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BULLETIN

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A Call for More Scientific Truth in Product Warning Labels

by Susan Hewitt and Edward Subitzky
reprinted from **The Journal of Irreproducable Results**

As scientists and concerned citizens, we applaud the recent trend towards legislation that requires the prominent placing of warnings on products that present hazards to the general public. Yet we must also offer the cautionary thought that such warnings, however well-intentioned, merely scratch the surface of what is really necessary in this important area. This is especially true in light of the findings of 20th century physics.

We are therefore proposing that, as responsible scientists, we join together in an intensive push for new laws that will mandate the conspicuous placement of suitably informative warnings on the packaging of every product offered for sale in the United States of America.

Our suggested list of warnings appears below.

CAUTION: The Mass of This Product Contains the Energy Equivalent of 85 Million Tons of TNT per Net Ounce of Weight.

WARNING: This Product Attracts Every Other Piece of Matter in the Universe, Including the Products of Other Manufacturers, with a Force Proportional to the Product of the Masses and Inversely Proportional to the Distance Between Them.

WARNING: This Product Warps Space and Time in Its Vicinity.

HANDLE WITH EXTREME CARE: This Product Contains Minute Electrically Charged Particles Moving at Velocities in Excess of Five Hundred Million Miles Per Hour.

CONSUMER NOTICE: Because of the "Uncertainty Principle," It Is Impossible for the Consumer to Find Out at the Same Time Both Precisely Where This Product Is and How Fast It Is Moving.

ADVISORY: There is an Extremely Small but Nonzero Chance That, Through a Process Know as "Tunnelling", this Product May Spontaneously Disappear from Its Present Location and Reappear at Any Random Place in the Universe, Including Your Neighbour's Domicile. The Manufacturer Will Not Be Responsible for Any Damages or Inconvenience That May Result.

READ THIS BEFORE OPENING PACKAGE: According to Certain Suggested Versions of the Grand Unified Theory, the Primary Particles Constituting this Product May Decay to Nothingness Within the Next Four Hundred Million Years.

THIS IS A 100% MATTER PRODUCT: In the Unlikely Event That This Merchandise Should Contact Antimatter in Any Form, a Catastrophic Explosion Will Result.

NOTE: The Most Fundamental Particles in This Product Are Held Together by a "Gluing" Force About Which Little is Currently Known and Whose Adhesive Power Can Therefore Not Be Permanently Guaranteed.

ATTENTION: Despite Any Other Listing of Product Contents Found Hereon, the Consumer is Advised That, in Actuality, This Product Consists Of 99.9999999999% Empty Space.

NEW GRAND UNIFIED THEORY DISCLAIMER: The Manufacturer May Technically Be Entitled to Claim That This Product Is Ten-Dimensional. However, the Consumer Is Reminded That This Confers No Legal Rights Above and Beyond Those Applicable to Three-Dimensional Objects, Since the Seven New Dimensions Are "Rolled Up" into Such a Small "Area" That They Cannot Be Detected.

PLEASE NOTE: Some Quantum Physics Theories Suggest That When the Consumer Is Not Directly Observing This Product, It May Cease to Exist or Will Exist Only in a Vague and Undetermined State.

COMPONENT EQUIVALENCY NOTICE: The Subatomic Particles (Electrons, Protons, etc.) Comprising This Product Are Exactly the Same in Every Measurable Respect as Those Used in the Products of Other Manufacturers, and No Claim to the Contrary May Legitimately Be Expressed or Implied.

PUBLIC NOTICE AS REQUIRED BY LAW: Any Use of This Product, in Any Manner Whatsoever, Will Increase the Amount of Disorder in the Universe. Although No Liability Is Implied Herein, the Consumer Is Warned That This Process Will Ultimately Lead to the Heat Death of the Universe.

HEALTH WARNING: Care Should Be Taken When Lifting This Product, Since Its Mass, and Thus Its Weight, Is Dependent on Its Velocity Relative to the User.

IMPORTANT NOTICE TO PURCHASERS: The Entire Physical Universe, Including This Product, May One Day Collapse Back into an Infinitesimally Small Space. Should Another Universe Subsequently Re-emerge, the Existence of This Product in That Universe Cannot Be Guaranteed. ✪

BULLETIN

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Deadline for the February issue is Dec. 15th.

Commencement avec l'annee 1992, tous les membres du Centre de Québec et du Centre Français de Montréal, et les membres français non attache a un centre, qui désirent recevoir le Annuaire Astronomique à la place du Observer's Handbook pouverront expédier leur Observer's Handbook et une requête au Office National. Les membres non attache a un centre pouverront indiquer leurs préférence sur leurs forms du renouvellement.

Letters to the Editor

Palms Up!

Upon reading the June 1991 issue of the **BULLETIN** I cam across the article on page four by Brian McCullough, *Planets in the Palm of Your Hand*. What he said was nothing new to be, although I have used this technique for a more practical application.

I am an enthusiastic amateur astronomer (and have been for sixteen years). In 1979 I began to observe the Sun by the method of projection. Using a 60 mm refractor, the standard for most beginners, I projected the Sun's image onto a screen whereby I drew the sunspots as the Sun's full disk mapped out the circle I had drawn on the paper.

In 1985 I purchased a C8. Observing the Sun with such a telescope is exciting (provided you have a proper solar filter), but if you want to accurately draw sunspots in their correct positions it is a different story. How can one make quick, yet accurate drawings of the Sun?

The method that I discovered is as follows. Make sure that the telescope is both properly filtered and polar aligned and then point it at the Sun. Allow the Sun to drift to determine east and then use the declination drive to determine north. Next, place a drawn circle, which already has marks to indicate north and east, under the star diagonal. I use a circle that is about nine centimetres in diameter. Use an eyepiece which will allow the observer to see the entire Sun (a 40 mm eyepiece works well for a C8). While holding the paper ten to fifteen centimetres below the diagonal, look through the eyepiece while keeping the other eye open. Your brain will superimpose the two images!

