



The Universe for less than 3 cents per star! Yasuharu Inugi reviews the “Sega” planetarium “HOMESTAR”

Image by T.R. Hnatyshyn @2004

*August 25th thru 27th the University Lowbrow Astronomers will be invading the Wilds of Potter County, PA and the Black Forest Star Party.*

*Watch for reports from Charlie Nielsen and Robert Wade along with lots of images from all the Lowbrow Attendees.*

*Drive Safely Lowbrows!*

*Clear Skies and Dark Nights!!*

*Carpe Nocturne!!*

**Inside this issue:**

**Discovering Modern Optical Engineering**—By Tom Ryan 2

**Homestar, A Compact Home Planetarium**—By Yasuharu Inugi 4

**Astronomy For Beginners**—By Chris Sarnecki 7

**Club Information Page** 9

Below: Yasuharu Inugi



- August 18—University Lowbrow Astronomers’ monthly meeting 7:30pm at Peach Mt. Observatory weather permitting. John Kirchoff’s latest astro toys will be exhibited.
- August 19—Public Open House at Peach Mt. Observatory starts at dusk (come on out & help us feed the bugs)
- September 15—University Lowbrow Astronomers’ monthly meeting 7:30pm at Room 130, Dennison Hall UofM
- September 16—Public Open House at Peach Mt. Observatory starts at dusk

## Discovering Modern Optical Engineering

By Tom Ryan

In the summer of 1968, the course of my life changed forever. I was fifteen years old, and the city had just built a new, modern library on Washington Avenue, replacing the Gothic horror that had housed the city library since the 1880's. My friend, Jim Grimes, and I both needed jobs, and since we spent almost all of our spare time in the library anyway, we decided to see if we could be paid for the privilege of reading their books.

It wasn't a well-thought-out plan, but we didn't know what else we could do to get money. Well, I had an entrepreneurial job cutting the neighbors lawns, but that was hard work, uncomfortable, and didn't pay as much as the customers thought, after taking out the cost of gas and mower repairs. The library looked a lot better.

Jim and I discussed it for a while to build up our courage, then we applied for jobs as pages. We were immediately accepted, which at the time, didn't set off any alarm bells. We were given a tour of the library, our duties were explained to us, and then we were given into the care of the ancient ladies who actually ran the library. And then our fantasy began to take on some hard edges.

First, the pay was abysmal. We were paid 60 cents per hour, which was below the minimum wage then (but not now) because we were not yet sixteen years old. Child labor laws evidently didn't cover us either, because we only worked about fifteen hours a week. Enough hours to absorb all of your free time, but not enough to provide enough money to live.

Second, and worst, we couldn't read books on duty. After we had finished checking books in, finished reshelving them, finished bringing up reserve books from the wonderful, humidity and temperature controlled basement (perfect conditions for books are nearly perfect conditions for people. Of course.), finished cleaning up the staff break room, finished straightening up the chairs and magazines that people used, finished sweeping the rugs, after all that, if there was any free time, we were expected to "read the shelves".

When we were just users of the library, "on the outside", so to speak, Jim and I just saw the library as a source of infinite reading matter. We had no idea of what it took to maintain that resource. It turns out that, if some idle browser takes a book off the shelf, glances through it, and puts it back in a space that *is not its original space*, then that book is effectively gone from the shelves and from the library. No one can find it again.

The library's only defense against this terrible attrition was the pages. Jim and I were on the front lines in the war against entropy and ruin. When all of the other, more immediate work was done, Jim and I would take up positions in front of a random shelf and would read each number on each book, from the top of the shelf to the bottom, and ensure that each book was in its correct place on the shelves. When we finished one shelf, we would move on to the next.

This was both incredibly boring and outrageous. Our plans for reading books in our spare time were not to be. They had been replaced by an activity which was both tedious and insulting to our considerable intellects. Reading the shelves was worse than running a sweeper around your still-carefree classmates who had come to the library to study, and were now watching you as you swept the floor, obviously headed for a life of manual servitude.

The third reality check we got was the sexual harassment. The library employed older women, older than us, maybe sixteen or seventeen years old. One day, while riding down to the basement with us in the elevator, several of them told Jim and me that they had taken the previous pages down into the dimly lit basement, far in the back of the reserve section, and made them play *Spin the Bottle!* For those of you who don't know what that is, it's a game where everyone sits in a circle, and the person who is "it" spins a bottle, and when the bottle comes to rest, whoever the bottle is pointing toward has to kiss the person who is "it".

