THE Prairie Astronomer

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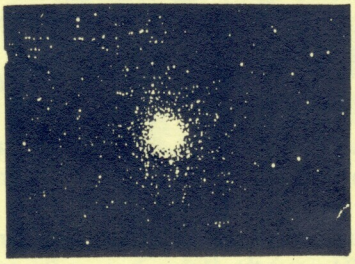
GLOBULAR CLUSTERS?

PART TWO...

11-85



If you remember, last month we transversed the history of how astronomers came to know and use globular clusters in their estimations of distance in the heavens. So, now we're at the point of exploring what we actually know about globulars, and a little bit of what we don't know about them.

If you were to go out right now and hover at the eyepiece of your telescope peering at the bright prism-like globulars, you might define them to be big groups of stars oriented around some central point in space. You can see perhaps 200 to 300 individual stars (Herschel counted 30,000 in M13, but I never get past 200), but you know there to be many times that amount that you can't see. And if you had no knowledge of galaxies, you might suppose that our sun lies in such a cluster association, since there seems to be so many stars around us as we look up at the night sky.

After making such conclusions at the telescope, you now enter your warm house and pull down the ever faithful astronomy text book you picked up at B. Daltons. Looking in the back at the index, you'd find "Globular Clusters" and turn to that page. You would probably find about a paragraph of text describing globular clusters, and that's it. In fact, the description of globulars would probably be tied into the general explanation of our galaxy and the distances within it.

The fact of the matter is, there just isn't lots to say about globular clusters. Their fame lies mainly in the determination of stellar distances. But here's what there IS to say; Globular Clusters lie between 3 and 60,000 parsecs from our Sun and are made of between 100,000 and 1,000,000 stars. In the run of the mill cluster, the stars are an average of 2 light years apart on the outside and only a fraction of a light year apart toward the center. The stars at the center are so tightly packed that most of them are probably multiple systems... and some clusters may even have black holes at their core.

As stated last month, the stars of globular clusters are thousands of millions of years older than the stars of our galaxy, mainly because the stars of these clusters condensed at a time when the gas of the Galaxy was still too turbulent to do so. Most stars of globulars are composed mainly of hydrogen and helium whereas stars formed more recently also contain metals (metals became available for star formation at a later date via supernova explosions). We also know that globular clusters are on the move. They orbit the center of the galaxy in highly elliptical paths, and even pass through the disc of the Galaxy every ten thousand million years or so. When this happens it's either torn apart or distorted by gravity so that they loose part of their stars. This is why globulars close to the hub are smaller than those in the outer reaches.

We have lots left to learn about globular clusters, just as we have volumes left to find out about everything in space. Discovering the secrets that lie at the center of globulars will unlock phenomena that travel beyond our wildest dreams. Maybe some day we'll travel there. Until then, however, I'll just keep moving the scope from cluster to cluster, to enjoy the grand sight, and just pretend... .

OBSERVATORY STEERING COMMITTEE REPORT...

BRYAN SCHAAF
COMMITTEE CHAIRPERSON

The PAC Observatory Steering Committee met for it's second meeting on November 5th. Since the last meeting, there was a total of nine observatory project questionaires recieved (Thank You!). All but two responses were in favor of the club observatory proposal 'as generally described' on the questionaire from. The two responses that objected to the project proposal 'as it is generally described' did so on the grounds of undefined (unspecified) goals for the project and the means by which the project would be financed, such as 'by a raise of club dues' and 'specail assessments'.

There was also concern that such a project would be financially straining to the club membership and hinder club membership growth, particularly in the direction of potential young members. These ARE important points worth great consideration, but not necessarily obstacles to the reality of a club observing facitlity.

Options of observatory or observing facilities that were discussed at the last meeting:

‡‡‡‡‡‡ A PAC Membership owned observatory built on a permanent foundation, with satellite concrete pads for individually owned telescope use. The satellite pads could be a separate project to be completed at some later date, after the initial building project.

‡‡‡‡‡‡ An observatory building simply constructed that could be mobile or easily disassembled, for possible relocation in the future (either because of site difficulties or light pollution).

‡‡‡‡‡‡ A simple observing site with only concrete slab supported telescope mounts for club members use. The option would involve only individually owned telescopes, much like our monthly star parties, but with a special site.

