



PeGASus

Newsletter of the

Royal Astronomical Society of Canada: Prince George Centre

Published: January to May & September to November.

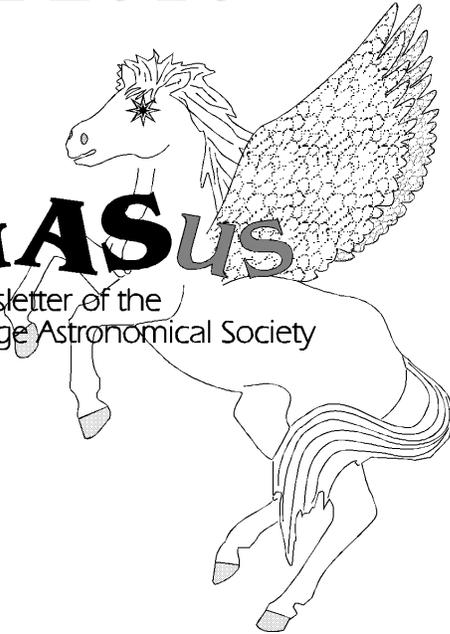
www/rasc.ca/princegeorge

April 2010

*Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.*

PeGASus

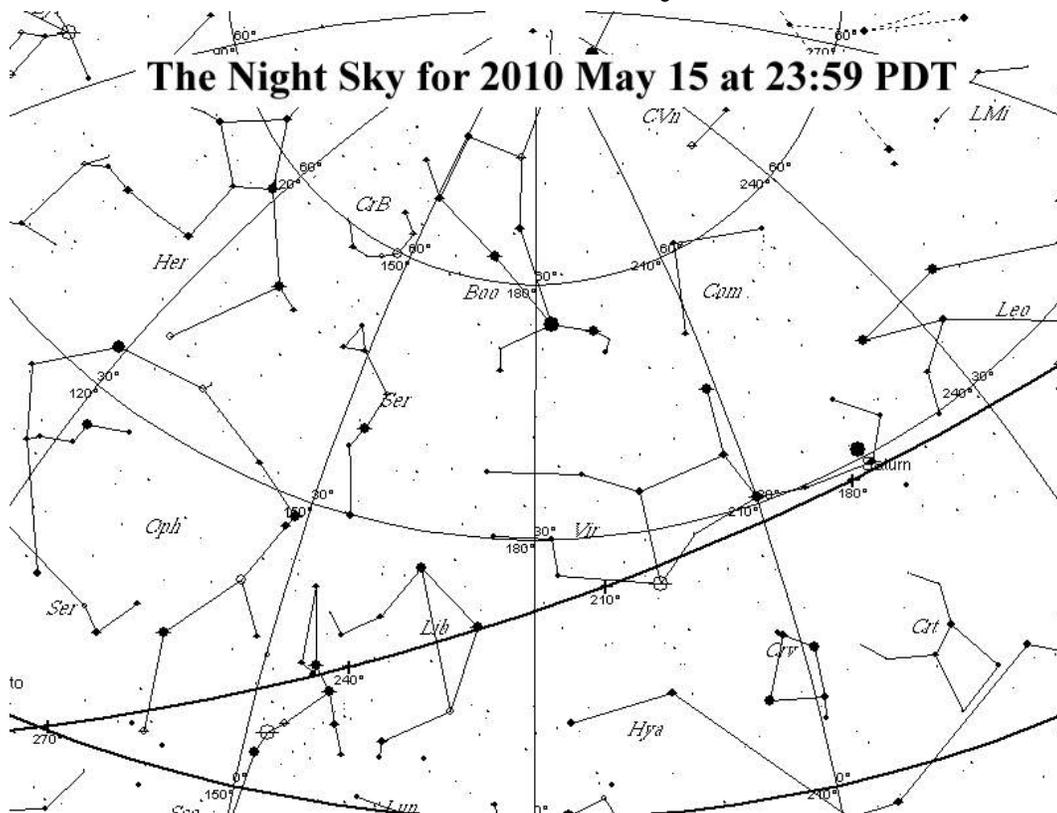
Newsletter of the
The Prince George Astronomical Society

