

The DIGITAL Project

Dave Hardy came up with an idea to have an IAAA Digital Project. It's a contest open to all the membership to assemble an online art show of space art which is "painted" directly on the computer using software such as Photoshop or Painter. This is intended to be a test or demonstration of ability to actually draw a space scene by hand under these conditions. That means no use of Bryce or other 3-D software, and no inclusion of scanned photos or artwork. Draw with mouse or stylus, pretend you're painting, and see what you can come up with! Subject matter should include a landscape of some kind. All images should be submitted to Joe Bergeron by December 24, 1997, email address is JABergeron@aol.com. Images will be displayed at the IAAA critique site at <http://members.aol.com/IAAAartist/index.html>. The best image will be the cover of the next Pulsar. Break out the pixels folks!

DUES TIME! This means you!

Out of 142 members, 39 haven't paid dues, some in way too long. This is unacceptable. It's VERY simple. Look your name up in the IAAA directory, the date next to the (U1) is when your dues are due. If you don't get the next Pulsar, then you can figure you didn't pay. If you don't get a check to Dale Darby by the middle of December, then you won't be in next year's directory and your slides for the world tour won't be included. Come on, people! Pay up!

WORLD TOUR UPDATE!!!

LAST CHANCE!!! Get your slides in to Dale Darby A-S-A-P! Deadline for all submissions is 15 JAN 98! Remember: three slides max per artist, max framed size is 41' x 34', and there is a one-time \$50 fee for art ACCEPTED into the show. Artwork may be any space type motif, digital printouts are acceptable in lieu of slides. Jurying will be done in late January. Art work may be on tour for as long as two years. Get out your best stuff, this should be an excellent show!



INTERNATIONAL ASSOCIATION OF ASTRONOMICAL ARTISTS

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MEMBERSHIP
Dale Darby

IAAA POINTS OF CONTACT

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L26.00 to DAH below)
Life membership: \$350/L230

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Kennedy Space Center picture (KSC-97pc1545)

Editor: Jon Ramer

Dec 97 / Jan 98

The Official Newsletter of the



International Association of
Astronomical Artists

**LOOK OUT!
SHE'S
GONNA
BLOW!**

Oh... uhhh, maybe not...

Cassini heads for Saturn,
somewhere most of the
IAAA has already been!
Reactions and personal
connections in this issue.

IAAA Website: <http://www.novaspace.com/IAAA/IAAA.shtml>

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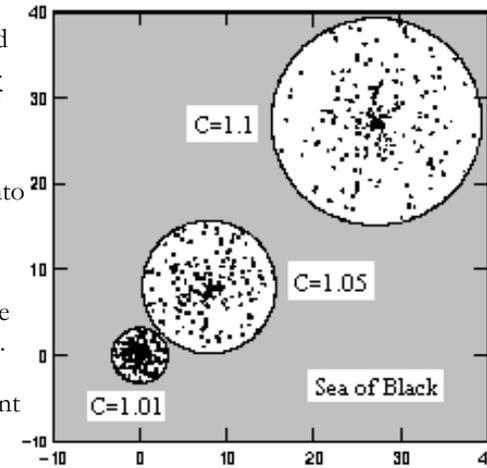
From Joel Hagen

From the Editor -

Hi Gang, this month we're highlighting the biggest and best space exploration mission ever undertaken by humankind - Cassini! In honor of that event the theme to this issue of the Pulsar is ringed planets. Lots of the membership have contributed some fantastic images of ringed worlds, I hope you like them!

