

NOVAC

The Newsletter of the Northern Virginia Astronomy Club

Issue Number 22

Volume 8

February/March, 1989

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The night has a thousand eyes
And the day but one;
Yet the light of the bright world dies
With the dying sun.
-F. W. Bourdillon, *Light*

Board of Directors:
Al Boldt
Gerald Perman
Al Schumann
Lynn Schumann
Gilbert Swift

A WORD FROM THE PRESIDENT

Quite a bit has happened since the last newsletter was published. We had a general membership meeting in December, a Pseudo-Board of Directors meeting the first week in January, and the beginning of a new election campaign.

At the December meeting many topics were discussed. It is now official folks! All observations are scheduled for C. M. Crockett Park this year. It seems light pollution and cow patties have pushed people away from Greenville. Everyone should now be meeting at Crockett Park on Fridays as well as Saturdays evenings (See enclosed observing schedule for 1989)!

We also voted to have dues due in January of each year. 1989 will be catch up year for the club. Members who's dues expire this year will be prorated to January of next year. This is being done to ease the duties of next term's Treasurer.

Thanks to Steve Smith of the Arlington Planetarium and John Huggins, we now have a regular meeting spot. Beginning in February we will have the honor of meeting regularly at the Arlington Planetarium on the third Wednesday of each month. Yes folks! **REGULAR MONTHLY MEETINGS!** Mark your calendars and wash the car! The address of the planetarium is 1426 North Quincy Street, Arlington, Virginia. Meetings will always begin at 7:30pm. Please consult the club hotline (866-4985) for cancellation information. No one will call you.

As the three year term has come upon us again, we scheduled a Pseudo-Board meeting to discuss offices and election procedures. Not all of the board was there but enough members attended to make discussions worthwhile. Nothing was set in concrete at this meeting as it was not heavily

advertised. The holidays and newsletter timing made it impossible to do so. However, what was discussed will be brought up for voting as the first item at February's meeting. The following offices have been proposed. If you are interested in volunteering for any of these positions, please let me know so I can include your name on the ballot.

President,
Vice President,
Treasurer,
Secretary,
and a five member Board of Directors.

In January, many people were nominated for these offices. Those that were nominated will have until the February meeting to tell me if they do not want to run for office. Here is a list of the nominees:

President - Blaine Korcel, Jim Schaeffer
Vice President - Blaine Korcel, Jim Schaeffer
Treasurer - Bob Ridgley, Lynn Schumann
Secretary - Al Schumann
Board of Directors - Brent Archinal, Al Schumann,
Don Larson, Al Boldt, Laurel Wanrow, Dennis
Gaughan

Elections will be held at the February meeting folks! I urge everyone to attend and vote. What is decided that night will effect the club for the next three years!

Also, if anyone is interested in giving a talk, a short slide show, or an equipment demonstration at any of our meetings, please let me know. We want to try and schedule at least one fun item at each meeting.

Clear skies,
Blaine Korcel, President

REFLECTIONS ON NOVAC

by John Huggins

I have enjoyed my many years in this club. I have seen many changes since its inception by Nils Thomas in 1980. It started out with six people you know. The club grew as people recognized it for its simple goal of simply observing.

When Richard Lawson first created the Burke Lake Telescope Meet (BLTM), NOVAC was thrust into the lime-light.

Once Nils said to me "NOVAC exists to observe and help others do the same..." I continued, "...to observe and to help others observe." Nils liked it and suddenly it became the motto of NOVAC. Yes, it is humorously poetic, but it says it all. The sun's corona became a symbol of the club for its simplicity and easy recognition.

Richard Lawson published the original three NOVAC newsletters. They were a struggle to make. You can only do so much with a mechanical Smith-Corona and a magic-marker. The NOVAC Corona began to flourish when Blaine Korcel took hold of it and shaped it into a masterpiece.

Past events like BLTM's, Halley's Comet, and NVTM88 have steadily increased our presence in the astronomical community. Many people have joined since then. I hold much respect for many of the members whom I have met. Our merry band of amateur astronomers is a happy community; this is something not easily found these days.

