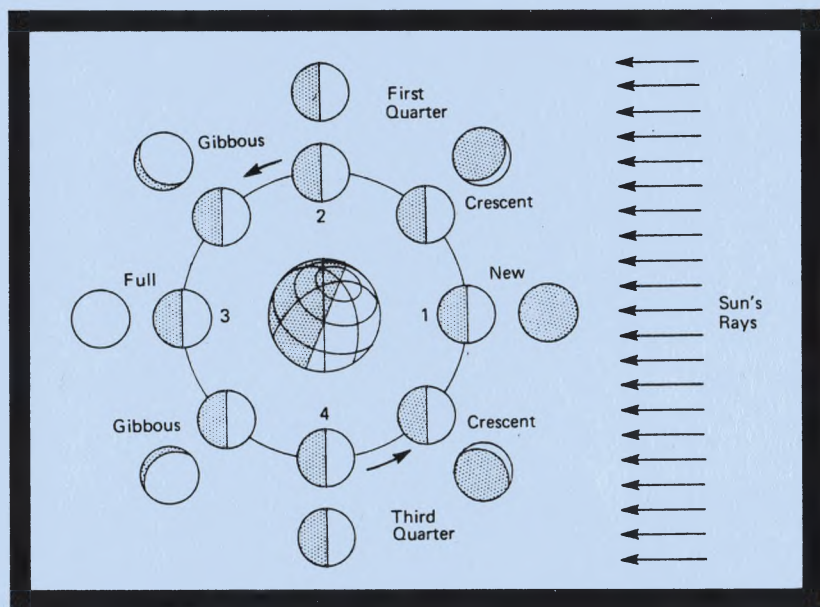


NOVA NOTES



Halifax Centre



Mar-Apr 1991
Volume 22
Number 2

1991 Halifax Centre Executive

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Notice of Meetings

~~~~~  
Date: **Friday, May 3rd: 7:30 P.M.**

Place: Chinatown Restaurant, Bedford Highway (at Kearney Lake Road), Halifax.

Topic: The speakers for the banquet will be **Dave Lane** and **Joe Yurchesyn** who will be presenting *Misadventures with a CCD*. Meal includes egg rolls, bo bo balls, pinrapple chicken, almond lobster ding, fried rice, honey garlic ribs, beef with broccoli, chow gai pan, fortune cookies, tea and coffee (dessert extra). Tickets are available from Mary Lou Whitehorne at \$22.00 each (including tips and taxes). Call her for more information.

~~~~~  
Date: **Friday, June 21st: 8:00 P.M.** for the main speaker

Place: Nova Scotia Museum, Summer Street, Halifax. Access from the side entrance. Meeting to be held in the lower theatre.

Topic: **Member's Night**, if you have anything you would like to present, contact Mary Lou Whitehorne.

~~~~~  
Date: **Saturday, July 6th: 9:00 P.M.**

Place: Elmsdale

Topic: As part of the Maritime Kite Festival, members are encouraged to bring their telescopes (weather permitting) for a public observing session.

## ~~~~~ Halifax Planetarium Public Shows

At the following shows will be on the topic of the current sky. Please note that dates are tentative.

|                      |           |
|----------------------|-----------|
| Thursday, May 9th :  | 7:00 P.M. |
| Thursday, May 23rd:  | 7:00 P.M. |
| Thursday, June 13th: | 7:00 P.M. |
| Thursday, June 27th: | 7:00 P.M. |

The Halifax Planetarium is located in the Dunn Science Building on the campus of Dalhousie University.

~~~~~  
Note: The above list is tentative and subject to change.
~~~~~

### About the cover:

The cover shows a diagram that is probably familiar to all of you. It explains how the illumination of the Moon by the Sun changes over the course of the Moon's orbit about the Earth. These changes result in the changing phases of the Moon as observed here from Earth. Unfortunately, recent studies in the United States have shown that the average American is unaware of this explanation of the Moon's phases.

# Toronto Star's Annual Trivia Contest

Terence Dickinson

Here's our annual astronomy trivia quiz with the usual mix of fairly easy and not-so-easy questions. If you get 15 or more, consider yourself an expert.

1. Which of the following would completely cover the Full Moon if held at arm's length: a looney dollar, a dime, an aspirin tablet?

