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BULLETIN

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Reflections: The Digital Darkroom

Rajiv Gupta
Vancouver Centre
reprinted from NOVA

Astrophotography, like much else around us, has been greatly affected by recent advances in technology. The most visible example is the electronic charge-coupled device, or CCD camera. This type of camera uses a silicon chip, similar to the chip found in a video camera, to record an image digitally.

At first glance, a CCD camera seems to have several advantages over photographic film. First, the detector is much more efficient at recording incoming photons than is film, so exposure times are reduced significantly, often by a factor of five, or more. Second, the image is captured in digital form, so a computer can be used to enhance it. Third, these cameras are relatively easy to use as compared with film, especially hypered film.

These advantages explain the recent burst of interest in CCD cameras. Both novice and seasoned astrophotographers have been attracted to this technology, and recent issues of astronomy magazines have had features on it.

However, (you knew that word was coming if you know how dedicated I am to film technology) CCD cameras do have a major shortcoming, namely the small size of the detector. The CCD cameras currently available to amateurs can cover perhaps a tenth of the area of a 35 mm film frame. Newer CCD cameras are becoming available, but still do not match the coverage of film,

even at prices approaching \$10,000. While it is possible to electronically stitch together several smaller digital images to produce a larger one, this can be cumbersome. If your goal is to photograph large regions of the sky, clearly it is better to take a single one-hour exposure on film, than to take a dozen 10-minute exposures with a CCD camera and paste them together.

Nevertheless, improving an image is tremendously easier to do using a computer than in a conventional darkroom. A good software package for image processing can allow you to remove a scratch or improve an improperly exposed photo in a tiny fraction of the time that it would take using conventional techniques.

Happily, film astrophotographers can now have the best of both worlds by taking advantage of the computer processing that CCD users have always availed themselves of. By scanning either the film or a print, you can convert a photograph to digital form that can then be manipulated by a computer. You can do the scanning yourself, if you buy a film or flat-bed scanner to attach to your computer, or you can have your photos transferred to a Kodak Photo-CD at a retail photo finisher.

I recently bought a computer and flatbed scanner which I have been using to transform my photos to digital form. I am now a strong advocate of this technology. The photos appearing in the 1995 RASC Observer's Calendar were all handled digitally. The preservation of both highlight and shadow detail on the July photo, for example, would have been impossible or extremely difficult without the computer. Besides facilitating image manipulation, the electronic medium allows easy zooming and inspection of any portion of the image.

Nothing in life is perfect, and there are a couple of major drawbacks to the digital darkroom. The first is that a powerful (hence expensive) computer is needed. Depending on the resolution at which the photos are scanned, image files can become very large. My black-and-white images can be as large as thirty megabytes each. They are this big partly because I use medium format film, which has about four times the coverage of a 35 mm film. Also, I use a fine-grain film (Kodak Tech Pan) which records extremely fine detail, so a high scanning resolution is required to preserve all the details. Images from 35 mm negatives would probably be about ten megabytes in size.

To handle image files this large, a fast processor and plenty of memory are highly desirable. Inadequate memory will result in disk swapping, which will greatly lengthen the amount of time needed to do image manipulation. My computer with a 40 MHz 486 processor and 32 Mb of RAM takes three to four minutes to rotate a large image and I am currently contemplating upgrading to a Pentium with more memory. A fast 486 with a large hard drive and at least 16 Mb of RAM is a minimum configuration for serious image processing. [For Mac users, any 040 processor or PowerMac with a large hard drive and at least 16 Mb of RAM would be suitable.—PMK]

Another major drawback to the electronic darkroom is the difficulty in getting a hard copy version of the digital image. One method is to photograph the computer monitor that is displaying the image. You will then have a slide or negative of the computer-enhanced image from

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BULLETIN

is a publication of the Royal Astronomical Society of Canada and is distributed together with the society's *Journal*. It contains articles on current activities of the RASC and its centres across Canada, as well as articles from members and non-members which are of general interest to members of the society. Inquiries about the society should be directed to its national office at 136 Dupont Street, Toronto, Ontario, Canada M5R 1V2 (416) 924-7973.

Cover Picture: A picturesque sidestreet in downtown St. John's. Note the many chimney pots.

Editor: Patrick M. Kelly, RR#2 Falmouth, Nova Scotia, Canada B0P 1L0
E-mail Address: pkelly@tuns.ca
FAX: (902) 423-6672
Phone: (902) 420-7604(w), (902) 798-3329(h)

Editorial Staff: Diane Brooks
Rédacteur pour les centres français:
Marc Gélinas, 11 Pierre-Ricard, N-D-Ile-Perrot
Québec, Canada J7V 8M6
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Letters to the Editor

The Wright Stuff

During a recent observing session with an enthusiastic beginner, I realized how my knowledge of the night sky had grown over the past six or seven years since I first joined the RASC's Toronto Centre, and that the ease with which I am now moving around the night sky is owed to an extraordinary "amateur" and RASC member, Darnley Wright.

