

Event Horizon

May 2001

Volume 8 Issue 7

Data Slavery Revisited

Back in November 1995, I wrote an article for Event Horizon entitled "The Fall and Rise of Magellanic Cloud Variable Data". In it I described the disappearance of close to a million estimates of variable star brightnesses which had been done at Harvard College Observatory (and which formed the basis of the most important variable star catalogs for several decades) and their subsequent reappearance and trip to McMaster! That catalog appeared in 1971 as Smithsonian Contributions to Astrophysics Volume 13, "The Variable Stars of the Large Magellanic Cloud" by Cecilia H. Payne-Gaposchkin. Due to the absence of powerful computing, only the summary statistics for the most easily recognized periodic variables were listed.

The individual brightness estimates were recorded on mimeographed sheets in handwriting, making the automated transfer of these data to electronic form impossible (except as relatively useless images!).

Since fifty years of stellar evolution can produce measurable

changes in periods of pulsating stars, I began a project of entering this data into spreadsheets, by hand. Many HAA and RASC folks joined this enterprise and this article is an update on that effort.

The data which has been entered is available at the URL: <http://www.physics.mcmaster.ca/HCO/> and the folks who entered that data, sometimes known as "data slaves", are listed there.

What has been done with it? Quite a bit! One of the earliest works based on the on-line data which HAA and RASC members made possible was "HV 2554 and the Supersoft X-ray Source RX J0527.8-6954" by Jochen Greiner of the Max Planck Institute and Martha Hazen of Harvard College Observatory in 1997. It can be viewed at the URL: <http://www.konkoly.hu/cgi-bin/IBVS?4409>

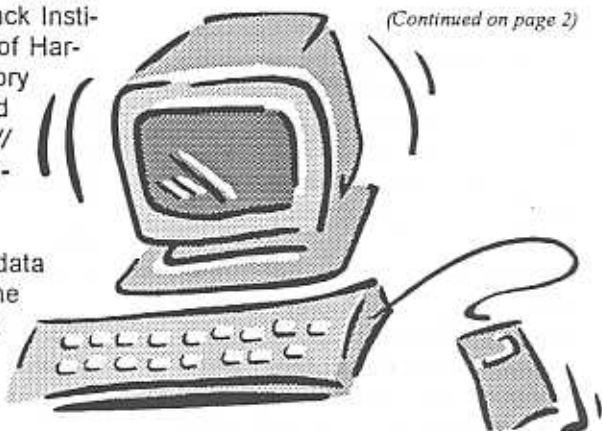
Interestingly, this same data became of interest to the MACHO Project folks working on super-soft X-ray sources! It is

strange that what was once a routine survey for variable stars has ended up impacting our understanding of types of objects which hadn't even been discovered at the time!

More recently, a paper based entirely on this database appeared by Enrique Garcia-Melendo and Josep Gomez-Forellad of Spain entitled "Reclassified and New Variables in the Archival Harvard College Observatory LMC Photometry". The URL for this paper is: <http://www.konkoly.hu/cgi-bin/IBVS?5048>

These authors made use of the plentiful computing power avail-

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Chair's Report

Margaret Walton

Last month some of us took advantage of a rare clear night and did our Messier Marathon. Our first attempt was clouded out after about an hour so we tried again on the next clear weekend night three weeks later. It was a great night, we saw lots of objects, and 4 members raised over \$300 for the club. It was a lot of fun and an easy way to raise money. Hopefully next year more people will participate.

On Saturday, June 9 the Bin-

brook Conservation Area, where we do our observing, is holding an open house. Several organizations, including ours, will be putting up displays and giving demonstrations. We will have scopes set up for solar viewing. The event takes place from 11am to 4pm – admission and food are free. Anyone who wishes to come out and help is welcome.

Our next meeting will be held June 8th at the Hamilton Spectator Building. Doug Welch will be talking about his California adventures. Hope to see everyone there at our last regular meeting of the season.

Data ...

