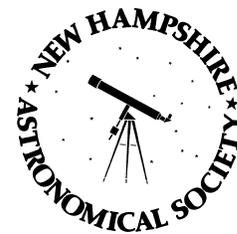


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THE NHAS OBSERVER



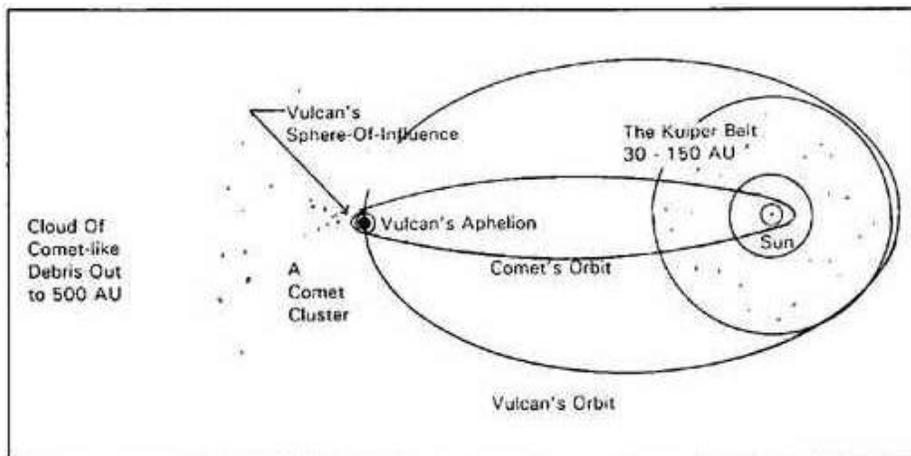
Newsletter of the New Hampshire Astronomical Society

Volume 2001 No. 7

"All the news that fits in print"

July 2001

VULCAN AND THE DEATH STAR

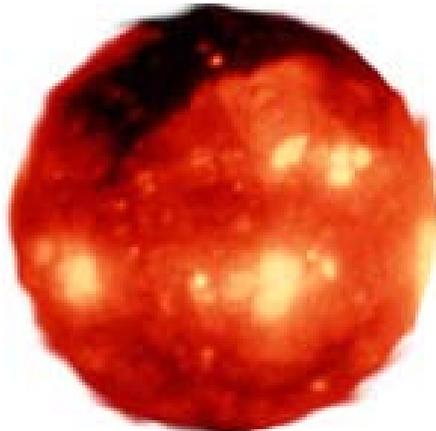


Oort Cloud Debris Is The Initial Source Of Toxic Comets Threatening Earth.

Chart courtesy of 1997 web article
"Vulcan, Comets, and the Impending
Catastrophe"

President's Message

This month's program will be "Vulcan and the Death Star" presented by our own **Bert Bingel**. It promises to be an event not to be missed.



Comet Linear (C/2001 A2) has made it way back to the Northern Skies. Current estimates of visual magnitude are around 5. It will be traveling through Pegasus into Vulpecula while dimming to about magnitude 7 during July. By midmonth

you can start looking for it just after midnight.

On July 17th there will be a daytime occultation of Venus by the crescent moon. Start time for the Boston area is listed at 2:34 p.m.. Let hope for some clear skies.

Finally, Stellafane, the great ATM convention in Springfield, Vermont, is almost upon us. I am looking for a volunteer to set up the club tent. In past years we have had someone arrive early to stake out a good spot for the membership to gather around. So if anyone is planning on attending the first day and could arrive early please contact one of the officers.

★ John Pappas

Public Observing Highlights

On June 8th and 9th, several NHAS members went to the NE Regional Star Party sponsored by Earth Treasures in Keene. Club members **Dan Smith**, **Chase McNiss**, and others camped out Friday night under dark skies.

