

have to be supported on the ceiling of the fourth level (the base of the square dome) above the stairwell of the main building. This is 13.3 m below the floor of the observatory and a pier would be a minimum of 100 tonnes made up of about 27 000 bricks.

A photograph taken during the construction shows what is apparently a pier protruding above the square dome, amidst scaffolding, before the construction of the octagonal room and observatory (Figure 2). Today there is no pier above the floor of the canteen, some 8.0 m short of the observatory. If indeed there had been a pier, then it must have been taken out of the building presumably after being broken into small pieces. This would have been a daunting task and probably not undertaken unless the structure was considered unsafe.

The whereabouts of any instrument is not known. The Lands Department has many small telescopes and survey instruments (there is a fine display in the building) any of which could have been used in the dome. The width of the patched slit is approximately 0.4 m and this puts an upper limit on the size of any telescope. One story is that 'the telescope' went to Sydney University. This is probably not the case as the University's Archivist and the Curator at the Macleay Museum have no knowledge of it. The story probably results from a loan of instruments to the University for an exhibition several years ago.

1. Department of Lands, General Information: Information on the Historical Lands Department Building (no author, date or printer)
2. Lands Department Building, Government Printer, 1976
3. 'The Illustrated Sydney News and New South Wales Agriculturist and Grazier', 9, XIII, p. 12 (August 1876)
4. *Ibid*, 11, XIII, p. 19 (October 1876)

Note added after Referee's Report

This paper was refereed by Dr Harley Wood just prior to his passing in June 1984. His comments are as follows:

'As you know I lived for a long time where the Land's Department dome was plainly visible until buildings hid it from view. I took a rather desultory interest in it and I have an unreliable recollection that I was told of a large theodolite having been in it.

It may be mentioned that at the time when the building was being planned and built full preparations were being made to observe the transit of Venus on 1882 December 7. Several 6-inch refractors were bought for this. Although there is no suggestion that any of these was placed in the dome, it is offered as a possible plausible surmise that the preparations for the transit were a stimulus for the dome's erection'.

Obituary

Student Memories of Bart Bok, an Astronomical Godfather

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Last year, like many others, I was saddened to learn of the death of Bart Bok. The development of optical astronomy in Australia, in particular the formation of Siding Spring Observatory, owes much to the farsightedness of this effervescent Dutch-American astronomer. Ben Gascoigne has recently written some fine words about Bok's reign at Mt. Stromlo Observatory for a special Bok issue of *Mercury* (a journal of the Astronomical Society of the Pacific); other parts of Bok's scientific life have been covered by Raymond White of *Steward Observatory* in last October's issue of *Sky and Telescope*. Bok took over as Director on 3 March 1957, at a time when the Observatory had just become a fledgling department of the Australian National University (ANU). By the time he left, nine years later (31 March 1966), the Observatory had developed into an active university department with a reputable post-graduate student program, as well as an astronomical research centre with modern equipment and a field station. A total of 28 students were admitted to the Observatory during Bok's reign; 23 of them are still scientifically active.



Figure 1: Bart Bok, in typical pose, and Professor Jan Oort at the control desk of the Parkes 64-m radio telescope, during the 1963 IAU-URSI Symposium held in Australia.

Rodger Bell, Colin Campbell and I formed Bok's first student intake, in early 1958. Alex Rodgers was already at the Observatory, finishing off a Ph.D. under Richard (later Sir Richard) Woolley, Bok's predecessor. Colin lasted only two years—the first Australian 'Bart-dropout'—but resulting from this brief contact with astronomy he became the 'C' in the 'RCW' notation used for southern HII regions. For Bok, midst the great disappointment over Colin's failure, there must have been a small twinge of perverse satisfaction—of the three students, only Colin had been regarded by ANU administration as sufficiently qualified to be a Ph.D. student in astronomy. Bok's unbending support of Rodger and me probably marked one of the first of many battles that he was to have with the conservative ANU administrators. I will never forget the day I first arrived at ANU, young, immature, and quite exhausted after a 14-hour trip up a poorly-surfaced Hume Highway in a bus with square wheels. I was greeted by the ANU administration with 'You know, Mr. Whiteoak, you shouldn't really be at ANU', and wouldn't have been but for 'that Professor Bok on his mountain'. Had I possessed the strength I would have fled there and then! Despite this very neutral beginning, the four years that I spent at the developing Observatory were exciting to say the least, and I look back on those days with a great deal of nostalgia. I will attempt here to provide a picture of the Bart Bok of this era, as recorded through the eyes of an unworldly, introverted Ph.D. student.