For years I have been an officer in NOVAC. Nils, Blaine, and I have raised the club from an infant to an adult. Nils told me once that someday we would have to let the club move onward on its own. I am pleased to say that MANY of the members are qualified for the above offices. It is time for me to get out of office (albeit nervously) and let some others get underway. Al Boldt said I needed a rest; he's right.

I look forward to doing more astronomical things like finishing my scope, doing more astro slide presentations for the public, getting more involved with the planetarium programs, etc., etc.,.....

Regards,
John Huggins

PLANETARIUM VOLUNTEERS

The Arlington County Planetarium is seeking volunteers to help expand their public programs. People with mechanical or electrical skills are needed. Also if you enjoy meeting and working with people please pitch in and give them a

hand. Contact Steve Smith, Planetarium Director, at 358-6070 during normal business hours.

NEWSLETTER CHANGES

In an effort to improve the newsletter's appearance several changes have been made. Most obvious is the NOVAC logo. As you may have noticed the CORONA logo has been replaced. The new logo was designed by Jim Schaeffer and matches that which appears on the club shirts, jackets, and hats. We have also gone to a slightly smaller type face and a two column format. This will allow greater flexibility in the placement of graphics and photos. It will also give us more room for text. In response to several suggestions the monthly calendar has been temporarily discontinued. This type of information is readily available in various magazines and reference books. The *Astronomical Calendar* published by The Astronomy Workshop at Furman University (803-294-2208) is a good source.

Please submit articles or suggestions that you feel would be of interest. You may post them in the newsletter directory of the NOVAC RBBS if you wish. You may also leave messages to me (Bob Ridgley) with your suggestions or comments. For those of you who don't have access to the RBBS please type your articles on a word processor (IBM or compatible please!) and save them in an unformatted or as an ASCII file. Photographs, drawings or illustrations are welcome. Articles of interest from other newsletters or books can probably be used with the proper permission. I'll do the leg work on that if necessary.

Remember that this is YOUR NEWSLETTER...we need to hear from YOU about your astronomical interests and experiences.

ELECTION INFORMATION

As you know from reading Blaine's article elections will be held at the next general membership meeting in February. It is very important that all club members make a special effort to attend this meeting and to consider running for offices. It has been suggested that four officers be elected in lieu of the present two. This will spread the work load around. In accordance with the club's constitution they will serve three year terms. A five member Board of Directors will also be elected for one year terms. A brief description of the major duties of each office follows.

The President conducts general membership meetings and functions as liaison to the public. The President must be an outgoing individual who can easily relate to people. Public speaking skills would be a great asset.

A Vice President is responsible for general operations within the club and assists the President with all club activities. He or she will monitor the activities of the Secretary, Treasurer, and all committees. Time, energy, and the ability to organize are important here.

The Secretary shall handle all requests for information from outside organizations. They will supervise the newsletter or if they choose to assume the position of Editor. They will also record revisions to the constitution (by-laws). The Secretary should have access to a word processor and **MUST HAVE** good writing skills in order to effectively communicate with other organizations.

The Treasurer will assume general financial duties such as the collection of the dues and maintenance of the membership list. In addition they will welcome new members. This individual must be a good record keeper and should have access to a computer with a data base manager.

Board of Directors - Will meet a minimum of four times each year. Resolves all disputes which may occur within the club. They will be expected to serve as coordinators for activities such as the Annual Telescope Meet, educational aspects, etc. Again these individuals must be energetic and goal oriented.

These offices are very important! They require a great deal of work. It is however, very satisfying. If you make a decision to run for office please treat it as a commitment.

FEBRUARY/MARCH SKY SWEEP

by Kevin Jones

R.A./DEC. DESCRIPTION

00427 + 4116 - M31, M32, M110, M31 = Andromeda Galaxy. Huge and bright, M31 and companions visible in wide-angle eyepiece.

01339 + 3039 - M33, Triangulum Galaxy, low surface brightness, huge.

02039 + 4220 - Gamma Andromedae, double star, yellow/bluish contrast.