You can now adjust the distance of the paper from the eyepiece until the size of the Sun and the size of the circle match and then rotate the paper to get the correct alignment. One can now quickly and accurately draw the sunspots in the correct positions.

I have used this method for the past six years with great success. In fact, I can now position a sunspot group with an average accuracy of $\pm 2°$ in both heliographic latitude and longitude. (It should be noted that to actually determine the heliographic latitude and longitude of a sunspot based solely on a sketch requires knowing some additional pieces of information as well as performing some mathematics.)

There is one interesting effect that occurs as a result of this method. One is able to view one's dead spot which is caused by the spot on the retina where the optic nerve joins the eye and where there are no light sensitive cells. This occurs, for the average person, at a point located about 5° from the center of vision. An object located at this position cannot be seen. You don't notice this in ordinary life because you have two eyes. Even if you only had one eye, it would be constantly moving so that you don't notice the dead spot. However, when viewing with this method it is possible to see it. Why? I am not a doctor, but I suspect it is due to viewing two separate images at the same time.

Todd Lohvinenko
1836 Legion Avenue, Winnipeg,
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Across the R.A.S.C.

Vancouver

The summer started with the question: "How did the universe begin: with a whimper or a bang?" Dr. Mark Halpren gave us the answer when he presented his data confirming the big bang theory at our May meeting. The General Assembly was a perfect opportunity for members of the Vancouver Centre to meet other society members from across Canada and to explore different scientific facilities within our own back yard. Astronaut Bjarni Tryggvason of the Canadian Space Agency presented the Ruth Northcott lecture at the G.A. dinner, speaking on "Manned Space Flights" (coming to a *Journal* article near you).

The members' meeting in June was a great chance for a lot of members to share their latest winter activities. Duncan Munro showed us an easy way to create a null test for large mirrors using the Mosby-Popov test. Rajiv Gupta treated us to his latest deep-sky astrophotos after describing his most recent experience in developing and using a film hypering tank (with help from Duncan and Greg Soderling). Lance Olkovick and Gary Wolanski gave a blow by blow description of the construction of their 25" Dobsonian. Fuzzy, upside-down G.A. slides were presented (only two with the lens cap on!). Dave Dodge showed the latest N.A.S.A. video of Venus' topography based on Magellan data and lastly, a special presentation on CCD's was offered by Greg in the Gordon Southam Observatory where astro-cookies and astro-coffee were served.

Just when you thought that it could not get any better, July's meeting was a special showing of the film "For All Mankind" on the Apollo lunar program, although a lot of us were getting "fried" down south hoping for those elusive seven minutes of darkness.

The feature speaker in August was Terence Dickinson, author of *Nightwatch: An Equinox Guide to the Universe*. His presentation, "150 Years of Trends and Traditions in Amateur Astronomy" offered a new appreciation for the enjoyment of observing. In August we also had a mini-Manning Park Star Party following the near dismal conditions experienced on top of Mount Kobau at the Mount Kobau Star Party. A full four nights of clear skies was a perfect end to an almost washed out summer. ✪

Astronomy is the most ancient of all sciences, and has been the introducer of vast knowledge.
Martin Luther
German Theologian (1483-1546)

The 1991 General Assembly

Steven Spinney
Toronto Centre

On May 17th-2Oth, 1991, the Vancouver Centre hosted the 1991 General Assembly of the Royal Astronomical Society of Canada. This annual gathering of the Society, gives its members from over twenty centres a chance to get together and renew old acquaintances and meet new friends. During the weekend you really get to understand the diversity of the R.A.S.C.'s membership. You can begin to see the different interests, goals and activities that centres use to pass on their love of astronomy to their fellow members and the public.

The University of British Columbia was the venue for most of the weekend activities. This large and picturesque campus is the third largest university in Canada and the oldest in the province. Most of the activities at the G.A. occurred within a short walk of the Gage Residences. As is typical of B.C. weather, it was overcast all weekend and the Sun was not seen until Monday afternoon when most of the delegates had gone home.

Registration and display competition set-up started early Friday morning. A fair number of National Council members arrived in Vancouver around 11:00 A.M. and they were met by members of the Vancouver Centre and driven to the U.B.C. campus just in time for part one of the "Never Ending National Council Meeting". Although these meetings tend to be long, it has to be remembered that as a council we really only get together three times a year to discuss Society business. A lot of preparation goes into these meetings and with over thirty executive and centre representative members in the room there are always a lot of different views and opinions that must be aired.

The traditional G.A. pyramid. Bottom row from left to right: Don Scarlett (Calgary), Raymond Auclair (Unattached), Glenn Hawley (Calgary). Middle row: Brian Chapel (Victoria), Don Hladiuk (Calgary), Merak Chan (Calgary). Top row: Lorna Hawley (Calgary), Marla Forth (Calgary). Photo by Mary Lou Whitehorne.

That evening, a tour was held at the facilities of the MacDonald Dettwiler Company, which is world famous for its work in satellite imaging and in data processing systems for surveillance and meteorology satellites. This tour was held in conjunction with the wine and cheese party. This is usually the first time that delegates have a chance to get together and meet one another in an informal setting. Following the return to the residences, the U.B.C. Department of Geophysics and Astronomy opened their observatory to G.A. attendees. As was usual this weekend, the clouds did not co-operate and so no viewing was done.

The H. R. MacMillan Planetarium was the setting for the barbecue and the slide and song contests. The dome is shaped like a native hat and is "guarded" by a sculpture of Cancer the crab. Photo by Patrick Kelly.