2. What year does N.A.S.A. hope to mount a mission to install corrective optics on the Hubble Space Telescope?

3. In December, 1990, which two objects did the Galileo space probe photograph on its way to Jupiter?

4. In October, 1991, still on its way to Jupiter, Galileo will photograph what object?

5. The Magellan spacecraft, now orbiting Venus, is using radar to map the planet's surface. Has it shown Venus to be covered in craters, crater-free, or dotted with just a few?

6. What two bright planets are high in the evening sky this month?

7. The Milky Way is (a) our galaxy seen edge-on, (b) sunlight reflecting off dust in the plane of the solar system, (c) gas reflecting starlight?

8. From which of the following places is Polaris, the North Star not visible? Florida, Siberia, Australia?

9. Name the only planet that has not been visited close-up by spacecraft?

10. Which two planets have moons that are largest than the Earth's moon?

11. In 1990, astronomers determined that Abell 2029 is the largest known galaxy. Is it 5, 15 or 60 times wider than the Milky Way galaxy?

12. In 1996, N.A.S.A. hopes to send a spacecraft called Cassini to explore what planet?

13. Name the constellation that contains the star Sirius.

14. Name the brightest comet seen from Canada in 1990.

15. A bolide is an exploding meteor. True or false.

16. How many meteors can you expect to see in one hour on a typical clear, moonless night: 1, 5 or 20?

17. What was observed in Saturn's atmosphere late last year that had not been seen since 1960?

18. What celestial event are amateur astronomers looking forward to on July 11th this year?

19. Why is it considered unusual?

20. What is noteworthy about the Keck Telescope now nearing completion on Hawaii's tallest mountain?

The answers can be found elsewhere in this issue. Ω

# Transparency Films for Astrophotography

Brian Segal

The thought of tools for astrophotography usually brings to mind images of huge apertures, fluorite elements, exotic guiders, freezing cold cameras bathed in dry ice (usually redundant in Canada), dead accurate drive systems, the soft red glow of reticules and tired eyes (not to mention those supportive, understanding spouses condemned to yet another night of just sitting there in the dark!)

However, given a decent array of hardware, the most important consideration facing the aspiring cosmic snapshotter is the choice of "weapons" – otherwise known as film. There is a kind of decision tree that one must work through. Black and white or colour; print or transparency; fine and slow or grainy and fast; Kodak, Fuji, Konica, Illford, etc., etc., etc.

Not surprisingly, many astro-shooters tend to specialize. Given the time it takes to make astro images (other than the Moon or Sun) and the number of opportunities for total, partial or incidental snafus, simplification is a good strategy.

Consequently, my astrophotographic odyssey has been mostly confined to the use of various transparency (slide) films. They are my medium of choice and different ones are suitable for different applications. I have done considerable work with EKTACHROME 400, KODACHROME 64, FUJICHROMES 50, 100, 400 and 1600 and also have shot FUJICHROME 400 at an effective exposure value of ISO 800 and has it push processed.

The slower films have been used exclusively for solar photography and some lunar when the Moon is at least at first quarter. The only limiting factor in this situation is the mechanical stability of your system as the exposures have to be made on the long side compared with the focal length of the lens (a prime focus shot of the Sun taken on an unstable 2000 mm scope will blur at the slightest vibration unless you can shoot at 1/2000th of a second...unlikely). If you are looking at shutter speeds of from 1 second to 1/500th of a second, you had better have a real solid mount and lock up your camera's mirror if it's a SLR system.

I have had good results with both KODACHROME 64 and both FUJICHROME 50 and 100 when shooting the Sun with a Thousand Oaks full aperture solar filter. Effective focal lengths of up to 25,000 mm through eyepiece projection have yielded surprisingly good results on calm days. Naturally at the higher magnifications various factors come into play including the amount of glass in the system, the seeing, and the care taken by

the photographer.

I have also used both EKTACHROME 400 and FUJICHROME 400 for this type of photography. The trade off is a cooler colour cast and a lot more grain, especially during the longer exposures (generally, we are told, slow films have better reciprocity characteristics than faster ones... there seems to be some substance to that claim). However, you do achieve between a two to three stop advantage which translates to faster shutter speeds, and less camera shakes... in theory, anyway!