02215 + 5708 - Double Cluster in Perseus, big & bright. A lovely starfield and a real showpiece. Use wide-angle eyepiece.

02290 + 6724 - Iota Cassiopeiae, triple star.

03475 + 2406 - M45, Pleiades in Taurus. Huge and very bright. Use binoculars or a finderscope for an unforgettable view.

04596-1447 - R Leporis, Crimson Star. Deep red long

period variable.

05345 + 2201 - M1, Crab Nebula in Taurus. Supernova remnant from 1054 A.D., pretty bright, not too big, whitish oval.

05354-0522 - M42/M43, Orion Nebula. Bright, extensive & delicate nebulosity surrounding the Trapezium. Use wide-angle eyepiece.

05387-0235 - Sigma Orionis, multiple star, Yellow/blue/green/blue.

06089 + 2420 - M35, Open Cluster in Gemini, bright and large. Fainter and more distant cluster NGC 2158 to SW.

06324 + 0452 - Rosette Nebula in Monoceros. Cluster w/ wreath shaped nebulosity. Cluster is easy, nebula is more difficult.

06451-1641 - Sirius, double star. Close white dwarf companion, difficult because of glare of Sirius.

08404 + 1941 - M44, Praesepe in Cancer. Large bright cluster of yellowish stars.

09556 + 6904 - M81/M82 Galaxies in Ursa Major. Two close galaxies, M82 seems to be exploding. Dust lane visible in M82.

10199 + 1951 - Gamma Leonis, double star, both deep yellow.

12245 + 2543 - Coma Cluster, extra-huge. Use binoculars.

12561 + 3819 - Cor Caroli, double star.

13239 + 5455 - Mizar, double star. Also wide double w/ Alcor.

13422 + 2823 - M3, Globular Cluster in Bootes, bright and round.

17419 + 7210 - Psi Draconis, double star.

1989 OBSERVING SCHEDULE

All club observing sessions for this year will be held at the C. M. Crockett Park in Fauquier County. Also, NOVAC members may use the park for observing on nights other than those scheduled below. However, the park manager must be contacted in advance. The park manager's name is Roger Pence. His assistant is Gary Kwolek. They can be reached during normal business hours at 703-788-4867. The gate is locked at sunset; the combination is 1-9-6-1. After setting the combination the shackle must be pushed in slightly before it will release. For your security lock the gate after you enter. Remember to lock it after you leave. Please do not leave trash or debris behind. We are guests of the park. Directions to the Park are as follows.

* Take I66-west to Route 28...

* Turn right onto Route 28-south, and continue thru Manassas...

[Or you may continue on I66 to the Manassas interchange. Take the 234-south exit. After about 3 miles look for the sign directing you to Route 28-south (Godwin Drive) on the right hand side of the

road. It's the traffic light just after the "Po Folks" restaurant. Take this road until it joins with 28-south. I prefer this route; it is less driving time than going all the way down Route 28 from I66.]

- * Continue on 28-south, you will cross the Prince William/Fauquier County line...
- * Continue for about six miles until you get to Route 643...
- * It leads only left - don't turn there...
- * Continue for another 1/2 mile to the next Route 643 that leads only right, turn there. It's right in front of a little country store...
- * After about one mile you will turn left...there is a sign reading "C.M. Crockett Park" just prior to the turn...
- * The Park entrance is about 1/2 mile ahead, just past the "Road Ends 1/2 Mile" sign...
- * Drive slowly down the paved access road to the end of the cul-de-sac. If possible turn out your headlights and drive with your parking lights on, as long as you can do so without running over any telescopes! It takes about 1/2-hour to dark adapt your eyes after being blinded by headlights. If you are already there please use a red flashlight to help people who are arriving find a parking spot.
- * Park anywhere near the edge of the pavement...

Any changes to the following schedule will be posted on the NOVAC hotline. The format is: day, date, and moons age.