A no-nonsense, gruff character with a heart of gold and encyclopedic knowledge of the sky, Darnley took me and a few other beginners under his wing and began to systematically teach us the skill of star-hopping. He started us off with the basics: learning the constellations and the interesting binary or variable stars in each, using naked eye observations and binoculars, then on to deep-sky wonders and star-hopping with a telescope. In these early sessions he refused to discuss using coordinates and setting circles, insisting that we first hone our skills and learn the sky.

How grateful I am to him for the thrill I now feel when I zone in with my scope on a deep sky object without the fussing of coordinates—I feel such a connection with the heavens. I remember one evening having difficulty finding M5, and my absolute amazement when Darnley stood behind me, held the binoculars to my eyes, moved them around a bit and said with total confidence, "There! You should have it now." I wanted that kind of knowledge and recently, when I was able to perform the same feat (although with significantly less confidence) my thoughts were immediately of Darnley.

The Deep Sky Observers Club eventually evolved out of these sessions, with Darnley our official mentor. The night of our first observing session, I arrived and began struggling to lug my new 8" Schmidt-Cassegrain to the site. Several

of the men gallantly offered to assist me and were told, in no uncertain terms by Darnley, that I was to learn to handle it myself. How wise he was! Nowadays, I handle it with ease and do not hesitate to carry it no matter where my site is. Thank you, Darnley!

I wonder how many more beginners would persevere in their studies of astronomy and remain active in the RASC if we had more experienced members to take them under the wing in an organized way. The first month can be lonely and overwhelming for the novice, and the less outgoing feel ignored at star parties and meetings. Darnley's example is worthy of thought.

Mary de Torcat
29-94 Calle Igualdad, Porlamar 6301, Margarita
Venezuela

It Belongs on the Bottom

On page four of the October 1994 issue, I noticed a mathematical error in the article on field rotation. In the second column of that page, the first equation (beginning with "R=") should have "cos D" in the denominator, not in the numerator as printed. The other two equations are correct.

Dr. C. Musès
45911 Silver Avenue, Sardis BC V2R 1Y8 ☼

Items of Interest

"Dence" Asteroid Taken Off List

Jeremy Tatum is pleased to report that asteroid (4340) Dence, named after Canadian geologist Michael Dence, is now officially off the list of inadequately-observed minor planets. Five observations, at magnitude 16-17, were made of this high-inclination object between October 9th and 13th at Klet (Czech Republic) and the United States Naval Observatory. It was in Fornax, very far from the ecliptic near the Fornax-Sculptor-Cetus boundary. (3023) Heard is going to be more difficult to recover.

A Hot Time at Starfest

From Kingston's newsletter: During Starfest, someone noticed that one camping area contained a telescope that was on fire! It seems that the owner had pointed it skyward and then turned their attention elsewhere. Later, the Sun moved into the scope's field of view, shone down the tube and set things alight! The lesson to be learned: Never point your scope at the Sun without taking precautions and if the Sun's not there now, it may be later!

Gravity Wave—"Bore"ing Astronomy

Members of the Minas Astronomy Group had their first astronomical field trip at 10:00 A.M. on December 3rd to optically observe a large gravity wave. The group, started by recently-retired Roy Bishop, is an informal astronomy club for the eastern Annapolis Valley. Thirty members met near the mouth of the St. Croix River to await the results of a close perigee New Moon and the Bay of Fundy's unique geometry—a tidal bore! While waiting, Sherman Williams, a member of both MAG and the RASC, and noted birdwatcher, pointed out interesting birds, including two bald eagles. A seal was also seen, frolicking in the river. As the bore moved upriver there were many exclamations of surprise as the advancing wall of water, while not high due to the river's width there, surrounded, covered and then poured over a huge sandbar.

Members then drove to another vantage point, further upstream on the Meander River. Here one was able to get very close to the water and the bore was much more impressive. It formed a foaming wall of brown water, that had its leading edges running along the muddy banks, tearing at the slopes and sending up a plume of water as it poured over rocks, while the water in the middle of the river lagged behind. After passing this point it reappeared around a bend where it was at least 50 cm high! Many members returned at 11:00 A.M. on Sunday morning, for an encore and were not disappointed. ☼

The New, Improved Simon Newcomb Award

David M. F. Chapman
Halifax Centre

Introduction

After long and careful deliberations, the RASC awards committee has revamped the rules for the Simon Newcomb Award, which was created in 1978 to encourage and recognise RASC members who write on astronomical themes. The official declaration of the new rules and the call for 1995 submissions appear to the right of this article; my purpose in writing is to draw attention to the award and to arouse RASC members to submit entries. At the outset, I should emphasise that I am not a member of the awards committee and the views expressed below are entirely my own. However, I like to think that the committee members would agree with my personal impressions.