Astronomical Feature of the Month: -- Event Horizons --

An event horizon is the defining edge of the most mysterious and fantastic astronomical object known to humankind - a black hole. The interesting thing is, an event horizon isn't a physical object. It's actually a *distance*. To be only slightly less confusing, an event horizon is the definition of the distance from the center of a black hole at which the acceleration due to gravity is exactly the speed of light. There is no "boundary," no "edge." The mass of the black hole curves space-time so much that any object whose orbital altitude above the black hole falls below the horizon distance can never increase its altitude and escape, not even if it could travel as fast as light. Event horizons are one-way signs on the highway of the universe. Indeed, light itself cannot escape, hence the nickname "black" hole. So, if light can't escape, what is an artist supposed to paint? Here's a few thoughts.... As an object falls towards a black hole, light reflecting off of it towards a distant observer must "climb" out of the steep gravity well. In the process, the light loses energy and is red-shifted. The observer would see the falling object turn redder and redder as it got closer to the event horizon. The opposite is almost true from the object's viewpoint. Light from distant objects would gain energy from the pull of gravity and would blue-shift as it got closer to the event horizon. The difference is what happens to the view of the universe from the falling object. The intense gravity acts like a giant fish-eye lens and all of the in-falling light is concentrated into a circle overhead. The closer you get to the event horizon, the smaller the circle becomes. At 1.01 times the event horizon distance, the entire universe would be squished in to a circle covering about 30 degrees of the sky (picture). At the instant before crossing the event horizon, the universe would shrink to a brilliant point overhead. Here's more - as objects get close to the horizon, they are stretched by the difference in gravitational pull between the top and bottom of the object. This tidal effect can shear a star to peices - which could make for some pretty interesting art... interested?



Plot showing shrinkage of visible universe while approaching an event horizon. Source: Black Holes: A Traveller's Guide, by Clifford A. Pickover, a book I highly recommend.

ART TIPS

Tip this month from Dale Darby - Here's a short tip basically aimed at

the newer artist but one that some of the older... er... more experienced... artist may find usefull also. Some of my students have had problems with frisket paper and cutting into the illustration board or canvas with whatever it is that they cut with. Here's a neat little idea that I came up with. It's probably been thought of before, however, I'm self taught so this is what I came up with. Use glass to place over the painting and cut your frisket off of that. If you are just hard masking circles for planets, you can determine the size you want and just cut the circle without taking the backing off the frisket. If you are doing a canvas, use clear shelf paper that is adhesive. Self sticking. Regular frisket will not work on canvas. To remove the frisket off the glass if the backing is off without stretching it, use a blow dryer on low heat gently while removing the frisket. Let it cool somewhat before matching it to the illustration board or canvas. How to not have a hole from the compass? Go to a knick knack store and buy some small wooden circles... I get a bag of them in various sizes for about a buck...and secure it with masking tape... then cut your circle using the wood piece to rest your compass point on. A word of caution. Try to keep your circle... or whatever... and the frisket that you cut it from at the same room temperature and humidity. Otherwise, it may stretch or contract. Also, this works best on hot press illustration board as opposed to cold press. Hot press being the smoother. Happy cutting and say goodbye to those irritating cut marks!



Evening Planet by Dan Durda. A view of a ringed planet in the evening twilight on an icy moon.

Profile: Dorothy Hitt

As a person who enjoys viewing the heavens, I have the most rewarding job you could possibly want. I am Art Director for Second Nature Software and I select images for screen saver collections.

Living on Long Island, New York, as a youngster I would lay out in the grassy yard with my telescope and watch the night sky. I owe the Girl Scouts for initially tickling my imagination. Working for the Astronomy Badge started me on a life long pleasurable activity of viewing the skies.

After graduating from college, I taught school for a dozen years on the West Coast. Then I worked for a computer software company as their official "reader" searching the trade publications for vital information.

For the past five years it has been my pleasure to work with Second Nature Software as Art Director and VP of Licensing. Second Nature has over 100 screen saver collections with various categories ranging from impressionist art to nature photography to fantasy to space art. Our space art collections are among our top selling categories. I am pleased to be able to say that space artists are a delightful group of people to work with. In other art genres, artists are often reluctant to recommend the work of other artists in their field who I might like to contact. Not so for space artists. There does not appear to be the driving competition among space artists, but rather a mutual enjoyment of fantastic space art.

Our very first space screen saver featured the work of Don Dixon. The public loved his space art and clamored for more. It's fun to hear people say how much they enjoy a particular space collection, and then tell me that they didn't realize that they liked space art. It's been my privilege to create collections with Michael Carroll, Don Dixon, Bob Eggleton, John Foster, David Hardy, William Hartmann, Robert McCall, Ron Miller, Kim Poor, Joe Tucciarone, and Raymond Wilson. We have one space photography collection, Through the Eye of Hubble. It gives me a great deal of satisfaction to know that I'm contributing, if only in a very small way, to people appreciating the wonders of the Universe.