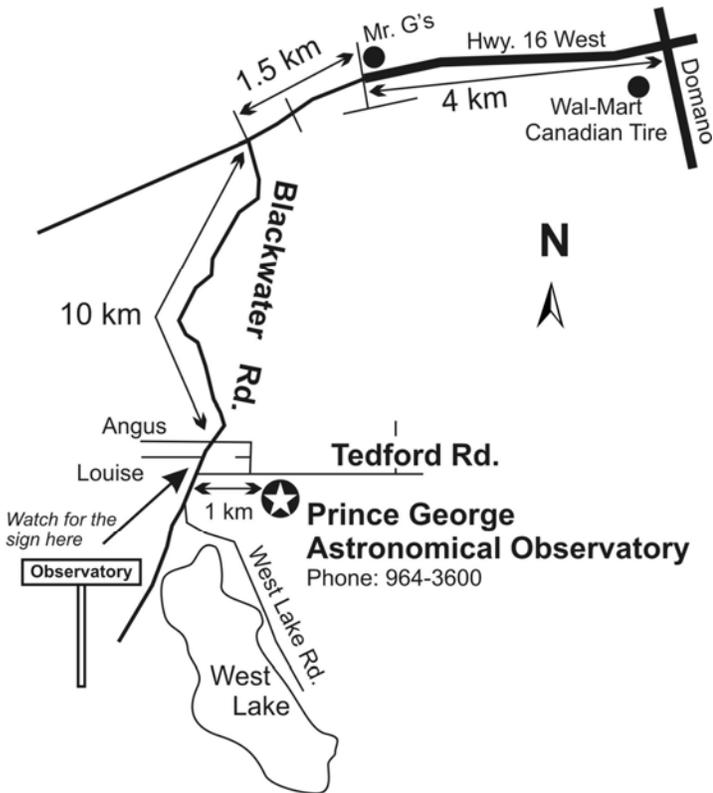


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The RASC: Prince George Centre meets next,
Saturday, 6:00pm
at the Observatory





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Contributions to the newsletter are welcome.

Deadline for the next issue is

May 21 , 2010
Last issue until September
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Coming Events

To Volunteer to help run an event please contact Brian Battersby.
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<i>Date</i>	<i>Event</i>	<i>Time</i>	<i>Place</i>	<i>Volunteers</i>
May 8	Business Meeting / NOVA	meeting 6:00pm	Observatory	Members welcome
May 21	Sidewalk Astronomy	7:30pm	Pine Centre	Everyone welcome
June 12	Wind-up BBQ	5:30pm	Observatory	Members/family Welcome

For an up to date list of the Volunteer Schedule / meetings / classes visit our website in the MEMBERS AREA

www.rasc.ca/princegeorge

Editorial

By Gil Self

A funny thing happened. I was reading SkyNews and one of the articles set me thinking. I have never considered myself particularly creative with words. So of course I'm the editor, kind of like the deaf person writing symphonies (Beethoven) or the blind gentleman who is an astronomer (Galileo). But its' a challenge, right? So my best tool for this lack of creative writing is to start kicking ideas to write about a week or so ahead. I may watch a TV show or read a book and I'm thinking up an angle or an argument or opinion. Well as I was saying I was reading an article in SkyNews by Ray Villard about the search for extraterrestrial life, more about my idea in a moment. The funny thing was, if you read Steve's article on page eight ("Life", Is it out there?) he refers to reading and being inspired by the same article. A good article and a very good magazine. I don't want to say that it has improved a lot lately because that implies that it wasn't very good before. But that's not true either, it has always been good. Can something be better without first being worse? So if you will allow me that I will say that SkyNews is a very good read and shouldn't be missed.

Now my ideas, extraterrestrial life has certainly become a popular topic lately. Articles and theories abound. I think anyone with any science sense does not doubt that there is life elsewhere. Where, is of course the big question. Saying you believed was once a sure way to get categorized with the lunatic fringe. Not any longer, sure the Looney's are still out there, but science like the Drake equation that Steve talks about has left little doubt at least in my mind that they are out there. They could probably care less about us and if you have any concept of the enormity of our universe how very unlikely it is we will meet others any time soon if ever.
But!

One function of the Drake equation (I think) that might be more meaningful to us is time. I'm not sure off hand which part of the formula time fits into but with that in mind, may I suggest that we may be the home to alien life.

In the Drake equation the question about time is that in the billions of years that the universe has existed could various civilizations overlap? Could there be no one else in our galaxy simply because the times didn't overlap. One civilization just winked out as ours started evolving. I won't try and answer his question but ask another question. Could it have happened here? How long does it take to turn an aggressive smart monkey into an aggressive tool making bomb building humanoid? A million years? Two million, maybe four million. If the solar system was too unstable for life for maybe the first billion years, lets make that two billion, that leaves two and a half billion years to evolve humanoids. Maybe we put boundaries around an

evolved species' lets say five million years. Time to rise from the slime, develop civilization and fall victim to any of dozens of game ending scenarios. Blow themselves off the face of the planet, comet impact, disease maybe even just leave. Perhaps none of them became large enough to sustain themselves.