The next day, we met with Celestron reps and drooled over new equipment, including the new NexStar 11 GPS,

which initializes itself using an internal GPS system. There were many raffle prizes, but it seems only our **Barbara O'Connell** won anything. Lucky Barb! On Friday June 15th, several NHAS members showed up for a skywatch at Center Woods Elementary school in Weare (where?). I did my best to artificially extend my children's slide show while waiting for it to get dark outside. This was a terrific skywatch. A great time was had by all, and the adults kept us there showing them sights until 11 p.m..

Teacher **Melanie Brown** wrote back, in part, "The children and parents haven't stopped talking about it. The entire presentation was fantastic. I hope you all realize what a positive impact you have on people."

I will bring this letter to the next meeting, along with some Thank You cards from the kids (there are some amusing attempts to draw **Joe Derek's** large 12.5-in. Newtonian in there!)

A Summer Solstice celebration was rained out at the Planetarium on June 21st.

On June 28th, six NHAS members brought telescopes and binoculars to the Manchester VA Hospital. The forecast said it would clear, but the clouds kept getting thicker and thicker. Hospital residents and recreation therapist **Jessica Catanese** waited patiently with NHAS members to no avail. They appreciated our stopping by anyway, and we will reschedule for the fall.

★ Ed Ting

Feature Story

Eclipse 2001: Africa Page 2

Eclipse 2001: Chisamba, Zambia

by David Speltz, david@speltz.com

"Seeing a partial eclipse is very interesting. It bears almost no relation to a total eclipse. Seeing a partial eclipse bears the same relation to seeing a total eclipse as kissing a man does to marrying him, or as flying in an airplane does to falling out of an airplane.

Although the one experience precedes the other, it no way prepares you for it."

—Annie Dillard, *Teaching a Stone to Talk*

Who ever heard of Lusaka, much less Chisamba before the total eclipse of 2001? Few of us had, but we were about to learn a lesson in international relations and geography that we would never forget, for that is where Nike (my wife), I and several thousand other total eclipse crazies were headed. What did malaria, bilharzia, tuberculoses, HIV, unstable governments, no phones, no internet, and broken down buses with leaking fuel matter when the first total eclipse of the millennium was waiting for us? Besides, this was a chance to see a part of Africa that we never expected to see (our family had lived in East Africa for two years in the early 1980s, but apartheid kept most of us away from Southern Africa).

American I know in Boston: "I know someone in Africa! Do you know so and so?"

You can look at a map of Africa and still not understand its size. Seven times zones from east to west; from north to south, the Mediterranean Sea to the Cape of Good Hope in the south, take off point for Antarctica, and slow, slow roads. This is one big place.

"No, I don't think I have met that guy."

On June 3, Nike and I headed to Logan Airport in Boston, having packed in two modules. Module one was designed for weeks one and three when we had a fairly generous allowance of 66 pounds

each. This could accommodate what we needed for our first week of exploring South Africa from Cape Town along the Indian Ocean coast and back through the Afrikaan-populated lands north of the coast (we drove more than 1000 miles the first week). It also allowed for the extra gear we thought we would need for the eclipse during week three. The maximum weight for week two was 26 pounds each plus carry on because we were to fly into the Okavango Delta in Botswana to tented camps via tiny toy planes (five passengers with no luggage, or four passengers, minimum luggage).

The Okavango is the largest inland delta in the world, fed by a massive river out of Angola through Namibia, finally running itself out in a 6000 mile square piece of the Kalahari desert turned lush, the Okavango. But the death of this river gives life to a multitude of life including the Big Five (lion, elephant, rhino, giraffe, leopard) and thousands of varieties of bird and other mammals. Camera time. Bug repellent time, too. This second week into the Okavango was the luggage challenge of the century. Major photo ops, totally dark skies. Do I focus on gear or clothes? I pick gear. There was no way I could leave the big camera or telescope in storage for the week. The Land Rovers/Cruisers we used to track and photograph game were entirely open. The African guides who were our



constant companions convinced us the lions saw us as part of a non-threatening big mammal called a car and had no interest in us. Since we got within 20 feet of these predators and they just yawned at us, I suppose it was true.