Profile: Helmut Eppich

I'm 39 years old and work as a college lab technician at LaGuardia Community College. Working at an art department has advantages - one has opportunities to exhibit work and donate paintings to the college's permanent collection.

I first became attracted to space art in high school. My sketchbook was filled with pencil drawings of galaxies and nebulae. I began to doodle with different kinds of paint application, attempting to copy the texture of those eye-catching, undulating, swirling colored gas clouds. The colors in the photograph were astounding. I wound up with the beginnings of a self-taught style and my first crude, smeary nebula. Although the work was very basic, reactions were always favorable. Soon my paint brush began swishing nebulae onto small canvases.

In college the canvases grew larger, and I began perfecting my self-taught method of space painting. ("Look Ma, no airbrush!") About this time early issues of Star Log magazine displayed works of prominent space artists such as Don Dixon, Rick Sternbach, and Robert W. McCall, then Carl Sagan's *Cosmos* premiered. I was blown away by the artwork! To say the least, it was breathtaking and awe-inspiring.

I graduated from the City College of New York with a BA, after a few years and plenty of science fiction movies later, I began painting again. Watching science fiction movies and television shows containing cosmic visuals have served as inspiration for paintings because they always displayed some kind of eye-searing nebulae. Ideas from Astronomy Magazine, PBS Nova specials, and books about space art with crisp images of galaxies and nebulae from the Hubble Space Telescope increased my output to the point where I exhibited in small juried shows leading up to my first solo exhibition in New York's Soho.

My space paintings are not representational, though sometimes they inadvertently turn out that way. They are meant to be an abstract interpretation of space and are done from an artist's point of view. Currently, my paintings are becoming more sophisticated - the self-taught technique hones itself into a shaper style.

In the future, I plan to submit work to other galleries and have space art viewed from a



Ringleader by Mark Garlich. *A hypothetical planet. Like Uranus in our own solar system, it is tipped over so that its rings are nearly perpendicular to its orbital plane. Here you have a view from a moon in a polar orbit. Such an orbit affords spectacular views when the planet's rings are seen face-on in all their glory.*

1997 IAAA Board Meeting Minutes

By Don Davis

The Board Meeting was called by our President, Dave Hardy, and organized after much e-mail discussion over many months, taking place in Pasadena at the wonderful recording studios of Mark Mercury.

Vice Prez Joel Hagen was the prime mover behind the splendid gathering at the subsequent 'practice workshop' attended by various members at a desert research center near Mojave. This is not far from Joshua Tree National Monument, among the darkest sky locations in California. Like the seminal 1983 Death Valley workshop, we would end our journey at Edwards Air Force Base.

On Saturday, 11 Oct, our get together began as we met for breakfast in Pasadena, from which we drove to Mark Mercury's fantastic studio for the board business in insulated and comfortable surroundings.

Attending were David Hardy, Jackie Burns, Mark Mercury, Don Davis, Joel Hagen, and Dana Berry. Kara Szathmary and Michael Carroll were absent, though Mike later joined us at our desert destination. At 11 A.M. a quorum was declared and we got down to business.

The items were quickly considered and dealt with one after another, each one unanimously voted. Agenda items and discussion results are as follows:

1. UK Incorporation. We resolved that IAAA set up an independent UK corporation for the purpose of fundraising providing IAAA parent organization retains control and all legal requirements are met.
2. Letter of Welcome. We resolved that the IAAA make a "Welcome Pack" which reflects our re-dedication to astronomical art and includes at least the following: a welcome letter, statement of advantages of being online, statement of our history, our aims, a generalized description of astronomical art, sample art, obligations of members, benefits of membership, (exhibitions, Pulsar, workshops), professional guidelines, dues, resources (bibliography), guidance from experienced IAAA members regarding administrative activities, workshop kits, an organizational chart, and the latest edition of Pulsar.
3. Project Coordinator/streamlining work. Whereas the IAAA is a volunteer organization, we resolved that a new post be created, "Chief Project Coordinator," on a one-year pilot basis, who's duty is to facilitate and coordinate the volunteer activities of the membership.

