****

Oct 31, 1967'
Vol 1 #4

Editorial

This fall has been terrific for astronomy, and will continue to be so. Favorable weather was present for both the occultation of Saturn and for the eclipse, by the way, if you missed the occultation you'll have a second chance on the evening of November 12.

Again I encourage everyone to contribute to the newsletter: articles, book reviews, cover designs, photographs or want ads will be appreciated. As for this issue, we regret that no picture was included due to delayed orders for enlargers, however, next month we will probably have one either of the occultation or of the eclipse.

Finally, we would like to know if there is any interest in developing or mirror-making classes, if so, be sure to bring it up at the meeting. Quite a few of our members now do their own developing, it is inexpensive, interesting, and you can control your results.

Good observing and I'll see you at the meeting.

-Scott Coatsworth

****

The Meeting

Our meeting will be held on Tuesday, October 31, 1967 at 7:30 p.m. in the old Science Building at Wesleyan University.

It looks like a superb meeting; elections, results of this month's astronomical activities, planning for the upcoming occultation, a hologram (see enclosed article), and refreshments. Be sure to join us.

****

The President's Report

We're in! The Mid-States Region of the Astronomical League that is. Rick, Monte, and I attended the meeting of the Omaha Astronomical Society on Sunday, Oct. 15th. They voted on the question of staying in the North Central or changing to the Mid-States Region. The vote was unanimous to go to the Mid-States. This means that the Central Time Zone of Nebraska will be changed from the North Central Region to the Mid-States, and that is where we want to be. A vote by our club members at the Oct. 31 meeting will put the final touch on this transfer.

I received a letter from Russ Maag in St. Joe. Big plans are brewing for the Saturn-Moon graze on November 12th. A site in North-east Kansas has been selected. It's about 100 miles southeast of Lincoln. There will be teams from the Naval Observatory, Yale University, St. Louis, Memphis Tenn., Des Moines, Omaha, Kansas City, and several colleges in the area will also send observing teams. Our club will be there too. I would like as many of youa as possible to attend this outing. If you can't bring a telescope, come anyway. The people that you will meet will be well worth your while, even if we are clouded out. For other details on this event contact me or one

of the club officers.

Election of officers at the next meeting. Pay your dues promptly to Rick Johnson so he can send in the orders for Sky and Telescope.

Say! Did you see Jupiter brush by Regulus? That would have been quite a sight if there had been an ocultation.

We had a fairly good show at Gateway. We only had 5 'scopes at this show but there were ten out there at the Sept. show. We should try to have more telescopes out there if we are to expect to get $50 for each show. Don't forget the Oct. 31 show at Wesleyan.

-Earl Moser

****

A good lens has always been thought to be essential to good photography. Yet, today, the most realistic pictures are being taken without lenses! These pictures, dramatic evidenceof the laser's impact on the science of optics, are called HOLOGRAMS. When light strikes a hologram's peculiar whorls and strips in a special way, a scene materializes in three dimensions. It is so realistic that you want to reach around to the other side of the hologram and touch the objects in the scene.

As it's name, HOLO (whole) plus GRAM (message), reveals, a hologram contains the whole message carried by the light that exposed it. Thus you see the entire scene, in depth, just as it would appear through a windowpane. You can see around objects in the foreground with a shift of your head. You can cover part of the hologram "windowpane" and view the scene through any clear area.

Since the invention of the camera, photographers have wished to capture windowpane realism on a sheet of film. But How? The physicist answers, "If we could stop time and 'freeze' the light wave striking the film window, by photographing the LIGHT from the scene we would have sotred all the information coming to the window. We could construct the light exactly as it comes from the scene, and we could againa see the scene in three dimentions.

This is easier said than done. The crests of light rise and fall nearly 500,000,000,000,000 times each second. Like countless ripples crossing a pond, this jumble of waves streams through a windowpane---different colors, crisscrosing at different angles, all changing with time.

We can take this picture if we could hold the pattern steady on the film. But to do this, all the light striking the film must be of the same wave length, or the same pure color. To get a bright picture, we must also aim another light beam of the same color called a reference beam, directly at the film.

The reference beam is adjusted in brightness untill its wave crests are just high enough to exactly cancel the troughs in the light coming from the scene. Then, we have wave crests from the scene that will stay in step with those of the reference beam at the same Place on the film. Likewise, where creast meets trough, there is a cancelation and no light strikes the film. Thus, the purity of the color and the reference beam freeze a light and dark pattern having high contrast.

A light beam that has a pure color first became readily available in 1960 with the discovery of the laser. When a scene is illuminated with a laser, and a reference beam is provided, a multitude of closely packed interference fringes will be found all over the developed film.

A single helium-neon gas laser was used to make the picture I will have at the up coming meeting. To take the hologram, the laser and other components were arranged on a nine-ton granite slab to still any vibrations. A shift of even 1/100,000 inch would change the relationships of the wave crests and move the interference pattern on the film ruining the hologram.

