had on the British space-research programme. As far as I am aware, there is no official record of the meeting, but M O Robbins would probably substantiate my recollections.

His attitude to the work of the NAO is also shown by the way in which he would transfer staff from it to his research department with no notice if he wanted extra help. Soon after he came to Herstmonceux he asked me if I wished to transfer from the NAO to astrophysics; I declined and I subsequently felt that he held this against me. I also felt that he treated Sadler very rudely; on several occasions when I was with Sadler he received a telephone call from Woolley summoning him to go immediately to his office in the Castle; the word 'please' was not to be heard. He generally treated staff in this way, but I have known him to be very charming to visitors. I had very few individual meetings with him during the few years that I was in charge of the NAO and he was Astronomer Royal.

He was a keen sportsman, and he participated actively in tennis for many years and in cricket for all the time that he was at Herstmonceux. Sadler and I used to play men's-doubles tennis with him regularly on Sunday mornings and we had many enjoyable hard-fought games, but we soon learnt not to question his calls. He was also very keen on folk dancing, and his decision that the Long Gallery should revert to being a Ballroom (instead of being partitioned into offices) was made when the Club arranged another function for an evening on which the folk dancers normally met in the Club's premises.

Although he had a very autocratic attitude he did take a commendable personal interest in the annual reports on the staff. We used to have a meeting of all the reporting officers (and staff-side scrutineers) so that he could hear and question their comments on the reportees; this was stopped by SRC! He would back very strongly staff whom he knew well and considered to be good.

There is no doubt that he did a great deal to build up the RGO and ground-based astronomy generally; he certainly deserves credit for building up the links with Sussex and Australia. My regret is that he appeared to me have a very narrow idea of the role of the RGO, so that we gradually shed such functions as the meteorological and magnetic observations; he also ran down the work of the Solar Department. (At an even earlier stage he had failed to support Gold's work on cosmic rays, but I doubt whether they could have worked together anyway.) I suppose that it could be said that he was anticipating the attitude of the SRC in wanting to concentrate on short-term astrophysical research rather than on the long-term astrometric and geophysical programmes for which the RGO is best known. At first he was very sceptical about the value of electronics and computing, and I felt that he actually held the RGO back in these fields. With hindsight it is easy to see that did not make appropriate provision for the installation and operation of the Isaac Newton Telescope.

I do not feel that I can assess his contribution as an individual research scientist since I do not know enough about the fields in which he worked. He spent much more time at the telescope or measuring machine than I expected for a man in his position, but on the other hand he appeared to be successful in encouraging others in their research.

I hope that these comments will be helpful to you, although I realize that that they are unsuitable for an RS Biographical Memoir, and that they probably tell you more about my attitudes and interests than they do about Woolley himself. I will let you know if any other illustrative events occur to me; please let me know if you think that I could help you in any other way. Our librarian has prepared a bibliography which might be useful to you, and I hope that there is a good collection of his papers in the archives.

B.3 Notes about Dr Thomas Gold

Dr Thomas (Tommy) Gold was a Chief Assistant from 1952 to 1956. He was initially appointed by Spencer Jones to set up a cosmic-ray-monitoring unit. (See section 2.7.2). He resigned when he failed to obtain support for his work from Woolley.

B.3.1 A note on Gold from *EOS*

EOS, the newsletter of the American Geophysical Union, contains a report of a historical meeting on the discovery of the solar wind at which Gold and others spoke. [*EOS* **75**, p.140, 1994-03-22] There is a photo that includes Gold, who is described in the caption as 'the wide-ranging theorist'. The text includes the following items.

"Tommy Gold recalled his suggestion in 1953 that sudden commencements of geomagnetic storms were due to magnetohydrodynamic (MHD) shocks. This suggestion was met with skepticism because, at the time, relatively few people believed in MHD. Gold described his work on 'magnetic bottles', now generally identified with the coronal mass ejections discovered in the early 1970s, in the context of the great solar particle event of February 23, 1956." [This was observed at Herstmonceux by the new cosmic ray detectors.]

"Gold humorously recalled that when he introduced the term 'magnetosphere' in the title of a paper in 1959, several people told him that the terminology would never be adopted because the structure was not a sphere. Gold also recalled that as late as 1956, Woolley, the Astronomer Royal of Great Britain, regarded space physics as 'utter bilge', a viewpoint that was instrumental in Gold's subsequent departure to the United States."

B.3.2 A note on Gold to Janet Dudley

The following note is a transcript of a manuscript note that I sent to Janet Dudley, then the RGO Librarian and Archivist, on 1987-02-14 about the 'contemporary' history of the RGO. George A. Wilkins.