- Minutes cont'd...
4. Purchase of a CD-ROM writer. The motion to buy a CD-ROM writer was tabled, because a writer is already potentially available to the membership. Ernie Blair proposed a Bryce resource disk, which the board discussed. It was concurred that it is not in the interest of the IAAA to be involved with this and other proposed group projects in an official capacity, but we offer our blessings to people wishing to undertake such projects.
 5. An educator's workshop. We resolved that to enhance the public awareness of astronomical art, the IAAA shall host a teacher or promising art student at one of our future workshops provided there are measures in place that indicate a high potential for good publicity. This endowment shall include room, board and conference costs only.
 6. Exposure for Space Art. We resolved that to enhance the public awareness of the IAAA and astronomical art, we shall establish the post of Public Relations Director.
 7. An Internal Video. Joel Hagen and Don Davis will make this, compiling footage from different, past workshops. No resolution.
 8. IAAA T-shirts. Dismissed by unanimous vote.
 9. Kim's proposal for a collective video. Davis explained that it should be a collection of CG animation sequences. As a courtesy, the IAAA should be credited in any of these projects but discussion orbited around whether or not this should be discussed at the board level, concluding that no decision should be made at the organizational level.
 10. IAAA Color Brochure and 11. Price Guide/Professional Guidelines. Folded in #2.
 12. Video monitor. We resolved that motion graphic imagery should be included in future IAAA exhibitions, we shall investigate the most expeditious means of doing so.
 13. IAAA Corporate Credit Card. Credit card idea is rejected.
 14. IAAA Corporate Shipping Account Shipping account is to be explored further.
 15. IAAA Domain Name. We resolved to purchase the domain name, "www.iaaa.org" and establish an independent, autonomous web site.

We moved to appoint the next president and vice presidents as members of the board.

We resolved that the IAAA rededicate itself to its original founding goals, namely: the study, practice and promotion of astronomical art.

We resolved that the Secretary shall record and archive the minutes of on-line board business. "Minutes" are a summary of the business transacted, not a running transcription.

We resolved that, provided there are no legal constraints, we shall change the name of our organization from the "International Association for the Astronomical Arts" back to its original name, "International Association of Astronomical Artists." Since the meeting Kara Szathmary has confirmed the feasibility of the return to our original name, and is attending to the legal paperwork.

After discussing board correspondence and item consideration, the board maintained the practice of considering all issues concerning the body. Don Davis volunteered as Secretary, archiving board e-mail discussion, with Jackie Burns providing backups.

We moved to draw up an IAAA general release and liability waiver form for all participants of future workshops. For each workshop, each participant shall sign this release. It shall be the responsibility of the workshop coordinator to collect these forms prior to the workshop.

We agreed to conduct a membership survey, content of which will be discussed on-line.

We discussed a color brochure. Jackie suggested that we have a single sheet "leaflet." The consensus was that Jackie would print them on her color printer, rather than color litho. Discussion about content will be handled on-line. Joel volunteered to write the text.

Business cards and letterheads standardization was discussed, as was the appointment of a PR person both in America and in the UK.

After the board business was adjourned at 3:45 PM, PDT, 12 Oct 97, Mark Mercury and Dana Berry went their own ways. The next day, with David Hardy and Jackie Burns as passengers, Joel Hagen and Don Davis drove to the desert preserve.

4 MORE NEXT ISSUE - including plans for the next workshop!

BRACE FOR IMPACT! By Dana Berry

Some of you may remember all of the hoopla last winter over the made-for-TV movie "Asteroid" which aired on NBC. Part of that hoopla was a two-part documentary produced for the Discovery Channel called "3 Minutes to Impact," a program that examined the prospects of an asteroid or comet really striking the Earth. Unlike the fictionalized NBC movie, "3 Minutes" explored past evidence of catastrophic impacts and looked at realistic counter-measures. Featuring interviews with Duncan Steel, David Levy and the late Gene Shoemaker, as well as state of the art animation by Dana Berry and Scott Battaion, (of the Wright Center in Boston), "3 Minutes" has garnered one of the highest audience ratings in the history of the Discovery Channel. It has also been collecting some interesting accolades.