I have also used pushed FUJICHROME 400 for lunar shots using a 1000 mm f/11 Maksutov. The results were surprisingly good and allowed me to photograph an almost full Moon without a drive.

Deep sky work is a very different challenge. All but the brightest objects require relatively long exposures (to a daytime photographer, anything longer than a few seconds is very long). Even with the very fast print films (ISO 3200), ten minutes would be a minimum exposure for the majority of diffuse and faint objects. As film speed decreases, exposure length grows exponentially. Each stop represents a doubling of exposure time as the ISO value is reduced.

Each doubling of exposure time increases the risk of any number of problems, from the gradual accumulation of dew or frost to unfortunate happenstance - like sneezing your head into the eyepiece (resulting in possible eye damage, but more importantly shaking the optics).

As any slide presentation will demonstrate, various emulsions have very different characteristics. There are some factors which will influence the choice of films. While EKTACHROME 400 tends to bring out certain red nebular emissions very effectively, it suffers from a local contrast than its FUJICHROME 400 cousin. In fact, the sky background tends to a kind of purplish cast while the FUJI retains very black skies over fairly long exposures.

Naturally the seeing and general sky conditions have to be comparable, but certainly my experience over a range of targets and nights has confirmed this situation. I do find, however, that the FUJI requires more exposure for certain objects... particularly planetaries.

FUJICHROME RSP 1600 is the fastest transparency film in the FUJI line. Its optimum rated value is ISO 1600 although it can be pulled to ISO 800 or pushed to ISO 3200. Although KODAK makes EKTRACHROME P800/1600, a film that makes similar claims, in fact its optimum rating is ISO 800 with a one or two stop push possible. The fact that the FUJI product is "comfortable" at 1600 means that the one stop push to 3200 is asking less of the film. As push processing does have both colour

shift and granular effects on the final image, the less push, the better.

I have used the RSP 1600 in daylight as well as night time photography and can attest to its quality. It has surprisingly fine grain characteristics and although rather high in contrast compared to a slower chrome film, its colour response is quite good. The higher contrast level is a plus in astrophotography, and the skies in exposures of up to forty minutes stay quite blue-black with very good colour range in the stars and gasses. You have to be careful of a couple of things, though:

1) GUIDING: Very sensitive emulsions gather light at an alarming speed. Any deviation in guiding are preserved obviously and mercilessly for all time within seconds. Whereas with ISO 400 films a bit of wander due to periodic drive error or distractions of one sort or another can be recovered with little or no evidence, a quick glimpse at a meteor at the wrong moment with ultra-fast film can leave a lasting memory on the emulsion.

(2) FOGGING: Ultra-high speed films are very susceptible to ambient light, whether from city lights, celestial background light or that yard light that your neighbour has installed across the valley just to make your life that much more of a challenge! The message is a) be in a dark place and b) wait PATIENTLY for astronomical twilight to surrender to real night!

With any transparency processing it is a good idea to write those three important words "DO NOT CUT" on the envelope. Although I always take the precaution of exposing the first frame in daylight to give the processors a reference frame, I much prefer to cut and mount my own slides for two reasons:

1) I use a mini-cassette recorder for note taking during a session and all of the data is subsequently preserved frame by frame. Thus, when the film comes back I simply turn on the tape and review the strip of film to my own commentary. As I cut and mount the slides, the information is recorded in indelible ink on the mount. You can't count on the processor to sequentially mount your slides... they do screw up at times!

2) There are, alas, always shots that don't make it. Why bother having them mounted?

Another transparency material that is often overlooked is black and white negative film. A negative tonal "slide" can be quite dramatic and add another dimension to projectable images.

Whatever the application you may have planned for your astrophotography, transparency films offer a variety of choices and possibilities. If you decide that you have an image that simply must be printed, you can always go the route of reversal printing and have a large internegative made. Thus, the versatility of transparency films makes them an attractive option for astrophotography.  $\Omega$



# Periodical Picks

Patrick Kelly

**Discover** - November 1990

- *Space Places*, p. 46: A collection of amazing photographs covering telescopes, space test and space launch facilities.