(Continued from page 1)

able on the average desktop computer to find the periodic variables in the Harvard data that were measured, but missed in the first analysis! They also kindly acknowledged all the HAA and RASC contributors by name!

Personally, I have used the database to look for earlier eclipses of some of the eclipsing Cepheid variables that were found in the microlensing surveys. I have also looked for evidence of a change in the amplitudes of double-mode Cepheid

variables over time. There is still much to be extracted from this database!

There is still much data left to enter. The entry for Small Magellanic Cloud variables hasn't even begun. If anyone suffers from chronic insomnia, I have just the solution for you!!!!

Thanks to all who have contributed so far!!!!

Doug Welch

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HAMILTON
AMATEUR
ASTRONOMERS

Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).

The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels

The cost of the subscription is included in the \$25 individual or \$30 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

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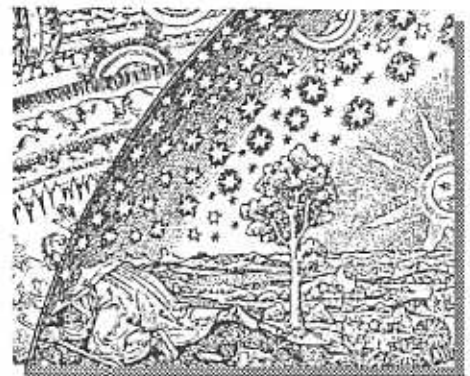
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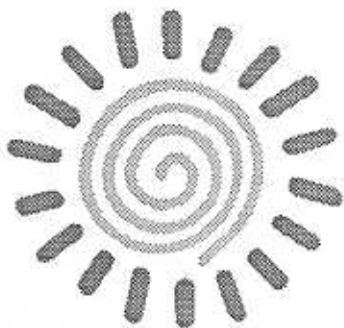


The Creation of the Moon

Sheila Overall

After First Man and First Woman arrived in the fifth World, they decided to make this world brighter than the lower worlds had been. After a long discussion, they decided to make a sun and a moon.

First, they made the sun. They took a piece of rock crystal and made it round and flat. They fastened turquoise around it and around the turquoise, they placed rays of red rain. They placed bars of lightning beyond the rain. They fastened onto it feathers from the flicker of the lark, the cardinal and the eagle.



Then they made the moon. They took mica and they

made it round and flat, but not as large as the sun. Around it, they placed white shells and then sheet lightning, then water from the



four directions.

After they had done this, they began to talk again. "Where shall we have the sun and the moon rise and set?" First Man asked. Then East Wind spoke up. "Have sun brought to my direction. Let it begin its journey there



each day." So it was decided.

Now they needed to give life to sun and moon. They needed someone to carry them across the sky. The young man who had planted the reed which carried the people to the Fifth World was chosen to carry the sun. The old man who brought the earth in which the reed was planted, was chosen to carry the moon. They were pleased. First Man and First Woman gave them new names. "You who will carry the sun, your name will now be Johanna'ei (The One Who Governs The Day.)"

"You who carried the moon," they said, "your name will now be Tle'choonaa'ei (The One Who Governs The Night.)"

Now it was time to set the two of them on their paths. First Man gave them each a fan made of twelve feathers from the eagle's tail, for

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Total Solar Eclipse of June 21, 2001

The first total solar eclipse of the third millennium occurs on Thursday, June 21 begins in the South Atlantic Ocean some 400 km southeast of Uruguay. The umbra touches down at 10:35:55 UT and has a centreline duration of 2m6s at the terminator as seen from the centre of the 127 km wide shadow. For the next two hours the umbra sweeps north-eastward across the South At-

lantic with no major landfall. The centreline duration, path width, and Sun's duration all steadily increase as the moon's shadow rushes across the ocean.