The skies were black as can be, except for the astounding show in the sky, the Milky Way. The first stars out as the sun set in this cloudless African sky were the showpiece stars in Crux (the Southern Cross) and Centauri. The winter sun set at 5:30 p.m. and rose at 7:30 a.m., plenty of time for observing, if you dared (more about that).

By 7:30 p.m., we had astronomical darkness. In our group of 12, I was the only one that chose gear over clothes, so we had one telescope (mine). What a show! First, omega Centauri was near the zenith. At 60 power, it filled the eyepiece with more than a million bright stars. By comparison, M13 in Hercules was a small blobby thing compared to omega Centauri. How do I go back north?

(Cont'd p. 3)

ATM True Grit

At the ATM session on Sunday June 24, **Don Ware, Ed Dougherty** acted as teachers. **Barbara O'Connell, Larry Lopez, Mike Stebbins, Paul Norris, Dave Davenport, and John McLean** pushed glass.

Don and Ed worked on the Foucault tester and provided support to the others. Barbara finished her pitch lap and will be polishing next week. Larry was go-fer and would be polishing next week. Mike fixed his pitch lap. Paul and Dave finished 120 grit.

John ordered a 16-inch pre-curved blank and already has parts of his mount done! Next meetings are July 8 and July 22.

★ Larry Lopez

YFOS

Joel Harris, Paul Norris, and Larry Lopez worked on the observatory on June 2. The chain for the Roof Opening Device was attached and tested. Latches and plywood were also installed. Rain prevented further work.

At the July 7 work session,, **Joel Harris, Chase McNiss, Paul Norris, Bob Sletten, Philip Sletten, and Larry Lopez** cut grass, installed shelves, a storage deck, and lighting (including Christmas tree lights).

We left the facilities at 7:23 p.m. It looks cool.

★ Larry Lopez

The Bottom Line

Bank balance is \$7,940.00.
Total 2001 Members: 141.
Little activity, no donations.

★ Jim Warendra

Looking Back at Last Month

Opening Remarks. John Pappas reviewed a few pieces of mail, mentioned the Keene, NH event, and asked new members to introduce themselves.

Book of the Month. none

Committees. ATMs: The 1y met on June 3, Ed Dougherty repaired the Foucault tester and attendees discussed photomultipliers.

Web Comm: no news

Photo Comm: no news

YFOS. Joel Harris said the roof cranking mechanism was operational and instructions have been posted. Some more red lighting is needed for safety. Two people attended the May 25th Coffee House and it clouded over in the late evening.

Public Observing. The CMP skywatch was clouded out and Ed Ting gave a lecture in Merrimack despite rain. Audubon at Silk Farm was to hold a Summer Solstice event on June 21. At the July 6 CMP skywatch, CMP was to give a lecture on the SOHO satellite.

Astronomy Day. John Pappas thanked everyone who helped out. There were still several t-shirts available. Bob Sletten overheard someone bragging about getting her T-shirt autographed.

Stellafane. Joel Harris discussed this Aug. 17-18 event. He brought registration forms and urged members to participate.

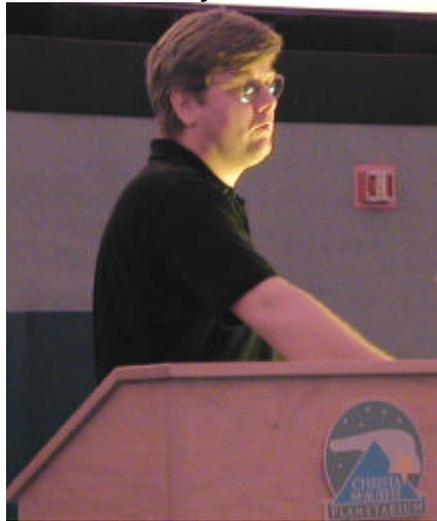
Kitt Peak. Joel circulated some photos and literature obtained from a friend who visited the site. Ed Dougherty related some entertaining stories about the time he snuck into the observatory.