FRI 02/03 25 days	SAT 07/01 26 days
SAT 02/04 26 days	FRI 07/07 04 days
FRI 02/10 04 days	SAT 07/08 05 days
SAT 02/11 05 days	FRI 07/28 24 days
	SAT 07/29 25 days
FRI 03/03 24 days	FRI 08/04 03 days
SAT 03/04 25 days	SAT 08/05 04 days
FRI 03/10 03 days	FRI 08/25 22 days
SAT 03/11 04 days	SAT 08/26 23 days
FRI 03/31 22 days	
SAT 04/01 23 days	FRI 09/01 01 days
FRI 04/07 01 days	SAT 09/02 02 days
SAT 04/08 02 days	FRI 09/29 28 days
FRI 04/28 21 days	SAT 09/30 01 days
SAT 04/29 22 days	
FRI 05/05 28 days	FRI 10/27 26 days
SAT 05/06 01 days	SAT 10/28 27 days
FRI 05/26 20 days	
SAT 05/27 21 days	FRI 11/03 05 days
	SAT 11/04 06 days
FRI 06/02 27 days	FRI 11/24 24 days
SAT 06/03 28 days	SAT 11/25 25 days
FRI 06/30 25 days	
	FRI 12/01 03 days
	SAT 12/02 04 days
	FRI 12/29 01 days
	SAT 12/30 02 days

NOVAC CONSTITUTION AND BY-LAWS

DECLARATION OF HIERARCHY

This constitution and by-laws shall operate much like the United States constitution and laws. The constitution shall be the highest authority of behavior, rules (laws), and activities. All rules, laws, operating procedures and other governance may not conflict with the constitution in any manner.

GOALS OF THE CLUB

Item 1: The club and its members shall promote astronomy to the public.

Item 2: The club shall help its members' become better astronomers in any appropriate manner.

ORGANIZATION

Item 1: The club shall exist with a minimum of three officers, as defined in item 2, a board of directors, defined in item 3, and members as defined in item 4 and bylaws.

Item 2: The minimum are President, Secretary, and Treasurer. Other officers may be created according to the members wishes. Officers are elected by mail ballot.

President: The term for the office of president is to be three years with a maximum of two consecutive terms. Requirements for election are a plurality of votes with at least a fifty (50) percent votes response. The president's duties are to organize club events, interact with the public and media, and otherwise act as the chief executive officer.

Treasurer: The terms and conditions for the election of the treasurer are the same as the president. The treasurer is responsible for collecting, dispensing, and keeping members informed, of all the club funds, dues, or other income or debits. Tax returns and other papers and monetary duties also belong to the treasurer. Election terms are the same as the president's.

Secretary: Election terms and conditions for the election of secretary are the same as the president's. All publications, correspondence, and media articles are to be edited by the secretary and their context is his/her responsibility.

Other Officers: No officer may serve a term longer than the president. Duties and responsibilities will be stipulated upon creation of the office by the members.

Impeachment: An impeachment vote may be given at the members' discretion. Any group of members having a signed list of 1/3 or greater of club members, or classified in the by-laws, must present such petition to the board of

directors for execution. Upon receipt of such petition a member of the board of directors must do the following.

- 1) Date and initial the list with the person presenting the impeachment petition. The "1/3" factor is for all members as of the initialized date. The petitioner may demand and receive an up to date list before initializing the petition.
- 2) Verify the list within one (1) week of the above date.
- 3) Execute a mail ballot within the next sixty (60) days of the petition date. A majority of 50% votes response requires immediate removal of the officer.
- 4) Members are to be notified of the results in less than 5 days from the mail ballot deadline date.
- 5) An election to fill the remainder of the term is to be held within thirty (30) days from the ballot deadline date.

Item 3: The Board of Directors.

The board of directors shall consist of five (5) members excluding officers elected at large. The highest vote receivers win. Elections are to be held annually. The board's duties are to hold elections when required, interpret this constitution, settle constitutional or legal disputes.

Item 4: Members.

Any person interested in astronomy may join the club. Members ratifying the constitution will define what a member is in the by-laws. For ratification, a member is defined as one who has paid dues when his or her article is mailed. Members hold ultimate authority for all laws and activities of the club. All expenditures, activities, publications, etc. must be approved by the members in a manner outlined in the by-laws.