‡‡‡‡‡‡ The OAS has offered to let the PAC in on their established observing site with the offered option to build an observatory there or construct a simple slab. The size of the PAC facility would be governed by the OAS's established guidelines...in effect they would be the landlords. This offer has been long standing, and although the landlord aspect isn't appealing, it is none the less a viable option worth consideration in the absence of others.

As an aide to gathering opinions and preferences of the PAC membership, the committee members will likely be calling each of you and will ask specific questions. In the meantime, please think of your opinions and ideas so that we may gather info more efficiently and determine in what direction to go. Our next meeting is scheduled to be on December 3rd. As a rule, our committee meetings are held one week after the general meetings at the same place, and at the same time (7:30pm, Hyde Observatory). All members are welcome to attend and express any views on this matter. Here is a listing of the committee members...

BRYAN SCHAAF	477-3323	RON VEYS	464-1449
JOHN LORTZ	390-9821	BEV HETZEL	435-7881
DAVE KNISELY	223-3968	RICK JOHNSON	423-6726
RUSS GENZMER	429-3484	DOC MANTHEY	489-3237
STEVE BORNEMEIER	435-0007	JOHN GLOVER	464-0163
STEVE KELL	476-7816	LEE THOMAS	483-5639
ANDY CORKILL	488-1096		

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For club membership information or suggestions contact one of the following: John Lortz (Pres) 390-9821 (Omaha), Ron Veys (V.Pres) 464-1449, Bev Hetzel (Sec) 435-7881, Lee Thomas (Tres) 483-5639, or Andy Corkill (Prgm. Ch.) 488-1096. All articles and letters to the editor should be sent to newsletter editor JOHN LORTZ 9255 CADY AVE. #14, OMAHA, NE. 68134, no later than 10 days before each club meeting date.

THIS MONTH'S PROGRAM

This month's program will be presented by the PAC's own Earl Moser. Earl will fill us in on the finer points of comets, and give us some information on how to use your camera with a clock drive to photograph those wanderers of the heavens.

During the business part of the meeting, we will of course be voting on next years club officers.

PRESIDENT:	Andy Corkill
	Norma Coufal
V-PRESIDENT:	Jack Dunn
	Rick Johnson
	Rick Lapp
SECRETARY:	Bev Hetzel
	John Lortz
TREASURER:	Lee Thomas
PROG. CHAIR.:	Dan Neville

Nominations are still open so let's get some more people on the list!

We will also be selling the collection of assorted astronomy magazines donated to the club in Jess Williams memory.

DEFINING ASTRONOMY

EMISSION NEBULAE

Clouds of gas and dust which shine because the gas absorbs short wavelength (ultra-violet) radiation emitted by very hot and highly luminous stars (of spectral types O and early B), and re-emits visible light. The spectrum of such a nebula is an emission-line spectrum, quite unlike the spectrum of a star. Emission nebulae are often referred to as H II regions as they contain a high proportion of ionized hydrogen. Generally the emission nebula is only part of a much larger hydrogen cloud, for it is only that part of the cloud sufficiently close to hot stars which will actually emit visible light; for example, the Orion Nebula (M42) has a visible diameter of some sixteen light years, but is part of a cloud which may be 300 light years across.

(from Dictionary Of Astronomy by Iain Nicolson)

OBSERVING CHAIRMAN'S REPORT

by David Knisley

We have two star parties scheduled for this month; December 6th and 13th, so dress warmly. One of the best things about the early winter sky is the number of spectacular open clusters visible in most telescopes. An excellent case in point is M37 in Auriga, located 4 1/2 degrees south and 1 1/2 degrees west of Theta Aurigae. It is a large beautiful group of perhaps 150 stars in a fairly tight mass and should be easy in anything over 2.4 inches in aperture.

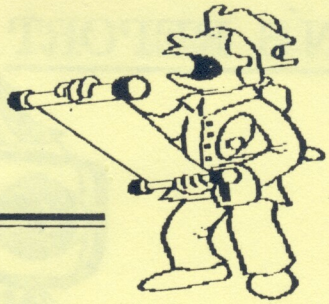
To get away from open clusters for a bit, take another look at M1, the Crab Nebula, located one degree north-west of zeta Tauri. It can be seen in a 2.4 inch refractor as a very dim "z" shaped patch but telescopes 10 inches or larger should just be able to see hints of the filaments that give the object its name.

The small telescope or binocular user should find M35 a nice easy target. It is a large group of about 120 stars in a rich background field and can be seen by looking one degree north and a degree west of the star 1 Geminorum. There is another good cluster on the south-west edge of M35 that should be visible in 6 inch instruments; NGC 2158. It is small and probably won't show too many stars in a six inch, but eight or ten inch users should find it rich.