Geology likely can eliminate many eons that could not have had any intelligent life because there would be some clues in the rocks. I'm not putting forward a theory, and I sure don't want to fall into "bad Science", I'm just asking a question. There are certainly many eras that can be eliminated, but with plate tectonics, weather, glaciers and erosion, who can say for sure.

Starting from some form of established life, lets say a monkey. We will give them five million years until they push the button to initiate warp drive on the last colony ship to leave. Then another five million years between (they took the monkeys with them) to start all over again. That's ten million, don't forget I suggested a million or two to evolve from monkey to bomb maker, so ten million should give them lots of time. That's one hundred civilizations start to finish in one billion years. Each of those civilizations hasn't got a clue about the previous. The earth is just one very effective recycling machine, it even recycles continents.

In our planets history there have been millions of years of chaos, but could there have been millions of years of fruitfulness, that's what a planet does. We are simply lucky enough to be here at this time. What ever we do (short of building a death star) the planet will survive. The planet will renew itself and we will not just be forgotten we will be erased. So many of the programs that we see on television or the organizations that are springing up are selling the message to save the planet. The planet will be fine, it just takes time. What we need to work on is saving ourselves.

Could there have been civilizations here before? I don't know, but it seems a fairly good bet. Will we ever know? That's a tough one. If there were civilizations as large as ours, surely there would be some trace. But there aren't too many rocks that haven't been through the recycling machine. If there was culture here before they would want to leave a record, its in our nature. You would think that there would be something in a crack in Ayers rock or something, its been there for five hundred million years. But lack of evidence doesn't mean it didn't happen.

What do you think?

Maybe we will find a monolith on the moon!
And no, I'm not off my meds :-)

Gil

Running a little late this month, my fault , sorry a little bit taxes and a little bit hockey.

The Night Sky for May 2010

by Bob Nelson, PhD

Hi Folks,

Spring at last is here! Perhaps like you, I am getting my yard work done and look to replanting my garden. At time of writing, we are getting some clear skies, but the weather is highly changeable and we take what we can get.

I have been fortunate in being able to get, recently, complete light curves (in V, R, and I) of AC Bootis, a 10th magnitude contact binary of period 0.35 days (about 8 hours). As usual, I will combine these observations with the radial velocity observations I have been able to get at the Dominion Astrophysical Observatory (DAO) in Victoria and do the analysis to yield fundamental stellar parameters (like mass, temperature, stellar radii, distance). Quite surprisingly, an easy system like this has not been done before. (Now that I say this, I realize that I must rush to get this published before someone else does!)

I feel the need to 'crank out the publications' (as they say) both to maintain my status at the DAO, and also to help the DAO defend its usefulness in the face of government cuts. That is why you haven't seen much of me of late -- I've had my head down!

While we are here, it is perhaps good to re-iterate the fact that all of us astronomers (both amateur and professional) are all on the same team, as it were, in bringing astronomy to the people and maintaining its status. The amateurs need the pros to lead the way, to bring out the great discoveries that so fascinate the man in the street. The pros, on the other hand, need the amateurs to deal with the public, generate enthusiasm, and maintain access to the skies. This, of course, includes public observing and the dark skies initiative, in which our club has been very much involved.

We can all look forward to more initiatives in the future by our little club (thanks Maurice, Blair and others).

Anyway, here is what is happening in the sky next month (all times are PDT):

MERCURY is a morning object this month, following last month's conjunction (on April 28). Owing to the obliquity of the ecliptic (I love that expression), this is a poor apparition for us northern observers. (In plain language, the ecliptic there is inclined to the lines of constant declination. Because we are heading for summer here (when the Sun is high in the sky), Mercury -- trailing the Sun -- lies at a lower declination, and hence at a lower height above the horizon than it would be at other times in the year.) At mid-month, it lies a paltry 3° above the ENE horizon. By month's end, this has grown to 5° -- not much better. If you are up to a challenge, it will be a 7" disk of magnitude 0.2.

VENUS, lovely Venus, is an evening object this month. At mid-month, it lies 21° above the WNW horizon at sunset and sets close to midnight. Then, it will be a 12" disk of magnitude -4.0. It's still in the gibbous stage as it races to catch up to the Earth in its orbit. Greater brightness and greater elongation from the Sun will ensue as the month progresses. (Greatest eastern elongation is somewhere around August 2.)