GENERAL

All officers and directors must uphold and obey the constitution of the United States of America and the Commonwealth of Virginia, when dealing in club matters. Conviction of a crime in U.S. or Virginia courts, related to club duties, irrespective of whether the activity was a club task, requires automatic impeachment without a vote. Examples are: Fraud, theft, libel. Unless another club member was a victim, the following are examples of crimes not club related: murder, assault, etc. All officers are expected to maintain and exhibit high moral character and behavior.

CONSTITUTIONAL MATTERS

- 1) This constitution is ratified upon receipt of a majority vote with 2/3 of the ballot being returned.

- 2) Amendment has the same requirements.

- 3) By-laws require a majority vote of at least a 50% ballot return.

AMENDMENT I

SECRETARY/TREASURER OFFICE

Section 1. The offices of Secretary and Treasurer are hereby combined to provide the office of Secretary/Treasurer.

Section 2. The office may be split into two entities if the elected official feels he/she cannot satisfactorily fulfill the obligations of both Secretary and Treasurer. The Secretary/Treasurer must immediately notify the President of his/her decision regarding the split. A meeting will be immediately scheduled and a second official will be elected to fill the empty office.

Section 3. If the office of Secretary/Treasurer has been split and the end of the officials' term has been reached or the offices suddenly become empty, a new official will be elected as Secretary/Treasurer.

AMENDMENT II

ELECTIONS AND BALLOTS

Section 1. All preceding references and implications to mail ballots prior to the acceptance of this amendment, shall be disregarded. Sections 2 through 5 of this amendment describes election and ballot procedures pertaining to the club and this constitution.

Section 2. All elective offices shall be voted upon by secret written ballot at a pre-announced membership meeting. Election shall be by a plurality of the votes of the members present. In the event any candidate should fail to receive a plurality of the votes, a run-off election shall immediately be held between the two candidates having received the largest number of votes.

Section 3. A plurality at any regular or special meeting shall be the number of votes that is received over and above the number of votes cast for the nearest opponent.

Section 4. All decisions or settlements regarding the activities and status of the club, with the exception defined in Section 2, shall be held at any regular membership or special meeting. With the exception of those ratios and percentages defined elsewhere in this constitution, a majority of the votes of the members present will decide.

Section 5. A majority of the members present shall be greater than 50 percent of the total number of members present.

AMENDMENT III
MINIMUM NUMBER OF OFFICERS

The club shall exist with a minimum of two officers, President and Secretary/Treasurer. If the office of Secretary/Treasurer has been split as defined in Amendment I, the club shall then exist with a minimum of three officers for the remainder of the term.

HOTLINE BACK IN OPERATION

The NOVAC Hotline (866-4985) which had been down due to equipment failure is now operating. Many thanks to Gerald Perman for the loan of a temporary replacement. The club will purchase a answering machine unit as soon as possible.

COMPUTERIZED ASTROMONY

by Bob Ridgley

Computers have already had a major impact on amateur astronomy by helping optical designers turn out superior telescopes and eyepieces. Yet the most dramatic impact is just now beginning to be seen. That is the new generation of amateur telescopes which are assisted or guided by computers.

Having owned two computerized telescopes, a Super Polaris C8 and now a Meade 2120 LX3, I can begin to appreciate their advantages and disadvantages. They will unerringly guide your telescope to locate any object. Some have huge databases. The Meade CAT has about 8,000 objects in its ROM memory and if equipped with the an RS-232 port it can access any computerized database. They will allow you to select objects for observation by type, brightness, size, and position. For star parties and public observation nights they can show you lots of great objects in rapid fire sequence. Very impressive!

There are however, disadvantages. They make a portable telescope much more difficult and time consuming to transport and setup. They can be difficult to install and initially setup. And most importantly they do not help you

help you learn your way around the sky the way a good set of charts will.