I found myself talking to Prof. 'Tommy' Gold and Dr. R. Hide (Met. Office) during the lunch break of the RAS G-meeting on Friday, Feb. 13. Hide mentioned my involvement in MERIT/IERS and this prompted Gold to mention that he had been the first person to propose that radio interferometry (VLBI) could be used to monitor the rotation of the Earth. I was not aware of this and would like to trace the paper, which he thought was published in Science (or Nature) in about 1962. I would be glad if you could suggest how we might track this down.

But, and this is the main point of this note, he also said that he previously tried to interest Spencer Jones and then Woolley in the RGO developing radio techniques for astrometric purposes. Spencer Jones didn't support him and this is consistent with H. M. Smith's claim that S.J. refused the ex-radar equipment that eventually went to Jodrell Bank. Woolley quite definitely rejected the idea and I imagine this contributed to Gold's decision to go to Cornell. Woolley also failed to support Gold's work on cosmic rays etc. I often wonder what the Observatory would be like now if Gold and not Woolley had succeeded Spencer Jones.

Do we have any papers that refer to these matters? It would be interesting to find, for example, internal memos about Gold's plans for radio astronomy work at Herstmonceux. Do we have any papers about Woolley's appointment (or are these all held by the Admiralty)?

As far as I can recall, Janet Dudley did not respond to this enquiry.

B. 4 Closure of the Chronometer Workshop

This note by Herbert West was sent by email to George Wilkins on 8 May 2006.

The last few years of my service at Herstmonceux were not particularly happy ones. The Hydrographer was forced to make cuts in his staff, and decided to cast adrift the Chronometer Section. The Section came under the banner of DGSW(N) (Director General Surface Weapons). The headquarters were at Portsmouth, but no one there knew what we did or for that matter cared what we did. We were therefore shunted to the care of a sub section at Slough.

At the same time, the Officer in Charge of the Section (the late William Roseman) made it perfectly clear that he would never hand over His Section to anyone else but would kill it first! (don't ask!) I could not find out anything about his activities at Slough of with meetings at Portsmouth. He was due to retire at 60 years of age on 5.5.85 but just before that date a Director arrived from Portsmouth and announced that Roseman would serve an additional year in the capacity of O in C but on a half time basis!!! The Section would be wound down early in 86 and all the work carried out within the Section would be undertaken be a Contractor which Roseman had selected.

A very unhappy period for every one, especially the watchmakers who were all declared redundant. Once into 1986 I found myself waiting eagerly for my retirement in February. The only other member of staff kept on at that time was the late Dorothy Clark, (Jimmy Clark's wife) who was retained on half time in her capacity as a Clerical Officer. Roseman had arranged for all the equipment to be sold off by Sales Dept. but a few items were transferred to Slough. I have to admit that I used to go to the Castle for my lunch, and then go home! Well it was so demoralising to be in the Section all on my own and to watch all the furniture being dismantled.

Many of the Standards I had written over the years (Defence, Repair and Rating) went to the Contractor together with many thousands of pounds worth of spare parts; but I know not under what conditions. It would appear that DGSW were disinterested and only wanted to be rid of the whole Section.

I know this is of little interest to you, and has really nothing to do with the history of the Club, but now some 20 years after the events I have outlined above, I am able to write in a dispassionate way about the whole period.

On the bright side, I attend regularly the meetings of the Sussex Branch of the Horological Institute. We assemble at Ringmer, which you may remember is fairly close to Hailsham. Some of the members travel up from West Sussex, which is quite a journey (they must be keen!). On the 26th July, I shall travel with Branch members by coach to Greenwich for a guided tour! It will be interesting to see how my old friends the 4 antique chronometers by John Harrison are surviving. They have been moved from the Navigation room to a new display up on the hill in the Old Observatory.

I had a look on the National Maritime Museum web site, and noted that all the timepieces have been housed in swish new display cabinets.

[See also DCI RN 31-35, 1986]

B.5 Notes on Herstmonceux village and the surrounding area

Herstmonceux village was formerly known as Gardner Street and lies on the same main road between Hailsham and Bexhill to the east. The village Bodle Street was on a minor road to the NE of Herstmonceux. The village of Magham Down lay on the main road to the west of Herstmonceux, while Boreham Street lay to the east. There was a bus service between Eastbourne and Hastings that passed through Hailsham, Herstmonceux, Ninfield and Bexhill.

The village had a few shops and a pub (The Woolpack) in the centre. It had a barber shop in the early 1950s (until ?). It is well-known for the making of Sussex trug baskets. Some RGO staff (especially at first) lived in the two Council housing estates (Denefield and Fairfield) in Herstmonceux village. The nearest town was Hailsham, from where there were occasional buses to the Castle and a coach service to London.

The Castle and the Church are about 1.3 miles to the south of the village and at the end of fairly narrow lane. There is also a farm south of the Church, but the only other nearby house is Cleavers Lyng, which served afternoon teas and later (?) became a small guest house. The owners were Mr & Mrs Holden.