Most observers think of Orion when looking for a good area for viewing due to M42, the Great Orion Nebula. However, don't overlook the fine open clusters that dot that constellation like NGC 2169. It can be found by looking one degree south and a bit east of Nu Orionis and shows as a nice group of about 20 bright stars arranged in two triangles that make it look like a three dimensional prism. A bit more difficult but still beautiful object is NGC 2194, located one degree north-west of k Orionis. It is a moderate sized group of perhaps 90 faint stars with two or three "rays" of stars coming out from the center.

The challenge this month is NGC 1300, a barred spiral in Eridanus. It is located about 2 1/2 degrees north of Tau 4 Eridani. It is listed as being 11th magnitude so the central bar should be visible in an eight inch.

TREASURER'S REPORT



GET YOUR "EXPLORING THE UNIVERSE" CALENDARS NOW!

Four members have not picked up the 1986 EXPLORING THE UNIVERSE calendars. Since the club has already paid the supplier for them, this represents a drain on cash flow. The calendars **must be picked up at this month's meeting**, or they will be sold to any other interested member. The price is $4.25.

THINKING OF A DUES INCREASE...

The Board of Directors (outgoing) has been pondering the necessity of a dues increase. The present dues, $19.00 for a single regular member, $21.00 for a family membership, has been in place for nearly 3 years, and provides us with an operating cushion of only $6.00 per regular member over the Sky & Telescope subscription price.

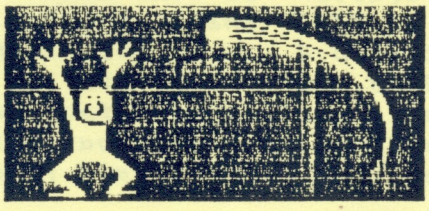
The operating margin is insufficient to cover the expenses of newsletter publication, mailing, and other activities of the club. As you will see when the annual Operating Statement is released in the December newsletter, had it not been for a number of generous donations from members, and our sideline business of selling posters, booklets, T-shirts, and comet pills through Hyde Observatory (most of the proceeds of which go to the observatory itself, not to the club), the PAC would be in a position of financial embarrassment. Most readers will recognize this term as a euphemism most recently employed in the state legislature. It means "broke", "insolvent", "tapped out", "down a fiscal black hole", etc.

I mention this state of affairs now, just before the club elections, so that everyone can ponder the slate of candidates with an eye toward identifying the Free Spenders lurking in their ranks. (Just kidding. But we do need to talk about a possible dues hike, preferably at the November meeting because we typically have a low turnout for the December meeting, and a dues increase, if approved, would most conveniently go into effect January 1, 1986.)

A NEW POLICY TO AID THE CLUB TREASURY

In the past, when we have purchased books, shirts, caps, and various other products for resale to club members, we have not asked for payment in advance. That means the treasury forks out the bucks, usually in the hundreds, and waits for everybody to pay it back. Some members attend meetings irregularly, which means months can elapse between purchase and payback. Retail stores float loans on inventory for such purposes, but our bank, FirsTear, simply glowers at such a suggestion.

So, your Board has decreed that **Henceforth, Orders For Merchandise From Members Shall Be Accompanied By Payment In Advance.** This should be a great help in our continuing efforts to stay solvent.



CLUB SHIRTS??

Pardon me, Mr. President, but weren't we suppose to have our club shirts by now? Well, yes you were... but as happens to the best made plans, we have a slight problem. My contact at J.C. Pennys informed me only last week that the shirts we wanted were now out of stock until next summer. GREAT!!! But I can't blame him... he does have a busy job and just spaced our shirts off. So, what do we do now? Well, I went scrounging through clothing catalogs and found some nice shirts that Lands End offers at quite a good price. I even called them to confirm that they had plenty of navy blue in stock and could ship them out in 3 to 4 days time. I will bring the catalog to the meeting so you can decide if you'd like to go with these shirts or something else.

I really apologize for this delay. With a little luck, we can still get them before X-mas.

NEXT MONTH'S NEWSLETTER

We'll be taking a look at how the universe began in our front page article, and inside we'll see a new (old) column... "At The Last Meeting" featuring notes from the previous PAC meeting. And as always, the Observers Report, PAC Calender, Defining Astronomy, (and MAYBE a few words from some of our membership...hint, hint.

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