MARS, in Cancer until May 12, after which it passes into Leo, is an evening object this month. At mid-month, it lies 37° above the SW horizon at sunset and sets at about 02:00 next morning (about 5 hours later). It's a 6" disk of magnitude 1.1.

JUPITER, in Aquarius until May 2, after which it passes into Pisces, is a morning object this month. At mid-month, it rises at 03:37 (about 1.5 hours before sunrise). At sunrise, it lies some 13° above the ESE horizon. It's a 36" disk of magnitude -2.2.

SATURN, in Virgo until 2012, is an evening object this month. At mid-month, it lies 38° above the SSW horizon at sunset and sets just before 03:00 next morning. It's a 18" disk of magnitude 1.0.

URANUS, in Pisces until 2012 (May), is a morning object this month. At mid-month, it rises at 03:40 (about 1.5 hours before sunrise). At sunrise, it lies about 13° above the ESE horizon, close to Jupiter. (There will be a conjunction next month on June 7.) As usual, it's a 3.6" disk at about magnitude 5.7.

NEPTUNE, in Aquarius until August, is a morning object this month. At mid-month, it rises at 02:56 (over 2 hours before sunrise). At sunrise, it lies 16°

The Night Sky , cont from page 4

above the SE horizon. As usual, it's a 2.3" disk at about magnitude 8.0.

CONSTELLATIONS to look for in May (at 23:00) are Eastern Hydra, Corvus, Virgo, Coma Berenices, Bootes and Canes Venetici.

Corvus ("The Crow") is the small lectern-shaped constellation southeast of Leo (the top two stars point up and left towards Spica to the northeast). It contains NGC 4782, a galaxy located halfway towards Spica and NGC 4361, a planetary nebula inside the figure. Messier 104 is just over the north boundary in Virgo. It also contains NGC 4038 - the "Ring-Tail Galaxy" about 3.7° WSW from Gamma Corvi. "Follow the top two pointer stars for about the same distance down and to the right.) According to Burnham's Celestial Handbook, it's sometimes regarded as a gravitationally interacting (or actually colliding) pair of galaxies. (Today, I think there's no doubt that they are colliding galaxies.) Deep images (available on the internet - try Google image search) show a kidney-shaped object with two curved tails extending north and south. Radial velocity measurements show that the system lies about 90 million light years distant, giving it a diameter of 100,000 light years and total luminosity of 20 billion suns. There is also another galaxy (NGC 4027) lying 0.7 degrees away that is almost certainly gravitationally linked. This should be an easy target, next time you are out at the observatory.

Hydra ("The Sea Serpent") is a sprawling constellation running from 8 hours to 15 hours right ascension and from -35 to +5 degrees declination. In this month's region of interest, there is globular cluster M68, lying 3.8 degrees southeast of Beta Corvi (the star at the lower left corner of Corvus), and several galaxies, M83, NGCs 5061, 3923, and 3821. M83 is a large spiral galaxy discovered by Lacille in 1752; it is one of the brightest galaxies in the southern sky, with two strongly swirling arms, in a reversed 'S' (there is also a third arm). The distance appears to be well-determined - about 10 million light years. M83 appears to have had a remarkable number of supernovae in the last 100 years (1923, 1950, 1957, 1968 and I don't know after that, because Burnham's - my principal reference - is dated 1978). We are told that the average production rate is about one per

300 years for a given galaxy. It also contains NGC 5694, one of the more remote globular clusters that are still part of our galaxy. It lies at the eastern end of the "tail". It was discovered by Sir William Herschel in 1784, recognized as a globular by Clyde Tombaugh and friend at Lowell Observatory in 1932.

Virgo ("The Virgin") and Coma Berenices ("Bernice's Hair"), lying to the east of Leo, are the regions of the sky rich in galaxies. Virgo contains 11 Messier objects, all galaxies and many NGC objects too numerous to mention. These are part of the giant Virgo cluster of galaxies lying some 20 megaparsecs (65 million light years) from Earth and is some 500 million light years in diameter. It contains some 1000 galaxies and shines with the light of 10^{14} suns. It is thought that the local group (containing the Milky Way Galaxy, M31, M33 and others) may be falling towards the Virgo Cluster. Nearby in the sky, but much more distant is the even larger Coma cluster which lies some 150 megaparsecs (500 million light years) away. It contains some 10,000 galaxies and shines with the light of 10^{15} suns. There is a similar cluster in Corona Borealis, about 700 million years distant.