On Saturday, the paper sessions were held. This is the time when G.A. attendees get a chance to see what other members of the R.A.S.C. are doing in their astronomical activities. Many talks were given on a wide range of topics from Leo Enright's "Monitoring the Sunspots of Cycle 22" to Don Hladiuk's "Medicine Wheels in Western Canada." Chris Brown from the Winnipeg Centre and Mary Lou Whitehorne from Halifax have been doing a joint project called "Spectroscopic-Photometric Observing Project on the Binary Be Star ϕ Persei." Although separated by a couple of thousand kilometres, they were able to combine Chris' photometric observations with Mary Lou's spectroscopic work on Be stars.

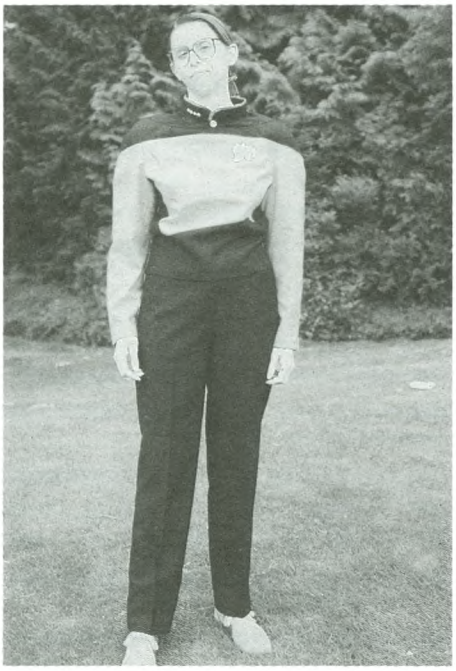
That evening, the banquet was held in the Graduate Student Centre. Following that, award ceremonies were held. Don Hladiuk from the Calgary Centre and our own Ian McGregor both received National Service Awards for their many years of dedicated service to their centres as well as to the Society.

The Ruth Northcott lecture was given this year by Canadian astronaut Bjarni Tryggvason. His talk on "Manned Space Flight" was well received as he gave a Canadian perspective to the subject.

First on the agenda for Sunday was the Annual General Meeting. The Society's financial and officers' reports were presented. Mary Anne Harrington, our First Vice-President and editor of *Scope*, was appointed as the Society's Recorder. We all wish her well in her new position. After the A.G.M., a short(?!) council meeting was held to elect committee members and chairpersons.

A tour of the Tri-University Meson Facility (TRIUMF) was next on the agenda. The TRIUMF facility houses the world's largest cyclotron. This unit accelerates negatively-charged hydrogen ions to 75% of the speed of light. Some of the short-lived particles, called pions or pi-mesons, that are created are used to probe the structure of matter or in the treatment of various kinds of cancer.

Sunday evening, the H. R. MacMillan Planetarium was the site of a salmon barbecue. Before dinner, we had a chance to see a special presentation of the show "China Stars" which explored the contributions made by Chinese skywatchers over a 1200 year period. This was followed by a delicious salmon barbecue. Next, in the planetarium auditorium, we had the traditional Murphy slide contest where a variety of photographic bloopers entertained us.



Captain Whitehorne of the U.S.S. Halifax Centre beamed in for the activities. Photo by Don Hladiuk.

Over the previous couple of days, Guy Nason, our Members' Night Chairperson, had been

(continued on page 8)

The R.A.S.C. Eclipse Expedition

Dan Falk
Halifax Centre

Even when I look at the slides and the videotape, it's hard to believe I was really there. But after months – years even – of anxious waiting, the time finally came for what they were calling the "eclipse of the century". I went on the R.A.S.C. national expedition, from Toronto, along with 164 other enthusiasts from across the country.

On the morning of Wednesday, July 10th, a specially chartered DC-9 took us to Puerto Vallarta on Mexico's west coast (all the hotels on the Baja Peninsula – our eventual site – had apparently been booked). It was very hot (high thirties and humid), but we were told that at our site in Baja we could expect dry air and clear skies. At an evening presentation in our hotel, organizers Michael Watson, Randy Attwood, and Steve Dodson gave us a look at the mechanics of solar eclipses and told us more about what we could expect to see on "eclipse day", now just a day away!

Eclipse day, Thursday July 11th, saw us up at 3:00 A.M. for an early breakfast and a ride back to the airport. Our plane carried us across the Gulf of California, with the Sun coming up just before we landed in Los Cabos, at the southern tip of Baja California. Six buses then took us forty kilometres north to our site, a soccer arena in the small town of Santiago. With four Mexican soldiers watching from the sidelines, we set up our telescopes and cameras, eager for the "first bite" to be taken out of the Sun, which was now high in the eastern sky. Cheers rang out at first contact (10:25 A.M. local time) and the shutters started snapping.

However, as the partial phases continued, a potential problem started to worry us: clouds! The sky had been perfectly clear as we were setting up, but now a buildup of cumulus clouds overhead was threatening to obliterate our view. With totality now just minutes away we were not sure how much, if anything, we would be able to see through the clouds.

Shouts of "Naked eye crescent" and "Bailey's beads" hailed the imminent start of totality (second contact) which came just after 11:49 A.M. And then the Sun was gone. Fortunately for us, the clouds were moving, and there were a few breaks between them. Whenever there was a gap in the clouds, the inner corona and two giant prominences appeared, accompanied by ecstatic screams and the clicking of shutters. While this was happening the temperature dropped from 36° to a relatively comfortable 28°.

Though the first diamond ring was marred by clouds, a well-placed gap passed by in time for third contact, and a spectacular diamond ring rewarded us as the Sun reappeared, and the Moon's shadow continued on its eastward path. Totality had lasted just under seven minutes. And then, naturally, the sky began to clear up! (The clouds, we decided, were probably not a coincidence – they must have been caused by condensation as the Moon's shadow swept over our valley, and the temperature dropped accordingly.)

After the final partial phases were over, the buses returned us to Los Cabos, where a sunset dinner cruise around the spectacular rocks off the cape made a fitting end for the expedition. We spent the night in the air, bound for Toronto.

