A SHORT HISTORY OF STAMFORD OBSERVATORY

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Abstract

First envisioned as a small shack to house the Fairfield County Astronomical Society's 10-inch telescope, the Stamford Observatory, celebrating its 30th anniversary, is a much larger home to a 22-inch telescope, which is used to make variable star charts for the AAVSO.

1. Early developments

The Stamford Museum, which is the site of the Stamford Observatory, was founded in 1936. Almost immediately astronomy became one of its interests. An astronomy club was formed, and a Spitz model "A" planetarium instrument was installed. The planetarium dome was made by members, using wood slats for the frame and cardboard as the projection surface. This was the first small planetarium between New York and Boston. Astronomy classes were taught, and a 6-inch reflector was acquired. Member Robert Cox (who later wrote for *Sky & Telescope*) built and donated a 10-inch reflector which is still in use. It was first used on December 7, 1941, on the steps of City Hall, where, in spite of the presence of the Mayor and Museum dignitaries, they were accused

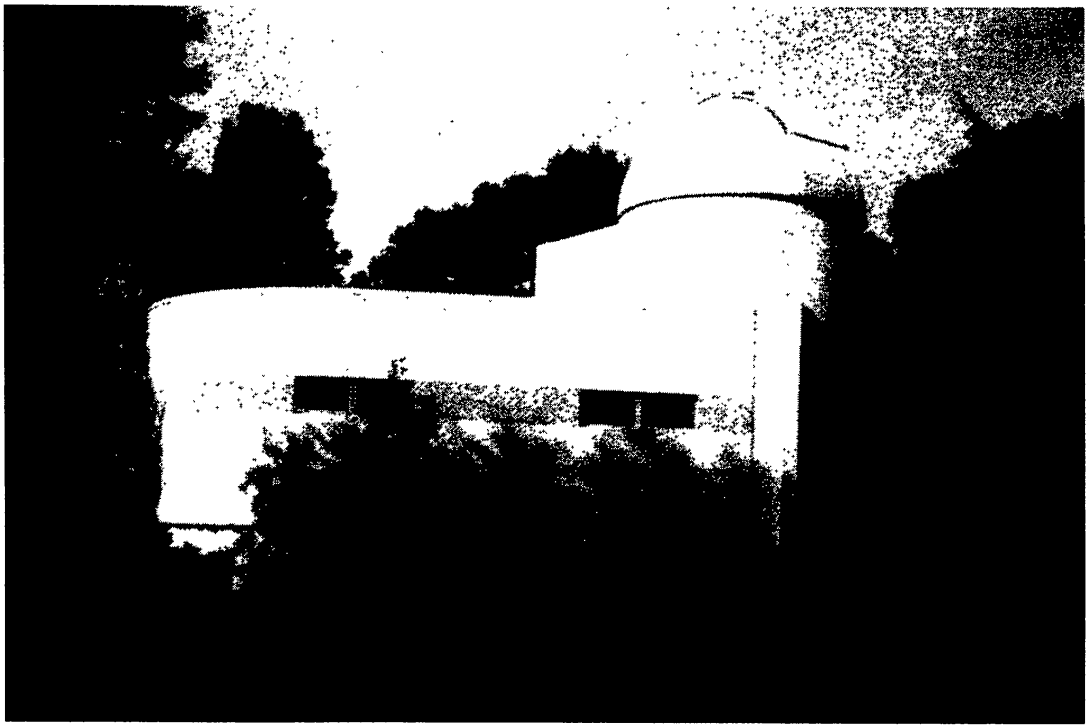

Illustration 1. The Stamford Observatory.

of signaling the Japanese!

In 1945, the Museum moved from its few rented rooms in a downtown location to a nice building on the east edge of town. There it grew to include more astronomy, more exhibits, and a small petting zoo. With the construction of the Connecticut Thruway, the Museum was forced to move again when a fair-sized chunk of its land was acquired for the right-of-way. A 110+ acre tract with a mansion on it became available, and the Museum moved to its present location 3/4 mile north of Route 15 (the Merritt Parkway).