I was frankly terrified of this. Would the older girls really make me kiss them? Where was this in the job description? Did I have any recourse? The girls were obviously better established in their jobs, and could probably get us fired if we didn't do what they wanted. I lived in fear from that moment on, imagining that I could be called down to the basement at any moment, only to find a circle of women waiting for me. With a bottle.

I can only imagine the effect this had on Jim. He later decided that he was gay, and, while I don't think that this situation was the deciding factor there, it did leave me with an abiding wariness and caution toward aggressive women.

The library was an interesting place, full of first experiences. Despite the ladies efforts to occupy every bit of my time with work, I managed to stumble across a just-published book while clearing off the reading tables, called "Modern Optical Engineering", by Warren Smith. I had already made a six-inch reflecting telescope and had studied the conic sections that described its mirror, but I knew that what I had learned so far was just the edge of a vast ocean. Here was a book that put the entire field of optics in perspective, and it was written in a style that was friendly and accessible. I carried the book over to the white-haired reference librarian, and asked how I could buy a copy of the book. She showed me how the library purchased books from the publisher, and I, scraping together most of my library earnings and following her advice, bought my first book. It was a pattern that I have repeated throughout my life, and it set my feet onto the path of optical design which leads, I think, to a world that is bigger than the one in which we presently live.

Jim and I eventually got tired of working all week for next to no pay, even if it was in a library. However, we didn't want to appear crass, so we devised a plan where we would say that our departure was due to the effect that all that work was having on our grades. We turned in our resignations on the same day and gave the same reasons for leaving, and congratulated each other for being noble and making a clean break from our low-paying jobs.

Then the library gave us its last lesson. The library's manager sat us both down, and told us that, because we were such good workers and the library would have a hard time replacing us, and because the city had just passed a new levy, he was authorized to offer us three times what we had been making, if we would stay.

Jim and I looked at each other. This was wealth beyond our dreams. But it was also beyond our grasp. We had given our reason for leaving as time constraints, not low pay. If we took his offer, we would be shown to be liars.

Jim and I shook his hand, said "No, thanks", and walked out the door.



**Lowbrows at Cherry Springs State Park, PA**

Image by Doug Scobel

## "Homestar", A Compact Home Planetarium

By Yasuharu Inugi

### Introduction

A compact, home use planetarium named "Homestar" was released last year by Sega Toys in Japan. The product was co-designed with Takayuki Ohira, a Japanese Planetarium designer. Ohira is well known in Japan for his "Mega Star" planetariums that can project more than a million stars. Some people who go to his planetariums take binoculars with them.



All images by taken by Yasuharu Inugi

"Homestar" does not project a million stars, but rather, it projects about 10,000 stars. I bought one last December and showed it to Lowbrows, first at John Causland's house at January ACNO gathering, and then at a meeting later. Since then, it has been a good toy for me and I have been using it frequently.

### How it works

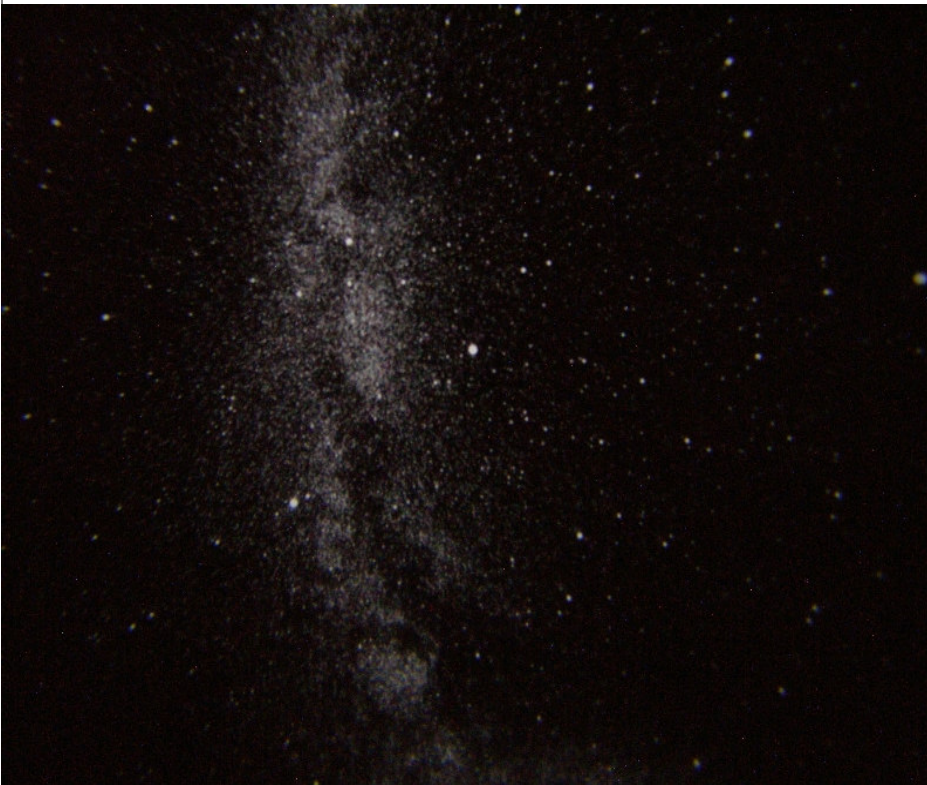
Homestar is powered by 5~6VDC, which can be supplied either by an AC/DC adaptor which comes with the unit, or four size C batteries. It comes with two star image discs, with or without constellation lines. This planetarium uses a lens system. Star images are photo-printed in a tiny data disc, which is set horizontally into the unit. There is an LED bulb below the disc, and star images go upward, go through four element lens to be sharpened, then projected upward, to the ceiling or a dome.