Also in western Coma Berenices lie the globular clusters M53 and NGC 5053, about 1 degree apart. In Canes Venatici, about 15 degrees to the northeast, lies M3, one of the three finest globular clusters in the northern sky, (the others are M13 and M5). Discovered by Messier in 1764, it glows with the apparent magnitude of a 6th magnitude star and lies about 35,000 light years distant.

Clear skies,
-Bob



Asian Astronomy:

My New sky

By Trevor Padgett

Astronomy, as practiced through the thick banks of clouds above by an amateur astronomer in Taiwan.

What do you do when your nights are cloudier than a cloud convention?

Take advantage of everything - that is the reality of observation since I moved to Taiwan. The tropical heat lends itself well to tropical clouds, but they give way to moments of clarity. Sometimes a whole night, a whole week-end will be clear. Sometimes, more often, hours, minutes, moments are clear. In a sky of white clouds, gaps appear and stars seemingly poke out their noses and claim their territory of the sky.

When I gaze out the window while eating dinner or finishing that book and see a star... a single spec of light that took light years to send its photons to my retina... I go out. Long gone is the glorious Canadian ability of taking a night off, or having one more sip of coffee or read one last paragraph before I spend some time with the sky. A star, in the sky, clouds parting... run! It might not be visible for more than a moment. The clouds are certainly going to close that gap soon.

It's truly a harsh reality for that one photon, having spent all those light years charging through the seemingly endlessness of space to have its finale, its one performance, to be a close encounter with clouds. A long journey and nobody to share the story with. So it goes for the billions of photons that never make it to my eyes here in Asia, or anyone's. But when they do, when I can see the stars, they are wonderful. That much I wrote in my last piece. In this piece I want to share the view of a few special moments I have encountered with the night sky, even the day sky. To juxtapose the familiar, the moon and Orion, against the unfamiliar, rice fields, lush mountains and my village. So here are three of the views I wish to share.



The moon setting in the early morning. Seen across the rice fields, with the morning mist rising off the river and mountains.



Orion, faintly, watching over the village of Song-Pu, seated peacefully in the east rift valley. Can you also spot the wasted light?!? Those are the old lights, the new ones...full cut off. One of my next stories will go through the Asian lighting phenomenon of "booming bright" versus "calming dark" in the cities and outlying villages.



The moon seen here rising in the early evening with Saturn holding strong just above the mountains. Rice in the foreground waiting to be harvested and directed to my dinner plate.

But there is another attraction on the island, not just those fleeting moments of clear skies that make the astronomer in me filled with excitement. There is geometry – cosmic geometry – to keep me enthused. The Tropic of Cancer dissects the island, almost cutting my village in two. Nearby are two monuments honouring not only the physical presence of this line but also offering up a host of astronomical information of the science of what that line means. Astronomy for the public, in a big way. Further the Chinese relationship with the stars and the stories they see in the sky is portrayed. To stand on the Tropic of Cancer, to drink in the cosmological importance of this geometrical process is certainly calming. To have such monuments built (there are three in Taiwan, and at last count only 8 other countries with monuments to the line) speaks of the connection and appreciation for astronomy in a historical and cultural way. And, since there is no better way to

share a moment than to share a picture, here is one of the monuments, ocean-side, and another, which is nestled in the mountains. An ode to the seasons!



Along the eastern coast of Taiwan stands a tall reminder of where we are. All around the base are astronomical explanations and historical events etched in the stone. The view, seen here, is lined up directly with the Tropic itself.



Across a mountain range, through the rift valley and up a hill stands the second monument to the Tropic of Cancer. This one combines the monument with education, offering explanations on the geometry of the cosmos, the history of the line, the solar system and the Chinese relationship with the night sky.

Despite the reality of a tropical night sky there is a celestial connection to be had, and enough to keep an amateur astronomer from Canada happy, educated and intrigued with the cosmos. A different view, the same home.

Trevor.

Nothing to do with Astronomy !

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Good pay- many career paths.**

<https://www.cia.gov/careers/opportunities/cia-jobs/index.html>

I especially like this one, 50 to \$95,000 to start. Just a high school diploma and a drivers license, lots of travel.

<https://www.cia.gov/careers/opportunities/support-professional/protective-agent.html>

Or how about: Science, Technology, and Weapons Analyst Just the name sounds cool, but up to \$99,9974 to start that's pretty cool too.