In the upset of the impending move, the old astronomy club disbanded. It was succeeded by the newly-formed Fairfield County Astronomical Society (FCAS). The new group asked for a place on the Museum grounds to put up a small shed to house the 10-inch telescope. This request was readily granted, but it was stipulated that since the use of the land would be free, the club should hold public open house nights. That meant that the small shack had to be doubled in size, as restrooms would be needed. Since plumbing would be available, the club wanted to install a darkroom for the inevitable astrophotos that would follow, and the building had tripled in size. It was realized that a classroom would be a big asset, so a roll-off-roof building was designed. At this point donors were found who were interested in the Museum and in astronomy. They were Frank and Helen Altschul, who agreed to donate $50,000 toward the construction of a proper observatory. Ownership of such a building would have to rest with the Museum.

2. A worthy telescope

The 10-inch telescope would be too small for the grandiose building envisioned, so the Astronomical Society was asked to supply a new telescope. Club member John

Illustration 2. Stamford Observatory's 22-inch Maksutov telescope.

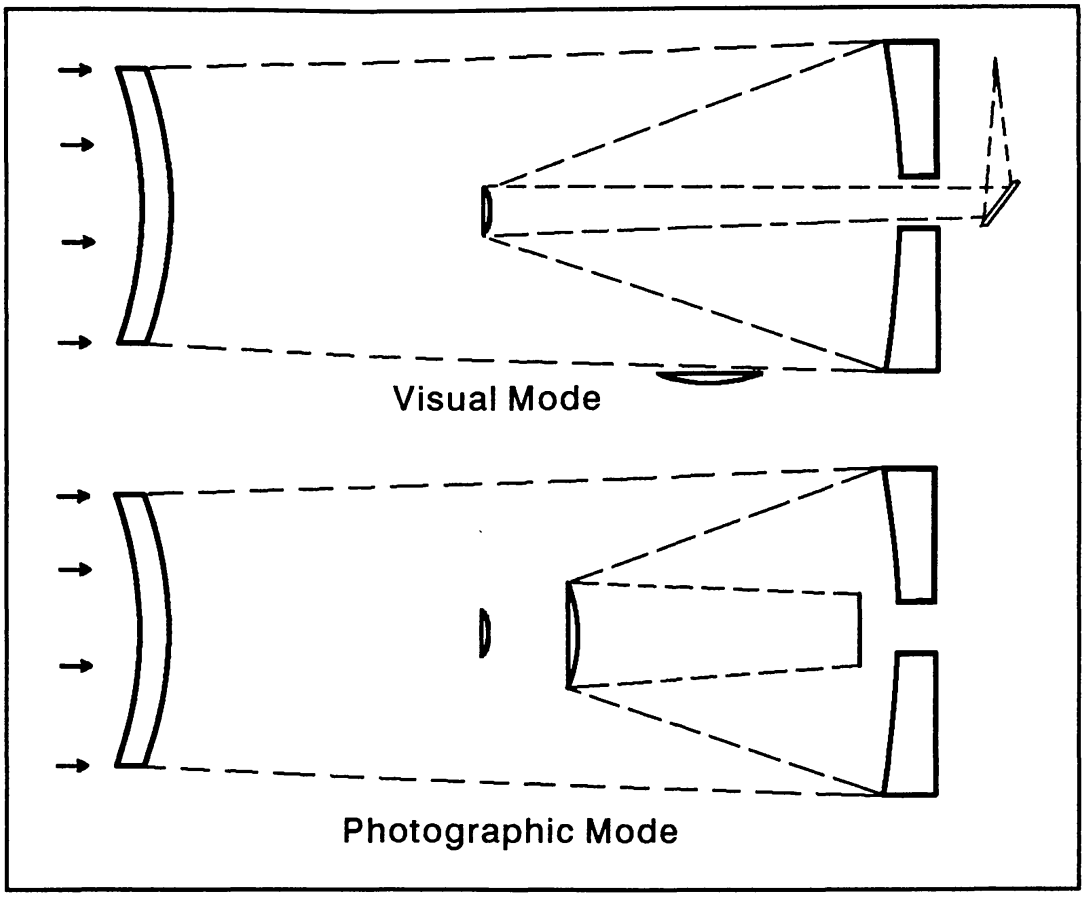

Figure 1. Optical configurations of Stamford Observatory's 22-inch Maksutov telescope. The photographic secondary is normally parked in the bottom of the tube.

Gregory, an optical engineer working for the Perkin-Elmer Corp., agreed to design the instrument. It was his idea to ask local industries to make and donate the parts. When Mr. Richard Perkin agreed to donate the optics, the project was off and running. Several dozen companies participated, making the needed parts on "down shop time" when work on Cold War defense projects was finished. Again, ownership had to pass to the Museum so these companies could take tax deductions. It took about 5 years to get all the parts made, and at the last the Museum hired retired engineer Bill Blackwood to coordinate the efforts and the assembly of the telescope. First light was in May 1965, with formal dedication on June 13, 1965. Blackwood suffered from a wasting disease, and died a couple of years after the completion of the telescope. At his memorial service, his sister stated that his interest in the telescope project had extended his life at least two years. He left money to the Museum, part of which was used to purchase a new commercial dome to replace the home-made one built by the club, which was too heavy and was shaking the upper part of the building apart.