Perhaps things could have gone better. We did not see any stars or planets during totality, or the full corona against a dark sky, but no one spoke of disappointment. We were there. We witnessed an awesome phenomenon, and it will be a long time before most of us can expect to see such an incredible sight again. ✪

An Encounter With Totality

Bruce W. Shier
Calgary Centre

They say you don't really appreciate something until you lose it. The same can be said about something you almost lose.

Helga and I started planning for the July 11, 1991 total solar eclipse one and a half years before the event. Because of our love of Hawaii, and Kailua-Kona in particular, neither of us really gave Mexico a second thought. We both knew that our encounter with totality would be in Kailua. With airplane, hotel and car rental booked well in advance it was only a matter of awaiting the fateful day.

We arrived in Kailua on June 24th and immediately set about the first order of business, acquiring a rich golden-brown tan, pool side. In contrast to winter time, the town was dead quiet. It was interesting to watch things come alive as July 11th approached. They were expecting an infusion of between 40,000 and 60,000 ecliptophiles with massive traffic jams on their narrow roadways. The authorities were warning locals to stay home eclipse morning as there was virtually nowhere on the island from which the event could not be viewed. The exceptions, of course, were from behind a palm tree and under a cloud. Highway speeds of 10-25 km/h would have to be tolerated.

We attended an eclipse seminar given by Wayne Barnes, a local amateur astronomer. It was interesting to learn about an ancient Hawaiian heiau (place of worship) in the Waikoloa area which is the Hawaiian equivalent to Stonehenge. Not only was the greatest collection of modern astronomical instrumentation, located on Mauna Kea, directly on the path of totality, but also one of the most ancient astronomical sites as well. He warned photographers that while Kailua would be a great spot to view totality, it might not be the best photographic site. Apparently early morning heating of the atmosphere over the Hualalai volcanic peak can cause an inversion. Since photography was very high on my agenda, we began to scout viewing sites in the Waikoloa area. While Waikoloa did not offer precise center line alignment, it had the highest rating for favorable weather.

We picked four sites. The primary site was just above Waikoloa on the Mamalahoa Highway. The shoulder was wide and grassy, and the Sun would clear a nearby cinder cone by 06h15. With an elevation of over 750 metres, we had a great view of the Kona coast below and the ocean over which the Moon's shadow would approach at 9000 km/h. Local amateur astronomers convinced us that we should be settled at our chosen site twelve hours before first contact to avoid delays and disappointment.

July 10th took forever to arrive. Kailua was really bustling now, however we didn't really feel that things were as bad as the warnings. I wondered if 7000 rental cars on the road would really create the anticipated traffic jam. I had yet to meet a single local who planned to drive to a high percentage viewing area. After three straight days of Sun and clear skies, cloudy Kailua made me nervous. I was glad that we had decided on sunnier Waikoloa. We arrived at our cloudy Waikoloa site at 17h00 after a short thirty mile drive from Kailua. There was a definite air of anticipation along the highway as hundreds of bivouacs were already in evidence. There were easily two dozen camps along the highway within view of our site. Highway traffic was light. The cloud didn't really concern me because the late afternoon cloud of Kona had always yielded to clear skies over night.

At 18h30 a couple, John and Rachel Kasianowiuz, and their friend David Meltzer, pulled in behind us. John and Rachel, from Maryland, had scouted the site and had just picked up David at the airport. David, a New Yorker, is a theoretical physicist at the University of Florida in Gainsville. His immediate con-

cern was to locate our exact position on the island so that he could complete precise calculation of the four contact times for our location. Each to their own! Anyway they were great eclipse buddies and we all had a great time.

That night was easily the most anxious and depressing one I have ever experienced. Total cloud cover persisted throughout the night and at 4h00 it began to rain. But it NEVER rains in Kona! Highway traffic was heavy all night and our site began to fill up with late arrivals. Optimism faded as I admitted to myself that there was an excellent chance we might not see the eclipse at all. By 6h00 we were desperate. The rain had just stopped, but there was not a stitch of clear sky to be seen. I told Helga that if it didn't clear by first contact, at 6h30, we were going to stuff the car and become true eclipse chasers. We might just as well miss the eclipse elsewhere as here.

6h30... First contact and still no sight of the Sun. There were, however, a few very small patches opening up in the cloud cover. The local radio station reported totally clear skies at Captain Cook, but that was 100 kilometres south. Helga thinks we should stay where we are, and I want to chase, but in which direction? From our vantage point we could see for miles and everything within view was clouded. Realizing that it was really too late to move, I set about the task of polar aligning, as best I could, by compass and level. We hadn't seen Polaris all night.

7h00... Hey, there's the Sun! It's in the smallest of holes between two cloud banks. The hole cleared a bit and I was able to center the half eclipsed Sun in my telescope. I attached and focused the camera, but the thin cloud in front of the eclipse made focusing almost impossible. I did the best I could and snapped my first picture.

7h15... The partially eclipsed Sun is barely visible in the cloudy hole, which is only two solar diameters large. Things didn't look promising.

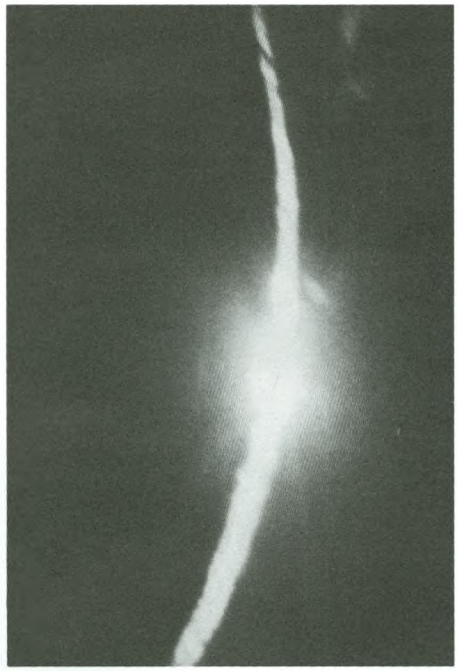
7h20... A melancholy feeling swept over me as I realized that the still partially clouded eclipse, minutes away from totality, was slipping toward the ominous black cloud above it. There would be no chance of us seeing totality. My thoughts turned to Mexico and our club members there. I silently wished them clear skies and better luck than we were having. "Ah come on!" I appealed in desperation. "Give us one little peek." The appeal must have worked because the eclipse miraculously stayed in the now lightly clouded hole and the show that followed will stay with me for the rest of my life.