To me, Bok was unique. He was unlike just about any other scientist I'd ever met. He looked different, always well-groomed and elegantly dressed in American style. He spoke loudly and often, with an almost exaggerated Dutch accent—always with great enthusiasm about astronomy, but sometimes with an unsophisticated candour that caused his peers to cringe. He was a great 'operator'. Although his techniques were more transparent than subtle, his sheer audacity usually won out. A prima donna of the greatest degree, he hated being upstaged. I can recall on one occasion Bok returning most irate from an Army parade at Duntroon, a big social event attended by the Governor-General. Bok had obtained reasonable seats and was enjoying himself until the official party arrived. There, amongst this group, escorting the daughter of the Governor-General's aide-de-camp, was none other than Tony Neylan, one of Bok's students (who subsequently, but not consequently, dropped out to enter the Diplomatic Service). Tony replied to Bok's stunned stare with his typical wide smile and a regal handwave as the party swept by.

Even Bok's writing was flamboyant—who could forget the large 'return to Bok' emblazoned on preprints, reprints and other documents that Bok dispersed generously in all directions (and probably never got back). It is not surprising that the Bokmobile was a huge bright green Fairlane that the Boks brought with them from America. It was unlike any other vehicle in Canberra, and spent most of its life being driven sedately up and down Mt. Stromlo.

Bok owed much of his success to his wife Priscilla. This dear quiet person was an astronomer in her own right. In fact, it was rumoured (perhaps a little maliciously) that in the writing of the excellent general astronomy book 'The Milky Way' (now in its fifth edition), for which the two Boks were co-authors,

the chapters that Bart wrote exclusively were those that required the most rewriting. Priscilla was not only Bart's personal assistant, collaborator and adviser, but also his moderator, the governor of the Bok dynamo that occasionally threatened to run out of control. I believe that she was also a great protector of students, even from Bart's ire. There is little doubt about the great bond of affection between the two Boks. On the many late afternoons when we saw them walking around the Observatory, deep in quiet conversation, and hand in hand, I believe we were being treated to a rare view of the real Bart behind the public facade.

I believe that Bok was not personally engaged in avantgarde research while I was with the Observatory. This appeared to matter little—he knew how to promote world class research, in particular research involving the southern skies. He realized the benefits of combined optical and radio astronomy research, and sought a close relationship between the Mt. Stromlo scientists and the radio astronomers in Sydney. Ben points out in his article that it has been said that Bok always left his observatories in better shape than he found them. Mt. Stromlo Observatory was no exception. He quickly set about building up the equipment—a Coudé spectrograph for the 74-inch telescope, completion of the 50-inch reflector (an upgrading of the old 1868—Melbourne telescope), new electronic equipment, increased workshop size, a new office block for the astronomers. Realizing the limitations of Mt. Stromlo as an observatory site, because of the weather and increasing light pollution of the night sky, he initiated a site-testing program which included mountains as far south as Horsham in Victoria, and as far west as Meekathara in Western Australia. An initial field station consisting of a 26-inch reflector was set up on Mt. Bingar (near Griffith, N.S.W.), and when this site proved unsatisfactory, Siding Spring Mountain was chosen in 1962. The first instrument was a modest 'modern' Boller and Chivens 40-inch reflector, now dwarfed by the larger telescopes there. Bok's visions included a large telescope, to be jointly owned by Australia and an overseas country, and towards the end of his reign he pursued this goal with his usual (and sometimes embarrassing) verve. Unfortunately for him, the birth of the Anglo-Australian telescope took place after his departure from Australia.

As the Observatory was the ANU's Department of Astronomy, Bok developed an extensive post-graduate student program. He instituted full courses in astronomy, to be given by the regular staff. To assist in the future supply of students, he began the successful summer vacation program. This enabled university students from all over Australia to spend summer vacations at the Observatory and gain a 'hands on' initiation into astronomy. Many of today's astronomers first encountered Mt. Stromlo as vacation students.

Bok was fully aware of the value of a supporting public. He had a friendly and outgoing style which was well suited to performances in the public arena. He travelled widely and often around Australia, bringing astronomy in simple comprehensible terms to an interested but uninformed public. His public lectures were superb—classic examples of both good preparation and good presentation; he could transmit to his audiences a wonderment, enthusiasm and excitement for astronomy. At the

same time, he became the confidant of many Canberra politicians.

