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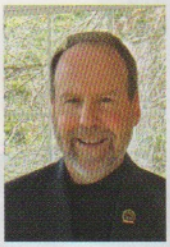


An innovative program allows newcomers of all ages to borrow compact, high-quality reflectors from public libraries

JOHN JARDINE GOSS

The library-telescope program is a fun way to help more youngsters become involved in amateur astronomy. Here, patrons at Adams Library in Chelmsford, Massachusetts get ready to borrow a user-friendly telescope for a full week.

AMATEUR ASTRONOMY has seen many significant changes over the past 30 years. One worrisome, often-discussed trend has been the declining numbers of young people taking up the hobby. Although the reasons for the dearth of young skygazers are complex, one factor is clear: If you haven't been exposed to a star-filled night sky, you're far less likely to pursue amateur astronomy.

As he pondered this dilemma six years ago, Marc Stowbridge of the New Hampshire Astronomical Society (NHAS) had a "eureka moment." He realized that many people — particularly youngsters — could be introduced to our hobby through a venue familiar to nearly everybody: the local public library.

Stowbridge's idea was both simple and game-changing. In December 2008, he modified a small telescope to increase its durability and then donated it to his hometown library. Patrons could then check it out just as they would a book. Anyone with a fledgling interest in astronomy would have the chance to use a

Telescope!

S&T: J. KELLY BEATTY

Thanks to an outreach program started by the New Hampshire Astronomical Society, nearly 200 specially modified Orion StarBlast 4.5 telescopes are now available to library patrons across the U.S.

compact, high-quality, easy-to-use telescope in the comfort of their home.

He convinced his club to donate more scopes to libraries throughout New Hampshire. Another 10 found homes at other libraries the following year, and interest in the program soared. Recently, the count of NHAS-facilitated telescopes reached 100.

Loaning telescopes certainly is not a new practice. Many clubs let their members borrow modest Dobsonian reflectors or various other types, and some groups also make these available to the public. But the NHAS concept sidesteps the complications of lending equipment by partnering with local libraries — institutions that, by design, loan things to the public.

The Perfect Library Loaner Telescope

What instrument best fulfills the requirements of being highly portable, simple to use, and relatively inexpensive — while providing steady, clear views of the objects that novices want to observe? Stowbridge and other NHAS members, resisting the temptation of aperture creep, decided on Orion's 4.5-inch StarBlast reflector. It provides plenty of aperture in a compact, portable, easy-to-use package.

Then the library-telescope team opted to replace the two modest eyepieces supplied with each StarBlast in favor of a single 8-to-24-mm zoom eyepiece. It provides good eye relief and a relatively wide true field, making it easier for the uninitiated observer to locate bright sky objects.

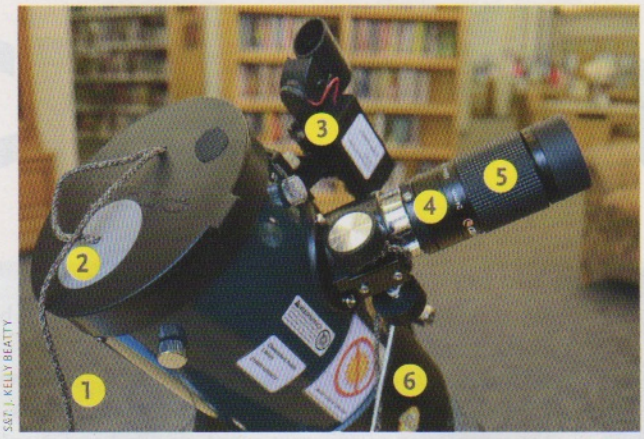
This combination provides a 2½°-wide view at low power (19×). That's enough to fit all of the Pleiades stars, the Double Cluster, and the Orion Nebula in one wide field, each giving impressive scenes for excited eyes. At 56×, the eyepiece's other extreme, users can pick out lunar craters and mountains, see hints of Jupiter's cloud features, resolve Saturn's rings, and glimpse Venus's crescent.