Why Write?

Whether your interest in astronomy is professional or amateur, if you enjoy it and if you value the time that you have invested, you owe it to yourself and your fellow enthusiasts to write about it. One good reason to write is to provide a memory of what you have done: if you do not write it down, you will forget. Also, the process of writing challenges your understanding of the material. You may think you understand what you have done, but the process of documenting your work often induces a self-critique, usually with positive results.

Finally, writing about your astronomical activities elevates a mere pastime into a cultural force. You have probably learned a lot about astronomy by reading books and articles that were written by other people; here is your chance to return the favour and to stimulate others.

The RASC is a large organisation that spans the country and serves a wide range of members. The huge distances that separate us makes it unlikely that you will have the chance to meet most RASC members. Writing for RASC publications is an important communication channel and an opportunity for you to make contact with even the most remote members. If the proposal for a new combined *Journal/BULLETIN* publication goes ahead, the society will need a large stable of writers from the entire professional/amateur spectrum to support the initiative. The Simon Newcomb Award is one way for the RASC to encourage and recognise the talented writers among its members.

Changes to the Simon Newcomb Award

The award has existed for at least sixteen years but the numbers of recipients and submitters seem to have dropped off in recent years. Let us not dwell on the reasons why (that is why we have committees!). If you read the new rules you may notice the following changes, all intended to increase participation:

- ☛ **Who can enter?** Any member can enter, avoiding the awkward judgment over who is a professional and who is an amateur. However, the award is not intended for those who normally write on astronomy as part of their professional work.
- ☛ **Submission:** The requirement to pass a manuscript through your centre's executive has been dropped.
- ☛ **Format:** Now there are no limits on length, although 2000-3000 words is recommended. Electronic submission is appreciated, but not required.
- ☛ **Judging:** The submission should be suitable for one of the society's national publications. The order of the judging criteria has been altered, implying less emphasis on the requirement for scientific content. The scope of valid subject matter is now quite broad, from hard science to amateur observing, including educational projects and armchair activities like historical research.
- ☛ **Presentation:** The trophy and book prizes remain, supplemented by a \$250 cash prize (Wow!) made possible by an anonymous donor.

I think I have highlighted the main changes; please consult the official rules for the full story. I hope you will agree with me that the changes improve the Simon Newcomb Award. It would be nice to see more submissions next year.

One final thought: there is nothing in the rules about where—if anywhere—the winning submission will be published. In the past, the winning entries appeared in the society's *Journal*. It would be nice if **all** entries were considered for publication in some form, whether or not the author wins the actual award, subject to the normal editorial selection criteria.

Now get cracking and write! ✨

The aim of science is to seek the simplest explanations of complex facts. We are apt to fall into the error of thinking that the facts are simple because simplicity is the goal of our quest. The guiding motto in the life of every natural philosopher should be, "Seek simplicity and distrust it."

Alfred North Whitehead
English mathematician/philosopher (1861-1947)

Simon Newcomb Award

The Simon Newcomb Award is named in honour of the famous astronomer Simon Newcomb (1835-1909) who was born in Nova Scotia, and later served for twenty years as superintendent of the American Ephemeris and National Almanac Office at the United States Naval Observatory in Washington. The award was created in 1978 on the initiative of the Halifax Centre. It is intended to encourage members of the society to submit well-written articles of general interest to the membership and to recognize the best of these contributions through an annual award. It is not intended for those who normally publish articles or papers on astronomy as part of their professional work.

Who can enter? Any member of the society may submit an article.

Format: There are no limits on submission length but 2000-3000 words is recommended. The submission should be written in proper grammatical form, and be presented typewritten and double-spaced. The additional submission of an electronic version, if available, would be appreciated, although it is not a requirement.

Diagrams need not be in a finished form but should be complete and ready for drafting. Photographs may also be submitted and, if possible, original negatives should be available on request. The author's name should appear only on the title page and reference to centre affiliation should not appear in the submission.

Submission of Entries: Articles must be received by the national awards committee, care of the national office, by March 31st of the year during which the award is sought. All entries must be original and should not have been previously published in any substantially similar form (although appearances in centre newsletters is permissible).

Judging: The awards committee will judge submissions based on their originality, literary merit and scientific accuracy. The submission should be suitable for publication in one of the society's national publications. Regarding style and content, submissions may be of any type: scientific papers, historical essays, education notes, accounts of observing expeditions, etc.

