NOVA NOTES

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NOVA NOTES are printed bi-monthly (Jan, March, May etc.) through the courtesy of the Nova Scotia Museum. Contributions relating in any manner to astronomy are welcomed and should be sent to reach the Editor by Feb. 26 for the next issue. Members who have any problems in receiving Nova Notes or Notices of Meetings should contact the Editor as cards may not be printed in our computor mailing lists and this may not be noticed for some time.

UP COMING MEETINGS:
Jan 16, 8:00pm at the N.S. Museum
Dr. R.L. Bishop--Some Small Telescopes
Dr. Bishop seemed a bit reluctant to give me the details of his talk. But he did say he would have on display several small refractors including a 3" transit instrument used in Halifax in the last century and he may also display his 5" RFT (not to be confused with his beautiful 8" creation). I have no doubt that this will be another of Dr. Bishop's superbly prepared and illustrated talks and that it will be most entertaining.

Feb 21, 8:00pm at the N.S. Museum
Members'Night--I think it safe to say that our last members'night was one of our most successful and interesting evenings. Their success depends on the contributions of all. Bring your recent photos or slides, displays or anything you believe would be interesting. Now where was that comet & my camera?

EDITOR'S MESSAGE

The Halifax Centre has completed one of its most successful years. Besides hosting, by all reports, a most successful General Assembly, we have had steady attendance at meetings, our membership has increased more than 30% and '76 membership has already reached the 1975 level but may I remind some of you once more that your membership was due Dec 31. We would appreciate your continued support, so when you recover from the Christmas shock send your checque to our treasurer. The OBSERVER'S HANDBOOK is in--if you have paid your 76 dues but have yet to receive your copy, again contact Bill Sheppard. Additional copies are available from him or myself at $3.00 each. You will notice elsewhere in this issue that Bill has juggled the books so that we are financially well off this year--any suggestions of usefull ways to spend our newfound riches?

As a result of the recent elections, we now have a new V-P in Debby Burleson and Peter Reynolds will continue as Secretary. I would personally and on behalf of the Executive like to thank those other persons who allowed their names to stand. Peter Edwards deserves a special thanks for his contributions to the Centre over the last 3 yrs.--2 as Editor and last year as V-P.

What's up for the coming year as an encore to 1975? Several suggestions have be forwarded as projects for the Centre. We are hoping to receive an invitation to participate in the N.S. Museum's Societies Show, but as yet have not received word. This will require that we come up with a number of displays from individual members--don't put off too long, April 15 will come very quickly. We are investigating the possibilities of resurecting the planetarium for this event. A pamplet to describe how to begin observing may soon be prepared for the Dept. of Lands and Forests for distribution in Provincial Parks next summer. It has also been suggested we should contribute a weekly article to local papers. This of course would also be educational but would reap a certain amount of publicity. An attempt will soon be made to found an astronomy group in Moncton which it is hoped will lead to the formation

of a new centre for the RASC. The Executive has also begun the process of writing a constitution for the Centre. If anyone has some experience in such matters we could use your assistance--and that goes for any of the Centre's projects! If you have suggestions for undertakings you feel we should tackle, we can not urge you strongly enough to either bring it up at a meeting or mention it to any of the Executive.

Nova Notes, I hope, will continue to expand and improve. Last year saw a number of changes and hopefully some improvements. Personally I think we have one of the best and most interesting newsletters in the country and reflects itself in the fact that we have had several articles reprinted elsewhere and some features are now being copied by other Centres. This year I would like to see a greater number of observing reports submitted. I'm sure some of you must do some observing on your own so why not scribble out a short report and send it along- it only takes 10 or 15 minutes. And if you wonder why I think we have one of the top newsletters just look a second at last years index in the Nov/Dec issue. The large number of contributors is the reason and I would like to thank you all for helping to make my work a bit easier, it is appreciated indeed!

One last reminder. Along with your election ballot you received a slip asking for information on your observing equipment and sites. We got a large number of replies but some have not been returned. Even if you have none, we would like to have a record of that. A membership list will be in the next issue along with this information and may be of help to some of you.

Finally a belated happy 79 th birthday to our Honourary President, Father Burke-Gaffney. On Dec 17 he was found in improuved health after a recent bout of pneumonia. He now resides in the Saint Vincent's Guest House on Windsor St. here in Halifax.

Dec. Minutes will be published in the next issue space permitting. Delay was beyond our control.

TELESCOPE RAMBLINGS

For some 2000 years, up until Kepler saw patterns in Brahe's observations, man was obsessed with the circle and circular motion as properties intrinsic to the heavens. Aside from the apparent motion of the celestial sphere, the only direct evidence for the existence of spheres in the sky were the discs of the Sun and Moon and the infrequent dark arcs associated with eclipses. Even the monthly flexing of the Moon's elliptic terminator could not sway the Greeks from their circular thoughts.

The Sun and Moon were joined by several other discs when the first telescopes were raised in the year 1609. The 100" resolution limit due to the unaided eye was thereby sidestepped and as optical quality approached perfection in the late 19th century, resolution fell to that quavering limit imposed by Earth's atmosphere. On the steadiest nights with optimum conditions this can drop as low as perhaps 0.3",corresponding to the resolution limit of a 500 mm telescope. The 10-fold larger aperture at Palomar is solely for more light.

On the following page are listed in descending order the one dozen, Earth-based, approximate maximum angular diameters of the spheres that fall between the 100" and 0.3" limits. Note that the values for Venus and Mercury correspond to inferior conjunction when these bodies are usually not visible.