A computerized telescope would not be a good first telescope. It takes a good bit of observing experience to benefit from one. If you already know your way around the sky, and have a medium size telescope (say an 8-inch reflector or larger), and want to spend more time look at, not looking for objects, then get a computer assistant. You will enjoy it!

ASK DR. ASTRO

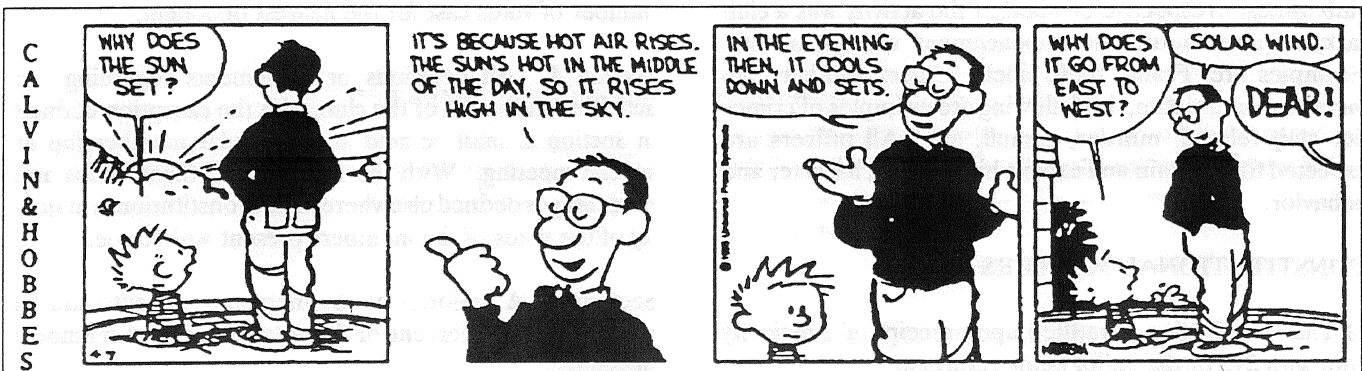
Got an astronomical question? Why not ask Dr. Astro. He'll do his best to answer any question...no matter how difficult (or easy)! See if you can stump him...if you can Dr. Astro will give you a 32mm wide angle eyepiece! No strings (cosmic or otherwise)...no kidding...you really will win an eyepiece if you can stump Dr. Astro. But it's not going to be easy!!! Send your questions to the Newsletter Editor (Bob Ridgley), 1316 South Buchanan Street, Arlington, Virginia, 22204-3410. (Club Officers are excluded...sorry!)

ADVERTISEMENTS

For Sale, contact Jim Schaeffer at 476-5624 (home) or 281-6363 (office): CAPS, baseball type, mesh back, adjustable, NOVAC logo, \$5.95 (you pick-up), \$7.75 (UPS ship); JACKETS, nylon/satin, NOVAC logo on front & back, elastic at sleeves, neck, and bottom, very good quality, sizes s, m, l, xl \$34.95; TELRAD finders, \$38.00.

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The NOVAC NEWSLETTER is published six times a year. Subscriptions are available through membership in NOVAC. Dues are \$10.00 per year. For club membership information contact John Huggins, Secretary/Treasurer, 6028 Ticonderoga Court, Burke, Virginia, 22015, telephone: 703-866-4985.

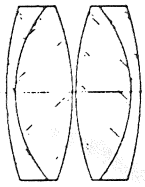


EYEPIECES: FACT, FICTION AND APOCHRYPHA

by Jesse F. Carroll

G.S. Ploessl was a Viennese optician of the early-to-mid 19th Century. He was best known contemporarily for his "dialytic" telescopes, for which he was given direction by Karl von Littrow. Ploessl soon became pre-eminent over George Dolland and Peter Barlow in the manufacture of this ancestor of today's instruments of similar nature. (A dialytic telescope is achromatic, but with the crown and flint elements placed, respectively, at the objective end and mid-section of the tube. Ed.)