Presentation: The award is a trophy which will be presented at the General Assembly and remains in the hands of the winner's centre for display until the following April. A prize of two books will be provided by the Halifax Centre. One will be a copy of one of Simon Newcomb's works, while the other will be contemporary. A cash prize of \$250 will be awarded to the winner by the RASC. ✨

National Council Update

Cathy Hall
Kingston Centre

The October 29th national council meeting was held in Toronto at the Royal Ontario Museum, thanks to arrangements made by Ian McGregor with the McLaughlin Planetarium. Everyone was delighted with the 'round table' atmosphere of the trustees' boardroom, with its high ceilings and cupola skylights. National council members were also given free passes to the museum, one of Canada's finest.

Dr. Doug Hube, congratulated Dr. Sidney van den Bergh and Dr. George Volkoff for being awarded the Order of Canada. While in Ontario, Dr. Hube announced plans to visit a number of RASC centres as part of a tradition set up a number of years ago.

It was announced that the Helen Sawyer Hogg lecture this coming year would be held at the CASCA meeting. At the upcoming Windsor General Assembly, the speaker for the Ruth J. Northcott lecture will be Carolyn Shoemaker.

David Levy has been awarded an honorary doctorate in science by Queen's University, and will be receiving another honorary degree, from Acadia University, in the spring of 1995. On the topic of comets, correspondence indicated that the naming of comets by the IAU would now be paralleling the method used for minor planets.

A number of unattached members were elected to the society. Membership Certificates were awarded to Rick DeRosa, Lisa Dickhout, Charles Fassel, Marvin Scott, Frank Scordino, and Bob Winder. Messier Certificates were awarded to Ben Gendre of Edmonton and Howard Simkover of Ottawa.

Copyright of *Journal* articles was discussed. The RASC will not be using a company to administer copyright. Permission to use articles will be considered upon request.

A detailed report on the insurance issue was deferred until the return of Mike Watson, who was in South America for the solar eclipse. Centres are covered for public and mall displays, and special organized activities, if they notify the national office in sufficient time to obtain a certificate of coverage. Casual observing at centre observatories is not covered.

The updated RASC manual is now available and each centre secretary is being sent a copy. This includes an e-mail address list for centre executives and national council members.

A newer photocopier was approved for the national office, as the lease on the old one is up.

The treasurer, Rajiv Gupta, presented a report, although no financial statements were distributed. A motion to reinvest the society's funds in fixed income term deposits and GIC's, with a maximum fixed term of two years, was passed. The travel reimbursement policy was discussed. Members are encouraged to forward any comments on this matter to Rajiv.

Walter MacDonald, as librarian, gave a report on the reorganization of the library at the national office. The updated RASC library inventory will be issued on floppy disk to all centres in January 1995.

The *Journal* editor, David Turner, reported that the number of papers published was down, but that the number of pages published had increased. He will be changing some of the section headings. Also, Doug Forbes of Newfoundland will be taking over the education notes section, formerly done by Roy Bishop. Due to eyesight problems, Marie Fidler has resigned as editorial assistant and a replacement is being sought.

The *Observer's Handbook* was available earlier this year compared to the 1994 edition. An order form for the 1996 issue has been put into the 1995 edition, and an advertisement has been placed in *Astronomy* magazine to encourage more orders from the general public.

Leo Enright talked about the *Beginner's Observing Guide*. He thanked Tony Sosnkowski of Prince Edward Island for his assistance in establishing a contact with the Boy Scouts of Canada for marketing the guide.

The publication distribution problem with the recent *Journal* mailing was addressed! This has been corrected by the University of Toronto Press, and should not occur again. The question of whether the handbooks should be mailed by the national office or distributed by individual centres was discussed. A brochure is being prepared to promote the society's publications and a draft of it was circulated by Doug George.

Astronomy Day 1994 was reviewed. The date for 1995 will be Saturday May 6th, with activities encouraged for the week of May 1st to 7th. The theme will be "The Stars Belong to Everyone", taken from the title of the book by Dr. Helen Hogg. The society's concern with light pollution was encouraged as an auxiliary theme.

The awards committee named the recipient of the Service Award, to be officially announced at a later date. The rules for the Simon Newcomb Award, given for writing in the RASC, were revised. Members are encouraged to submit entries—the prize now consists of a trophy, two books and \$250!

Randall Brooks talked briefly about CASCA's heritage committee and the intention to coordi-

nate a working group between CASCA and the RASC for historical purposes.

The computer use committee commented on the ongoing question of how to get membership lists efficiently submitted to the national office.

General Assembly guidelines have been updated, and are available upon request.

Light pollution was touched on briefly, as was the quest for recipients for a possible presentation at the Windsor General Assembly.

The mandate of the long range planning committee was presented by Peter Ceravolo. The committee will be reviewing the present state of the society, and determining what changes are necessary in the society's operation and activities. A report of recommendations will be produced.