**Discover** - December 1990

- *Strung Along*, p. 26: How an amazing 60 km long tether will allow NASA to explore the relatively unknown area of Earth's atmosphere between 60 and 175 km.

**Discover** - December 1990

- *Cosmic Scrooge*, p. 78: A discussion as to why "Christmas Star" planetarium shows are bad science.

**Discover** - January 1991

- *Space 1990* p. 24: 1990 in review. Topics include: the Keck Telescope, launch failures, COBE results, Magellan's early results, and a few minor topics.

**Discover** - February 1991

- *First Foods*, p. 18: Speculation on an early chemical food supply for a planet's first life forms.

**Discover** - February 1991

- *The Salad Machine*, p. 30: N.A.S.A. has a prototype of a refrigerator sized unit that can supply a crew of four with salad three times a week, and help purify the ship's air.

**Discover** - February 1991

- *Hubble's First Hurrah*, p. 46: A gallery of spectacular space shots taken by Hubble.

**Canadian Consumer** - February 1991

- *35 mm SLR Cameras*, p. 19: Ratings and specs on over a dozen zoom lenses and almost two dozen 35 mm SLRs.

**Canadian Consumer** - February 1991

- *Colour Films*, p. 29: Specs on many colour films ranging from ISO 25 to 3200.

**Canadian Consumer** - February 1991

- *Under It All* p. 34: Everything you ever wanted to know about how to choose thermal underwear for those winter observing sessions. Ω

## Astro Quips

by Doug Pitcairn

**You know your eyepiece is a wide angle when:**

- 1) The edge of field is limited by the hair on the back of your head.
- 2) Your finder has a smaller field of view than your main scope.
- 3) Your observing buddy steps up and asks, "Why you are looking through your scope backwards?" and you scoff, and then realize you were!
- 4) You have to wear a safety harness to prevent falling into your eyepiece. Ω



## Ask GAZER GAZER

Dear GAZER:

In your response to DD and Unimpressed in the Sept-Oct issue, you made some rather disparaging comments about the city of Dartmouth. I found it remarkable that you, of all people, could belittle Dartmouth for its lack of a downtown given that poorly-shielded lighting in large city cores is responsible for most of the world's light pollution problems. Surely the world of observational astronomy would be far better off if we could emulate Dartmouth's example and totally eliminate those overlit areas from our cities, thereby allowing a larger portion of our deprived citizenry to experience the pleasures of a dark night sky. Does this seem like a realistic goal, or is the Dark Sky Association just wasting its time?

Sincerely

Pass the Sunglasses Please

It would be nice to think that Dartmouth's lack of light pollution was a conscious effort, but that is like Dartmouth saying it supports nuclear disarmament and we can prove it because we didn't sell any nukes to Saddam! I don't feel that the situation is hopeless. It is bound to improve as the cost gets more and more expensive, not to mention the inevitable carbon quotas which will make us all want to shoot everybody involved in implementing Point Aconi!Ω

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# The Astronomy Schnook Club

## Brian Segal

When I decided to join the ASTRONOMY BOOK CLUB, I did it for only one reason.... I wanted to get a better price on books. I collect books, so it is only natural to have a desire to minimize costs. The offer seemed reasonably good. I joined, and got my special, introductory bonus deal of three, count 'em, (3) books for a dollar each! Over the ensuing months and years I have received a number of great deals (i.e. the *Cambridge Atlas of Astronomy* for around 18 bucks).

Unfortunately, last spring something happened. I made the mistake of paying for three books at once, on one conglomerate cheque, confident that a transaction of that nature could easily be handled by a company that could, presumably, send hundreds of books everywhere. To make matters worse, when I paid them, I inadvertently wrote the cheque for the wrong amount. I was off by ten dollars in my favour.

Man, was that a stick of dynamite, or what?

Apparently, the computer(?) couldn't match the dollar amount to the book code. So, instead of simply burping, beeping, or waving a white flag, it looked for a book to default to by simply matching price! Of course, as far as the computer was concerned, I had not yet paid for my copy of *The Observing Handbook and Catalogue of Deep Sky Objects* (a book I heartily recommend). The book was worth \$53.30 Canadian.