<https://www.cia.gov/careers/opportunities/analytical/science-technology-and-weapons-analyst.html>

As you probably see this is the CIA , here's one for you Clandestine Service, Specialized Skills, Targeting Officer. I wonder what he does? Opportunities for short assignments overseas — Hmmm

<https://www.cia.gov/careers/opportunities/ clandestine/sso-targeting.html>

Of course I am looking for what we would call a spy, how about? Clandestine Service Trainee Core Collector. That's gotta mean "spy"

<https://www.cia.gov/careers/opportunities/ clandestine/core-collector.html>

Just a bit of fun, Enjoy
Gil



“Life”, Is it out there?

References :

Abell's "Exploration of the Universe" 1994

Dawkins's : "The Greatest show on Earth"

Skynews : Villard's " will we inherit the Galaxy"

Wikipedia : SETI, ALH8401 Meteorite, Drake Equation

Steve Senger

“Life”, Is it out there?

By Steve Senger April 25 2010

This is one of the biggest questions we have ever asked ourselves since the very dawn of man. Well, get ready I actually have the answer we all have been waiting for...it's the # 42.

Sorry, inside joke, the actual answer is maybe :-).

I was inspired to write this article after just reading “Will We Inherit the Galaxy” in the latest issue of SkyNews. They have shown SETI techniques are improving at an exponential rate. This implies that we are doubling star/signal processing every few years, one estimate predicts that we could detect an intelligent signal within the next 25 years. I have SETI (BOINC) program running currently at home, but my computer is over ten years old. I should run out and buy a new computer and tell my wife we now only have to wait 5 years before making contact. The SkyNews article suggests failure to make contact within 25 years with sentient beings (aware of oneself) may be caused by an intelligent non-technological race. We have several examples on Earth: Dolphins, Whales, and Chimpanzees. All are Sentient mammals but none can make extra planetary contact. I should not have included the Chimp though there not as smart as dolphins, but they do have opposable thumbs and are currently using hand made tools, so given time they might start building Ham radios. Sorry Flipper.

The famous “Drake” equation created in 1961 by Frank Drake is excellent for showing and explaining seven variables needed to estimate radio-communicative civilizations within our Galaxy. But of course it will fail completely. That, however, is not a fault of the equation (I am a fan of this equation), the problem is the numeric values one decides to use are, for the most part educated “Guesses”. Two of the variables in the equation could even be estimated by any kid down the block. A few other variables are close to being bang on the money.

Here is the **Drake equation**, $N = R_s f_p n_p f_b f_i f_c L_c$.

N = Communicative Civilizations. I didn't like some of the definitions my text book gave for the 7 variables, so I modified a few to have more complexity (I could have put even more variables in the equation but this is supposed to be a short story).

“**R_s**” = Rate of star formation in the galaxy. It is currently 7 stars per year. It previously was 10.

“**f_p**” = fraction of stars with planetary systems. Wow this has changed dramatically since **Exoplanet** discoveries. It used to be a strong theory, now it is a “**fact**” Planets do form naturally from star formation. We can assign almost 100 % but most stars are binary or triple star systems, this would cause serious perturbations to the planets orbits causing extreme elliptical orbits or complete planet ejection out of their solar system. Better to have near circular orbits like Earth or Mars to maintain a steady temperature for life to evolve. This would eliminate about 60 % of the stars.

“**n_p**” = the fraction of those planets that are suitable for life. (Can we call them “M” class planets?). Well first of all you need terrestrial (rocky) planets, not gas giants like Jupiter or Saturn that are made mostly of Hydrogen. Only second generation stars that are formed from the shock waves of a supernova explosion can seed a newly forming solar system with the needed heavier elements for life to occur. Also you need a steady temperature over a long period of time for life to evolve. Yellow dwarf stars like our sun, a second generation “G” class star would do nicely. Only about 8 % of the stars in our Galaxy fit

the bill. I don't know off hand what percent of these stars were sprinkled with the life given pixie dust when they were formed. One half the Stars in Globular cluster have these heavier elements. So I'll just pick a number, how about 40% of the free roaming stars have the right stuff? So $(0.08) \times (0.4) =$ about 3 % of the stars is my guess.