The publications revitalization committee, chaired by David Lane, presented a report on the status of the proposed new combined publication. More suggestions and input from the general membership are invited—talk to David (dlane@husky1.stmarys.ca), or one of Pat Kelly (pkelly@tuns.ca), Terry Dickinson, or Doug George (george@sce.carleton.ca). They are also asking for potential writers, editors, and photographers to contact them!

A question of membership for new people for portions of a membership year was raised by Suzanne Moreau of the Montreal Centre. This will be investigated by the finance committee.

Computer bulletin board guidelines were presented by Randall Brooks for consideration by those centres administering boards.

Lastly, (but not briefly), the qualifications for both the Messier and Finest NGC Certificates were revised to allow for two witnesses or a declaration by the applicant and a copy of their observing log.

The date of the next national council meeting was set for Saturday, February 18th, 1995. ☪

Just and above all lies the sphere of the fixed stars, containing itself and all things, for that very reason immovable; in truth, the frame of the universe, to which the motions and positions of all stars are referred. Of the moving bodies, first comes Saturn, who completes his circuit in thirty years. After him, Jupiter, moving in a twelve-year revolution. Then Mars, who revolves biennially. Fourth in order an annual cycle takes place, in which we have said is contained the earth, with the lunar cycle as an epicycle. In the fifth place Venus is carried around in nine months. Then Mercury holds the sixth place, circulating in the space of eighty days. In the middle of all it dwells the sun.

Nicholas Copernicus
Polish astronomer (1473-1543)

A Stellar Wind Breezes Into Nova Scotia Schools

Mary Lou Whitehorne
Halifax Centre

President, The Atlantic Space Sciences Foundation, Inc.

The Nova Scotia Planetarium Advisory Committee has had a change of name and status along the way to building a new planetarium for Nova Scotia. Four years ago we incorporated as a provincial society and began laying the groundwork for our project. This year we have incorporated as a federal foundation to be known as The Atlantic Space Sciences Foundation, Inc.

So far, it has been an interesting experience. We have had a feasibility study done that examined the economic potential for such a venture, as well as developing a very preliminary concept of the facility itself. We are now about to proceed with phases II and III of the study that will further refine the facility's physical structure, staffing, operations and programming. While this is a necessary and important part of the process, we also have to raise awareness and find support for the project.

We are working on this in a couple of different ways. We have been working steadily to increase the quantity and quality of programming in, and raise the visibility of, the already-existing Halifax Planetarium. We take advantage of every opportunity to talk up the project, including radio and TV interviews. Several of us, who do public and school talks, carry the message with us as we go. These simple tactics are starting to have an effect: people are beginning to be aware of our existence.

One of the major components of our proposed facility will be a Challenger Learning Center (CLC). For those of you who are not familiar with Challenger, it is a totally immersive, hands-on, space flight simulator for groups of people, particularly school classes. It is an educational experience par excellence. In order to familiarize people in Nova Scotia with Challenger, we sponsored a CLC workshop for twenty-five teachers for the October 1994 in-service day. The workshop, funded by the Canadian Space Agency, was very successful—the participants enjoyed it, learned a lot from it and rated it very highly. A local TV crew filmed some of our teachers as they attempted to simulate a launch in the space shuttle with their chairs tipped backwards onto the floor. The other activities were just as enjoyable, if less spectacular, than the launch activity. No wonder

there was a waiting list of fifty teachers hoping for cancellations!

Those teachers who completed the workshop are now able to incorporate space science education into their regular curriculum as a powerful and exciting motivational tool that will encourage their students to pursue math and science. The following is a description of the workshop that generated so much interest among our teachers:

TOUCHING THE FUTURE: Linking the Classroom with Space

Come and spend a day in space! Touching the Future is a one day hands-on workshop for teachers that will provide a uniquely stimulating space-theme experience, supplemented by imaginative materials and techniques that can be used in the classroom.

The program is built around a flight in a space shuttle, with activities divided into six modules (preflight, liftoff & orbital mechanics, adapting to space, global perspectives, looking out, landing & debriefing). The activities are hands-on, and promote the concepts of teamwork and problem-solving.

Touching the Future content is generically "space science", but it can be adapted to emphasize numerous interdisciplinary skills including mathematics, language arts, technology, art, and other areas of science. The program is best suited for Grades 5 to 9 inclusive.

Participants will receive:

- a 140 page workbook containing activities centred around a typical space shuttle mission. Also included are background information sheets, a detailed glossary of space-related terms, and resource information,
- a set of slides linked to various workbook activities,
- a 110 minute video tape containing film sequences linked to certain activities in the workbook, and
- related materials from the Canadian Space Agency as available.

