

BOOKS & ARTS

Not so amateur

Volunteer star-gazers tracking satellites at the start of the space age often surpassed the professionals.

Keep Watching the Skies! The Story of Operation Moonwatch and the Dawn of the Space Age

by W. Patrick McCray

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Technological advances come in such small increments that we rarely think about their accumulated effect. Today, it is hard to imagine a world without photocopiers, colour television, mobile phones or e-mail. Or satellites, imperceptibly circling overhead, ignoring national boundaries, spying on hurricanes, solar activity and terrorist encampments, positioning us globally.

In *Keep Watching the Skies!*, Patrick McCray reconstructs an era when the world was taking its baby steps into the space age. He views it through the eyes of amateur star-gazers who experienced the excitement of those Sputnik days by joining Moonwatch, a worldwide effort to track the satellites that were launched for the International Geophysical Year of 1957–58.

Fred Whipple, the energetic new director of the venerable and nearly moribund Smithsonian Astrophysical Observatory (SAO), oversaw the observatory's move north from Washington DC to join Harvard College Observatory in Cambridge, Massachusetts, and propelled the SAO into the space age. Overriding the doubts of many of his peers, it was Whipple's vision to engage amateurs across the United States, and then around the world, to watch for the passage of satellites. At each location, he proposed the creation of an 'optical fence' across the sky, using a row of modest wide-field telescopes to spot any satellite that might cross the celestial meridian.

Whipple's stubbornness in defending the inexpensive Moonwatch programme paid off when the unexpected launch of the Russian satellite Sputnik 1, and shortly thereafter Sputnik 2, occurred before more elaborate satellite-tracking programmes were ready. The Moonwatchers' observations gave the SAO just enough data to calculate the orbits of the satellites and to follow their decay. Three weeks after its launch, the batteries of Sputnik 1 died, rendering it silent to the multimillion-dollar radio tracking stations and amateur radio operators. The observations of the amateur Moonwatch teams suddenly became the main source of information.

Despite the crucial role of the Moonwatch network, Whipple faced opposition from



Moonwatchers, including many students, were a vital source of satellite sightings, but officials were sceptical of their reliability.

administrators who were sceptical of the reliability of amateurs, an encounter vividly described by McCray. But Whipple's confidence was vindicated when the amateur teams spotted a lost, radio-silent Vanguard satellite launch vehicle in the skies in May 1958. A missing satellite was found by another Moonwatch team in Adelaide, Australia, on New Year's Day 1959; when the satellite got lost again, Moonwatchers searched for six months before finding it once more.

Writing the history of a widespread and amorphous group of amateurs was not simple. Many file boxes of communications from the Moonwatch teams survive in the Smithsonian Institution Archives. But it was a challenge to locate and integrate the more personal aspects of recruiting team members and sustaining their enthusiasm in the cold, pre-dawn hours when there was often nothing to be seen. McCray went beyond the official documents, ferreting out records from several of the most effective team leaders, and spotlights these throughout his well-illustrated presentation. At times the story seems rambling or padded, but at its best, *Keep Watching the Skies!* becomes a genuine page-turner.

The high points of McCray's narrative are the mini-biography of Whipple, leading up to his visionary defence of the Moonwatch proposal against its detractors, and the account

of those fraught days after Sputnik's launch in 1957, when it took a heroic scramble to make the programme work in real time. The tale is always related from the perspective of the Moonwatch teams, with almost nothing about the space technicians and computer novices at the SAO who were caught equally unprepared. McCray's account is an important contribution towards preserving the history of a fascinating episode at the dawn of the space age, but other such stories are yet to be told.

McCray ends his book wistfully, wondering if there can ever again be such a public outreach on this scale by scientists, and whether amateurs can be marshalled to play a vital part in science today. "Will curious citizens have the opportunity to learn about the science that explicates global climate change and contribute to research in a meaningful way?" he asks. I would guess that it won't be citizen star-gazers who continue their skyward observations, but more likely amateur naturalists — looking not for satellites, but for birds. An ongoing census, which includes all animals and plants, might allow tracking of gradual or swift changes in our terrestrial environment. There are still observations to be made. ■

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