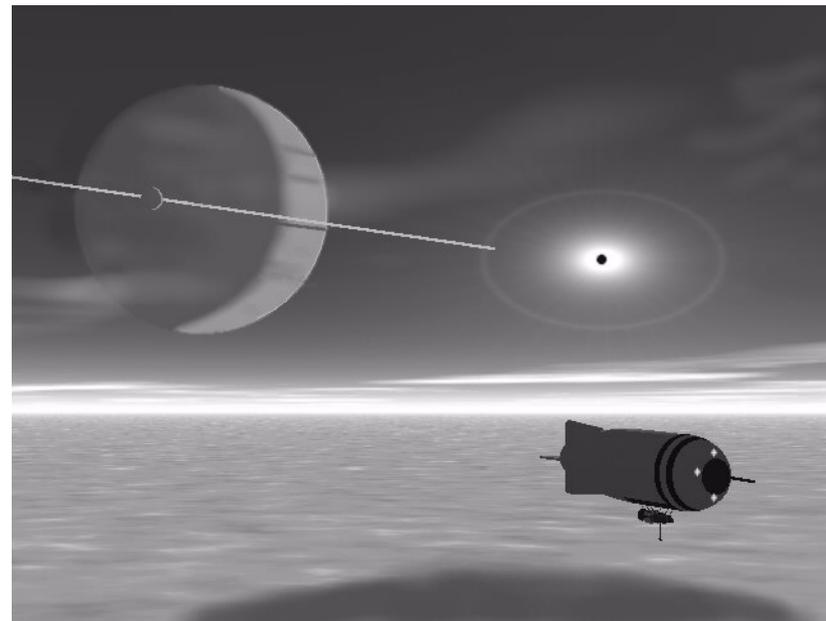
"3 Minutes to Impact" was a finalist in the 1997 Banff International Documentary Film Festival, held each year in Canada, in the Popular Science Category. And, just when you thought it was safe, the show was nominated for the 1997 Cable Ace Awards. A Cable Ace Award is cable television's equivalent of an Emmy Award, (which is reserved for broadcast television, and is not available to cablecast programs).

Those of you who were at the Tenerife workshop may recall the panic Dana was in as he churned out storyboards for a then upcoming production meeting. Those storyboards were the genesis of the animation produced for this show. The 3D animation was generated on Silicon Graphics workstations using Alias/Wavefront Power Animator, versions 7.1 and 7.5, (we're up to 8.0 now!), Matador Paint, version 6.0, and Adobe Photoshop on a Power Mac 7200.

If you missed the program, you can still see some quicktime versions of this animation by going to the Wright Center's web site and clicking on "brace for impact," a web documentary produced by Dana Berry and Scott Battaion, based on the Discovery Channel Production. The web address is :

http://www.tufts.edu/as/wright_center/index.html.

Please note that this series of pages is media intensive, so whatever you do, get ready. Sell the farm, buy canned goods, and Brace for Impact!



*Eclipse
0910
Titan
Time*

by
Steve Hobbs

*A future
mission to
explore Titan
floats over the
dense cloud
cover and
witnesses a rare
solar eclipse.*

Profile: Aldo Spadoni

I was Born on the 4th of July in 1957, at the dawn of operational spaceflight. I was glued to the TV during the heady days of Mercury, Gemini, and Apollo. I was hooked... I just loved Rocket Science! I devoured Science Fiction books and discovered Chesley Bonestell, and my hero, Wernher Von Braun. I would draw endless sketches and detailed designs for spacecraft, as well as scenes of the future exploration of space. I almost never drew existing stuff, I loved to create my own designs.

Around 1971, I started to paint. My first astronomical painting was accomplished with enamel modeling paints! I soon became the staff artist of the Hall of Science planetarium in New York City. My friend Alan Seltzer at the Hayden Planetarium introduced me to the great Helmut K. Wimmer. One of the most memorable days of my life was the one I spent with Helmut, who taught me how to airbrush. What this extraordinary man could do with simple poster colors was amazing. I attended the 1974 World Science Fiction Convention in Washington DC with my first batch of astronomical paintings and won the first place award for best amateur astronomical illustration. I also met and was inspired by the likes of Ron Miller and Rick Sternbach.