The Challenger workshop is not all that we have done. The workshop was part of a much larger science teacher's conference (an opportunity not to be missed!) so we decided to carry out a major province-wide outreach program. We prepared and distributed a set of hands-on, classroom-based, astronomy-related activities, to approximately two hundred science teachers. These included:

- Phases of the Moon
- Reason for Seasons
- 3-D Dipper

- Modelling Features on the Moon
- How Far Away is the Moon
- Understanding Eclipses
- Create Your Own Constellations

In addition to these handouts, we distributed two hundred information packages which contained videos, slide sets, posters and other printed materials from the Canadian Space Agency. I think it is fair to say that people know about us now...

The next step is to secure funding for the purchase of two Starlabs (portable, inflatable planetariums) that will then travel around to the province's schools. We have already begun a corporate campaign to acquire these units. A mobile astronomy program with Starlab, plus the programming offered in the Halifax Planetarium, plus a successful teacher training "mission," and our province-wide outreach activities, should establish The Atlantic Space Sciences Foundation as a serious group with a credible track record of success. We believe that this will put us in a position to be taken very seriously when we begin the capital campaign for the new planetarium. ☪

Astro-tip: Turn Your Telrad Into a Finder

Bill Broderick
Kingston Centre
reprinted from *Regulus*

If you have a Telrad on your telescope, you already know that it is a dandy device for aiming a telescope—provided you know where to aim. For picking up those faint fuzzy-wuzzies, however, you have to resort to your telescope's main optics. You may have wished on occasion that you had a finder too. Well, wish no more!

One night, back in August, I got to thinking: From a focusing point of view, the stars, etc. are at infinity and the Telrad's reticle image is also at infinity, which is why it works. If I were to look through the Telrad with my binoculars—also focused at infinity—I should have all of the benefits of a finder. I did and—voilà!—it worked!

Considering that the cost of a finder, complete with mounting brackets, etc. can cost \$200-\$300, combining binoculars with a Telrad is a cheap but workable alternative. Yet another good reason to keep a pair of binoculars handy, n'est pas?

A scientist can discover a new star but he cannot make one. He would have to ask an engineer to do it for him.

Gordon L. Glegg
American engineer (1969)

Huronian Star Party: Stellar Speakers

Dave Sage
reprinted from *SCOPE*—Toronto Centre

In the mere four years it has been in existence, the HSP has become a first class event. This year it was held over the Labour Day weekend, and Friday afternoon was added making this the longest HSP yet. HSP remains a cosy gathering of about 150, an attribute the organizing committee of the South Simcoe Amateur Astronomers wants to maintain. In small gatherings I think everyone feels more friendly and it is easier to locate the regulars and chat with almost everyone at some time during the event.

HSP assembles in a corner of the Kueper farm, about ten kilometres from Alliston, Ontario. The skies are probably as dark as they come in the area. The weather was extraordinary and Friday and Saturday nights were clear with excellent seeing. Sunday night a few wispy clouds passed through as if to give people an excuse to finally get to bed.

As usual, I tried to attend all of the lectures, but after lectures all day and observing all night, I must apologize to the one or two presenters that I missed. On Friday night, Henri Van Bommel, the SSAA's president, delivered the opening remarks. Then, fellow member Dave Petherick presented a wonderful slide presentation of celestial and deep-sky objects, set to classical music. The show set the mood for the weekend and what would be waiting nightly outside the tent. John and Debbie Crossen recounted their return trip to the Star Hill Inn in New Mexico. This year they were either clouded out or it rained and hailed. This was a distinct change from the six star-filled nights they had enjoyed last year.

On Saturday morning, Charles Sinsofsky provided some insight into the trials and tribulations of building and using a large format cold camera. Mike Hiltz showed some slides and explained the continuing role of Spar Aerospace and the Canadarm at NASA. This led the way to lunch and the opening of the swap tables where the usual bits and pieces of equipment were being peddled.

Saturday afternoon, Paul Delaney of York University gave some insight into Astronomy 2001. Brian Colville followed with some of his stunning CCD images, taken here in Ontario, of the SL9 impacts. The usual "I think it's G, K and L not H, M and P" discussion followed. Who really cares? They were great images!

After a break the afternoon continued with a

slide visit to Stellafane by Steve Dodson. This was followed by a panel discussion with such notables as Terence Dickinson, Paul Delaney, Steve Dodson and John Hicks. When the late part of the discussion turned to religion, I made my exit in favour of a power nap before dinner.

Saturday evening, Terence Dickinson gave an amusing talk entitled "Has Amateur Astronomy Become Too Complicated?" He presented many old advertisements for amateur equipment, noting the limited choices in equipment only a few years ago. In contrast, he showed more modern ads to illustrate the mind-boggling choices available to today's budding amateur. He also talked about experiences he has had with people looking to purchase modern equipment. He has concluded that amateur astronomy has become too complicated and that it may be a sign of our times that many people are jumping into the purchase of very sophisticated telescopes in an attempt at instant gratification.