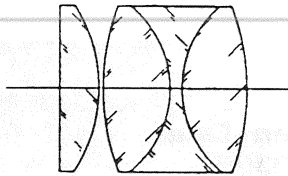
Ploessl's eyepiece was composed of two identical achromats with convex elements almost in contact. This is known as a 2-2 arrangement by opticians. Whether or not this was



Ploessl Eyepiece

preceded by Carl Kellner's 1849 design (1-2) is unclear from the texts, but I have a feeling that it was. These two quite different eyepieces were not improved upon until Ernst Abbe's "orthoscopic" (3-1) of 1880, designed at Carl Zeiss' in Jena. After Abbe at Zeiss, Heinrich Erfle (1884-1923) began work on much more complex eyepieces out of wartime demand. In 1918 he patented his "Erfle" (2-1-2) and later, a 2-2-2 improved design. Upon his death Albert Koenig became the major eyepiece designer at Zeiss. His book, *Die Fernrohre und Entfernungsmaesser*, covered Erfle's work and led to one of his many designs, the (2-1-2) Koenig of today. Koenig went on to design many more eyepieces and optical devices over a long career. His 1939 3-2-1 ocular and later works have found much use by the military and modern commercial enterprises.

There were other eminent workers in this period; Van Hofe, Schulz (at E. Leitz Co.), Bertele, Strauble, Kaspereit and a host of post-WWII workers at various arsenals worked up increasingly complex designs with the aid of computers. The development of rare-earth glass types made possible the reworking of older designs with increased performance. In 1938 Carl Zeiss patented an improved Abbe orthoscopic design (3-1) along with a vast improvement upon the original Ploessl, a 2-2 design with asymmetrical construction. This design was quickly copied world wide for military fire-control instrument use. It gave a wide (55°) field with a slight reduction in eye-relief. This is the eyepiece in the m-17 "elbow" telescope used extensively in post-war amateur sky-patrol work.

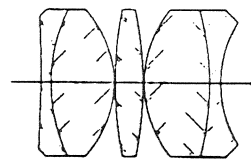


Orthoscopic Eyepiece

The Ploessl design has been (and is) known by many different more or less legitimate names: "Continental" and

"Dialsight" (from military use) by the British, as well as "Browning" from a one-time English manufacturer. The 1938 Zeiss "improvement" has been given the designation of "Ploessl" by modern importer/distributors. It is laudable that at least one supplier did not use the Ploessl name on this design. Indeed this is the only one actually made in the U.S.A. and it is possible that the "designer" was not aware of the Zeiss patent, given wartime exigencies. Recent adaptations of the Ploessl have generally consisted of adding a lens element, making it a 2-1-2, similar to the original Erfle! Indeed there was an early 20th century version (1-2-2) that use a larger 3rd element as a field lens, giving the new "Ploessls" precedent, however thin. The 5-element "Ploessls" do not have the deep concave entrance and exit surfaces of the true "Erfle" and thus should be cheaper to make.

A true Ploessl should be quite inexpensive to produce, given that it is made of two identical, albeit fairly "fast" achromats. If wide field is not wanted, they can be of common crown



Erfle Eyepiece

and flint glasses. My personal experience has been that, performance wise, it is a "dead heat" between the best Ploessls and the best Abbe Orthoscopics available, when contrast and resolution are of uppermost importance. A wider-field Abbe

Orthoscopic is possible, but requires one aspheric surface and would thus be more costly than the equivalent "improved" Ploessl of 2-2 design.

References:

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- Multhaus, Robert P., *Catalogue of Instruments and Models in the Possession of the American Philosophical Society*, A.P.S. 1961.
- Taylor, "Journal of Scientific Instruments," Vol. 22, 1945, pp. 43-48.
- Bell, *The Telescope*, McGraw-Hill, 1922, pp. 134-149.

Mr. Carroll is a member of the Chicago Astronomical Society and a camera technician and amateur telescope maker. Working with Daniel P. Joyce he recently completed a 6" f/10 parabolized Newtonian telescope which resolves Saturn's Encke Division under good seeing.

[Note: This article is reprinted from the November, 1988 issue of *The Astronomical League Newsletter*.]

NOVAC

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PM
JAN 19
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