A special mirror first split the laser beam into two beams by reflecting part of the light at an angle and allowing the rest to pass through. One of these beams was divided again, so that a total of three beams could be used. Two were guided by mirrors to light the scene from either side. A lens placed in each narrow beam from the laser spread the light and illuminated the scene evenly. The third beam from the laser, the reference beam, was aimed across the top of the scene, directly at the film window. It, too, was spread out by a lens and covered the entire area of the window. Looking through the w window, then, we see the scene, and, above it, the bright reference beam.

When everything was ready, a simple camera shutter was closed to block all light coming from the laser, and all the o other lights in the room were switched off. In darkness, the whole room became a lensless camera, with the scene, the lights, and the film and even the photographer inside it. Black and white film was placed in the film holder (the grain of the film is so small that the whole bible could be put on one square inch of it.) After a minute's pause to allow vibrations to settle, the shutter was opened, and for 30 seconds the red glow from the scene merged with the reference beam on the photographic film. The developed film, which contains the frozen interference pattern, is the hologram.

This hologram will be at the meeting holloween night and I promise you it will be far spookier than anything you have ever seen before unless you have seen a hologram before.

Just a note to these who were in Wichita and tried probably unsuccessfully to see the hologram there. This hologram is the same one but the set up I am using will make it plainly visable to all with no getting down on your hands and knees to see it. It's very bright and clear.

-Richard Johnson

****

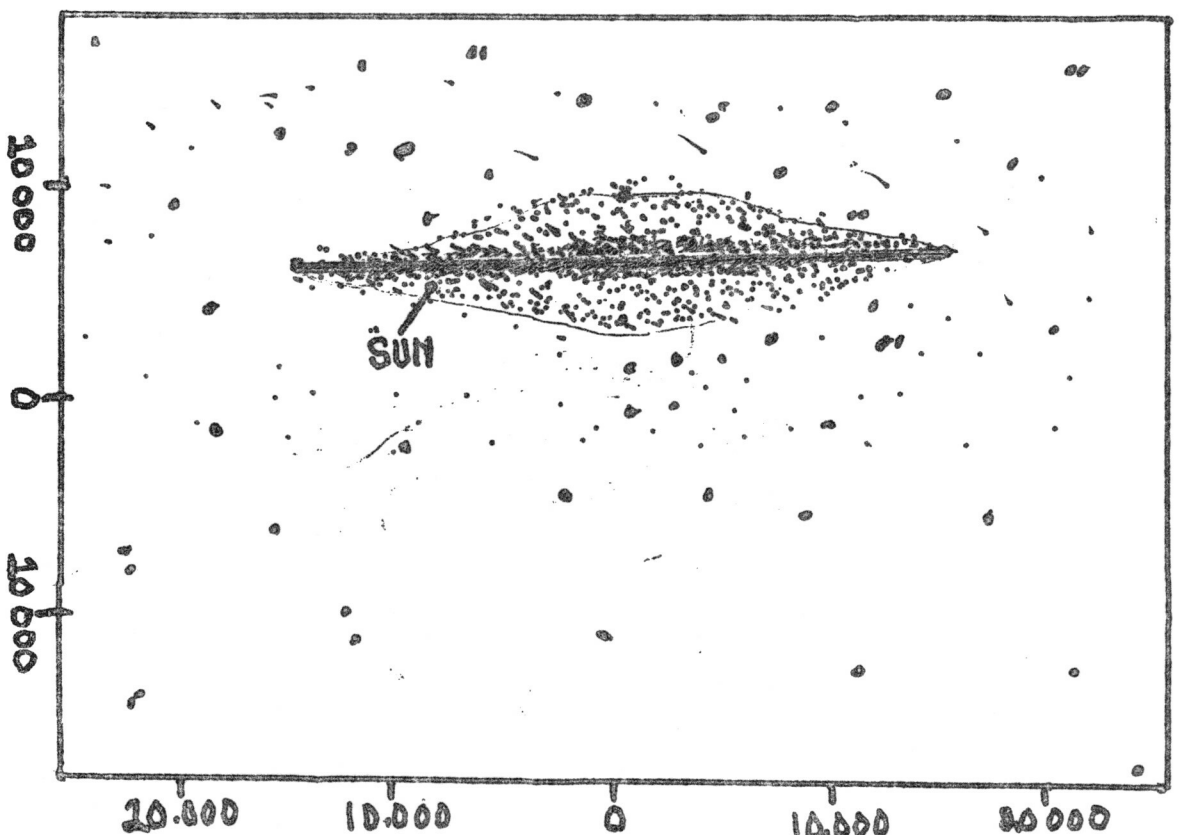
Dues were due as of last meeting, if you did not pay at that meeting please bring your money to this meeting to insure your receiving Sky and Telescope magazine without missing an issue. For those of you that did pay at the last meeting and still got a second notice that your subscription was expiring, I have sent in the money for all paid up members both new and old. In case you don't remember, dues are $6.00 and this includes the years subscription to Sky and Telescope magazine. If you can not make the meeting please send your dues to me.

Richard Johnson
1860 Pawnee Street
Lincoln, Nebraska. 68502

The Prairie Astronomy Club Inc,.
Lincoln Nebr Oct 31st 1967.