The moment of greatest eclipse occurs at 12:03:41 UT, when the axis of the Moon's shadow is closest to the centre of the Earth ($\Gamma = -0.570$ Earth Radii). The length of totality is 4m56s, the Sun's

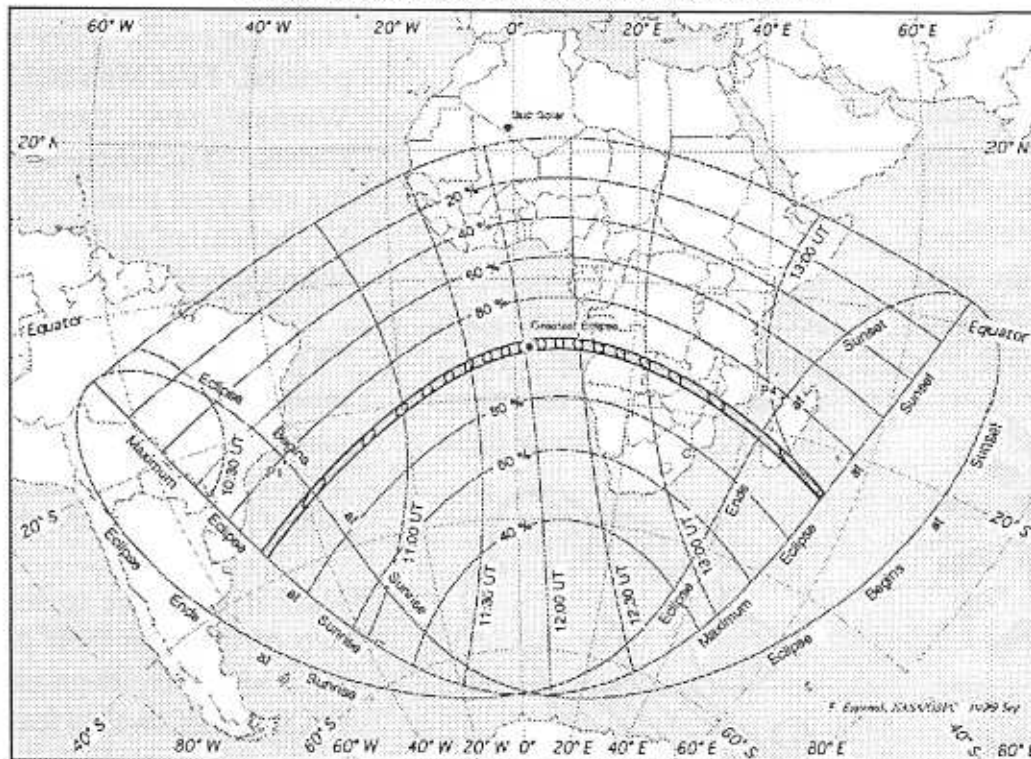
altitude is 55 degrees, the path width is 200 km, and the umbra's velocity is 0.554 km/s. Unfortunately, these favourable circumstances occur at sea some 1100 km off the west coast of Equatorial Africa.

First landfall occurs a half-hour later on the west coast of Angola at 12:36 UT. The centre line duration is 4m36s and path width is 193 km. Travelling at

0.63 km/s the umbra rapidly moves eastward through this war torn nation. By 12:57 UT, the shadow reaches the western border of Zambia where totality lasts a maximum of 4m06s. The umbra moves east-southeastward across country towards the capital of Lusaka which will enjoy some 3m41s of

Total Solar Eclipse of 2001 Jun 21

FIGURE 2: STEREOGRAPHIC PROJECTION MAP OF THE ECLIPSE PATH



NASA TP 1999-209484, "Total Solar Eclipse of 2001 June 21"
by Fred Espenak & Jay Anderson

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Solar Eclipse ...

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totality. Quickly crossing the Zambezi River the path enters Zimbabwe and Mozambique. The centre line crosses the border of these two countries for several hundred kilometres. As the umbra leaves Zambia, it lies entirely within Mozambique for a whole minute before its leading edge reaches the shore of the Indian Ocean (~13:20 UT). At the same time, the northern edge just skirts the southern border of Malawi. The centreline duration is now 3m09s, and the Sun's altitude is 23 degrees. The speed of the shadow has now increased to 1.7 km/s as it leaves the continent for the open waters of the Indian Ocean.