7h24... Schedule says its time to look for shadow bands. Nothing! It must be too cloudy.

7h27... Next items on schedule are Baily's Beads, Moon's shadow and diamond ring. I removed the solar filter from the telescope and set the camera exposure to 1/500. Timing will be critical as the Moon's shadow comes from the southwest while Baily's Beads and the diamond ring are at the Sun in the northeast.

There is an eerie darkening but no evidence of an approaching shadow. Facing north I glance southwest for the shadow then quickly northeast to the Sun. With remote shutter release in hand I repeatedly glance between the two views. I don't want to miss a thing. There is a noticeable chill in the air and it has become very calm.

It is getting quite dark and the Sun is a very thin crescent, but no shadow. Snap. Look, the



The diamond ring at second contact from Mauna Lani, Hawaii. The exposure was for 1/500th second on Fuji Super HG 400 film. Photo by society member Osao Shigehisa who had travelled to Hawaii from Japan.

Sun's crescent is getting thicker! Is that the Baily's Beads? Snap. Still no shadow, must be too cloudy. The Sun's thickened crescent has now collapsed to extreme thinness. What can that mean? Baily's Beads? Snap.

Now the crescent limbs are collapsing toward each other. That's got to be the diamond ring! Snap.

Blackness, the Sun is gone. But wait, look at the corona build! We are actually seeing totality, and through cloud! Snap. Snap.

Oh! Wow! Look at the prominence on the eastern limb. It's naked eye and gigantic. Snap. Snap. Snap.

What a sight! Without the benefit of prior knowledge this beautiful thing would indeed be terrifying. I too would have been one of the ancient Hawaiians shooting flaming arrows into the sky to re-ignite the Sun.

7h30... John, "One minute, 30 seconds." Bruce, "To what?" John, "Third contact."

Mid-totality and my carefully planned schedule was in disarray. Binoculars, where are the binoculars? In the car? Helga! Oh good, she's got them around her neck. Quick, let me have them. Spectacular, awesome! Where are those adjectives when you really need them. I couldn't believe what I was seeing! Three prominences and a corona with streamers which, through cloud, gave the totally eclipsed Sun the appearance or a Walt Disney characterization.

Not knowing what effect the clouds would have on my planned exposures, I snapped two sequences of shots bracketing the exposure from 1/500 to 1 second. Snap. Snap. Snap. What's the exposure count? Oh no, its thirty-six! I'm out of film. Just what Alan Dyer had warned us against in his *Astronomy* magazine articles.

"30 seconds... 15 seconds... 5... 4... 3... 2...1...", John announced. FLASH! Someone just turned on the lights.

We cheered, shouted and clapped! Rachel revealed a relieved smirk. She had insisted on Hawaii over Mexico. John continued to pace. David exhibited symptoms of annoyed disgust. His precise contact calculations may have been off by half a second. What can I say about Helga's glassy gaze? Did I really see what I just saw? Whew! I want a replay. "Where do we meet for the next one?", Rachel questioned.

Back in Kailua, where the skies had been clear, the favourite question was, "Did you see the eclipse?". One British gentleman in the elevator responded, "No, and I don't want to hear about it either." His tour group of 750 had been totally clouded out.

The wife of another fellow from New Jersey had expressed no interest in the eclipse and was not even going to get up for the event. If she made the effort to open the night shutter of her Hotel King Kamehameha room, she would have witnessed the whole show from her bed. I hope to learn someday whether her husband and his eclipse chasing buddies found the eclipse. Like us, they were heading to Waikoloa!

Kyle Martz, from Piedmont, California, acted as Minister at the wedding of his best friend. The ceremony was held at the City of Refuge during totality. His final words, "...with a new beginning and a new life, I present Mr. and Mrs...." coincided precisely with the sunlight flash at third contact. Two days later he was still flying high.

I wasn't around for Pearl Harbour, but I do remember clearly the assassination of President Kennedy. I will also always remember where I was during the Great Total Solar Eclipse of July 11th, 1991, and that we almost lost it. ✪

Trip to Totality: One Person's Experience

Ulrich Haasdyk
Calgary Centre

The Sun was reappearing from its hiding place behind the Moon on that cold morning of February 26th in 1979. I had travelled from Vernon, B.C. with a group of enthusiasts to a private observatory located at Goldendale, Washington. The peopled hillside, facing east toward the returning Sun, was wild with excitement. However, the full glory of totality, that apparition of the solar corona in all its beauty, had for the most part escaped us because of high cloud. I thought of the day twelve years hence when I planned again to be in the Moon's shadow, whether in Hawaii, Baja or Mazatlan.

The years passed ever more quickly (I suppose one sign of age) and as the time came near, I filed my trip plans with a joint group made up from the R.A.S.C. and the A.S.C., led by Don Hladiuk and Bill Peters. Not wishing to miss this opportunity, I sent in a deposit to Let's Talk Travel in February of 1990, a full seventeen months before the event! The itinerary included a flight to Mazatlan and a bus trip to the central line on eclipse day. Excitement ran high as the time drew near. Of course, many of my friends could not imagine spending that much time and effort on an event lasting less than seven minutes. They calculated the cost of the trip in dollars per second, but I could not help wondering how many of them would become eclipse chasers had they been given the opportunity to see their first, as I had in P.E.I. in 1972. It gets in the blood!