Focus adjustment is done by turning the dial at the top. The rotation function makes the star images to go around Polaris, CW or CCW, and complete a round in about 12 minutes. It also has automatic turn-off timer with 15, 30, or 60 min setting. There is also a shooting star function which shows imitated meteor image with random timing. There is no function to project planets. Optional southern hemisphere sky data discs are available.

### Personal opinion about the unit

The unit is surprisingly light and small. The first impression I had from the size was it just looked like a cheap toy. But the projected images were much more than I first guessed from the appearance of the unit. It is quite nice to be able to see some 10000 stars on my ceiling, which is more than you can see with your naked eye at either Peach Mountain or Lake Hudson. Unlike the conventional planetarium, the light ray from the projector is not a half sphere but rather shaped like a cone. This I believe is because Homestar is primarily designed to be projected onto a flat surface, like a ceiling at home. The light ray angle from north horizon to south horizon is probably about 90 degrees (I don't have the exact number). Thus, the entire sky above horizon is projected in a disc. Constellations inevitably appear a little smaller than what you see under the real night sky. The lower the ceiling, the smaller the images seem to appear. Also, images get fuzzy and a little distorted near the horizon. Milky Way is clearly seen, both in summer and winter sky. Images of stars for most constellations, especially near Zenith, are very clear. Stars appear brighter than actual ones. Especially, I feel that the faint stars are a little too bright. But maybe this is inherent in design. No color in stars. They are all white.

Some large open clusters (M44, M45, Hyades, Coma Cluster, etc.) are visible. I have noticed some major non-stellar fuzzy objects like M8, M13, etc. are missing. I believe this is because the disc data is made by stellar data and do not have non stellar objects.



The images get much nicer when a dome is used. At July meeting, Norb Vance showed us his Homestar unit and projected images on a half sphere dome at EMU astronomy department. Wow, it was so much nicer. I am quite impressed, and now planning on making a hemisphere dome for mine. The recommended projection distance, according to the manual, is 2.0~2.3 m (6.6~7.5 ft), but I found much larger distance, like 10~12 ft range, will still produce fairly descent image. The rotation function is nice, but I sometimes feel that it is too fast when you are observing, and it is too slow when you want to go from winter sky to summer sky. Auto-Off timer comes handy, since I often use it when going to bed. Shooting star function at first appeared nice, but after a while I am not too crazy about it, because the pattern is always the same, just timing is different.

Overall, I like the unit very much. I think it is well worth the money I spent. It has been a good tool to learn constellations and enjoy star gazing especially on cloudy Michigan nights.

### Specs

Dimensions: 167 x 159 x 151 (mm)

Weight: Approx. 1 kg

Power consumption: Approx. 3W

Recommended projection distance: 2.0~2.3 m (6.6~7.5 ft)

The product comes with:

- An AC/DC converter
- A DC battery box (for 4 size C batteries)
- Two stellar data discs (about +35deg latitude I believe)
- A user's manual (in Japanese)
- A small booklet for major constellations (in Japanese)

The AC/DC converter is rated for Japanese 100VAC input, but I have been using it for our US 115VAC input and have not encountered any problem.