Small, high quality telescopes can cope with discs as small as Neptune; however, moderate sized instruments (by amateur standards) are needed to sort out the Galilean

Venus	66"	Neptune	2.5"
Jupiter	50"	Ganymede	1.7"
Mars	26"	Callisto	1.6"
Saturn	20"	Io	1.2"
Mercury	13"	Europa	1.0"
Uranus	4"	Titan	0.9"

satellites. On steady nights I have been able to do this consistently with "the 200 millimeter telescope" at Maktomkus Observatory (prior to checking their positions in the handbook!). With 300x and the steady air that often precedes a storm system, Ganymede and Callisto present obvious discs. The dusky light of Callisto as compared to Ganymede makes it obvious which is which even without a careful comparison of their diameters. Io and Europa are harder to distinguish; however, Europa appears slightly more star-like than Io's small disc. The angular radius of the Airy disc of a point source is about 0.7" for a 200 mm telescope, so it is not surprising that Io and Europa cause some difficulty. Indeed, this difficulty increases away from opposition when the diameters can be as much as 30% smaller than those listed above.

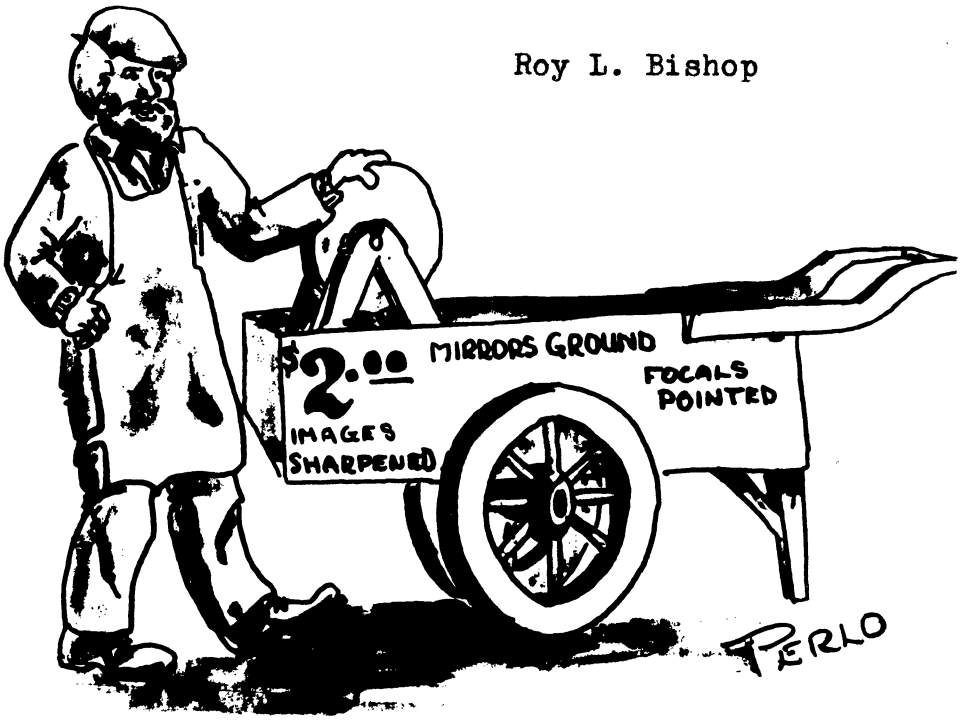
Of the five moons listed above, four are larger than our own Moon in linear diameter. Only Europa is smaller. Callisto, Ganymede and Titan are larger than the planet Mercury! However, Triton, the larger of the two moons of Neptune (and which falls just below the 0.3" cut-off point for the above list) may well be the largest moon in the Solar System. The September 1975 issue of Scientific American gives 6000 km for the diameter of Triton.

In summary, including the Sun and Moon, there are 14 discs distinctly visible to the eye of man. That even such immense luminous spheres as Betelgeuse and Antares are essentially

point-like in Earth based instruments is indicative of the profound scale disparity between solar and stellar space. Computer assisted techniques have recently been used to obtain a vague ghostly image of the face of Betelgeuse (see the February 1975 issue of Scientific American, p.42); however, this is not quite in the category of a direct visual encounter. The large space telescope (LST) planned by NASA for the next decade will give approximately a ten-fold improvement in resolution over Earth based instruments; but, since the heartbeat of a man at its controls would spoil its pointing precision, direct visual use will not be possible.

It is interesting that despite the technological advances of this age, the visual resolution limit is still the same as it was a century ago, and there are still but a dozen telescopic discs visible in the heavens.

Roy L. Bishop



THE ROYAL OBSERVATORY, GREENWICH*

J.E. Kennedy
Saskatoon Centre

The Royal Observatory was founded by King Charles II in 1675, primarily to advance the knowledge of the movements of the heavenly bodies, and to improve the means of finding the position of ships at sea.

Rev. John Flamsteed was appointed the first Astronomer Royal at a salary of one hundred pounds a year. Amoung the distinguished astronomers who followed Flamsteed were Halley, Bradley, Maskelyne and Airy.

The Royal Observatory was not well provided with funds at its founding. Flamsteed house was designed by Sir Christopher Wren and was to be erected at a cost not exceeding five hundred pounds. The bricks for the building are reported to have come from a gate-house which was being demolished in the Royal Park at Greenwich, while the Royal Navy raised slightly more than 500, from the sale of gunpower. On this basis, it may be readily visualized that the observatory at Greenwich should have started with a "bang"; unfortunately, this appears unlikely since historians have recorded that this gunpower was spoiled.

The scientific genius of a man such as Halley (about whom anecdotes abound), is evidenced by his work on periodic cometary orbits. Bradley has to his credit the great achievement of dis covering and explaining the aberation of starlight. Maskelyne, with his numerous accomplishments in astronomy, is most frequently associated with the "weighing of the Earth". Sir G.B. Airy influenced many fields of observation, and under his guidance the observatory became one of the foremost scientific institutions in the United Kingdom. He actively pursued the accurate triangulation of the British Isles and determined with precision by means of the electric telegraph the longitude of the Greenwich Observatory with reference

* This article was prepared by Prof. Kennedy on short notice to help fill the time left vacant whem the main speaker for the assembly was unable to attend.

to other observatories. The list of achievements of all the astronomers who have held the position of Astronomer Royal is indeed an impressive one.