Herstmonceux Place was between the Castle and the village; there was a house in which Sir Paul Latham had lived for a while and a group of small houses (?). Another group of houses and 'The Welcome Stranger Inn' were near the main road; Gold lived in one of these houses. (Also, later, the Leatons and the Carters?) The pub was usually referred to as 'The Donkey' after a painting in one of the bars.

Windmill Hill lay between Herstmonceux and Boreham Street. It could be reached directly (on foot) from the Castle by a track that was said to be the original road to the north. The Horseshoe Inn was a small pub, but it became part of an extensive restaurant.

There was a road from Boreham Street that passed the East Gate of the Castle and then went through the small village of Wartling (with church, pub and school) across the Pevensey Levels to Pevensey. From where there was a road to Pevensey Bay Halt (for the stopping trains from Hastings and Eastbourne) and then to Pevensey Bay and Eastbourne. The main east-west road through Pevensey ran past Pevensey Castle and through the village of Westham to Polegate and the station for the trains to and from Lewes, Brighton and London. This stretch of road was later by-passed by the A27.

David Calvert's book on *The history of Herstmonceux Castle* contains a chapter with early photographs about the village.

B.6 The transformation of Herstmonceux Castle in the 1990s

This note is based on a rough, unfinished draft that I wrote in the autumn of 1994. George A. Wilkins

In 1993 the Queen's University of Ontario, Canada, purchased the Herstmonceux Castle estate and announced that it intended to use it for an International Study Centre. The purchase was made possible by the generosity of a former student, Dr Alfred Bader and his wife Isabel, who had second home in nearby Bexhill-on-Sea. The donation was sufficient to cover the cost of the conversion of the Castle to form the administrative and teaching centre, as well as the conversion of the West Building to

provide living accommodation for the students. It was also intended to use the Equatorial Group as the basis of a Science Centre.

I had the opportunity to make a brief visit to the Castle during the afternoon of 30 September 1994 and this note is based largely on a very rough unfinished note of my recollections of the changes that I noticed on that occasion. By then the necessary changes had been made to Castle and West Building so that the centre had started its activities. A special exhibition had been open to the public in the EQ Group during the summer. My visit had two purposes. Firstly, to see the progress on the satellite laser ranging facility; I had previously verified that Roger Wood, the officer-in-charge, would be there. Secondly, to discuss the request by the Centre for a selection of my slides about the RGO and the Castle.

I drove to the east entrance to the estate and found that it was marked by a large brown sign to “Herstmonceux Castle and Science Centre” and by another sign that indicated that the grounds were open to the public. There was a lady selling tickets at the hut opposite the side road to the EQ Group; her face seemed vaguely familiar, but I could not place her and she did not indicate that she recognised me. A few cars were parked on the grass opposite the Castle even though it was a very heavily overcast afternoon.

I went to the SLR building and two changes were immediately apparent. A wire grill fence had been erected around the door and the steps up to the dome so that the observers would not need to lock the door to the control room when going up to the dome. An office unit had been built by the dome since the observers no longer had the use of offices in the West Building. There was also a new radio mast for the reception of the GPS and time signals. There had been several technical improvements in the equipment. The timing of the returns was to a precision of 0.1 ns (equivalent to 3 cm) and a new photometer system had been fitted to the telescope. The productivity of the system had increased; Peter Standen had managed to observe 24 passes during one duty. This had been made possible by the improvements in the operational procedures and by an increase in the number of satellites carrying retroreflectors. In addition to monitoring the signals from GPS satellites, the team was about to start to make regular observations of satellites fitted with PRARE equipment. [My recollection is that this was a French system.]

At the Castle I found a crowd around the porters’ cubbyhole, where I had been told to look for the receptionist. I the learnt that there had been a misunderstanding and the appropriate person was not there to talk to me. Moreover, the Operations Manger was in a meeting, but it was eventually agreed that one of the young members of the staff would show me around the Castle. He had, however, only been in his job for a week and so I was able to show him parts of the Castle that he had not previously seen.

We started in the Great Hall, which had been converted from a Library to the Dining Room. The balcony had been removed so that once again the full size and height of the Hall could be appreciated. The south wall had been partly opened up to give access to a completely new serving area where the students collected their meals. The Minstrels’ Gallery, which had been used for the Library office, now had the sign “Executive Director” on the door. The rooms on the north side of the landing were in use for administrative offices.

My original note ends at this point. I recalled (10 years later) that I was pleased

to see that the changes that had been made were for the better. In particular, there was a single large room, instead of several small offices separated by partitions, over what had been the dining room in the south wing. On a later visit for an RGO staff reunion I visited the West Building and was able to see how our offices had been converted to very pleasant bedrooms, while the time-service control room was used for a lounge.