Treasury. Jim Warendra reported

Scope of the Month. none

Club Scope: Still with Mike Pelletier

Evening Program. Lew Gramer presented a talk on Meteors.



Meteors are solid rocks and typically come from comets. Their bright trail is the result of friction as the meteor hits the atmosphere and ionizes the air around it.

Meteor observing is one of the best ways for amateurs to participate in scientific research. This is also a good way to learn and enjoy the whole sky. To record a meteor's trail, you need to know the stars and constellations it passes through.

Lew reviewed basic preparations such as picking a dark site and observing with a group. He listed the type of equipment and materials needed like a lounge chair to minimize neck strain, blankets for warmth, and star charts, red flashlight, and tape recorder for recording your observations.

Next came the numerous observing techniques and tips. For example, allow 20 minutes for eyes to become dark-adapted, observe in the early morning, record details about each meteor.

Lew described the differences between shower meteors and sporadic ones, and went over the methods for determining meteor radiants (visual point of origin).

He estimated that he spends 100 hours per year observing meteors.

A Q&A session rounded out the program. A tantalizing prediction was that the Nov. 2001 Leonid shower has a predicted burst of over 8,000 per hour. Chances are

that viewing will be good in North America, but not at that rate.

★ Michael Frascinella

Eclipse 2001 (from p. 2)

Over the next few nights, we worked several constellations using the Caldwell Chart (none of us had anything south of Crux). We began checking them off, the highlights of which were Centaurus NGC 4945 and 5128, also know as Centauri A with no problem seeing the dust lanes in this grand galaxy, even in the 90mm scope. We kept coming back to omega Centauri, NGC 5139. It opened and closed our evenings.

In Crux, two objects were outstanding and demanded re-visits. The Jewel Box NGC 4755 is a small but brilliant open cluster of very young stars, stunning to observe. And just south of the Jewel Box is the Coal Sack, visible to the naked eye, a very weird and huge blotch of black gas and dust in the midst of a blazing Milky Way. Further west is Carina, a constellation that looks like an ice cream cone, hosting multiple stunners including NGC 3372, the Keyhole Nebula in which the mystery star eta Carinae resides, moving from magnitude -.8 to 7 over the last 150 years. Speculation is that when eta dies, it may produce one of the most brilliant supernova ever seen.

I had to photograph this stuff. One day, Carter Roberts, a geologist-physicist from Portland, OR known in astronomy circles as Professor Gadget, and I decided to set up our respective equatorial motor-driven mini-drives (Tak Sky Patrol II) in the field outside the camp.

(Cont'd p. 4)

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Eclipse 2001 (from p. 3)

Because there is no southern Polaris we spent about two hours using our GPS units to identify north-south by walking several hundred yards to a tree, identifying its longitude, then walking back to the tripods and positioning them to within (in theory) a thousand of a second. Using his clinometer, we then set the mount latitude and were ready for the evening. On to a game drive, then back by 7:30 p.m., we set the cameras on the tripods and went to work. No one was allowed to walk within or out of camp after dark without an escort. There are no fences, and predators and other large mammals (elephants, hippos) walk through at will. The camp manager, Mark, escorted us into the large field east of the camp.



It is 7:30 p.m. and the first exposure for me is two minutes wide open on a slow speed transparency film using my Hasselblad and a 40 mm wide angle lens (24 mm in 35 mm camera-speak). All seems well. The drive is tracking (I think) and supper is at eight. Next is a 4-minute exposure, with the Southern Cross smack in the middle of the viewfinder. Next is the 10-minute exposure. Five minutes into it, our escort asks if he can turn on the torch (flashlight) to look around. No, we say. Might muck up the picture. One minute later I change my mind. Maybe he had a good reason. OK, point it away from the cameras. He turns it on and to our horror we are surrounded by hyenas. Hyena packs eat elephants. We probably looked easy pickings and tasty.