The telescope design is a Gregory Maksutov. John Gregory was one of the first in the USA to recognize the potential of the Maksutov design. In *Sky & Telescope* magazine he published plans for a 6-inch Maksutov that could be built by amateurs (Gregory 1957). The advantages of the design are Cassegrain compactness combined with easily-made, all-spherical curves. Gregory's first design for the Stamford project was a 20-inch clear aperture model, since 20 inches was the largest clear glass to be found for the corrector. Later the same company advised that they could cast a 22-inch clear aperture blank, and the telescope design was scaled up. It turned out that this

corrector blank was flawed in that the glass was not homogeneous. It had been made from melted blocks of glass, not all of which were of exactly the same density.

At the dedication of the telescope, Mr. Perkin told us of the difficulty, and that his opticians had done their best to "zonally correct" for the problem. They had indeed done a very good job, but still, the glass was flawed. Mr. Perkin promised that when it was demonstrated that the club was doing research-grade work with the telescope, Perkin-Elmer Corp. would replace the lens free, which was later done in spite of the fact that Mr. Perkin had passed away in the meantime. The glass was donated by Zeiss in Germany, and even though the project was for a non-profit educational institution, we had to pay a duty of $700 on it, 10% of its nominal value.

During the design and construction of the observatory and telescope, the Museum had a committee overseeing the project. One thing they requested was proposals for the use of the instrument. Some of these were: study of lunar transient events; study and photography of galaxies; planetary studies; occultation timings; and variable star studies. Since the telescope design incorporates an f/15 visual focus and an f/3.7 photographic focus using different secondaries (see Figure 1), it is ideal for variable star work. Visually it reaches about 16th magnitude, and photographically magnitude 17.5 is achieved on the better nights.

John Gregory's modification of the simple Maksutov design (Gregory 1957) involves moving the secondary from the back of the corrector to a location well inside the corrector. This makes it possible to use a higher order curve on the secondary, and since the Perkin-Elmer Corp. did the optics, it was no problem. The use of special curves on the secondaries gives flat, perfectly corrected fields at the final focus. The photographic secondary is mounted on a frame which is normally parked in the bottom of the tube, out of the way. It can be cranked into position for photography in about a minute. Putting in the plate-holder mechanism and focussing on a star requires 8–10 minutes. 5x7-inch glass plates are used, covering a field of about 3.33 x 4.5 degrees at a plate scale of 100 seconds of arc per millimeter. A steerable 7.5-inch guide scope allows guiding on a nearby bright star or the head of a comet that is off-center in the frame.