1974 was a pivotal year for me, should I pursue art and illustration or become a rocket scientist? I decided that I wanted to go beyond illustrating my visions, I wanted to become part of them. I attended the Massachusetts Institute of Technology, graduating in 1979. I was lucky enough to begin my engineering career at the start of a major aerospace industry boom. I started at Hughes doing configuration design for the Galileo Jupiter atmospheric entry probe. Later, at TRW, I became a navigation systems engineering specialist and worked on the Gamma Ray Observatory. Since then, I've made technical contributions to the design of numerous advanced aircraft, missiles, and spacecraft for NASA and the US military. During the 1980's, I was too busy with aerospace to do much space art, but managed to create a few paintings a year using airbrush and gouache. I really started to get the itch again around 1990. At that time, I was lucky enough to work for Del Jacobs, the head of advanced design at Northrop. Del was a former USAF Brigadier General, fighter pilot, test pilot, and a man of extraordinary vision who recognized my talents beyond engineering. With Del's help, I proposed and created a dedicated creative team tasked with envisioning the future of aerospace using emerging computer-based engineering visualization tools. I'm still with the team as the Advanced Projects Manager and remain active in engineering, holding patents for advanced sensor systems and trauma care technology.

Today, I also manage Aerospace Imagineering, a small consulting company I created in 1991, dedicated to the conceptual design and visualization of future technology for the aerospace, publication, and entertainment industries. My space art is focused on three main areas: spacecraft, spacecraft, and spacecraft. I live for Rocket Science! I love to design. Even when working with a Science Fiction or Fantasy premise, I create concepts that are designed as if they would actually function, using everything I've learned as an engineer and as an artist. My goal is to create compelling visions of humanity's spacefaring future. I work mostly in the digital realm these days. I live in Rancho Palos Verdes, California, with my wife and son.

My work has appeared in Aviation Week & Space Technology, Aerospace America, Aerospace Engineering, Air Force Magazine, The Discovery Channel, Popular Mechanics, Popular Science, Novagraphics, and others. On the entertainment side, I've consulted on APOLLO 13 (the movie), and James Cameron's TITANIC. I'm currently working with Science Fiction author Larry Niven on a project to illustrate and write a book of his amazing technological visions.

I'm in this for the long haul. I'm proud to be a member of the IAAA, and I hope to increase my level of participation as we head towards the future together.

Profile: Steve Hobbs

I was born in a small country town hospital one Australian autumn in 1972. For as long as I can remember I have always been interested in the universe beyond (it's strange how you seem to be born with this curious passion). "The Traveller's Guide to the Solar System" by Ron Miller and Bill Hartmann was one of the first books that influenced me and from then on I just couldn't get enough. Even in Australia we get news of the space program and I followed this with interest, notably the passage of Voyager 2 which left Earth when I started school and passed Neptune when I graduated twelve years later.

Going against the negative warnings of my school art teacher I took up my first paintbrush when I was seventeen and my first space painting was of a crescent Earth rising from a lunar orbit which many people thought looked 'very nice.'

At this time I began studying for a bachelor of science degree at university and my painting grew from a hobby to an absolute obsession. I had moved into science fiction at this stage, probably as a side effect from studying physics and maths ad nauseum and soon the walls, benches and ceiling of my humble abode became decorated with evil smelling oil paintings (my favorite medium).

My technique gradually improved and soon after I started to put my renderings in various shows, the Australian equivalent of exhibitions. If you bear in mind that I lived in a rural area you can easily imagine the content of a typical art exhibition. So here were my bright red pictures of Mars and beyond up in competition with distinguished works of farmhouses, cane fires and old farm machinery. Imagine my surprise when I not only won a prize but cleaned up the show!

Then one fateful day I came across Dave Hardy's 'Visions of Space' containing an address for the IAAA.... Finally, I could associate with creative people with similar interests - which unfortunately is a rare thing here.

Since then I have graduated from university and joined the Royal Australian Air Force where I currently work as a communications/electronics fitter.