### Price

Suggested retail price in Japan from the manufacturer is 20,790 yen. Available from some importers in US for about \$250 or so.

**Applications**

Home, School, etc. It would be great for a small classroom.

**Improvement I want**

I have some suggestions for improvement for Sega Toys, maybe for the next version of Homestar.

- \* Better image towards edge - I use hand made dome and image gets better, but they are still softer around the edge
- \* LED light brightness control (I think stars are too bright with current model)
- \* Speed control (to go where you want to faster, then go slower to enjoy)
- \* Wider angle projection - closer to half sphere, if possible
- \* Colors to stars
- \* Remote control - hard to see the control buttons in dark
- \* Major clusters, nebulae and galaxies

**New! About "Homestar Pro" coming end of 2006**

I just learned that the improved version "Homestar Pro" will be available by the end of this year, for about \$300. It will have improved images around the edge and bright stars (mag 4 and above) will have colors.





All images by Chris Samecki

## **Astronomy for Beginners,** **Map and Twenty Seven Engravings**

By Francis Fellowes, A. M.

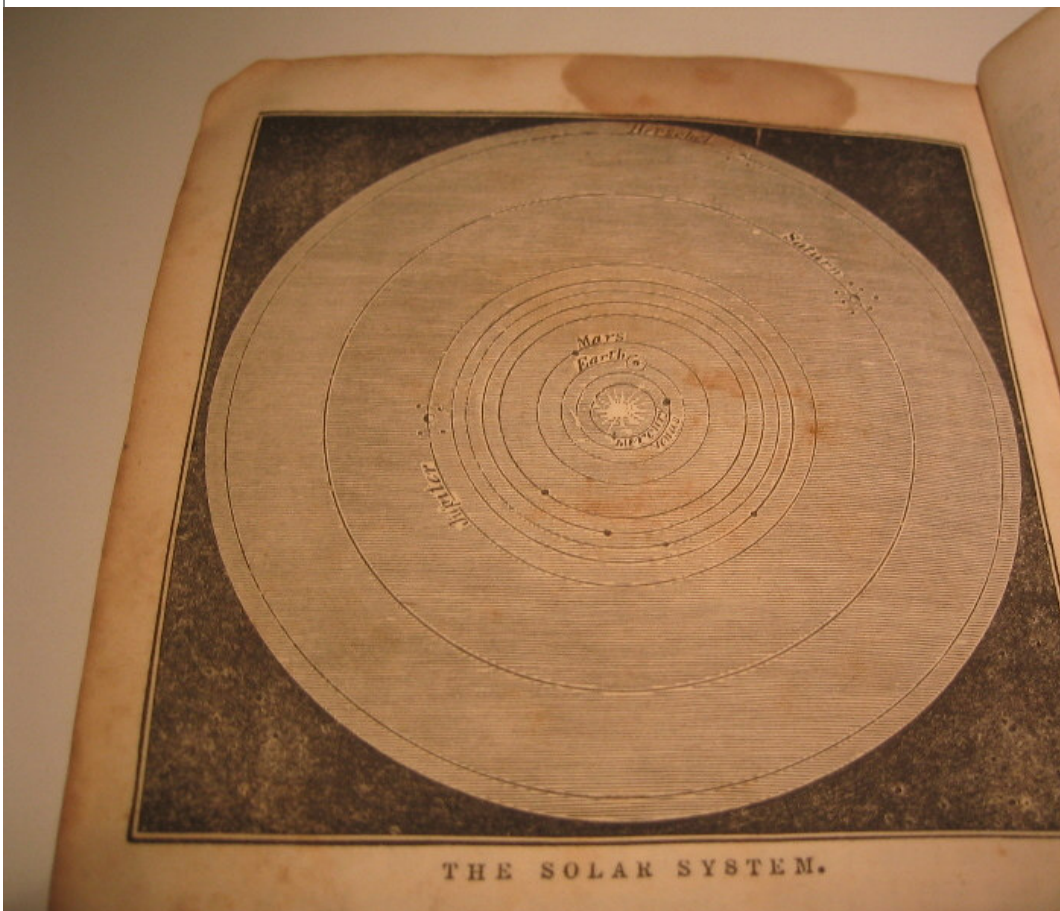
Book Review by Christopher Samecki

I found this book while trolling the used books at Shakespeare's 'On-the-Square' while in Madison, Wisconsin, during the fall of '05. 'On-the-Square' is any store on the capital square around the capital building. I recommend this venue on market Saturdays anytime in the summer. While you are at it check out the capital building. You will not be disappointed.