The famous gorman philospher ,Immanual Kant,reasoned that if we could see our galaxy from very far outside,it would appear as a faint,milky,elliptical object. He suggested that ellipit -cal patches of light called "Nebulous Stars"were other galaxies but it was not untill 168 years later that the identification-- was firmly established.

Our Galaxy



Our own galaxy interferes with our view of the outside galaxies. In the denser parts of the milky way,such as shown in drawing--- above,the stars seem to tightly packed for us to see anything be- yond. More than that there is gas and dust between the stars of - our galaxy,and when we looktoward the rim(Horizontall)there is a- vast thickness of such obscuring material between us and any out- side objects.In fact no outside galaxies are seen in the direction of the rim,that is,near the milky way in the sky as ---- as shown in above.But in the other direction,up or down,in above drawing,we are looking through the thin dimention of the dust --- layer in our own galaxy,and can see outside galaxies unobscured.

The largest and brightest of the outside galaxies that we can see in the northern latitude is called the"Andromeda Galaxy "

BB-

After reading "We are not Alone" I understand the types of Nebula, clusters, Radio source in our galaxy, and many other subjects a little more clearly.

George Wald-Harvard. Life has a status in the physical universe. It is part of the order of Nature. It has a high place in that order, since it probably represents the most complex state of organization that matter has achived in our universe. We on this planet have an-- especially proud place as men; for in us as men, matter has begun to contemplate itself.

Harlow Shapley, the astronomer, has likewise found spiritual wealth in the new discoveries. They have contributed, he said, "to the un--folding of a magnificent universe.

To be a participant is in itself a glory. With our confreres on distant planets; with our fellow animals and plants of land, air,-- and sea; with the rocks and waters of al planetary crusts, and the - photons and atoms that make up the stars-with all these we are --- associated in an existance and an evolution that inspires respect and deep reverence. We cannot escape humility. And as Groping Philosophers and scientists we are thankful for the mysteries that--- still lie beyond our grasp.

George Santayana (Spinoza, s Works) The universe that lies about us visable only in the privacy, the intimacy of night, is incomprehensibly vast. Yet the conclusion that life exists across this --- vastness seems inescapable. We cannot yet be sure whether or not it lies within reach, but in any case we are a part of it all:--- We are not alone.

****

Short one, s
If one believe that we on this earth are the only living things in the Universe, then are all the stars, suns, nebule, planets ets for naught ?

Nothing in the Universe is the only one of its kind.

Scientific Truth is the same in the most distant corner of the universe as it is in our own labratory on Earth.

For a "Fine" Our ancestors enjoyed a serenity denied to most of us. As we devastate our planet with industrialization, with highways, housing and hast, the restoration of the Soul that comes from contemplating Nature unmarred by human activity becomes more and more inaccessible.

30- JW.

Prairie Astronomy Club Inc. New list Oct 31st 1967.

Wayne Babchuk 814 Eldon Dr.
Walter Behlan 2555 Pershing Rd
Columbus Nebr.
Monte Cole 800 Eldon Dr
Scott Coatsworth 6019 Franklin
Felix Cavosie 4016 G St
Dr John C Clothier 355 SO Cotner
Stuart Chastain 1820 SO 50th St
Harlan Franey 1734 SO cotner
Guy a Farr 1912 NO 67th St
Steve W Everett 6720 Orchard
Jim-Marv Garber 2539 Kessler Blvd
Jim Hoskins 4021 Cooper St
Dick Hartley 320 Wedgewood
Kim Hobson 2223 VanDorn St
Steve Haack 5011 Glade
Ricky Johnson 1860 Pawnee St
Dwaine Jaacks 2144 SO 56th St
Byron Jennings 964 Lindon St
Steve Kunkee. 320-E-19th Ave
82240 Torrington Wyo
Earl Kendle 1101 Cottonwood
Steve Kroll 2620 N Eden Dr
David Kubicek 6927 Lexington
Werner Klammer Rt I Seward Nebr
R A Manthey 6855 South St
Richard Meile 4546 High St
Terry Mgurak 1001 Eldon Dr
Marvin Meeker 4806 Calvert
Earl Moser Pres,Hickman Nebr.
Prof,Carroll Moore 1140-N-79th
Thomas Pansing 2033 S-33rd St
Philo Prell 4425 Randolph
Steven Remmega 6740 Francis
Dale)(Kris) Rathe 4070 S-20th
Roy (Gene)Robertson 5742 St Paul
Erick Rudd 6541 Rexford Dr
Larry Stepp 910 Eldon Dr
Bobby Shanor 516 SO 50th
Mrs Fred Seacrest 1230 Crestdale Rd
Jess Williams 7844 SO Sycamore Dr
Ed Woerner 4530 Adams
Pete Schultz Uni Of Texas
Astronomy Dept.
Austin Texas.

The above list is of members,and,non-members. We would like to welcome the Non-Members to become members. The Dues are only $6.00 per year,which includes the Monthly Sky and Telescope Magazine.