I turned on my torch to supplement Mark's and the hyenas backed away. Break down and run. Nope. That would

be the end. Let's think about this for four more minutes while the exposure is running. Four minutes later, we pick up the tripods with mounts and cameras attached in spite of being top heavy and slowly move back to camp backwards while the hyenas laugh and howl at us. This picture better be good. Later, Mark, our esteemed escort informed us there were only two hyenas. And of course, Carter and I were the entertainment of the evening for the rest of the group. We never went out beyond camp again, except during daylight.



From Botswana, the hard part of the travel started. So far we had traveled about 10,000 miles with no real problems. Our eclipse site was another 750 miles north, some of which had to be by bus. Flying into Zimbabwe, we spent the night in a hotel close to Victoria Falls (which make Niagara Falls look like a dripping faucet), boarding an old Volvo bus the next morning for an eight hour ride through impoverished and desolate parts of Zambia. Halfway through the trip, the bus sprang a fuel leak and it provided the shoeless locals along the road with amusement as our driver unsuccessfully tried to stem the diesel flow and our group, clad in safari vests, took to the bush for nature's relief. Lusaka is in central Zambia and does not see tourists since it is certainly not a destination resort. At times it is the site for pan-African meetings to deal with civil war and other third world issues, and probably a destination for Zambians trying to escape rural poverty. But the week of June 17, this city of modern skyscrapers surrounded by grass huts swarmed with thousands of Mizungus (white guys) with big cameras, big scopes, big bellies covered by safari vests, and lots of dollars. Zambians have never seen anything like it, ever, and may never again. Eclipse day in Zambia was a national holiday. Probably to free

people up to sell us all their carved giraffes wherever we turned. Some preferred our shoes to money. I kept both.

Arrival at Lusaka was 4 p.m. on Wednesday afternoon, June 20. The eclipse would start about 1:40 p.m. the next day, Thursday. A decent night's rest and the next morning back on a bus for another hour's trip north to a "safari lodge." To our astonishment, this was an extraordinary site, right on the mid-line. Not a cloud in the sky, mowed grass with lounge chairs and tables set up outside for us. Nearby was a small lake, with elephant and kudu roaming the outskirts. There was ample room and no competition for the right spot. There was both plenty of food and drink, and time to prepare. It could not have been better.

I set up my 90 mm Takahashi on a Bogen 404 mount for fine adjustment control. The Hasselblad attaches to a combination of a Wimberly mount and Sky Patrol II driven mount. A little shaky, but so what, it was an experiment, and no photo can match what you see. I set the video to record us as we move about and talk during the eclipse. Some people have no gear, just binoculars. Many are just lounging, relaxed and ready. These are the folks who have seen 10-15 total eclipses. I am not relaxed. One fellow from Wisconsin has brought in a large equatorial mount with three modified Hasselblads all controlled via computer, plus an 8x10 view camera and various 35mm SLRs also strapped to the mount. He laments he will not see the eclipse except when he gets home. He is not relaxed either.

I think about my first total eclipse in Turkey in 1999 when we had the good fortune of traveling with Stephen O'Meara of *Sky and Telescope*. Stephen taught us nothing is as important as just relaxing and really looking at the eclipse and what is happening around you. He only carries small binoculars and camera for photographing people. Forget the cameras, he says.

I decide to not follow his advice: I use a 1000 mm (with extender) Hasselblad on a Sky Patrol, plus manually manage the telescope, view naked eye, view with binoculars, view with telescope (these

(Cont'd p. 5)

three views all offer something very different, all extraordinary). OK, let's see if I can keep my wits under extreme pressure (3.5 minutes of it) and do it right. I set up the camera so I can expose 12 photos, all at f/8 but various speeds all designed to record different aspects of the total eclipse. No one photograph can record it all due to immense contrast differences between outer corona inward toward the prominences. I am determined to change the exposure speeds by feel and sound and keep my eyes on the sun rather than the camera. It worked in Turkey and it should work again.