The last major landfall occurs on southern Madagascar where the eclipse occurs quite late in the day with the Sun just 11 degrees off the western horizon. The centre line duration is now 2m25s (13:28 UT) as the

highly elongated shadow stretches across the entire east-west part of the island. Continuing into the Indian Ocean the umbra leaves the Earth's surface (13:31:33 UT) at a speed of 10 km/s.

At every point along the eclipse path, the centreline duration is twice as long as the eclipse of August 1999 that I also observed.

Here are the circumstances of totality as seen from our prime observing site in Zambia, a village called Malambanyama:

1st Contact: 3:39:50 LST 6:39:50 AM EST
 2nd Contact: 15:08:08 LST 8:08:08 AM EST
 Mid Eclipse: 15:09:57 LST 8:09:57 AM EST
 3rd Contact: 15:11:45 LST 8:11:45 AM EST
 4th Contact: 16:26:36 LST 9:26:36 AM EST

Duration of totality is 3m 37s, altitude ~ 32 degrees.

Ray Badgerow

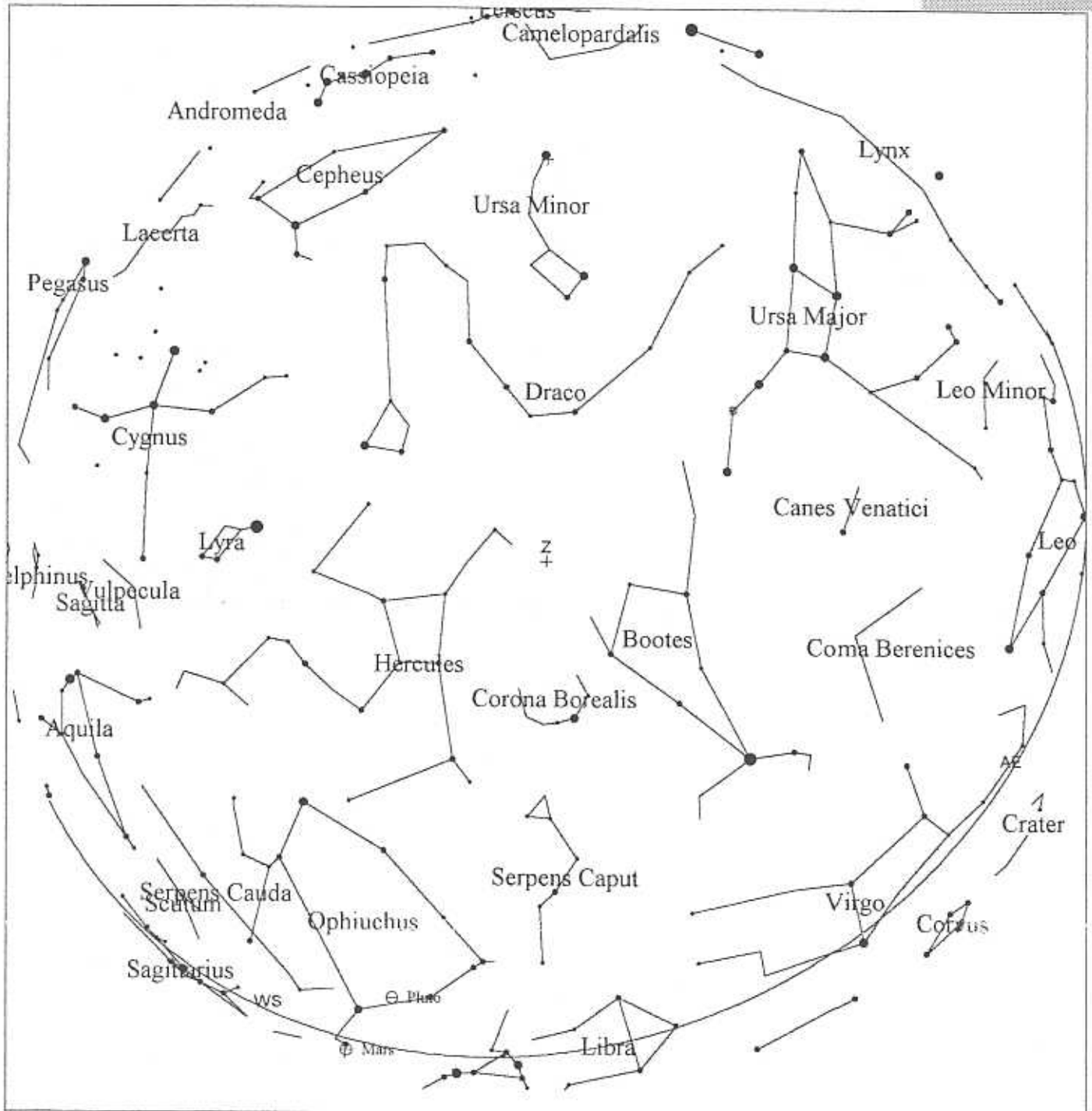


Jill Tarter coming to Hamilton

The Hamilton Amateur Astronomers are one of the sponsors for the Helen Sawyer Hogg Public Lecture being held in association with the Canadian Astronomical Society's annual meeting being held in Hamilton May 26 - 29. Jill Tarter, director of SETI, is the speaker for the lecture, to be held Sunday, May 27th, 8pm at the Hamilton Convention Centre. She is one of the most prominent and interesting astronomers around. Tickets are free, but as seating is limited to about 550, be sure to get there early to get your seat.

Dr. Tarter is going to speak on the latest advances in SETI techniques, and the 'communication' issues that may come up in the foreseeable future, if we ever do get an intelligently designed signal from out there. It should be suitable for high school age and up.

June Night Skies



ECU V3.0 (Star Atlas Mode) - June Night Skies