3. Chartmaking

Since its earliest photos in 1967, the telescope has produced about 1300 plates, mostly of variable star fields, with a few of comets and deep-sky objects. In 1976–77, South African astronomer Christos Papadopoulos lent the observatory his 24" focal-length f/6 Zeiss camera lens to complete the northern section of his *True Visual Magnitude Photographic Star Atlas*, from +30 degrees to the north pole. While the camera was here, we photographed as much of the sky as possible. This collection of plates, added to those taken with the 22", has been invaluable in the work of charting new variable star fields for the AAVSO.

Chartmaking work was started at Stamford Observatory in 1966 by Clinton B. Ford, using material from Dr. Charles P. Olivier of the University of Pennsylvania. The charts produced follow the AAVSO format, but to start with, they were pencil-traced, and thus preliminary. Clint Ford produced hundreds of charts, and soon enlisted the aid of other members, both from the AAVSO and from the FCAS. He recruited me by lending me a 10-inch reflector he had "retired" after purchasing a 12.5-inch for his own backyard observatory. No sooner was my backyard observatory completed than Clint was there with some strange blueprint charts and a gleam in his eye. I was initiated into the mysteries of "Inner Sanctum" observations. Luckily the 10-inch was able to reach into the 14th magnitude range so I could observe not only the old standby stars with the blueprint charts, but also some of his new Preliminary Charts of fainter stars.

By the time the 22-inch came on line about a year later, I was hooked on variables, and started taking photos as mentioned above. Soon I was also drafting charts and

looking for ways to standardize and automate the process. The first step was a chart blank with the outlines and spaces for the data printed on it. Next came the use of direct photoprints from the plates, reversed to black stars on white background. These produced rather rough-edged star images with the photo grain showing, but at least we did not have to trace all the star images, with the attendant possibility of error. Finally, we acquired a computer and scanner to translate the photos into computer graphic form. This helped a great deal, but we needed a program to make the star dots really round. FCAS member Gilbert Weingarten wrote the program for us, which we call in very scientific jargon "Roundify" (Scovil 1985). Bob Leitner collaborated in the design of computer chart forms for both the Standard and the Preliminary charts, and we are now producing very legible, easy-to-use charts (Scovil and Leitner 1991).

Clint Ford did not like to use the 22-inch telescope for chart checking because of its reverted field, but he broke down now and then and used it when conditions were good. He was secretary of the FCAS for many years, and attended our meetings when he was not travelling, either to musical events or to Ford Observatory in California. It was he, of course, who made the proposal to the Museum Committee that the telescope be used for variable star work. The Committee was thought of in the early days as a great monster which would remorselessly apportion telescope time as they alone saw fit. All of the other proposals have fallen away for lack of interested personnel, the Committee is long since history, and variables are our main work. John Griesé and I use the telescope as much as possible. Unfortunately my work producing the charts is more important than my doing a lot of observations for the fun of it. I do sky-check every chart I make, and try to cover important stars and AAVSO Alert Notice stars.

4. Conclusion

Since its inception, the Stamford Observatory has served as a focal point for a number of AAVSO members, including Clinton Ford, John Bortle, Wayne Lowder, William and Florence Glenn, Pearson T. (Pete) Menoher, John Griesé, Robert Leitner, George Lenz, and Timothy Hager. Several of these individuals, myself included, were directly involved in the creation and production of the *Journal of the AAVSO* and the *AAVSO Circular*. A few of us continue to be involved in the production of these publications.

The observatory is open to the public every clear Friday night for two hours, the time depending on the season. Since the Museum owns the building and telescope, the Museum pays one of us to run the open house nights. I am there most nights, clear or not, working on more and better charts. If you are in the neighborhood, give a call (203-322-1648) and drop in for a visit.

References

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