In July, 1975, the accomplishments of the Royal Observatory, Greenwich, during the period of three hundred years since its founding, will be recognized through the 4th joint IAU/IUHPS symposium on the History of Astronomy. Dr. Owen Gingerich, president of Commission 41 of the IAU on the History of Astronomy, will review the development of astronomy throughout the past three centuries.

Between the 13th and 18th of July, scientific sessions will be devoted to the developments in astronomy in which the Royal Observatory, Greenwich, has played an important role. The determination of differences of longitude, and the accurate measurement of time, are representative of the topics which will be reviewed. Both astronomers and the general public continue to associate Greenwich with the prime meridian of longitude. It may not be well known that one Astronomer Royal decided to move this prime meridian--not very far it is true--but he successfullycarried out this operation. This was done by Sir G.B. Airy, one of the most progressive scientists of the 19th century, and the Astronomer Royal with whom William Brydone Jack carried on an extensive correspondence from Fredericton, New Brunswick.

A representative number of astronomers from Canada will be attending this symposium; a past-president of our Society, Dr. A. Vibert Douglas, has prepared a brief account of the plans for the symposium; her note will be published shortly in the Journal. Dr. Douglas plans to be at Greenwich for this tercentenary, as does our President, Dr. D.J. Fernie. Three papers by Canadian astronomers have been accepted by the committee for presentation during the scientific sessions of the symposium.

Flamsteed House, which still dominates the site of the Royal Observatory, Greenwich, has been renovated for this tercentenary, with the galleries housing new displays. Special exhibits of surveying and navigating instruments,

as well as those amazing chronometers built by Harrison which are still kept running accurately, will be featured in the National Maritime Museum.

The appearance and pleasant surroundings of the Royal Observatory, Greenwich, are apparent in these few slides, with the time-ball on top of Flamsteed House very conspicuous. This service was provided initially for the benefit of sailing ships which were at anchor in the river Thames. Each day the ball is raised to the top of its mast just before one o'clock and, through the wonders of electronics, falls at the precise hour of one. With the aid of a low-power telescope, any ship along this stretch of the river could readily check its chronometer by viewing the dropping of the time-ball.

Shortly after the termination of World War II, the telescopes and associated equipment of the Observatory were moved from Greenwich, a step which was necessary due to the interference with the observational program from atmospheric pollution and city lights. The Royal Greenwich Observatory is now located at Herstmonceux in Sussex, and at this site most of the present scientific program is carried.out.

The Royal Observatory, Greenwich, has fulfilled in no small measure the purpose for which Charles the Second created it in 1675. It has made outstarding contributions to the advancement of astronomy during the past three centuries. As this observatory enters upon its 4th century, the Royal Astronomical Society of Canada, along with many other scientific organizations throughout the world will wish to convey best wishes to the Royal Greenwich Observatory for its continued success throughout the next three hundred years.

MINUTES OF NOVEMBER MEETING

The November meeting of the Centre was held at 8:00 pm on Friday, November 21 in the Nova Scotia Museum. Dr. Bishop our president, opened the meeting and announced that, on account of the mail strike, the formal election of officers originally planned for this evening would be postponed until the December meeting. Despite the strike, it was indeed gratifying to see such a large audience present.

The guest speaker for the evening was Dr. B.D. Loncarevic, Director of the Atlantic Geoscience Centre, Bedford Institute, Dartmouth. His topic was the Plate Tectonic Revolution (on, of course, the Third Planet). Probably everyone in the audience was familiar with at least some of the jargon of the Plate Tectonic Revolutionaries (e.g., continental drift, sea-floor spreading, the Mid-Atlantic Ridge, earthquake distribution patterns, Magnetic anomalies, etc); however, what Dr. Loncarevic was able to do was to give us a coherent picture of the whole story placed in its proper historical perspective. There now seems to be no question but that the outer 100 km or so skin of the Earth is divided up into perhaps 20 'plates' of varying size which jostle each other about. It is better to live near the middle of one of these ridgid plates rather than near an edge since most earthquakes on Earth occur in regions where two or more plates meet and fight it out for supremacy

Dr. Loncarevic continued his address by explaining in some detail recent studies in the Labrador Sea region carried out by scientists and ships from the Bedford Institute. He concluded by pointing out that in addition to having provided a general stimulus to scientific thinking, the plate tectonic revolution bodes good things for society at large. Included amoung these are: a greater insight into the causes of earthquakes (with an eye to their prediction and eventual control), an understanding of the processes which produce economic mineral deposits, the solution of various problems in evolution, and(perhaps seriously) a storehouse for the radioactive waste material from nuclear reactors.

There followed a lively discussion period, a warm vote of thanks to our speaker, coffee and cookies. After the coffee break, we were treated to a fine selection of lunar eclipse slides taken Nov. 25 by Peter and Mike Edwards.

