

REMARKS AT THE DEDICATION OF THE NEW AAVSO HEADQUARTERS

RICCARDO GIACCONI
Space Telescope Science Institute
Homewood Campus
Baltimore, MD 21218

The following is the text of the remarks made by Dr. Riccardo Giacconi, Director of the Space Telescope Science Institute, at the Dedication of the new AAVSO Headquarters, the Clinton B. Ford Astronomical Data and Research Center, Cambridge, Massachusetts, on Wednesday, August 6, 1986.

What a fine occasion this is - to see old friends again and join you in the celebration of the 75th anniversary of the American Association of Variable Star Observers and in dedicating this new building. The AAVSO has come a long way from the one-room office at Harvard in 1911. In 1954 the Association became independent from Harvard and grew until today we dedicate these new headquarters, donated to the Association by one of its members, Mr. Clinton Ford. The Clinton B. Ford Astronomical Data and Research Center will permit the Association to expand its services to its members and to the astronomical community.

In its 75-year history, the AAVSO has collected, organized, and archived 5 1/2 million observations. These priceless data will now be more secure, in a home with smoke detectors and fireproof cabinets. Safer also will be the 130-year-old historical records of Friedrich Argelander and other European founding fathers of variable star astronomy, and the AAVSO's fine collection of rare astronomy books.

Yet we are not here to dedicate a museum. The American Association of Variable Star Observers is a living and vital organization that coordinates the activities of amateur and professional astronomers for the progress of astronomy. From its 1,300 members, in all 50 states and 41 foreign countries, nearly a quarter million variable star observations flow in each year. It is a staggering job just to stay on top of the incoming data.

The American Association of Variable Star Observers does this and much more. It has computerized all variable star observations since 1962 and has sought and received a National Science Foundation grant to computerize the rest.

Another important contribution of the Association to astronomy is its effort to promote public understanding of science - its members explaining astronomy in their communities; giving students and adults the thrill of looking through their telescopes; helping youngsters one on one to learn the patience and techniques and integrity of good observing - and the practice of science.

I first met Janet Mattei when I was at the Harvard-Smithsonian Center for Astrophysics and was serving as Principal Investigator for NASA's HEAO-2 mission - a large x-ray astronomy satellite known after launch as Einstein.

By that time, Janet and the AAVSO already had years of experience in providing groundbased operational support for space projects. They had helped with the astronomy done by the Apollo-Soyuz mission in 1976 and the HEAO-1 x-ray satellite flight. I was delighted by Janet's visit and the AAVSO's ability to help. NASA provided some small grants to assist the collaboration. The role of the AAVSO was to monitor over 100 eruptive variable stars to record their visible light flux and to

alert us when an eruption began.

Astronomers using the Einstein Observatory could then compare their x-ray data with observations made in visible light. It meant that observations could be correlated across the spectrum and across time. It allowed us to discover that 70% of eruptive variable stars emit x-rays.

The AAVSO has continued its impressive assistance to NASA and even the European Space Agency in astronomy from space by their work first on Exosat, an ESA x-ray satellite, and now with IUE, the International Ultraviolet Explorer.

The AAVSO has built with enormous success on a centuries-old tradition: the collaboration of amateur and professional astronomers. In fact, it has often been amateur astronomers who have shown professionals the way.

Let me take you back more than two centuries to the last half of the 1700's. An English country squire and his wife were serving a diplomatic mission in The Netherlands when their son was born. Soon thereafter a severe illness left the baby without hearing or speech. At age 8, his parents sent him from Holland to a special school for the deaf and dumb in Edinburgh, Scotland. At age 14, he went on to a famous English private school which made no provision for handicapped students. He did well, but by the age of 17, his family had returned to England. He rejoined them and began some astronomical observations.

Within a year, he discovered that Algol, called the "demon star" because of changes in its brightness, had a well-defined period. Professional astronomers were amazed by this 18-year-old. But of course it was too much for them to swallow something else the youngster proposed: that Algol's brightness varied because it was actually due to two stars periodically eclipsing one another. Today we know he was right. That young man's name was John Goodricke. He had laid the foundation of variable star astronomy.

The next year, Goodricke discovered two more short-period variable stars - Beta Lyrae and Delta Cephei, each the prototype of an important variable star class. Cepheid variables, named after Delta Cephei, are a fundamental tool by which astronomers measure distance in the universe. The Hubble Space Telescope will spend a lot of time looking at Cepheid variables in external galaxies because it will allow us to see them seven times deeper in space than we can see from the ground.

John Goodricke was given a gold medal for his work on variable stars at the age of 19. At age 21, he was admitted to the Royal Society. Two weeks later, John Goodricke died of a cold he got while observing.

John Goodricke, founder of variable star astronomy, was an amateur.

This is no isolated incident, no fluke. For three generations after Goodricke, the progress of astronomy was largely the work of amateurs.