Making the Scope Library-Ready

Any off-the-shelf telescope, even the rugged little StarBlast, needs a few modifications to withstand the rigors of unsupervised home visits — and to make it as trouble-free and easy to use as possible.

Over time the NHAS library-telescope team has developed tried-and-true upgrades that have worked well. Every few months the club holds a "scope-modification party," at which an assembly line of up to a dozen volunteers (now led by Pete Smith) turns new StarBlasts into library-ready units. Here's a recap of the most important changes they make:

- ***Eyepiece focuser:*** The zoom eyepiece can easily be dropped, lost, or mishandled. So it's secured in the focuser tube with button-headed setscrews that can't be easily removed.
- ***Collimation knobs:*** A novice user might be tempted to fiddle with the six shiny mirror-collimation knobs at the rear of the optical tube. So club members remove the knobs and replace them with three locknuts on short, spring-loaded screws.
- ***Dust caps:*** The plastic dust caps that cover the main optical tube and the eyepiece can, and likely will, be lost in no time. So "Can't Lose Strings" are added to attach these caps to the scope.
- ***Red-dot finder:*** The StarBlast sports a 1× red-dot finder. When aligned with the main tube, it's quite sufficient for putting target objects in the eyepiece view. But the factory-supplied button battery dies in a few days if the unit is left on. A much more durable solution is to replace it with an external plastic case



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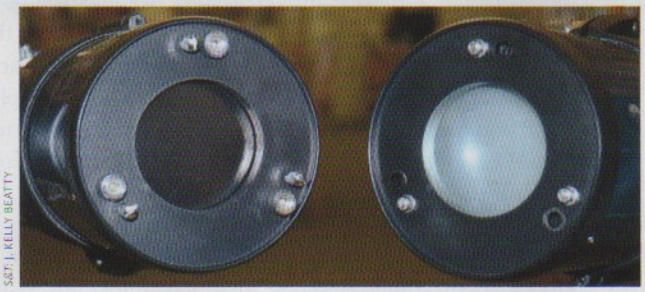
To make the beginner-friendly Orion StarBlast 4.5 tabletop reflector even easier to use and more rugged, volunteers make several modifications, among them: (1) adding "Can't Lose Strings" to loose parts; (2) cutting a 2-inch hole in the end cap to reduce the Moon's brightness; (3) installing an AA-battery pack for the red-dot finder; (4) adding setscrews in the focusing tube; (5) providing an 8-to-24-mm zoom eyepiece; and (6) adding a Sun warning and other stickers to the main tube.



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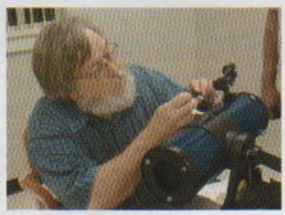
The standard StarBlast (left) comes with two sets of collimation screws, a temptation for inexperienced hands. They're removed for the library version (right), replaced by short screws and hard-to-turn locknuts.

JOHN JARDINE GOSS



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JOHN JARDINE GOSS

***Above left*: Another way to keep hands away from the Orion StarBlast's collimation screws is to install a plastic cap over the mirror cell. *Top right*: Marc Stowbridge initiated the NHAS's library-telescope program in 2008. *Bottom right*: A young boy gazes through the eyepiece of a StarBlast, a scene that is repeating itself all over the country thanks to the library-telescope program.**

holding two AA batteries. Another solution is to replace the red-dot pointer with a notched alignment sight.

• ***Aperture reduction:*** The Moon is a popular nighttime target, but the intensity of its light during gibbous and full phases needs to be reduced for comfortable viewing. Many observers screw a neutral-density "Moon filter" into the eyepiece barrel, but that could be easily lost. A solution that avoids the filter altogether is cutting a 2-inch-wide hole in the optical tube's end cap to block most of the moonlight entering the telescope. The hole is covered with a small plastic cap, again anchored with a string.

After making these changes, volunteers apply laminated, self-adhesive labels to the main tube and mount. These labels provide a handy Moon map, magnification and field-of-view charts, and a safety warning to discourage pointing the telescope toward the Sun. Club members complete the "kit" by attaching a small pack containing a laminated 4-by-6-inch instruction manual, National Audubon's pocket guide to the constellations, and a strap-on headlamp equipped with red LEDs.