This book measures 4 ½" x 5 ½" x 3/8" and the cover has the composition of an old brown paper bag, so you can imagine it doesn't stand out in a rack of used astro books. Upon closer inspection of this text, I noticed it had a handsome binding, with a musty aroma, and the hint of a damp basement. The raised text gave the impression of hand set type and the illustrations looked like the product of hand engravings, although the number of illustration were not as many as was billed on the cover. It seems someone decided to lift some of the pages with a few of the engravings. The price inside the cover indicated 300 and the published date indicated 1836. Well, I had to have this book. I approached the re-seller with some apprehension. Was it \$3 bucks, or was it 300 dollars? The clerk indicated it was "as is" and requested a payment of \$3.24; which I couldn't fork over fast enough. Like a robber in the night, I slinked out the door as fast as my feet could carry me. Did I mention before I bought this book, I set it on an upper shelf only to have it fall to the floor breaking the binding in the process. One hundred and seventy years of being passed from one owner to the next, and I had to break the hand stitched binding by dropping the book on an old basement concrete floor. What a cad.

The Preface indicates, "This book is designed for beginners. Instead therefore, of beginning in the middle, or at the end, it begins at the beginning; and seeking to avoid an indiscriminate blending of all things, treats of such things, and such

only, as are suitable to be set before beginners." Precious. The book, as it turns out, is an astronomy primer for New England secondary education of its day. In its 90 plus pages, the text is subdivided in to the usual chapters one would expect to find in an astronomy primer. The Heavens, the Sun, the Moon, the planets, fixed stars, divisions of the heavens, constellations, comets, and the history of astronomy. What did you say? The Heavens? That's right, the Heavens. In Lesson First, we find that in the beginning God created the Heavens and Earth. When have you heard that lately in an astronomy text? And you had better pay attention, because this is the first question at the end of the chapter. Most amateur astronomers would agree the author does get it right on page 11. "It would be of little use to you to study books on Astronomy, unless you go out and look at the Heavens for yourself."



The engravings are very superb as the pictures attest. There is a fine collection of the 'gestalt' (the whole, i.e. the Universe) views, Earth bound landscapes, diagrams, and constellations.

Sadly this great tome is no longer in print. If after reading this review you decide you might want to read the full text, you are welcome to borrow it, just leave me \$300 deposit.

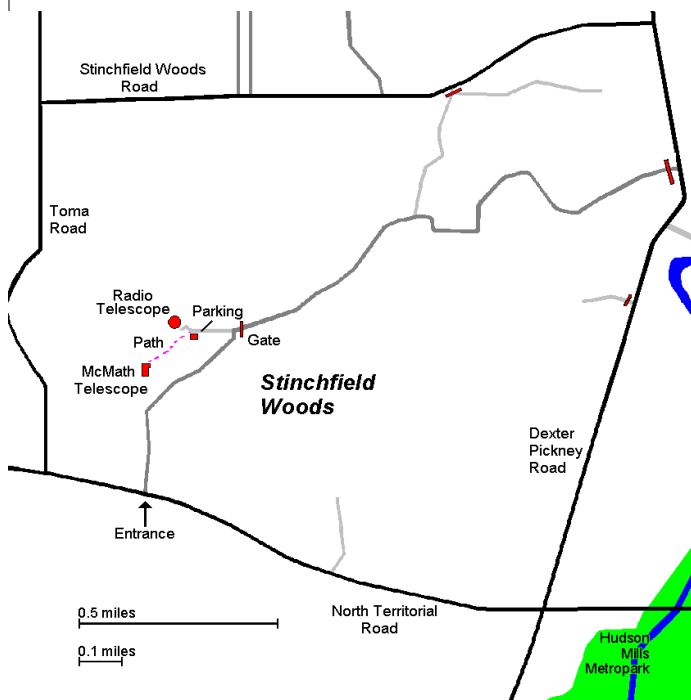
*(Notice that this picture shows the Solar System only extending out to Uranus or as it appears to be named here "Herschel". However it does show 4 unlabeled objects between Mars and Jupiter.)*



## Places & Times

Dennison Hall, also known as The University of Michigan's Physics & Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. Dennison Hall can be found on Church Street about one block north of South University Avenue in Ann Arbor, MI. The meetings are usually held in room 130, and on the 3<sup>rd</sup> Friday of each month at 7:30 pm. During the summer months and when weather permits, a club observing session at the Peach Mountain Observatory will follow the meeting.