Sunday morning I slept in, but did manage to get moving in time to make the lecture, "Building the Cookbook CCD Camera", by Dave Petherick. He gave an account of the camera construction and showed some slides of the images taken with one. Tom Dey, of Eastman Kodak, gave a very interesting talk on Kodak's developments in the mirror grinding field. You may remember that Kodak is the company that built the **perfect** mirror, the one that did **not** get installed in the Hubble Space Telescope. To learn that Kodak has the ability to figure mirror surfaces by removing material at the atomic level was fascinating. Unfortunately, Kodak does not make mirrors for the amateur market!

Dale Armstrong gave an interesting talk on the efforts of the International Dark-Sky Association and encouraged everyone to join the IDA in the fight against light pollution. John Hicks, renowned solar photographer, showed some slides detailing the construction of his new observatory, followed by some of his stunning photos of solar prominences. Leo Enright followed with a collage of astrophotography. Sunday evening, following another excellent dinner, Roy Bishop, from Acadia University, presented a very theoretical and mind-opening talk entitled "Light, Telescope and Observer".

Monday morning the tents came down, wrapping up the HSP for another year. If you missed it this year, be sure to put it on your calendar for next year. It should not be missed! ☺

Errors using inadequate data are much less than those using no data at all.

Charles Babbage
English inventor/mathematician (1792-1871)

Alberta Star Party: Wet But Wonderful

Alister Ling
Edmonton Centre

The ASP has gone through various incarnations over the last few years and would not have occurred, let alone succeeded, this year without the strident efforts of Rick and Carol Weiss and the generosity of the landowner, Kirby Eccles. In the past few years, the star party has lost its appeal by frustrating both sides of the observing equation—it has been oscillating back and forth between light-prone family campgrounds and dark, but remote, non-recreational areas. This year the site, the Eccles ranch halfway between Calgary and Edmonton, was an attempt to provide a decently dark site after last year's bright skies at Eagle Lake. Admittedly, there were a lack of amenities for the family-inclined, but this site has the potential to be what "most" of us want in the future.

We arrived on Friday just after a passing thunderstorm had transformed the main field into a mudfest. The lower pasture was only damp, providing a refuge for those who were camping. We had to play cat and mouse with the clouds that night, but numerous attendees commented on the beauty of Saturn and deep-sky objects. The transparency of the sky that was visible allowed us to easily see reflection nebulae like IC 59 and IC 63 in Cassiopeia. This site can definitely deliver!

On Saturday we were able to view the site and catch up with old friends while checking out the swap shop. Unfortunately, non-stop rain began in the early evening and did not quit until dawn. The crowd did enjoy a few talks in the barn.

Sunday was a turnabout day, clearing and windy. As night fell, the winds died down and the stars poured from the darkening depth of the sky. I was seeing stars just as faint as I had at Mount Kobau. It was great to hear the excited chatter drifting across the field. Some sought out their few remaining Messier objects, while others tracked down elusive nebulae and galaxies. Messiers were on my list since *Sky & Telescope* had charts showing one asteroid passing in front of M31 and another slipping by the delightful cluster M37 in Auriga. I returned two hours later to find that the star-like asteroids had moved, betraying their true identities as children of the solar system.

Near dawn I observed the new Comet Macholz, a wonderfully bright seventh magni-

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Nova East 1994: Telescopes and Turkeys

Doug Pitcairn
Halifax Centre

As the weather works out around these parts, star parties are far more likely to encounter favourable weather conditions after the middle of August. However, there are also the requirements for a weekend near the New Moon, and for the weekend to also be before the Labour Day weekend. The collective result is that about every fourth year, one does not get any weekend in August filling the bill.

Now, it turns out that on these years, the Thanksgiving Day weekend is near the New Moon. Isn't astronomy wonderful? So, we traded bugs for cold, and went for it, with this year's Nova East being held on the weekend of October 8th. The faithful met in a beautiful Fundy Park all decked out in its autumn finery. The weather looked indeterminate, and Friday night a 50% clear sky with some altostratus and some low cumulus hung overhead as we entered the meeting hall for the public talks.

The first speaker was Mary Lou Whitehorne. She wooed the crowd with a talk about the mythology behind the constellations. Following this, Doug Pitcairn spoke on man's place in the cosmos. After the talks, we went outside. Lo and behold the clouds had moved in, so we all retired back to the group campsite with the usual apologies to the public. Half an hour later, it had cleared off and we had a wonderful night with average seeing and transparency.

Saturday dawned clear, but broken clouds came and went until the evening. Attendees gathered to set up scopes, look at equipment, talk about the previous years' events, take a group photo, and do all the things that are so pleasurable about Nova East.