In the early 19th century, a young man spent seven years as an apprentice to a merchant and then changed careers to become a brewer in Liverpool, England. He was good at it and became quite wealthy.

But the scientific world knows him better as William Lassell, maker of fine large reflecting telescopes, inventor of steam-driven telescope mirror-polishing equipment, and developer of equatorial mounts for large instruments. He pointed his fine 24-inch telescope at

Neptune less than three weeks after it was discovered and immediately found Neptune's largest moon, Triton. He went on to discover a moon of Saturn and Saturn's dark inner ring. Lassell was the first researcher to move his telescope from the city lights and cloudy climate of England and place it where the seeing was better. Lassell spent 12 years in Malta where he discovered 600 new nebulae. It took professional astronomers another two generations to learn this lesson from William Lassell, but for almost a century now, we have been placing telescopes where they could see better. That's why the Hubble Space Telescope is going into space. We learned this lesson from William Lassell - brewer, astronomy equipment maker, diligent observer, amateur astronomer.

Goodricke and Lassell are just two of the many amateur astronomers who made remarkable contributions to the progress of astronomy during the 18th and 19th centuries. That great tradition continues to thrive in the 20th century in spite of obstacles.

Today, astronomical telescopes and equipment have become very complex and astronomical research very expensive. There are too few large telescopes to accommodate even the professional astronomers. But though they have been denied access to the larger instruments, amateur astronomers have found ways to contribute significantly. I need to go no farther than a few steps down the halls at the Space Telescope Science Institute to hear from other astronomers about the work of the AAVSO.

It was May 5 of this year, the day before Howard Bond was to leave for an observing run at Kitt Peak National Observatory. Janet Mattei called him from the American Association of Variable Star Observers with news that an amateur observer had just reported a nova outburst by VY Aquarii. The star was not on Howard's observing program, so, at the last minute, the program was changed. Howard made photometric observations of VY Aquarii for 1 1/2 hours each night 12 nights in a row.

Because Howard and his collaborator Al Grauer could observe most of the outburst, and because amateur astronomers were monitoring the variable star before and after eruption, Howard believes that VY Aquarii, thought to be a normal recurrent nova, is actually a dwarf nova - only the second well-established member of this subclass where a normal low mass star is in close orbit around a white dwarf and loses gas to its companion. Howard is working on a paper for publication.

And here's another story - one of many.

Sid Parsons, also at the Institute, studies supergiant stars, especially with the ultraviolet astronomy satellite IUE - International Ultraviolet Explorer.

22 Vulpeculae is a yellow supergiant with a blue giant companion. Sid suspected that as the two stars revolved, they might eclipse another, or nearly. He knew from radial velocity measurements approximately when the eclipse should be. He obtained IUE time and discovered a total eclipse; he could not, however, determine its duration. So he asked for help from amateur astronomers. He wanted photometry from groundbased telescopes at the time of the next eclipse to determine when the eclipse actually began and ended and how the light from 22 Vulpeculae varied. From this could come an understanding of the orbital inclination of the stars and a calculation of their masses and sizes. An AAVSO member replied, and he organized a network of other amateurs to help.

The paper was published one year ago. The authors were Sid Parsons and Tom Ake, two professional astronomers, and Jeff Hopkins, an amateur.

The next eclipse of 22 Vulpeculae begins a month from now on September 11, 1986. More data are needed. Sid would be grateful if the AAVSO would help him once again.

Your handsome new headquarters is testimony to the service the AAVSO has provided to the progress of astronomy and to astronomy's continuing need for your services.

And your new, larger building has come not one day too early - literally. A few minutes ago, I noted that in the 20th century, amateur astronomers have seldom had access to the advanced equipment that their talent and dedication deserves. That needs changing.

Tomorrow, in Baltimore, at the Astronomical League annual convention, I will be announcing plans whereby amateur astronomers will have observing time on the Hubble Space Telescope, which we expect will be the forefront instrument in astronomy research for the remainder of this century.

Janet Mattei, as Director and representative of the AAVSO, has been one of seven national leaders of amateur astronomer activities who has been working quietly and diligently (as she always does) on this project for eight months to bring us to the eve of this announcement tomorrow. I am committed to this program because of a deep conviction that today, when astronomical knowledge is accumulating at such a rapid rate, it is more essential than ever that the daring discoveries of forefront science become assimilated in the general culture and become part of the intellectual heritage of mankind. Together, amateurs and professional astronomers, united as we are by a deep love for science, can do much to bring this about.

The AAVSO is a perfect example of why amateur astronomers deserve this opportunity and why I know that refreshingly new questions will be asked and good science will be done.

* * *

The following four pages contain photographs from the Dedication of the new AAVSO Headquarters, the Clinton B. Ford Astronomical Data and Research Center, 25 Birch Street, Cambridge, Massachusetts. The Dedication ceremonies were held on Wednesday, August 6, 1986.