“**f_b**” = fraction of Earth like planets where micro biological life actually occurs a “kid down the block” guess. This is the variable I find the most fascinating. Given the right conditions and time what percent of those planets will have any life? I have no Idea, nobody does. All we know is that it happened here on Earth, the anthropic principle. It's possible that what happened on Earth is an extremely rare event. If this is the case that makes us quite special and not just a common rock orbiting a dime a dozen yellow dwarf star. But it also makes us very lonely and not likely to hear anybody chattering about. If the Martian Rock ALH 8401 discovered back in 1996 with possible micro-organic fossils turns out to be true, then the probability of life arising on a Earth like planet go up to almost 100%. A book I just read by Richard Dawkins “Greatest Show on Earth” is a great read about natural selection. I was very impressed and thought Dawkins could be the Stephen Hawkings of Evolution. In his book, Dawkins' mentions we have no evidence (obviously) of what the first complex self replicating molecule on Earth started out as, but his educated guess was RNA.

“**f_i**” = Fraction of biological life that evolves into intelligent life. I am convinced based on what I have learned from Dawkins' book that this is close to 100 %. Providing energy is continually put into the system (star to planet) at a constant rate for a long time. Then based on natural selection a single cell should evolve into complex sentient beings.

“**f_c**” = Fraction of intelligent life that can make EMR communication. Again, if the above mentioned conditions are met then I would give an estimate of near 100%, unless they don't have opposable thumbs or they don't want to DJ across the Universe.

“**L_c**” = Average life time advanced communicative civilization will last? “Kid down the block guess” (lots of variables here: war, disease, deep impact, pollution, the changing luminosity of there star, red giant phase, Alien invasion ‘oops that's a paradox’). One could guess a maximum survival time a communicative civilization could last if we based it on their planet orbiting a “G-class” yellow dwarf star that avoids most of the above mentioned problems. How about 3 to 5 billion years before there life brightens up lethally. By the way that's us. I choose “us” because we just invented the radio. If I chose a K or M class star we could go from 14 to 200 billion years lifetime as a main sequence star. They would have died of boredom. By the way yellow dwarf stars like our sun are not dwarf and they are not that yellow.

I will not be calculating “N” there is no point. However if the best conditions are met the future looks very ripe to detect an intelligent signal in the next 25 years, in fact my new answer is a definite **Maybe**.

One final note It has been said many times in Astronomy books and articles from the 70's through the 90's that Earth is an insignificant spec orbiting an insignificant star in our Galaxy of many in the Universe. Our revised Drake equation shows that we are extremely rare and unique. That means SETI could fail! But that's all right; it also means that we are very “Special” Our mum would be proud of us. Steve

WHAT'S OUT THERE

Singing at the Sky

As amateur astronomers, we like to practice our passion at every opportunity, vacating the warmth of a cozy bed to brave the chill night air... upon waking, squinting one eye open and drowsily peeking out the window to see if any stars are visible (because it was overcast at bedtime), yawning, and donning warm clothing - who else on this planet would be so dedicated?

For some of us it's astrophotography that draws us to the night sky (and many of the photos we see taken from a home base are truly phenomenal - wouldn't Galileo be envious if he could visit our century and see what we are capable of seeing now?).

For some of us, it's being able to do real science and contribute to our knowledge of what's out there, and we belong to organizations like the AAVSO (American Association of Variable Star Observers) or ALPO (Association of Lunar and Planetary Observers) to name only a couple.

Sometimes, though, it's enough to just stand outside on a clear, still night in the middle of an open space and simply look up...

Can you imagine if we inhabited a Venusian world forever blanketed with dense clouds (at times it seems as if we do, I know), where there is no grand vista to observe, and no knowledge that anything exists beyond our thick shroud? Or dwelled beneath a frozen sky in a watery world, perhaps like Europa? What if we saw nothing to wonder about in our bland sky? Even in our real world, it seems that only canines and humans sing to the sky - but it is only we humans who reach up to touch it.

And because we do, we tend to wonder if anyone out there might be reaching up too...

Ray Villard, in his column in the May-June *SkyNews*, suggests that we might be the only technologically advanced intelligence in the Milky Way. Simpler life forms are likely to be much more common in the universe, life forms that are perhaps content in their environment and give no thought to what lies beyond... for them, unlike us, there is no need to connect with the cosmos...

As technologically advanced creatures, we have been singing to the sky in our sophisticated search for those extraterrestrial intelligent beings similar to ourselves for the past half-century, and so far no one is singing back.

At least, not in a way that we recognize.

A tantalizing theory of cosmic connectedness is presented in *The Hidden Messages in Water*, a fascinating book by Masaru Emoto, based on his research in Japan studying water crystals and the information they are capable of communicating.