First contact is about 1:40 p.m. Temperature is 77 degrees in the shade on my Radio Shack digital thermometer. I record everything on a little cassette recorder. I want my eyes on the sun full time when we have total. No writing allowed. The temperature begins falling immediately, eventually settling at 57 degrees before this is over.

I see the long lens on the camera has moved way west and is about to hit the mount. I do the flip of the mount and all is well. Tracking fine, more shake than I like, but I remember O'Meara. I have to remember that if something goes wrong, don't fix it, ignore it. The photo in the mind is the essence of this experience.

We have another 1 ½ hours before total, so people are talking, some of us keep checking the gear. The kudu are now walking across the lawn looking at our three-legged big eyed wildlife (scopes and cameras) while the Black African staff are curious and being lectured by the safari-vested eclipse geeks.

Ten minutes before total things get weird. The light changes and humans know without a doubt they are small and dispensable. I remember this from 1999. It is a dream. None of this light or the way people feel is the world we know. The sky turns deep velvet blue, especially in the north and east. Birds actually start flocking somewhere (to their nests or some tree, I presume). My "operating system" is getting clogged and the full perception and understanding cannot keep up with the change. What is going on here? We are in overload. Perhaps no one will admit it, but we are over our heads in really

understanding what the combination of light change and personal feelings are doing to us.

Two minutes to go. The colors become strangely monochromatic with a touch of late 19th century landscape painting look. Our bodies are in some paralytic state while our brains are in some internal frenzy trying to comprehend the fast changes in light and sound around us.

Second contact! Bailey Beads this time, maybe. Did we miss them? The diamond ring flashes, a brilliant explosion of light passing through one of the moon's mountain valleys and embraced by a ring of inner corona around the rest of the moon. People scream, groan, whoop, while some are silent. Suddenly the sky is black except for the corona that explodes out from the sun in all directions and a strange sunset-like light that surrounds us 360 degrees at horizon level. Prominences are so huge they are easily seen naked eye. Jupiter emerges and shines brilliantly. With binoculars, the corona is in the form of a Christmas tree star or old fashioned compass. Shooting out from north, south, east and west are extraordinarily long star like wedge shapes reaching deep into space. There are several smaller points between them that also reach out as companions. The corona is huge and unlike Turkey 1999 this one does not twist and turn with color. It is elegant, silky smooth and white, more than a whisp, but less than a solid, a million degree angel star presiding for little more than three minutes over the heavens. There is no star, galaxy, nebula, supernova that can equal this grace in the sky.

A minute after the total eclipse starts, there is silence. No talk, no birds. Dead silence. The telescope reveals the moon passing over the sun, beginning to cover the monster prominence that first emerged but revealing on the opposite side a complex of new prominences that cling to the limb of the sun.

Suddenly, the diamond ring gives us a second show for a moment and the lights come on. The show is over. There is extended hugging. People start comparing impressions of what they saw. It goes so fast. Where do we go for the next one?

In the excitement, I forgot to take the solar filter off the Hasselblad.

No pictures.

Thanks, Stephen O'Meara.

I don't really care.

Additional photographs may be found at <http://www.skybones.com>.

>> DEADLINE FOR AUGUST 2001 ISSUE: 4 PM AUG. 3<<

E-mail articles to Editor. Call to schedule late submissions.

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Notify the Treasurer. Include your full name and new street address. If changing an e-mail address, specify whether you want to add, modify, or delete an e-mail address.

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NHAS Upcoming Events

Vulcan Death Star, July 13, St. Anselm

Event	Date	Time	Location
July Meeting	July 13	7:30 pm	St. Anselm, Goffstown, NH
Coffee House	July 20	dusk	YFOS site
ATM Meeting	July 22	TBA	Lopez Barn, New Boston, NH
Photo Comm.	TBA	TBA	YFOS site
CMP Skywatch	Aug. 3	9:00 pm	Planetarium, Concord, NH
August meeting	Aug. 10	7:30 pm	Planetarium, Concord, NH