Well, having no idea of my perceived delinquency, you can imagine my surprise and chagrin when a couple of months later I received a mild COMPUTERIZED rebuke from the club looking for their \$53.30! I went back over my records and, realizing my probable error in addition, I sent them a long letter detailing all of my transactions since that one, along with a cheque for \$10.00 to cover off my account. "There," I thought innocently, "that should do it."

Oh what fools we simple mortals be! For next month, VOILA!, in comes a stronger letter from the computer, still looking for \$53.30, and threatening to suspend future shipments until I paid up! I wrote a not intemperate, but pointed reply to either a human or the computer or both right on the notice and dispatched it to New Jersey. "That," I thought, "should be the end of it!"

Well, you can imagine my total frustration when the next month's mail brought with it a nasty threat from the computer to refer my \$53.30 delinquency to a collection agency as well as an implied threat that such an action would essentially shred my reputation as a credit worthy person. This was too much to take

from a computer, so I finally, reluctantly, resorted to the phone. After a small odyssey with long distance information which I won't go in to, I managed to get a phone number for the MACMILLAN BOOK CLUBS.

I called. After impressing the receptionist with the notion that I was an irate member about to blow up their entire operation AND cancel my membership, I was connected to a very polite lady named CAROL who listened to my now strident rant about all of the above. She claimed never to have received any of my correspondence. "What do you do with your mail," I enquired, "give it to your kids for scrap paper?" CAROL, the epitome of moderation, assured me that even as we spoke she was deleting all of the erroneous information from my file, and that she would send me a detailed statement of my account for review. The *Observing* book would never appear on my record again, I was promised. Eventually a printout arrived. I went through it, annotated all of the matching charges and payments, enclosed a cheque for another book (they were still coming, despite the threats), and sent the whole affair back to New Jersey. "Finally," I thought, "this is dealt with."

Right. Well, a month later, I get another even stronger letter from the COMPUTER. This time they were really going to get serious. "We have written you asking you to bring your account up to date but have no record of your payment... Please do not force us to take further action which may not only affect your credit rating with us, but could also affect your GENERAL CREDIT RATING!" This was the end!!!!

I called again in a fury! I got a woman named JEAN. I gave her an elephant's ear full. "I can't find any record of any correspondence," she purred at me.

"But what about my phone call with CAROL," I begged, "didn't she DO ANYTHING?"

"Oh," JEAN says, "Why did you talk to CAROL? She isn't the right person to talk to. I'm in charge of the ASTRONOMY book club accounts!" I assured her that I hadn't actually asked for CAROL at the time, she sort of fell into my lap, as it were, and how could I ask for JEAN if I didn't know she existed until five minutes ago? JEAN allowed that this was a problem and that I had nothing, NOTHING to worry about. Everything was being fixed right there on the COMPUTER even as we spoke. Promises, promises. JEAN also instructed me to DO NOTHING until she PERSONALLY sent me an update of my account. As I had books outstanding I made her PROMISE not to let the COMPUTER loose on me again. "Don't worry, Mr. Segal," she crooned softly, "everything is fixed up. YOU HAVE MY PERSONAL GUARANTEE OF THAT."

I slept soundly that night.

Over the intervening weeks I serenely went about my business, the ASTRONOMY BOOK CLUB not even a distant thought. You guessed it. The next month another missile arrives, "...despite our repeated attempts to contact you...." etc, etc, etc. By now I was one stop short of a stroke. How could this happen??? I mean, I'd heard of this kind of thing with huge power utilities in California, but really!

Armed with an 800 number, I called JEAN ready to do merciless battle. I got a recording. A RECORDING!!!!!! "Thank you for calling Newbridge Book Clubs," it said, reminding me of the recent ownership change, "unfortunately, as we're MOVING we can't take your call right now. However, if you leave your name and number, we'll call you December 10th. Thank you for being such a valuable and understanding member".

On December the 10th the phone rang. It was JEAN. She asked for my account number as I prepared myself for the attack. Not only was I totally frustrated with this insanity, it was snowing to boot!!! "Oh," says JEAN, "I see that you just moved." I looked around. Nope, the familiar surroundings were still in my field of view. I began to laugh. I was finally going insane. "MOVED," I choked out, "where have I moved to?"

