Edward A. Halbach 1909–2011

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Abstract Edward A. Halbach (1909–2011) was a dedicated, lifelong member of the AAVSO and the Milwaukee Astronomical Society. His service to these organizations, and his valuable contributions to variable star astronomy, are described.

1. Introduction

On March 20, 2011, the longest-term member of the AAVSO and the Milwaukee Astronomical Society (MAS) passed away just short of his 102nd birthday. Ed Halbach is the most significant member in the history of the MAS and a valued and loyal member of the AAVSO. In fact, Ed was one of the most significant amateur astronomers of the twentieth century.

Figure 1. Ed Halbach at the MAS recording box for variable star observations, about 1935. Note AAVSO blueprint charts in side panel.

2. Early years

When Ed Halbach graduated from college and began his engineering career, he looked for an activity to occupy his free time. He felt that most hobbies were way too passive. However in 1932, Ed saw an advertisement in the *Milwaukee Journal* announcing the formation of an astronomical society. Here Ed found an activity into which he could channel his energy.

Ed joined the AAVSO in 1934 and started observing variable stars using the AAVSO's blueprint charts (Figure 1) and a 13-inch reflector located in the backyard of MAS founder Luverne E. Armfield. Ed would continue to observe variables for the next seventy-one years, making 100,715 visual observations. The AAVSO and the MAS were also active in observations of meteors during that time.

In 1936, construction of the MAS observatory began in New Berlin, Wisconsin. Ed would play a key role in this project. At the height of the

depression there was little money available, so the members passed the hat and managed to collect $100 that was used to purchase some used lumber. One of Ed's many talents was the ability to obtain donated material for observatory construction projects (as he used to say, "you need to know how to scrounge"). Concrete for the pier and steel for the dome were obtained.

In 1942, Ed took on the job of observatory director, a position he would hold for the next thirty-five years. During the Second World War, Ed ran an optics shop in the "monastery" building to produce prisms for bombsights. This qualified MAS members for extra gas-ration coupons for observatory access, but observatory use was down significantly during the war.

During this time Ed also served on the AAVSO Council (1940–1943), as 2nd Vice President, and as Chairman of the AAVSO's Auroral Committee (1940–1948). In 1947, Ed was involved in the formation of the Astronomical League and served as the first president of that organization.

Ed married Jane Roth in 1942. They enjoyed sixty-five years together before Jane passed away in 2007. Despite all of Ed's astronomical activities, he always found time for his family. He designed and built a camping trailer so he could take Jane and their six children on cross country trips.

During the 1940s, amateur astronomers became involved in studying the relationship among solar events, aurora, and the magnetic field of the Earth. By comparing observations of solar flares, aurora, and ground currents, Ed was able to predict interruptions in power and communications caused by solar events. This work enabled power companies to prevent interruptions of this type. The MAS was part of a network of astronomers coordinating observations of these phenomena. Cornelius Prinslow, Bill Albrecht, and Ed Halbach, all of the MAS, were featured in an article on the subject in a 1949 issue of *National Geographic*.

Figure 2. Ed Halbach engaged in Project Moonwatch work, 1958.

In the late 1940s and 1950s, Ed became involved in an Air Force project using solar eclipse timings to link the North American datum with the coordinate grids of other continents. This work took him on eclipse expeditions all over the world. The result of much of this work has remained classified to this day.

With the dawn of the space age, the Smithsonian Astrophysical Observatory recruited amateur astronomers to help with tracking satellites in a project called

Moonwatch (Figure 2). Ed got the MAS involved and modified the "monastery" building at the MAS observatory with a pier and slide-off roof to house three satellite tracking telescopes. (The building then became known as the satellite shed). As a result of this work, the MAS predicted and observed the reentry of Sputnik IV in 1962.

Observations of lunar occultations had been going on for decades, but it was not until the mid-1960s that computers became fast enough to accurately predict lunar grazing occultations. Ed got involved with this program at the start. In the process he designed and oversaw the construction of a two-mile cable-and-chart recorder system to facilitate easy recording of these observations. In the early 1970s he led a project to design the 10-inch portascopes, which allowed us to bring larger aperture telescopes to these events. These telescopes were also heavily used in the observation of eclipsing binary and RR Lyr stars from the 1970s through the 2000s. Ed received the Astronomical League Peltier award for his work in lunar occultations.

3. Ed's legacy

In 1977, Ed and Jane decided to retire and move to Estes Park, Colorado. The house that Ed had designed included a rooftop observatory with a 16-inch cassegrain telescope on a modified Springfield mount. He would spend much of his retirement working on this project (Ed always needed to have a project to tinker with). While working on this telescope, Ed used a portable 10-inch telescope in his backyard to continue his occultation and variable star observing.

In addition to Ed's observing, Ed and Jane enjoyed extensive world travel during their retirement. Ed also did volunteer work with Habitat for Humanity. He continued this work until he was well into his 90s.

There are many facets to Ed's legacy. His engineering talent and creativity were at the genius level. He could find an economical solution to almost any problem. His innovations kept the MAS observatory thriving through the depression and a world war. He designed and crafted the drives and setting circles on both A and B telescopes that are still in use today. Those domes continue to function after decades of use.

Ed always looked for opportunities for amateurs to contribute to the science of astronomy and related fields. His energy and enthusiasm was contagious. In 1988, Ed received the AAVSO Merit Award for his long service to that organization.

A significant part of Ed Halbach's legacy was his role as a mentor to other observers. In 1933, Ed met a high school student named Bill Albrecht. Ed took Bill under his wing and it was the start of a close friendship that lasted for over three-quarters of a century. Over the decades that followed, several generations of observers as well as a few professional astronomers were mentored by Ed. At

the 2003 spring meeting of the AAVSO, Ed received the William Tyler Olcott Distinguished Service Award in acknowledgement of this effort. At the same meeting (Figure 3), his wife Jane was credited for "putting up with Ed" during more than sixty years of marriage.

I was a high school student when I first met Ed Halbach. As a young member of the Milwaukee Astronomical Society, I quickly got involved in observatory construction projects. One of the first observing projects Ed got me involved in was grazing lunar occultations, chasing moon shadows all over Wisconsin and northern Illinois. One night Ed gave me my first experience with variable stars. As he was showing me how to observe long period stars, I asked him how many he observed per hour. He told me that he normally observed about fifteen stars per hour but when he had "help" from people like me he got about four. He was always interested in getting new observers started.

Finally, in 1974 came a night that impacted my life. Ed came out to the MAS observatory with a copy of the *AAVSO Circular*. He said "There's an article in here about something called eclipsing binary stars. Let's see what we can do with them." I have been observing EB stars ever since.

In 1980 I took over Ed's old position as observatory director for the MAS. Throughout Ed's retirement we maintained a close friendship and continued to swap information about observing projects. The MAS site always was a special place for both of us; in 2003 Ed made his last visit. I gave him a tour of the new observatories that had been built. He was impressed with the designs of the new sheds and the CCD equipment—it showed how much observing has changed in a single human lifetime.

Figure 3. Jane and Ed Halbach at the AAVSO's 2003 Spring Meeting.