Arrangements were finalized and July 9th, 1991, the day of departure, came for my four day excursion to the tropics and a date with a syzygy. Sid Lee arrived for me and my luggage at 4:30 A.M. and we were off to the Calgary airport. Delta flight 1795 took us to Los Angeles with a transfer to flight 454 into Mazatlan. We met a number of our compatriots as we flew south – the MacDonalds (John and his son Stuart) and David Ewing and friend Karen. It was partly cloudy as we arrived at eclipse time minus two days. The heat and humidity hit us in waves as we walked to the terminal and customs. This was followed by an eye-opening bus trip to the Golden Zone and our room at the Playa Mazatlan; eye-opening in terms of the poverty and general lack of cleanliness.

A day was spent at the hotel acclimatizing. "Playa" means beach, and on the beach it was, and in the surf and swimming pool too! What a beautiful setting. The surf was great, as was the food in the hotel. A city tour the following day showed the reality of typical Mexican life. The inner city was crowded and less than clean. Although warned about eating anything not cleaned and rinsed in distilled water, Montezuma had his revenge on many of us anyway.

Bargaining is a way of life, where the buyer begins at a fraction of the price tag and eventually a compromise is reached somewhere in the middle at which both the buyer and seller are reasonably happy. The most fun was with the beach hawkers with their blankets, T-shirts, hats and trinkets. Those of us on the beach became first name acquaintances with Henry and his friends, whether we bought or not.

Noon, eclipse day minus one, was sunny with cloudy patches, but very hopeful. Noon also brought a phenomenon I had not experienced before. I suddenly noticed that our tour members threw shadows directly downward and vertical poles had no shadows at all! The Sun was indeed directly overhead as we were just south of the Tropic of Cancer.

Calgary Centre members in Mexico.
Photo by Dave Conley.

Eclipse day dawned cloudier than we had hoped but our meteorologists were optimistic. Well before dawn we awoke, had eaten breakfast, and were waiting impatiently for our tour buses to arrive. The armed military escort, with rifles and other weaponry, was prepared to accompany us to our viewing site since a number of dignitaries were to accompany us. The bus leaders met for a short strategy session and at 6:00 A.M. we left for Palmar de Cuautla, near the central line and about 150 kilometres south of Mazatlan. The trip was an adventure in itself, with the narrow roads, bridges with very low guard rails (if any at all) and the incessant stream of traffic, mostly long distance freight trucks. By 9:30 we had arrived at Concepcion, a state crossing point, and an opportunity to stretch our legs and do a little sightseeing along with some shopping in the village. The leaders gathered and decided that the clouds to the south contained ice crystals and would not dissipate by noon. Therefore a decision was made to backtrack to the north and meet the coast at the town of Las Cabras. So it was.

With our gaggle of nine tour buses, along with seven already there, we must have been over 400 "gringos" collected at the small hamlet of Las Cabras, likely more foreigners than ever before in that place at any one time. We were warned not to set up any heavy equipment since a move might be called for at a moment's notice. However, the clouds seemed to dissipate and the sky in the Sun's vicinity almost cleared completely by the time of first contact at about 10:33. A number of high bands of cirrus cloud threatened shortly before totality but they also cleared in time. With a few minutes to go and the Sun's diminishing crescent visible through filters, the deciduous trees and other sources of small apertures threw bright crescent shapes among the shadows. Increasingly, the palm trees did not! My fingers, when extended across the crescent, gave very fuzzy indistinct shadows, but those shadows became clear and sharp when my hand was turned 90° to align my fingers with the crescent. Then, some shouts of "Shadow bands!" which a few people saw, but most did not.

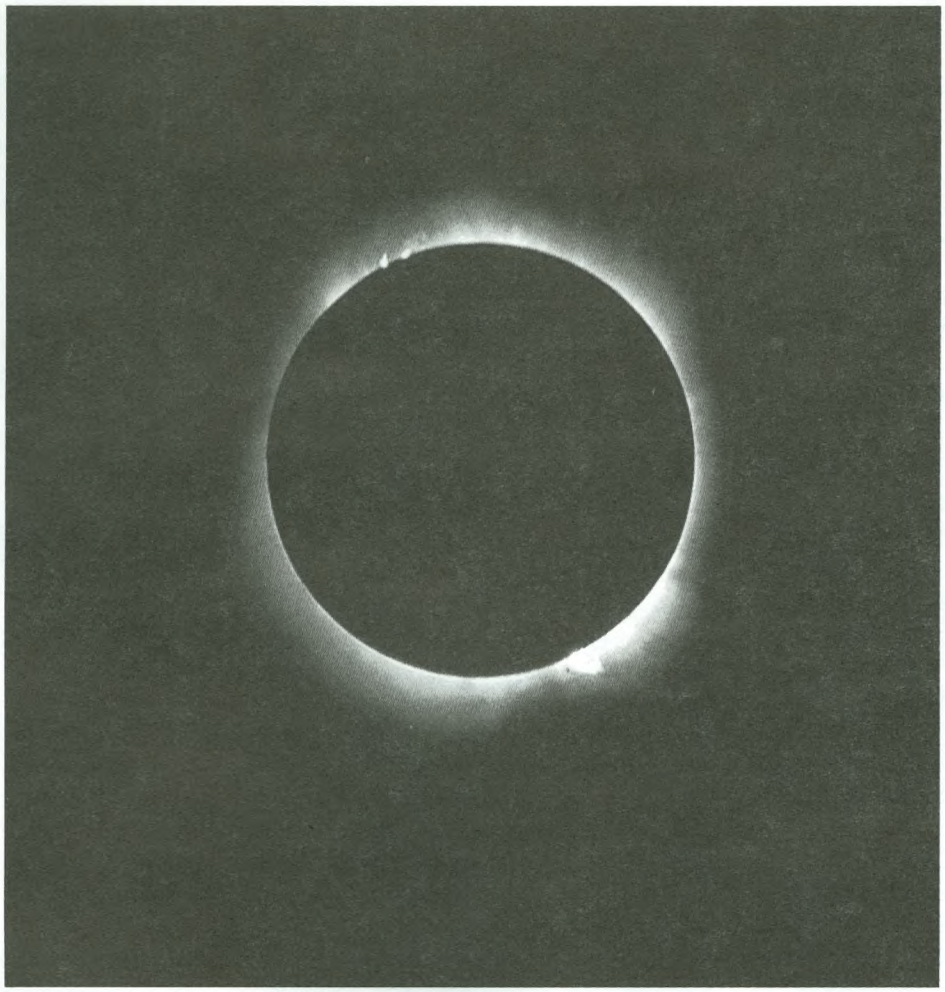
Just before 12:01 the surroundings darkened with second contact. The Sun was hidden and the land and seascape took on a greyish hue, but it was not exceedingly dark. In fact, it was the "brightest" eclipse of the three witnessed by this writer. There were cumulus clouds all along the horizon, both seaward and inland, then a band of clear sky and more clouds to perhaps 45° up. Lightning flickered within the towering cumulus to the north throughout totality. Awestruck reactions to this unearthly appearance resulted in a very brief intake of breath, then in whoops of delight and wonderment when the whole scene of totality unfolded.