Water has the unusual ability to copy and memorize infor-

mation. "If we were capable of reading this information contained in the memory of water," he asserts, "we would read a story of epic proportions. To understand water is to understand the cosmos, the marvels of nature, and life itself." For Dr. Emoto, the study of water is a means to exploration and discovery.

His years of research into water crystals have reinforced what the science of quantum mechanics acknowledges in general - that what we perceive as substance is nothing more than vibration. "When we separate something into its smallest parts, we always enter a strange world where all that exists is particles and waves... The entire universe is in a state of vibration, and each thing generates its own frequency, which is unique."

From a physical perspective, we humans are mostly water, averaging 70% of the life-sustaining substance... excuse me - vibration. And we too resonate with our own unique frequency.

Dr. Emoto concludes that as the human body requires the circulation of water, so does the universe. Water arrives on Earth from the cosmos and eventually returns, circulating to the "far reaches of the universe on an unending marvelous journey."

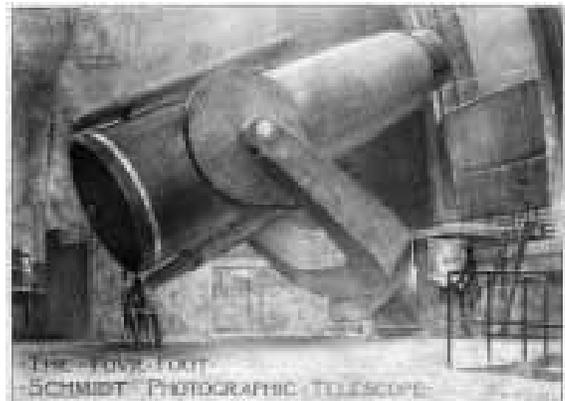
What am I getting at? Could it be that cosmic connections do exist? Could it be that water's capability of memory has permeated our universe over billions of years, and has been cycled and recycled through space and time, traveling and carrying the messages of life...?

Or, could it be what happens to someone who stands outside on a clear, still night in the middle of an open space, vibrating at her unique frequency (or possibly just shivering from the cold), contemplating such cosmic things as she looks up, and wondering who might be looking back...

What if communication is that simple? To connect with other inhabitants of our universe maybe all we need to do is generate cosmic thoughts and wave at the sky -

Do you think anyone might wave back? (I'll let you know.)

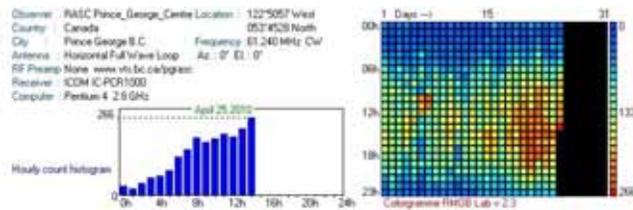
Fae Mooney



Monthly report for April Non-Visual Astronomy

For the month of April the big news is focused on the Lyrids Meteor Shower

Results for the Center are shown.



A European reported peak on April 11/12 at 14 –15 hours is seen. The Piscids, a minor shower reported to peak on April 20 are seen as well as the star of the month the Lyrids peak at ~ 266 per/ hour. The other monitoring locations bear these finding out.

The reported shower on April 11-12 does not have a known radiant at this time but with the number of confirmed supporting reports that I see. I am sure that it will be on the watch list for next year.

On further fronts a weather camera has been installed at the Prince George Center. Visit <http://www.vts.bc.ca/pgrasc/projects/project.htm> for a look at this completed project. Well-presented Glen.

On the All Sky Camera network There is not too much to talk as there has been a great number of cloud filled nights with few captures of meteor entries and no fire balls which are the likely meteorite dropping search items.

What is in the works at this time is a effort to place in service a 2nd camera Using the Sandia Camera System to that we have a direct tie to other systems that are in place in Canada. The camera has arrived complete with the video capture card, lens and software. A serviceable all weather housing is included. Do to ownership and insurance issues it is being installed at RDL-OBS on a 24-foot high tower, which will allow a relocation of the existing camera system. We have to supply about 125 feet of coax cable, with three runs of power cable for heaters and iris control. One thing discovered is that the cameras that we selected for our UFO system are just as sensitive as the Sandia System. The capture cards that we selected are the same one that they supplied and in fact it appears that the video signal

from a single camera can be (using a Video Distribution Amplifier) to separate computers running software for Both UFO and Sandia will allow us to marry systems together.



More to follow next month.

We are also planning to expand the camera network. Steve Capling a member from Williams Lake has agreed in principle to host a location for a All Sky Camera. Finding parts is underway. wayne