New Hampshire's Successful Model

"If I build it, will they come?" Well, that depends a lot on how your library and club publicize the program. After speaking with librarians who've been involved in the program for at least a year, Stowbridge reports, "The typical age range of adults checking out the instrument is 30 to 40 years old, and they bring it home for their kids and their kids' friends to use." He estimates that, on average, six people use a telescope each time it's checked out — and long waiting lists of patrons are common.

Like books that are heavily used by the public, these telescopes have limited life spans — they won't last forever. So the NHAS team pairs each library loaner with a local "foster astronomer" who checks the telescope periodically for damage, adjusts collimation, and cleans the optics if needed. Stowbridge reports that none of the NHAS telescopes has been damaged due to mistreatment and that no problems have been reported — except for complaints about the weather!

A Great Community Project

Clearly, the NHAS is onto something, and other clubs across the U.S. (and in other countries) have initiated library-telescope programs of their own. To make the startup process easier, the website **nhastro.com/ltp.php** has all the details you'll need — including parts lists, detailed modification instructions, and downloadable labels.

The StarBlast 4.5 telescope normally retails for $200, but the zoom eyepiece and other accessories bring the total cost to about $325. Aside from an outright donation by your club, you can raise funds by asking library patrons, partnering with "Friends of the Library" groups, and seeking sponsorships from local businesses.

The library-telescope program was brought to the

attention of the Astronomical League in 2011 by members of the Astronomy Enthusiasts of Lancaster County in Pennsylvania. They had learned about it from the January 2011 Focal Point in *S&T* written by NHAS members.

Since then, the League has been promoting the LTP to its member clubs. The March and June 2013 issues of its publication, *The Reflector,* were largely devoted to youth in astronomy, and one article featured the NHAS program.

The Southern Maine Astronomers have placed 30 telescopes in area libraries. "It's been a great outreach program for the SMA," says club officer Ron Thompson. "We have a number of members who volunteer their time as mentors to the libraries." Both SMA and NHAS work with Maine's Cornerstones of Science, a nonprofit group that procures the telescopes at discounted prices.

Michigan has at least two astronomy groups actively involved. The University Lowbrow Astronomers has placed 30 telescopes with the Ann Arbor Public Library, and the Kalamazoo Astronomical Society has donated four. Mike Cook, who heads the Kalamazoo effort, explains, "This program will give us the avenue to reach many who have never had the opportunity to look through a good telescope."

Naturally, clubs want to avoid any mishaps with their first foray into the program. "Before we presented the first telescope to the library, we field-tested both the telescope and the concept of loaning it by allowing a local scout troop to use it, with guidance from us. Several scouts earned their Astronomy Merit Badges as a result," explains Dave Koren of the Kiski Astronomers in Pennsylvania.

The library-telescope program is a work continually

JENNIFER STOWBRIDGE

Nia Shea Ashby, Zeth Ashby, and their mother Karson Ashby learn how to use a NHAS loaner telescope.

in progress, and the LTP has undergone many improvements since its introduction six years ago. The New Hampshire Astronomical Society wants to hear from other clubs taking up the cause and to learn about different modifications that have been made to the telescopes. Contact Pete Smith or the club at **nhastro.com/contact.php**. Club officers interested in obtaining StarBlast telescopes for their own program should send an e-mail to cynthia.randall@cornerstonesofscience.com.

Will all this effort increase interest in amateur astronomy? Will it cause more young people to become stargazers and join astronomy clubs? No one knows, because it might take years before any lasting effects are evident. Nevertheless, the library-telescope program is having a positive impact on communities across the country right now. It's the perfect outreach project. ✦

A lunar observer and member of the Roanoke Valley Astronomical Society, ***John Goss*** *was recently elected to serve a two-year term as president of the Astronomical League.*

NHAS

A year ago, this team of NHAS volunteers modified and readied 10 StarBlasts for delivery to libraries throughout New Hampshire. The club has now distributed 100 telescopes statewide.