UTC: 2001/06/16 at 03:30
 LMT: 2001/06/15 at 10:30pm

RA=15h48.2m Dec=-43°17'
 Field=180.0° Azim=345°29' Alt =90°00'

The Moon ...

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those are the feathers great
bird uses to guide itself



across the sky.

Sun began his journey first. Johannaa'ei climbed up into the sky, guided by the eagle's feathers and passed safely across the heavens until he came at last to the west.

Now it was the turn of the moon. Tle'ehoonaa'ei began to climb up into the sky. But because he was an old man, it was harder for him to do this. East Wind said, "I will help." And blew so hard that the feathers of the fan blew into Moon's face. He could not see where he was going.

So it is, that to this day, although the sun always follows the twelve paths across the sky, Moon takes a wandering way. Sometimes Moon even becomes lost,

turning his face away from Earth as he tries to see his way. If you look carefully at the moon on the nights when his face is fully toward the Earth, you may see those feathers on his face.



CALENDAR OF EVENTS

- May 18, 19, 25, 26 ~ 8pm
June 15, 16, 22, 23

- Friday, May 18, 2001 7:30pm

- May 26 - 29

- Sunday, May 27th, 8pm

- Friday, June 8, 2001 7:30pm

- Friday, June 15, 2001 7:30pm

BINBROOK OBSERVING NIGHTS - For confirmation or directions call Bret Culver 575-9492, Marg Walton 627-7361, Rob Roy 692-3245

HAA COUNCIL MEETING

Helen Sawyer Hogg Public Lecture being held in association with the Canadian Astronomical Society's annual meeting

Jill Tarter, director of SETI is going to speak on the latest advances in SETI techniques at the Hamilton Convention Centre (see notice on page 6)

HAA GENERAL MEETING - The meeting will be at the Spectator Building auditorium. Doug Welch will speak about his California adventures.

HAA COUNCIL MEETING