A successful publicity venture was the monthly Visitors' Night at Mt. Stromlo. On such an occasion all the telescopes were open for inspection, and the visitors were able to talk to the astronomers and view prominent celestial objects through selected instruments. Of course Bok would be at centre stage, directing with loud voice and flashlight firstly the traffic, then the people, and later delivering a spirited introduction from the Newtonian focus carriage parked half-way up the dome slit of the 74-inch telescope. All the staff (including students) were expected to be involved, manning telescopes or leading groups of visitors. I always prayed for clear weather because if the night was too cloudy for viewing, it was often my task to provide alternative entertainment in the form of an illustrated talk on astronomy. These Visitors' Nights were very popular with Canberra residents (although not with some of the astronomers), and were always fully booked out for months in advance.

Hospitality was dispersed frequently in the large residence beside the Observatory. A popular event was the famous Bok sherry party. Here Bok could be at his most outrageous—the late arrival, the slow eater or drinker would have these 'crimes' broadcast to all. Each party was well orchestrated, the proceedings and even the end being directed by Bok in no uncertain terms. During my years at the Observatory the invited ranged from the most menial of the Observatory staff to the Governor-Generals. I wonder how many of these people realized that, when the sherry bottles (all bearing famous labels of course) were emptied, they were removed to the kitchen. There, with a wicked grin, Bok supervised the refilling with 'Dan's lousy sherry'—wine purchased in bulk from wineries near the field station on Mt. Bingar.

Bok's observing was an obsession with him. On his scheduled nights he'd be at the telescope before sunset, not leaving until the sun reappeared. The fatigue of a long, cold winter night did little to lessen his enthusiasm. On occasion I was rendered speechless when, on leaving my telescope at daybreak, exhausted, frozen, and wondering why on earth I'd chosen such a ridiculous career, I'd be confronted by Bok who'd enthusiastically unroll his recorder chart across the frost-encrusted lawn in front of the offices to show me how many observations he'd obtained. He expected all others to share his passion for observing, and woe betide any student who failed to appear at the appropriate telescope on a clear night, or whom he caught with a closed dome after the weather had cleared. And not only students would sometimes arrive at the Observatory in the morning to find a hand written note saying 'Where were you when the weather cleared at such and such a time? Bok'. A humorous story on this subject concerns the famous astronomer Walter Baade, who spent a year or so at the Observatory while I was there. Despite his diminutive size, Baade had two weapons which could reduce Bok to silence—a louder voice, and a constantly-lit, very smelly cigar. In his advanced age, he didn't share Bok's masochistic approach to observing. On one clear night Bok intercepted Baade as the latter made his way towards the 74-inch telescope to begin observing, at about 10 p.m., after a good leisurely dinner with the students

at University House. At the end of the ensuing 'discussion', recounted Baade with a roar of laughter next day, Bok had exploded. 'Walter', he had said crossly, 'if you were a student I'd fire you'.

Bok's attitude towards students, no matter where he was located, was legendary. He was in fact our astronomical 'Godfather'. We were guided in our Ph.D. work, educated by the lecture courses, advised on our personal problems, and generally trained to become a scientist in Bok's own image. For instance, we were encouraged to become visible ('John Whiteoak, you must *always* ask questions when you attend talks, etc. to show the audience that you are present and know all about what is being discussed'). And when we married, our spouses were also taken under the Bok protective wing.

In my day the Duffield building had not been built, and Bok occupied one of the two large adjacent offices (now used by students) with two windows strategically set facing the courtyard of the old administrative buildings. It was a major feat for us to cross the courtyard without being spotted. More often than not, the whole observatory would hear of our failure—we would be summoned by a loud voice from behind one of the windows. Raymond White mentions similar experiences when Bok was at Steward Observatory.

Bok expected his students to be involved in all the scientific and social activities of the Observatory. He used us as showpieces, parading us wherever and whenever possible at meetings, Visitors' Nights, VIP visits, etc. As far as I can recall, my 'audiences' included at least three Governor-Generals and one Prime Minister. As a result of all this, I believe we developed a sense of involvement in the Observatory that would not exist in today's students.

In conclusion, I believe that for the development of Australian astronomy Bok was the right person in the right place at the right time. I am proud to be one of 'Bart's boys' (and 'girls' of course). There are a few of us scattered over the world, some from Mt. Stromlo Observatory, some from the other institutions he blessed with his presence. We all have a common bond, and I always enjoy meeting up with another of us and exchanging anecdotes about the Godfather. Unfortunately, I saw the Boks rarely after I left the Observatory in 1962, but always read Bart's various articles with interest, and chuckled at the outrageous comments he was reported to have made at some meeting. Wherever either of us was located we always communicated annually by Christmas card. For many years it was 'Here is a picture of Priscilla and Bart at such and such a place. When you are coming to visit us?' Sadly, from 1975 only Bart appeared in the annual photograph. From now on there will be no more greetings. The Bok era has ended.