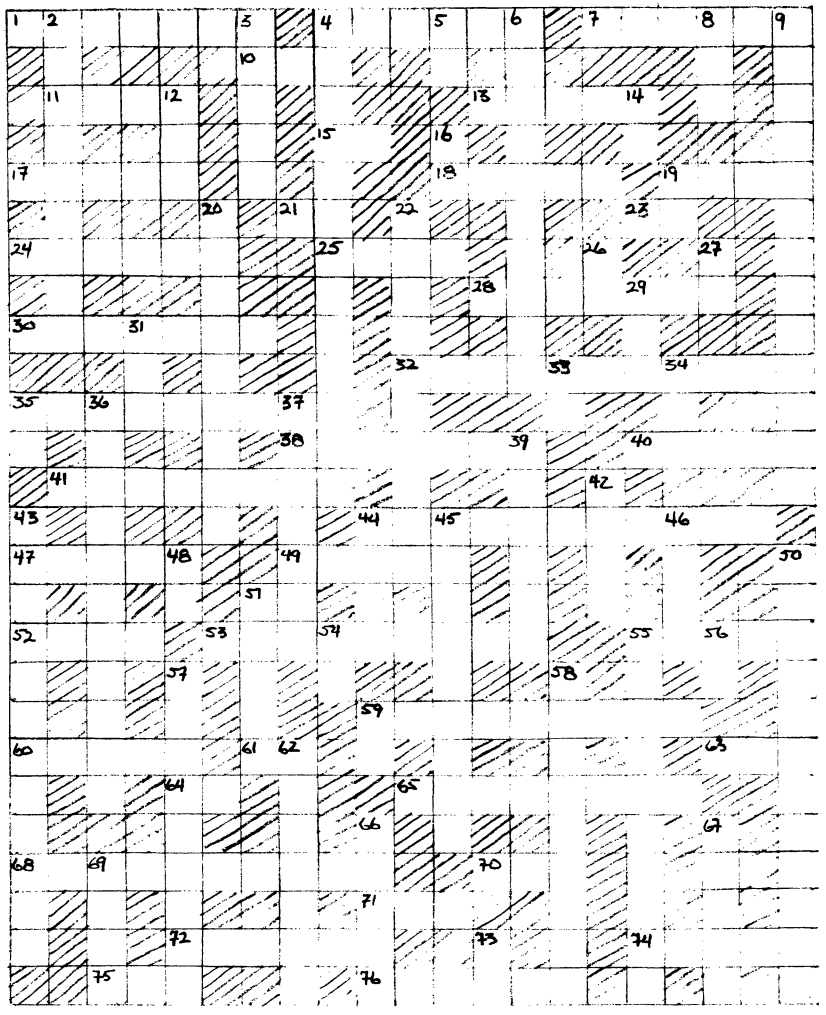
P.H. Reynolds

Across:

1 star group
4 radio wave lasers
7 planet
10 alter
11 intersection-orbit & ecliptic
13 bright star in virgo
15 Greek letter (Eng.)
17 moon of Saturn
18 Vega is α ___
19 coronagraph inventor
21 platinum-abb.
23 nickel-abb.
24 galaxy classifier
25 theorized comet cloud
28 measure of concavity
30 closest approach to Earth
32 cloud type (ionosphere)
35 brightness
38 Genitive-the Hunter
40 telescope type
41 many stars are this
44 H of H-R
47 dispersive element
49 outburst
51 Greek letter (Eng)
52 Cancer
53 study of Universe
55 ___ tube
59 layer of sun
60 triatomic oxygen
61 Helium-sym.
63 month of Aquarids
64 gadolinium-sym
65 totality of existence
68 apparent displacement of a star
70 bird of paradise-abb
71 ___ giants
72 atmospheric phenomenon
74 his limit of 2 body instability
75 sol
76 climatic period & HAPPY NEW YEARS

Down:

2 quantity measured eastward
3 name associated with hot O stars
4 magnetic field layer
5 erbium-sym.
6 low density star
8 reticulum
9 twinkling of star light
12 a long time
14 silver-sym.
16 chlorine-sym.
19 lithium-sym.
20 ___ sphere
22 discovered solar absorption lines
26 Greek letter (Eng)
27 radium-sym.
29 the Bull-abb.
31 charged atom
33 moon of Jupiter
34 Big Dog-abb.
35 Morgan-Keenan system-abb.
36 weak force
37 French planetary astronomer
39 Moon's position at new/full phase
42 goes with 1 across
43 employs a diffraction grating
44 luminous ring due to ice
45 ability to separate
46 dwarf novae prototype
48 magnesium-sym.
50 theory of the universe
51 Moon's period
54 mendelevium-sym
55 region in atmosphere-sym.
56 actinum-sym
57 type of reflector
58 right ___
59 radon-sym.
62 intersection of ecliptic and celestial equator
66 journal of the RAS-abb.



67 reference date
69 asteroid
73 cesium-sym

If you finish this we will know where to find you. If you give it a half hearted attempt and don't go off your rocker but still want the answers, come to the January meeting. If you can't make it, the completed puzzle will appear in the next issue of Nova Notes.-Ed.

Puzzle contrived by Diane Brooks

HALIFAX CENTRE FINANCIAL REPORT

The following statement of financial standing of the Centre is complete to Dec 20, 1975.

REVENUE

Membership fees	$ 837.50	
Donations	10.00	
Interest & Dividends	5.68	
Handbook sales	35.50	
General Assembly	3,701.99	
Miscellaneous	5.00	
Total Revenue		$4,595.67

Expenses

Fees remitted to N.C.	$ 540.00	
Meetings & Newsletter	62.64	
General Expenses	6.60	
Honorarium	20.00	
General Assembly	3,142.00	
Total Expenses		$3,771.24
Surplus on Operations		$824.43
Balance from 1974		76.62
Balance to Dec 20, 1975		$901.05

A complete breakdown of General Assembly revenue and expenses may be obtained from the treasurer on request. Surplus on operations of the General Assembly resulted from several fortunate events late in the planning stages and primarily from a substantially larger registration than anticipated. In the general operations of the Centre, (subtracting the GA surplus) the Balance has risen from $76.62 to $341.06 indicating the healthy state of the Centre.

Bill Sheppard,
Treasurer

COLOUR ACCURACY IN ASTROPHOTOGRAPHY

I'm certain that most of you have wondered from time to time how we know the colours seen in the Palomar photographs are correct. Even with the largest telescopes, the light levels of the nebulous objects are much too faint for the human eye to perceive colour. So, since no-one has seen the hues of these objects, how does one determine the proper colour balance for each object photographed? If you have ever seen a professional photographer processing colour prints, you will have an inkling of the problem. First, the film must be colour analysed as a whole with slight variations due to film type, age, exposure conditions, and enlarger bulb colour temperature being determined. Then the variations of tint of each frame from the film average must be corrected leaving a very minute margin of error if an acceptable rendition is to be achieved.