After supper, some gathered at the Assembly Hall again, along with about fifty or sixty public for three more talks. Pat Kelly gave a talk called "Bump & Grind in the Solar System" about collisions in the solar system, especially the recent crash of SL9 into Jupiter. Then Dave Driscoll of Saint John gave a talk, "Supermarket Science", about all those strange headlines that are seen in the supermarket tabloids. Dave's unique sense of humour and the totally bizarre headlines kept the audience chuckling. Dr. Roy Bishop closed out the talks with a short but interesting talk, "UFO's are Real and Dangerous!", where he suggested that the real danger is in wasting one's time dealing with falsehoods and misinterpreted astronomical events.

Saturday night was not as good as Friday's had been, but there were several hours of useable observing as well as some excellent camaraderie around a late night campfire.

Monday morning found us saying goodbyes for another year. All people who are regulars at Nova East know the special feeling one gets at this annual get together. It is a chance to make new friends with a similar interest, and to get together with old friends met years before. ☼

Kobau '94: Fire on the Mountain

Dave Clyburn
Edmonton Centre

Forest fires burning near Penticton gave pause for planning a trip to the Mount Kobau Star Party this year. When more fires were reported near Osoyoos just a week before the event, going early seemed especially risky. Arriving the weekend before the actual party, we found that two small fires were burning on Mount Kobau itself. Little wonder so few people were at the top, although Bruce McCurdy and Alistair Ling had both arrived and were setting up.

As I pitched my teepee, we discussed the situation. Should we head for Manning Park to get clear of the smoke or stay put? There is an old saying: "Be careful what you wish for—it just may come true." We wished for rain and got two cold, dreary days of it, including a downpour that caused a creek to flow through our campsite. At one point it looked as though Bruce's rubber raft (later christened the *S.S. Bolide*), which had been brought for comfy meteor and binocular observing, might just be used for its constructed purpose. The rain did its job, putting out the nearby fires and clearing the air. Tuesday night was clear, though dewy. We had what we came for—the Milky Way, torn with dark lanes, splashed vividly overhead.

With clear skies and a promising weather forecast, most of the Kobau regulars arrived by Thursday evening. Twenty members from Edmonton made the trip, including Sylvia Smith and Arnold Rivera who were able to complete their Messier lists during their stay. B.C. had a strong showing as well, with Alan Whitman, the star party's founder; Rajiv Gupta, who gave a talk on astrophotography and Craig McCaw, who had been involved with the site testing on the mountain for the original, planned professional telescope. John Mirtle and Dan Lazar, as always, came from Calgary. The 36", courtesy of John Casino, together with John Dobson, made the trip again, as well as the 25" from the

MacMillan Planetarium. The big scopes were rounded out by Steve McAlister's 20".

Evening observing began with the search for Jupiter. Even after a month, the impact features had not faded. Saturn was superb through a 7" Starfire—Cassini's Division was easily visible even though the rings were close to edge-on. However, the show-stopper was the Perseid meteor shower, which peaked early Friday morning. They came thick and fast with plenty of smoke trails. There were two brilliant fireballs, the brightest of which (magnitude -6?) blazed through the Milky Way, while the other one exploded in Hercules. Bruce McCurdy counted 726 Perseids and 94 non-Perseids over four evenings. The top hourly count was 128.

The drive is long, the days can be hot and the nights cold, and sometimes it is hard to get enough sleep, but during the New Moon in August, Mount Kobau is a wonderful place to be. ☼

Alberta Star Party

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tude blob with a 1/3° ion tail and broad fan with a short dust tail. I took a short walk to the upper field where the 20" scope was being stowed away, having picked up some Palomar globulars and split apart a couple of galaxy clusters. It was a great night, thankfully available due to the Labour Day weekend. By noon, the site was almost deserted. Mark your calendar for next year: Labour Day weekend! See you there! ☼

Reflections: The Digital Darkroom

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which you may make a conventional print. You may not be happy with the results unless you have a large screen running at high resolution. Another method is to use a colour printer. This is an evolving technology and currently is unable to provide photo-quality results at a reasonable cost, but this may change in the next couple of years. A printer also limits the size of print that can be made. A third possibility is to give the electronic file to a service bureau. For a charge of \$10 and up, they will print the image on a high-end imaging device or produce a high-quality negative or slide.

These obstacles will, I believe, be overcome with future advances in hardware. The digital darkroom is in its infancy now, but I encourage anyone with a computer and a fondness for astrophotography to combine the two and explore this exciting and upcoming technology. I can emphatically affirm that film photography is **not** dead—the combination of it with the computer will allow it to reach new and unsurpassed heights over the next several years. ☼

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Scientists are going to discover many subtle genetic factors in the makeup of human beings. Those discoveries will challenge the basic concepts of equality on which our society is based. Once we can say that there are differences between people that are easily demonstrable at the genetic level, then society will have to come to grips with understanding diversity—and we are not prepared for that.

David Baltimore
American microbiologist (1983)