In my spare time I paint both on canvas and digitally thanks to a Pentium 200 PC, Bryce 2 and Lightwave 3D which I am also using to create special effects for an ongoing film project.

However, I am an Australian at heart and enjoy scuba diving, rock climbing and attempting to fly airplanes in an effort to get a pilot's licence.



The Souls of Saturn by Michael Carroll

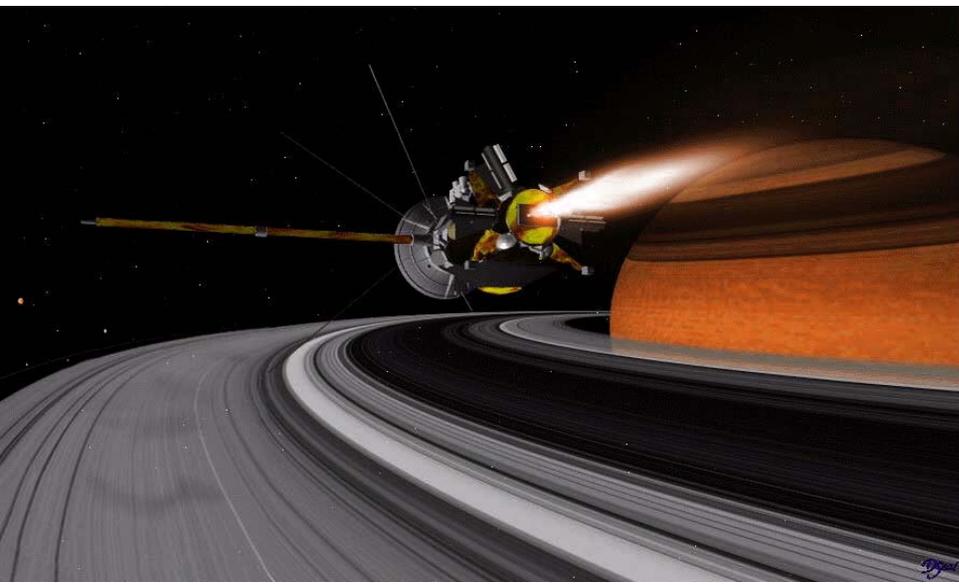
CASSINI'S AWAY...

With a roar and a whoosh, the Cassini mission to explore Saturn and its moons lifted off from Cape Kennedy at 4:43 am on 15 October 1997, proving once again that rational scientific thought can overcome fear mongering misinformation. The mission is definitely something for the record books. At 3.4 billion dollars, Cassini is the most expensive unmanned mission to date, and weighing in at 5,650 kilograms it's the heaviest one too (compare that to Voyager's 825 kg). But for the near future, Cassini will be remembered as the most controversial space craft ever launched. Carrying 72 pounds of plutonium for generating electricity, the launch was protested by hundreds of doom-sayers who choose to ignore the safety investigations done by NASA. The protests drew an... interesting response from Kim Poor. On 17 October he said:

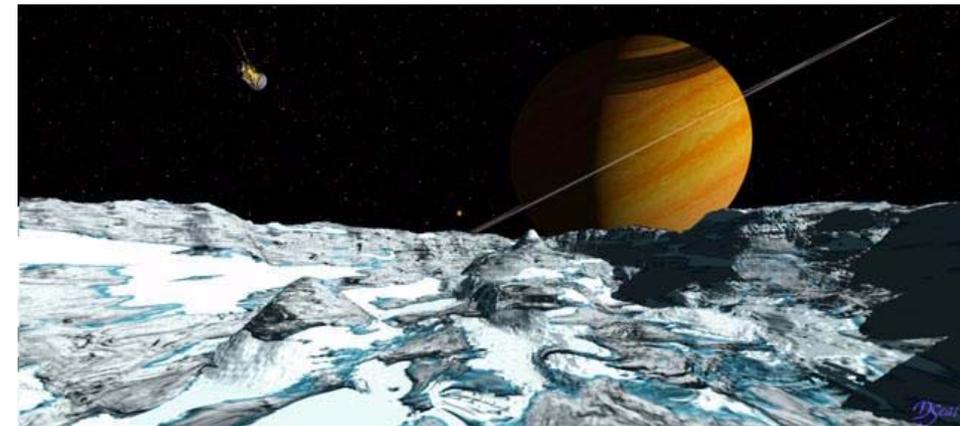
People who appear to have little else to worry about have manufactured a crisis. Some groups (and media) focus on these "grave dangers", and neither see the bigger picture, nor the astronomically minuscule chance of occurrence. They are effectively saying "Keep that plutonium here on Earth where it belongs!" Launching otherwise deely nuclear waste into space, and making it do some work along the way, seems to me a noble endeavor. That's 75 lbs of plutonium we won't have to worry about again.