"Why, according to this COMPUTER printout", she says, all sweetness and light, "you've moved to Tampa, Florida!" When I regained consciousness I assured her that not only was I still in Antigonish, Nova Scotia, Canada, but that right out of my window there was a howling blizzard! I might want to be in Tampa, I agreed, but it was my present misfortune to be staring out at the death scene from Dr. Zhivago.

"Mr. Segal," she intoned with a patient drawl, "I don't know what went wrong, but BELIEVE me, I am fixing up your account right now on the computer. This won't happen again."

"But what about my bill, I still want to pay you, "I pleaded," can I pay you yet...I owe you \$66.50 Canadian!"

"Oh, no," she sang brightly, " you have a \$10.15 credit. You only owe us \$56.35 for your latest purchases!"

Stunned, I said nothing but a quick thank you and goodbye. Hey, I'd just made twenty dollars net. It certainly wasn't worth it, but who am I to argue? Ω

### Trivia Answers

|                      |                      |                         |
|----------------------|----------------------|-------------------------|
| 1. All three         | 8. Australia         | 15. True                |
| 2. 1993              | 9. Pluto             | 16. 5                   |
| 3. Earth and Moon    | 10. Jupiter & Saturn | 17. White spot          |
| 4. Asteroid Gaspra   | 11. 60               | 18. Total solar eclipse |
| 5. A few             | 12. Saturn           | 19. Long duration       |
| 6. Venus and Jupiter | 13. Canis Major      | 20. Largest optical     |
| 7. a)                | 14. Levy             | telescope Ω             |



"The moon isn't really following us, son -  
that's just an optical illusion."

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**March-April 1991**

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HALIFAX CENTRE - R. A. S. C.  
1991 CALENDAR OF EVENTS

May

| S  | M  | T  | W  | T  | F        | S  |
|----|----|----|----|----|----------|----|
|    |    |    | 1  | 2  | <u>3</u> | 4  |
| 5  | 6  | 7  | 8  | 9  | 10       | 11 |
| 12 | 13 | 14 | 15 | 16 | 17       | 18 |
| 19 | 20 | 21 | 22 | 23 | 24       | 25 |
| 26 | 27 | 28 | 29 | 30 | 31       |    |

June

| S  | M  | T  | W         | T  | F  | S  |
|----|----|----|-----------|----|----|----|
|    |    |    |           |    |    | 1  |
| 2  | 3  | 4  | 5         | 6  | 7  | 8  |
| 9  | 10 | 11 | 12        | 13 | 14 | 15 |
| 16 | 17 | 18 | <b>19</b> | 20 | 21 | 22 |
| 23 | 24 | 25 | 26        | 27 | 28 | 29 |
| 30 |    |    |           |    |    |    |

July

| S  | M  | T  | W  | T  | F        | S  |
|----|----|----|----|----|----------|----|
|    | 1  | 2  | 3  | 4  | <u>5</u> | 6  |
| 7  | 8  | 9  | 10 | 11 | 12       | 13 |
| 14 | 15 | 16 | 17 | 18 | 19       | 20 |
| 21 | 22 | 23 | 24 | 25 | 26       | 27 |
| 28 | 29 | 30 | 31 |    |          |    |

August

| S         | M  | T  | W  | T  | F         | S         |
|-----------|----|----|----|----|-----------|-----------|
|           |    |    |    |    | 1         | 2         |
|           |    |    |    | 3  |           |           |
| 4         | 5  | 6  | 7  | 8  | 9         | 10        |
| <b>11</b> | 12 | 13 | 14 | 15 | 16        | 17        |
| 18        | 19 | 20 | 21 | 22 | 23        | 24        |
| 25        | 26 | 27 | 28 | 29 | <b>30</b> | <b>31</b> |

Key to calendar:

*Regular Meetings:* **bold and shadowed**

*Special days:* **bold** (On dates marked with an asterisk, the event occurs on the **morning** of the date given. Check your Observer's Handbook for details)

*Possible observing sessions:* underlined

Special Days:

- May 4 - Eta Aquarid meteor shower
- June 15 - Mars 0.6° north of Jupiter (2:00 A.M. ADT)
- June 19 - Two shadows on Jupiter (10:22 P.M. ADT)
- August 11 - Perseid meteor shower
- Aug. 30-Sept 2 - NOVA EAST '91



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