Peach Mountain Observatory is the home of the University of Michigan's 25 meter radio telescope as well as the University's McMath 24" telescope which is maintained and operated by the Lowbrows. The observatory is located northwest of Dexter, MI; the entrance is on North Territorial Rd. 1.1 miles west of Dexter-Pinckney Rd. A small maize & blue sign on the north side of the road marks the gate. Follow the gravel road to the top of the hill and a parking area near the radio telescopes, then walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.



## Public Open House / Star Parties

Public Open Houses / Star Parties are generally held on the Saturdays before and after the New Moon at the Peach Mountain observatory, but are usually cancelled if the sky is cloudy at sunset or the temperature is below 10 degrees F. For the most up to date info on the Open House / Star Party status call: (734)332-9132. Many members bring their telescope to share with the public and visitors are welcome to do the same. Peach Mountain is home to millions of hungry mosquitoes, so apply bug repellent, and it can get rather cold at night, please dress accordingly.

## Membership

**Membership dues in the University Lowbrow Astronomers are \$20 per year for individuals or families, \$12 per year for students and seniors (age 55+) and \$5 if you live outside of the Lower Peninsula of Michigan.**

**This entitles you to the access to our monthly Newsletters on-line at our website and use of the 24" McMath telescope (after some training).**

**A hard copy of the Newsletter can be obtained with an additional \$12 annual fee to cover printing and postage. Dues can be paid at the monthly meetings or by check made out to University Lowbrow Astronomers and mailed to:**

**The University Lowbrow Astronomer c/o Kathy Hillig**

**7654 W. Ellsworth Road  
Ann Arbor, MI 48103**

Membership in the Lowbrows can also get you a discount on these magazine subscriptions:

Sky & Telescope - \$32.95 / year

Astronomy - \$34.00 / year or \$60.00 for 2 years

For more information contact the club Treasurer. Members renewing their subscriptions are reminded to provide the renewal notice along with your check to the club Treasurer. Please make your check out to: "University Lowbrow Astronomers"

## Newsletter Contributions

Members and (non-members) are encouraged to write about any astronomy related topic of interest. Call or Email the Newsletter Editor: **Mark S Deprest (734)223-0262** or [msdeprest@comcast.net](mailto:msdeprest@comcast.net) to discuss length and format. Announcements, articles and images are due by the 1<sup>st</sup> day of the month as publication is the 7<sup>th</sup>.

## Telephone Numbers

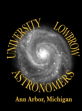
President:	Charlie Nielsen	(734) 747-6585
Vice Presidents:	Jim Forrester	(734) 663-1638
	Nathan Murphy	(734) 395-1043
	Kurt Hillig	(734) 663-8699
	Bob Grusczyński	(734) 461-1257
Treasurer:	Kathy Hillig	(734) 663-8699
Observatory Director:	D. C. Moons	(586) 254-9439
Newsletter Editor:	Mark S Deprest	(734) 223-0262
Key-holders:	Bernard Friberg	(734) 761-1875
	Fred Schebor	(734) 426-2363
	Charlie Nielsen	(734) 747-6585
	Mike Radwick	(734) 453-3066
	Paul Walkowski	(734) 662-0145
Webmaster	Dave Snyder	(734) 747-6537

## Lowbrow's Home Page

<http://www.umich.edu/~lowbrows/>

## Email at:

[Lowbrow-members@umich.edu](mailto:Lowbrow-members@umich.edu)

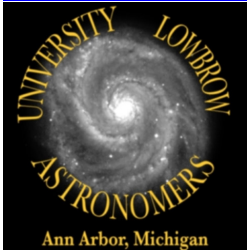


## University Lowbrow Astronomers

Kathy Hillig  
7654 W. Ellsworth Road  
Ann Arbor, MI 48103

Phone: 734-663-8699  
E-mail: [hilligk@hotmail.com](mailto:hilligk@hotmail.com)

### Reflections & Refractions



### Website

[www.umich.edu/~lowbrows/](http://www.umich.edu/~lowbrows/)



Chris Sarnecki reviews Astronomy For Beginners on pages 7 and 8.

Yasuharu Inugi reviews The Homestar Compact Home Planetarium on pages 4, 5 and 6.

Tom Ryan tell of his experience discovering Modern Optical Engineering



University Lowbrow Astronomers  
7654 W. Ellsworth Road  
Ann Arbor, MI 48103