Despite the protesters promise to disrupt the launch, Cassini's Titan 4 booster lifted off unmolesed. How did this happen? Here's the inside scoop. Security for the launch was provided by one of the engineering sections of the EG&G corporation, a section run by Carl Ramer (check out the editor's last name if you don't get the connection). Unseen and unadvertised was an array of sensing and reporting systems stretching from the ocean to the river boundaries of the launch site. Teams of engineers, technicians and security response personnel from the US Air Force, US Navy and NASA laid out an impressive perimeter defense in order to keep the threatened intrusion and launch interruption from coming to pass. The Navy deployed a system of floating hydrophones in the ocean to sense watercraft as far out as six miles. NASA deployed a tactical system three times the size of the systems deployed for Gallileo and Ulysses combined. This system contained a technology mix, with microwave, fiber optic, passive and active infrared sensors, encoded radios, solar power, and camouflage techniques. Helicopters sweeping with Forward Looking Infrared Radar were overhead while dozens of augmentees deployed into the woods and wetlands of Kennedy Space Center. The result? Several whackos nabbed where they shouldn't have been and not *one* intrusion into the launch zone.

Other members of the IAAA were more directly affected by the mission. Steve Mercer spent the first six months of the year working on the official Cassini Teacher's Guide.



As Steve puts it, the guide is "a comprehensive curriculum designed for educators in grades 5-8 to teach about the Saturn system and the Cassini project. It was contracted through JPL as part of NASA's Education Outreach program. The 194 page field test version consists of 6 lessons, dealing with everything from the history of Saturn discoveries to the structure of the Saturnian system. Two of the lessons are about the Cassini mission itself, including the spacecraft and its instruments, how it works, and what will be measured. There's even a lesson dealing with the people of the Cassini team, demonstrating that ALL types of people are involved, not just a few stereotypical scientists in white lab coats. There is a Connections section, showing connections with art, language, and mythology, as well as a comprehensive Question and Answer section. A glossary with maps on how to observe Saturn in the sky rounds out the lessons.



Finally, the guide comes with exact scale illustrations of the Saturn system, its moons & rings (courtesy of yours truly), and a scale model of the Cassini spacecraft on card stock that students can build in the classroom. My job was to take all of the raw material and turn it into a complete, ready-to-print guide, including design, layout, and illustrations."

Member David Seal is also directly involved with Cassini. He works for JPL producing images to demonstrate various phases of ongoing missions. Some of his work is seen here.

Cassini is on its way, healthy and safe. But it won't be zapping pictures of Saturn back for some time yet. Despite being launched

atop the most powerful booster in the US inventory, Cassini will take almost seven years to get Saturn, first having to get gravity assists from Venus, Earth, and Jupiter before arriving at Saturn in 2004. Eventually though, Cassini will slip into the Saturnian system, decelerate, and spend at least four years taking an estimated 300,000 pictures, including 1,100 from the Titan probe Hyugens. Undoubtedly, our knowledge of Saturn and its moons is about to take a great leap forward, but no matter how many orbital pictures are taken, only artists can take people to the surface and show them what it's like down there. So let's hear it for Cassini, we'll be getting inspiration from it for years to come!

Above: digital image from Aeneas crater on Dione with Cassini passing overhead. Across: digital image of Cassini making its Saturn injection burn. Both images by David Seal and part of an excellent JPL series found at www.jpl.nasa.gov/cassini/Mission/cas.html Below: JPL image P-4658.