The Palomar colour prints were produced with even greater care being exercised. These masterpieces you are all familiar with were taken about 15 years ago with the 5m. telescope on Super Anscochrome Daylight film which had an ASA rating of 100. The problem of all photographic emulsions is an effect known as reciprocity law (E=It, E= exposure, I= intensity, t= time) failure. Ideally, an emulsion would exhibit constant density when the intensity is halved and exposure time doubled. In practice this law does not hold for extremes of exposure time or intensities. In Fig. 1 the reciprocity curves of 2 black and white films are shown. A film which follows E=It would produce a horizontal line. The spectroscopic film 103a-F, commonly used by professional astronomers, is seen to approach the desired horizontal result. Tri-X, on the other hand, curves sharply up ward for longer exposures indicating

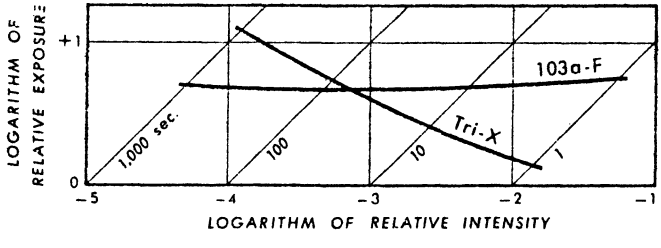


FIG. 1: Reciprocity failure for 2 Kodak films

that the percentage on incident light being recorded by the emulsion is decreasing with each additional increment of exposure time.

In colour photography the problem is compounded by the fact that the three layers of emulsion (blue sensitive or magenta-dye; green sensitive or yellow-dye; and red sensitive or cyan-dye) do not fail at the same rate and therefore the colour balance is constantly changing. In Fig. 2 the response of three dye layers to increasing exposure times is indicated for 4 common film types. If colour balance is to remain uncharged the 3 lines in each graph must be 'parallel' at all points. As you see, they are not and it is this factor which must be corrected in printing the photos of these faint objects and this is achieved by use of appropriate correcting filters.

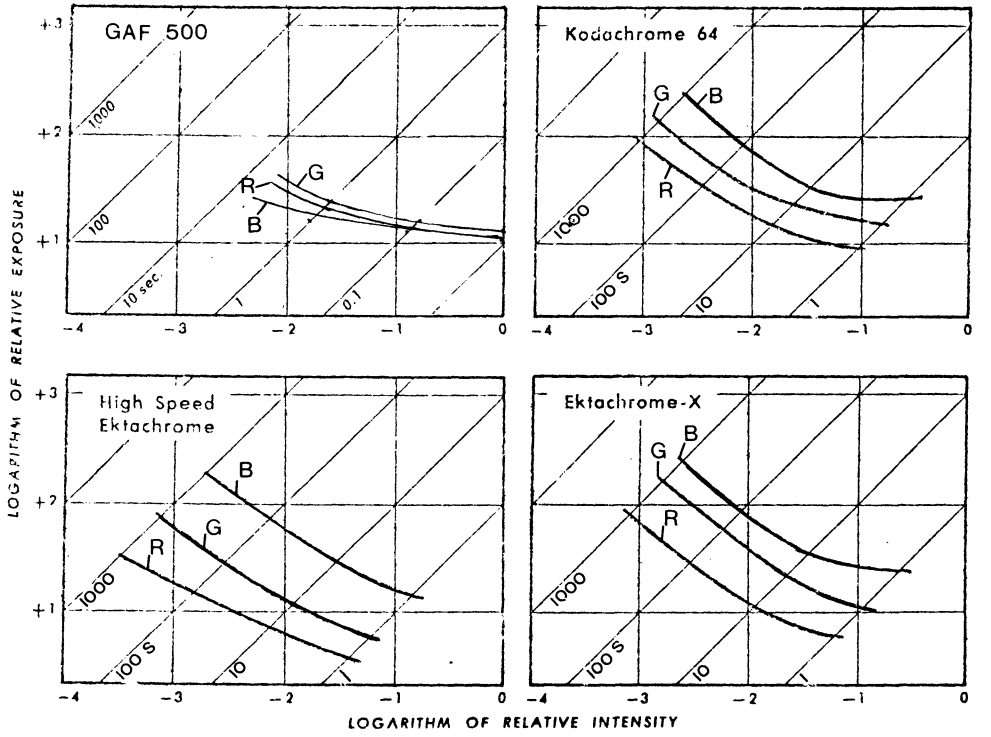
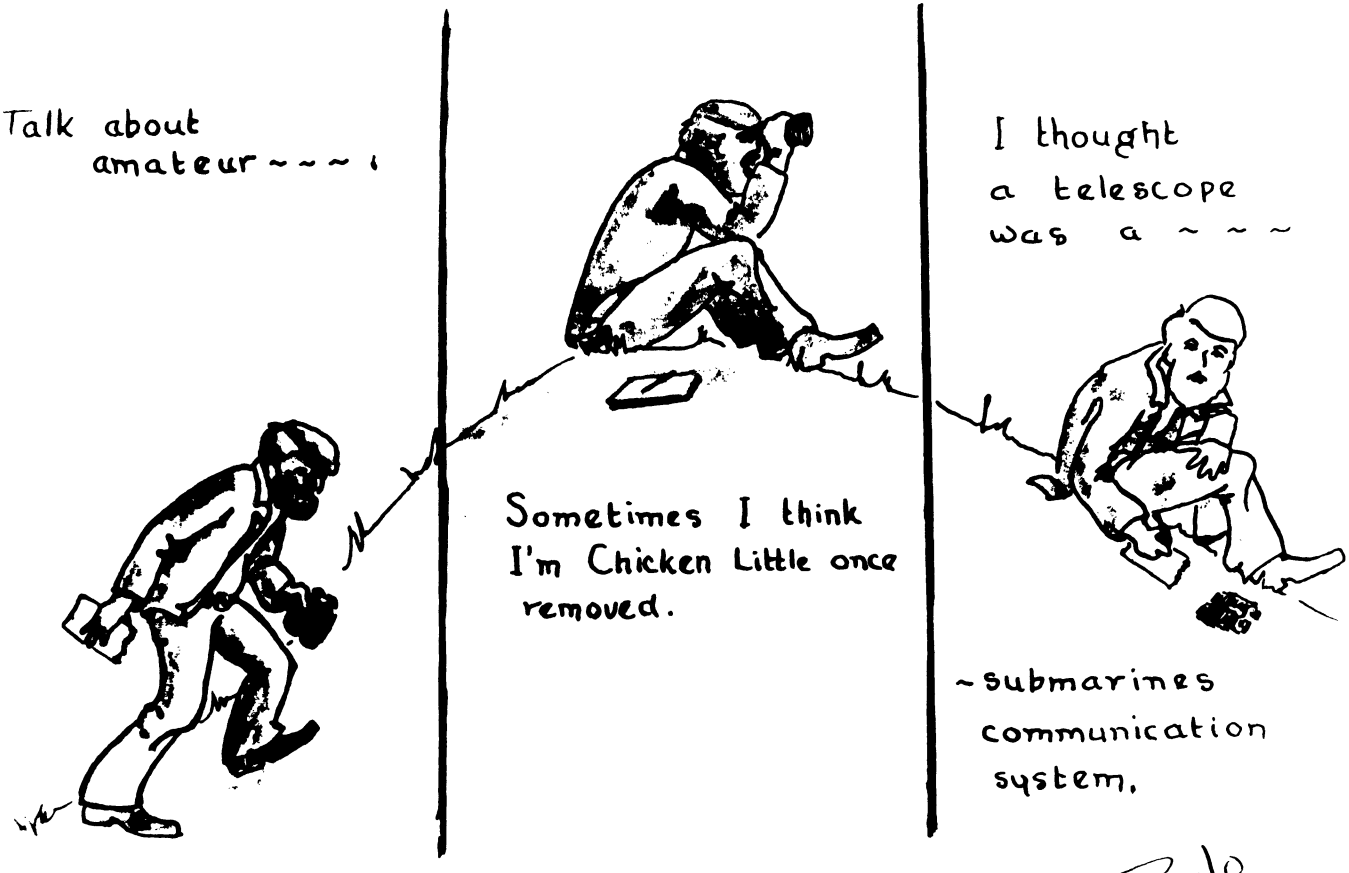