In the centre of the heavens (literally, for the Sun and Moon were at the zenith) the spectacle could be observed lying flat on my back with my trusty pair of 8x50 binoculars. The corona leaped out at the observer as the last of the Sun's bright surface disappeared. As well, there were several pink prominences visible immediately, like

little flames on both sides of the Moon's outline. One of these, observed at the point where the last of the Sun had shown itself at the leading edge of the Moon, was estimated to be about one seventh of the Moon's diameter or almost 2.4 arc-minutes above the Sun's surface. At the trailing lunar edge another was visible even though the Moon's edge extended about 1 arc-minute over that part of the solar limb. After enjoying the spectacle for a few seconds, I quickly took over ten exposures with my camera setup: a 200 mm lens at f/8 with exposures from 1/250th of a second up to 6 seconds on ASA 64 Kodachrome film. One minute later I was settled back on my blanket with my binoculars. Only later did I realize that my camera was oriented with the top of the frame being south! This had been due to the Sun being directly overhead. From that point on I had to consciously determine my directions and I ended up confusing myself at times, especially when viewing the final photographs.

What a view! With the naked eye, the Moon seemed to occupy a vacant hole in the sky, much as the ancients must have imagined. The Moon was pitch black, with the pearly glow of the corona surrounding it. With my binoculars there were fine filaments visible at the lower solar latitudes out to about one and a half solar diameters with even longer streamers at the Sun's higher latitudes. Fine detail in these regions could be made out to about three solar diameters where it became very faint and delicate. The fact that the longest streamers were around the poles was an observation I had not expected. At the time the Sun was a year or so past its most active period. If the Sun were at maximum activity, one would expect a large symmetrical corona. On the other hand, at minimum there should be more activity near the solar equator.

A search for the planets revealed bright Venus within an area that was thinly clouded. Towards the Sun was found Jupiter, then Mercury, nearest of all to the solar disk. Mars was lost in the cloud and a cursory search revealed no visible stars. A shout, "Three minutes into totality!". What a treat to be able to relax and take the time to observe, rather than watching through the viewfinder of a camera as I had done on previous eclipses. Just past mid-eclipse, I thought I was imagining it but, no, the west limb of the Moon was growing in brightness. The seconds and minutes went by and I alternated my observing between naked-eye and binoculars. The prominence on the west limb increased markedly in size as the end of totality neared. The limb brightened, then became brighter still with the corona paling in comparison, then a shout of "Third contact, filters!". The solar surface had reappeared as another diamond with the bright inner corona still visible. With a filter and naked eye I was unable to find any Baily's beads. The solar crescent reappeared, and with it more cries of "Shadow bands! Shadow bands!", apparently more clearly seen now than prior to totality, although my white beach towel did not show this elusive phenomenon. According to one avid timekeeper, totality had lasted for six minutes and twenty-three seconds. Later, from my photographs, I measured the angle between second and third contacts to be about 140° along the northern limb of the Moon, indicating our position to be well north of the centre line.



Just before third contact. A 1/125th second exposure using Kodachrome 64 on a 4" f/11 Meade at prime focus. Photo by Dan Hladiuk.

Understandably, the partial phases that followed proved to be anti-climactic, and long before fourth contact lunch was served to a group abuzz with excitement. On the return trip to Mazatlan, I dare say that more than a few new eclipse chasers were born. There is an elusive quality about totality that calls a person back to experience it again and again. A number of our group had been bitten long ago and have up to five to six notches in their belts. Already there were rumblings about the 1994 eclipse in South America and the 1999 eclipse in Europe.

Arriving back at our hotel we learned that Mazatlan itself had been cloudy during totality. We felt sorry for those who felt ill and stayed behind to witness the spectacle from the hotel. However, there was a celebration that evening with a grand and loud Mexican fiesta. The following day there was time to recuperate and do some shopping or relax on the beach before getting ready for our return home.