FIG 2: Reciprocity failure for the three emulsion layers of 4 common film types. Ektachrome-X appears to offer the best chance of accurate results because of the nearly 'parallel' rates of change of reciprocity in its 3 emulsions. (See Sky & Tel, July 1975 and note the correction to the time scales.)

The first attempts to obtain colour corrected photographs were made by exposing the film at the telescope without filters and then compensating for the shifts in colour sensitivity during the printing process. This was done in the hope of avoiding increased exposure times caused by the presence of filters but resulted in cross-over effects during the corrective procedure. The procedure then adopted was to predetermine the colour error for exposures of differing times and to include the required correcting filters during exposure. To do this, the Anscochrome film was exposed for 1 sec. in a tube sensitometer fitted with filters to yield an accurate neutral (18%) grey target. (See any Kodak darkroom guide for an example and the use of such a standard card.) The light was then attenuated without changing the colour temperature of the source so photos equal to the length of those anticipated at the telescope could be taken of the same neutral grey target. The longer exposures could then be brought to neutrality by adding filters while comparing the two samples in a colour densitometer. It was found that the greatest shift in colour rendition occured between 1s and 60 min. The filter (30R) required for a 3 hr. exposure was adopted for use at the telescope. By making a tube sensitometer exposure immediately after the astrophoto on the same film sample and with the same filter used in the telescope, they had a method of correcting small residual errors in colour balance—these being made as part of the duplicating process. The telescope exposure and its accompaning tube sensitometer exposure are from the same film batch, stored and developed together and in every respect handled identically. Thus any changes will affect both similarily but will not affect the final print quality as the changes will be corrected for automatically when balancing the two films in the densitometer.

One factor however which can not be controlled is the presence of aurora as the plate is being exposed. This of course changes from night to night and even from hour to hour. So in an effort to correct colours induced from the night sky, photoelectric measurements are made of the sky during the exposure with additional corrections being applied during duplication. Although the exposure required 3 - 4 hr. the analysis and corrective procedures spanned several weeks—but these efforts have yielded results we can be confident are very close to those of nature.

R. Brooks


Talk about amateur ~ ~ ~ ~ !
Sometimes I think I'm Chicken Little once removed.
I thought a telescope was a ~ ~ ~
~ submarines communication system,
Perlo

Notes on the Solar Wind

It was discovered through early space probes that the outermost reaches of our atmosphere are extremely hot; about 200,000°K. In 1958 E.N. Parker published a paper which put forth the theoretical promise of a hot gas travelling at supersonic speeds in the area of 1 AU from the sun, the source of the gas. He called this gas the Solar Wind. The existance of the Solar Wind was confirmed as soon as the flight of Mariner2 was made, in 1962. It was shown that a gas with a density of 10 particles per cubic centimeter streams past the earth with a velocity of 400-500 km/sec. Study has shown that solar wind results from the expansion of the corona due to its high temperature of 2 million °K. The photosphere is at about 5750 °K. (The higher, the hotter ?) Due to the mass of the sun, gravational, mechanical, electromagnetic and nuclear forces the core of the sun reaches temperatures of 15 million °K. The matter becomes gas and chemical and nuclear reactions take place producing great amounts of energy. (Recall that temperature is a measure of the mean square velocity of a volume of atoms; and velocity is related to kenetic energy.) This energy developed in the core is transported from hotter to cooler regions by radiation, conduction and convection. Convection is a turbulent process which is visible by the grains of the photosphere. This convection process produces sound waves made up of volumes of lower

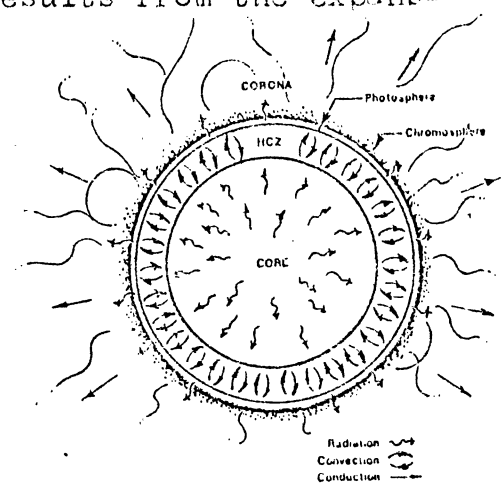


Fig. 1. The three modes of solar heat transport—radiation, convection, and conduction.