Saturday, July 13th we had a leisurely time to pack followed by a taxi drive to the airport. While flying back we were treated to a spectacular view of a setting Venus in a bright northwestern sky, while at the same time the ethereal green curtains of an aurora borealis shimmered in the rapidly darkening northeastern sky. It was a fitting end to a successful journey. The 1994 and 1999 eclipses are not far in the future, astronomically speaking. But our eclipse of 1991 has been an experience, the likes of which we will not see again, in terms of length, until my age would be a ripe, old 187 in the year 2132! ✪

News Reaches the Colony

Ed Kennedy
Saskatoon Centre

ROSSE'S TELESCOPE

The Earl of Rosse, who has recently completed another telescope, the largest ever made, alluded at a late meeting in London, to its effects. He said that, with respect to the moon, every object on its surface of 100 feet in height was now distinctly to be seen; and he had no doubt that, under very favorable circumstances, it would be so with objects sixty feet in height. On its surface were craters of extinct volcanoes, rocks, masses of stones, almost innumerable. –He had no doubt that if such a building as he was then in, was upon the surface of the moon, it would be rendered distinctly visible by these instruments. But there were no signs of habitations such as ours – no vestiges of architecture remain to show that the moon is, or ever was, inhabited by a race of mortals similar to ourselves. It presented no appearance which could lead to the supposition that it contained anything like the green fields and the lovely verdure of this beautiful world of ours. There was no water visible – not a sea nor a river, or even the measure of a reservoir for supplying town or factory – all seemed desolate.

(*New Brunswick Reporter and Fredericton Advertiser*, December 26, 1856)

This brief account of Lord Rosse's Telescope recently came to my attention as I was searching a microfilm copy of the *New Brunswick Reporter and Fredericton Advertiser* of December 26, 1856. A report of this nature may have been copied directly from a London paper reaching New Brunswick, then a colony of Great Britain. If so, publication in Fredericton of these details occurred more than a decade later than the date of February 1845 assigned by Agnes Clerke to the construction and completion of this large telescope.

By the mid-19th century, the distance of the Moon from the Earth was known with some accuracy: approximately thirty times the Earth's diameter or 384,200 kilometres. Observers still were striving to see clearly the details of the Moon's structure; a large telescope, of increased size and magnifying power, would assist in achieving this goal. The great Rosse Telescope, with a focal length of 16 metres and an aperture of 2 metres, had a nominal power of 6000x, roughly equivalent to viewing the Moon with the naked eye at a distance of 65 kilometres.

Whether or not inhabitants of the Moon would be seen had yet to be answered. The account of Lord Rosse's telescope stresses the evidence that if there were inhabitants on the Moon, they were not pursuing the same degree of industrialization as had been developed at the time in the British Isles and Europe.

As the 20th century draws rapidly to a close, it remains extremely difficult for us to comprehend the wonder with which astronomers of the previous era viewed the heavens. Nevertheless, although a number of the mysteries connected with the Moon have been removed, the quest for knowledge of the universe is on-going and its creation and evolution are still receiving the attention of astronomers throughout the world.

References:

A Popular History of Astronomy During the Nineteenth Century by Agnes M. Clerke (London, Adam & Charles Black, 1908)

Handbook of Astronomy by Lardner, revised and edited by Dunkin (London, Lockwood & Co., 1875) ✪

The 1991 General Assembly

(continued from page 3)

working very hard on a medley of songs for the song contest. In conjunction with members of the Halifax and Winnipeg Centres he worked long hours into the night to come up with the perfect combination of songs to sweep the audience off their seats and bring fame and glory to the members of the Winnipeg/Toronto/Halifax Clear Skies Memorial Choir. I guess it just wasn't in the stars for us to win. Even though they received a thunderous standing ovation (with coaxing from the choir before they sang), a trio from Halifax (Roy Bishop's wife and two daughters) won by a small margin, in the listeners' opinions. Even with all of Guy's work there was one small factor that he didn't count on. THEY HAD TALENT! Good looks and charm just wasn't enough this day. Just wait till next year!

The workings of the 20" f/15 Cassegrain telescope at the Gordon Southam Observatory are being demonstrated by Dave Dodge (foreground). Photo by Patrick Kelly.

Congratulations should go to the Vancouver Centre, Dave Dodge and members of his organizing committee for doing a superb job in running this G.A. Everyone I spoke to had an exceptional time and is looking forward to next year's G.A. in Calgary. I hope that next year you get a chance to be "Alberta Bound" for the 1992 General Assembly. ✪

Calling All RASCals!

Glenn Hawley and Mel Head
Calgary Centre

Have you ever written a paper and presented your ideas and observations to a group of individuals who share your interest? Perhaps you have a collection of astrophotographs or sketches which no one has seen and you are looking for an opportunity to share them with others. WAIT NO LONGER! YOUR CHANCE IS COMING! Be a presenter at the 1992 G.A. in Calgary from July 1st to 5th, 1992.

Since we have over eight months before the G.A., you have ample time to prepare a paper from scratch if you haven't got one ready to go right now. Your audience will range from the beginner to the pro-amateur and you will have only ten minutes to present your ideas. A maximum of five minutes will be allowed for questions at the end of each paper. A paper submission application form and set of presenter's instructions will be available in early 1992.

In the meantime, if you wish to let us know that you would like to be a presenter, please send us your name, address, a brief abstract (maximum 150 words), and a short biography of yourself. If possible, can you also let us know what presentation equipment you will need. If you get this information to us before the end of February 1992, we will ensure that you receive a presenter's kit. For those who feel that their paper may exceed ten minutes, there will be a few twenty minute time slots available and one criteria for assigning them will be an early request for one with submission of the above information. Send your response to:

R.A.S.C. - Calgary Centre
c/o 1992 G.A. Paper Session
28 Southland Crescent, S.W.
Calgary, Alberta
Canada
T2W 0K3

or via E-MAIL before 29 February, 1992 to RASC@UCNET.UCALGARY.CA ✪

In the path of a total eclipse one has the privilege of sharing the perfect alignment of earth, sun and moon. For a brief interval out of time, the three bodies are frozen in majestic union; then they go on their separate, complicated courses. To participate in that moment of uncanny equilibrium is to have one's faith strengthened in the possibility of equilibrium and to experience the paradox that balance and stillness are to be found at the heart of all change.

Andrew Weil
American Ethnopharmacologist (1980)