than average particle density alternating with greater than average particle density, that is rarefraction and compression. The speed of volumes of high density travel through a gas depends on local gas density and temperature. In the chromosphere, density varies little but between the chromosphere and corona the density drops by a factor of 100,000. This produces a discontinuity and a small amount of coronal gas dissipates a large amount of energy. Thus an extremely hot gas results. Also in the energy transportation process, enough charged particles exist in the gases to make up a flow of electricity. When this happens in a gas the gas is called a plasma. At some point the velocity of the gas away from the sun becomes great enough for the plasma to escape the gravational field of the sun becoming the Solar Wind rather than the corona. The effects of the solar wind will be discussed at another time. However one effect as you know is that encountered by the tails of comets. The June 1973 issue of Griffith Observer provided the source of information and diagrams above.

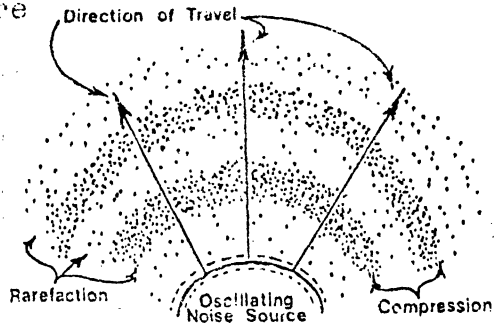


Fig. 2. The turbulence of the sun's surface produces noise that moves outward through the corona as sound waves.

Mike Edwards

COMET WEST (1975n)

R. M. West, European Southern Observatory, Geneva, provides the following precise positions, measured from plates taken by H. E. Schuster, O. Pizarro and G. Pizarro with the 100-cm Schmidt telescope at La Silla. The central condensation, 2" in diameter, is surrounded by a diffuse halo approximately 20" in diameter.

1975 UT	α_{1950}	δ_{1950}	m_1
Nov. 8.0334	$20^h17^m29^s.07$	-40°52'28".8	12.5-13.0
9.0293	20 17 39.76	-40 47 28.5	
10.0182	20 17 52.33	-40 42 26.2	
11.0453	20 18 07.30	-40 37 09.3	

The following parabolic elements, by B. G. Marsden, satisfy the above positions and the means of the positions of the trail ends given on IAUC 2860 within 2":

T = 1976 Feb. 25.1990 ET
q = 0.196626 AU
ω = 358°.4198, Ω = 118.2262, i = 43.0601 } 1950.0

1975/76 ET	α_{1950}	δ_{1950}	Δ	r	Elong.	m_1
Nov. 24	$20^h24^m.07$	-39°26'.8	2.391	2.083	60°.1	12.1
Dec. 4	20 31.99	-38 27.6				
14	20 42.63	-37 23.4	2.297	1.750	45.3	11.2
24	20 55.87	-36 12.0				
Jan. 3	21 11.79	-34 49.9	2.102	1.386	33.1	10.0
13	21 30.59	-33 10.9				
23	21 52.68	-31 03.9	1.784	0.978	24.5	8.2
Feb. 2	22 18.70	-28 05.8				
12	22 48.85	-23 17.4	1.303	0.492	19.1	4.5
17	23 03.83	-19 18.9				
22	23 11.09	-12 50.1	0.955	0.232	13.5	0.5
27	22 46.19	- 3 00.7				
Mar. 3	22 04.01	+ 4 09.4	0.810	0.318	16.8	1.6
8	21 36.25	+ 7 39.3				
13	21 19.43	+ 9 36.6	0.941	0.587	35.2	4.6
18	21 08.42	+10 56.1				
23	21 00.43	+11 58.6	1.056	0.833	47.8	6.3
Apr. 2	20 48.12	+13 42.0				
12	20 36.42	+15 11.4	1.191	1.262	69.6	8.4
22	20 22.81	+16 29.0				
May 2	20 06.07	+17 29.9	1.251	1.638	92.3	9.6
12	19 45.83	+18 04.5				
22	19 22.62	+18 03.2	1.313	1.979	116.1	10.6
June 1	18 57.78	+17 19.4				
11	18 33.24	+15 53.4	1.449	2.296	136.7	11.4
21	18 10.92	+13 54.0				
July 1	17 52.11	+11 34.3	1.706	2.595	143.5	12.3

$m_1 = 7.0 + 5 \log \Delta + 10 \log r$

COMET BRADFIELD (1975p)

The following improved parabolic elements, by the undersigned, are from 13 observations Nov. 13 to 24:

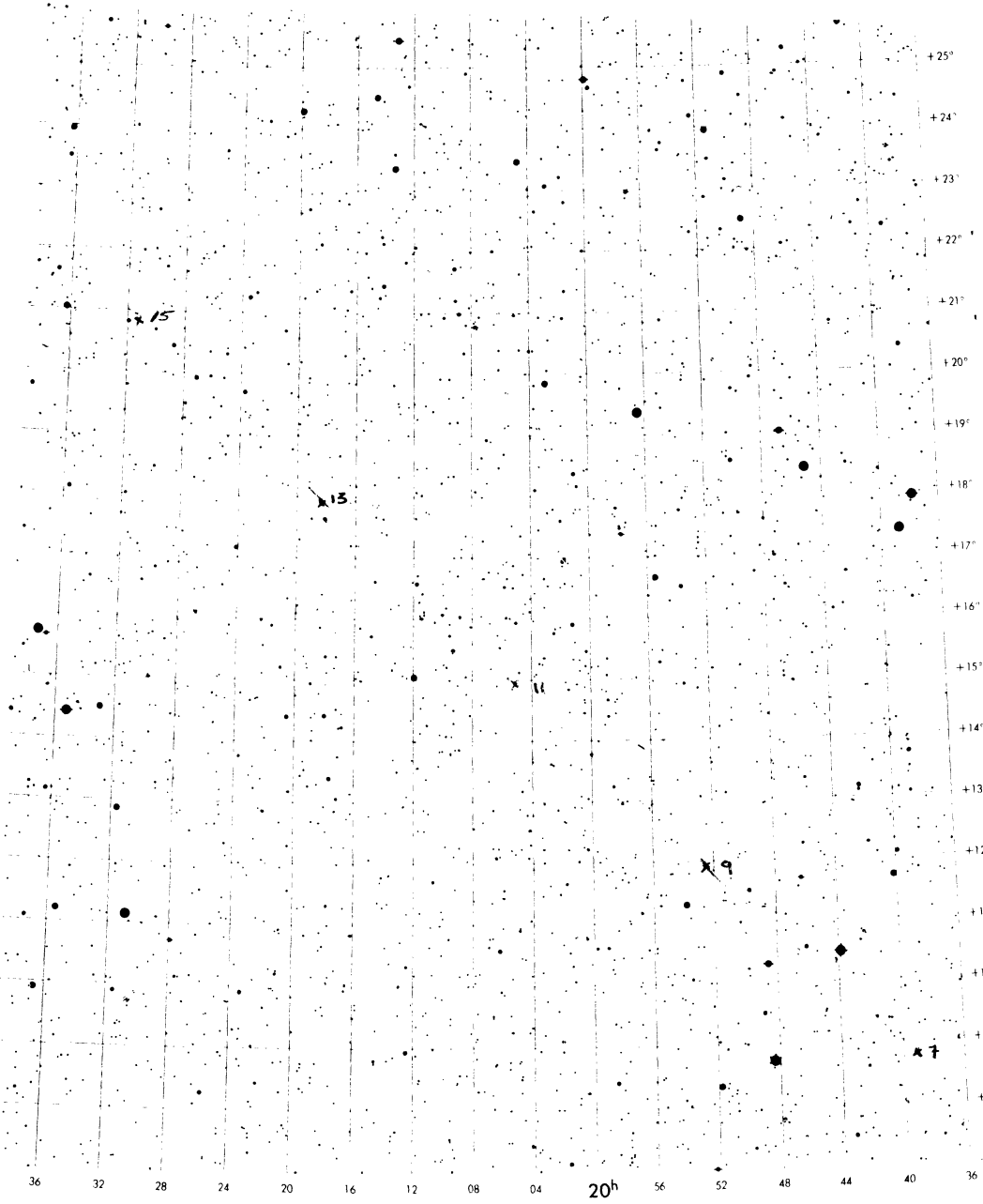
T = 1975 Dec. 21.178 ET
q = 0.21863 AU
ω = 358°.108, Ω = 270.611, i = 70.626 } 1950.0

1975/76 ET	α_{1950}	δ_{1950}	Δ	r	Elong.	m_1
Dec. 6	$15^h20^m.50$	-47°07'.8	1.069	0.540	30°.1	5.5
8	15 45.95	-45 32.3				
10	16 09.90	-43 29.5	1.096	0.437	23.4	4.6
12	16 32.16	-41 00.1				
14	16 52.69	-38 04.1	1.138	0.334	16.1	3.5
16	17 11.57	-34 40.6				
18	17 28.98	-30 48.0	1.184	0.247	7.7	2.3
20	17 45.04	-26 27.9				
22	17 59.86	-21 50.9	1.202	0.221	1.8	1.8
24	18 13.54	-17 15.4				
26	18 26.37	-12 54.2	1.174	0.279	10.9	2.8
28	18 38.68	- 8 49.6				
30	18 50.77	- 4 59.1	1.132	0.376	18.8	4.0
Jan. 1	19 02.82	- 1 19.7				
3	19 14.95	+ 2 10.8	1.097	0.479	25.9	5.0
5	19 27.25	+ 5 33.6				
7	19 39.74	+ 8 49.2	1.078	0.582	32.4	5.8
9	19 52.45	+11 57.5				
11	20 05.40	+14 58.2	1.074	0.681	38.3	6.5
13	20 18.55	+17 50.7				
15	20 31.91	+20 34.3	1.086	0.776	43.7	7.1

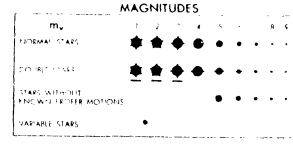
$m_1 = 8.0 + 5 \log \Delta + 10 \log r$

Z. Sekanina, Center for Astrophysics, Harvard and Smithsonian Observatories, communicates: "The earth will be crossing the orbit plane of the comet on Dec. 23.4 UT, and the projection conditions will then be favorable for the appearance of an antitail of dust particles (in p.a. 198°). However, only infrared methods could be used to detect the feature, because the comet will be only 5° from the sun. Even negative observations would be valuable, as they would indicate the absence of detectable output of dust from the comet prior to perihelion. Fairly favorable observing conditions will persist for several weeks after the date of crossing. If bright enough to detect, the antitail should be observed in p.a. ∿ 200°-215° at the beginning of January, rotating slowly counterclockwise to p.a. ∿ 230°-260° by the end. Owing to emissions near perihelion, the sector of sky to the west of the comet might appear brighter than that to the east, especially on long-exposure plates."

1975 December 3 — Brian G. Marsden



Path of Comet Bradfield (1975p)
on 7 to 15



OBSERVING REMINDERS

Jan to early Feb: Comet Bradfield (1975p) will be visible with a small telescope see previous pages for positional info. At the moment we only have data as shown but if you want up to date positions call someone at SMU or if closer Dr. Bishop.

Late Jan to July: Comet West (1975n) Reaches perihelion on or near Feb 22. Right here I could use Dr. Bogan's Cylindrical Astrolabe, but if I am not mistaken it will move from the evening to morning sky. Am I right Larry?

Very few other exciting events are upcoming but check the Hdbk for happenings which interest you. This was cut short so I could go meteorite hunting---no kidding. Read about it next month--I hope.

"Never sunbathe during an eclipse!"

FROM:
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