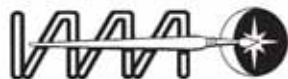




NASA



INTERNATIONAL ASSOCIATION OF ASTRONOMICAL ARTISTS

Mar-Apr 2004
Incorporating Late-Breaking News Through 1 Jul 04

IAAA PULSAR

The Official Newsletter of the
INTERNATIONAL ASSOCIATION OF ASTRONOMICAL ARTISTS

In the Next Issue of PULSAR:

We'll have an interview with Kevin Grazier of the Cassini mission team to highlight our gas giant theme, and one or two other surprises.

We'll be profiling Julie Jones, a member familiar to the email list posters and now readers of this issue. See her MER-inspired art inside!

In Future Issues:

We're always looking for theme images for our upcoming issues, so send your digital files or slides or prints:

Jul-Aug 2004: Exotic Objects. Neutron stars, black holes, supernovae, Big Bang, anything weird and energetic.

Sep-Oct 2004: Comets. Seen from a distance with long flowing tails, seen up close as dirty snowballs, landing missions, impacts, comets around other stars.

Nov-Dec 2004: The Moon. Early lunar formation, cratering, lava, human exploration, the moon's future.

We're also exploring ideas like a year-end annual art issue or portfolio, so stay tuned and stay involved in your IAAA.

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"Mars Exploration Rover" by Dan Maas

From the Editor –

The Wonders Keep Coming, and Time Warp Cubed

PULSAR continues its theme issues with more exploration of Mars. When we last left our intrepid rovers, Spirit and Opportunity, they were rolling on to the Columbia Hills and Endurance Crater, respectively. These targets have been reached, nearly doubling the 90-day “warranty” given each rover and resulting in thousands of additional photographs and scientific readings. Evidence of past water and the presence of the mineral hematite abound. “Blueberries,” tiny grayish spherules, pepper the sediments and litter the landscape, adding contrast to the whitish and reddish rocks. Wind-blown dust forms dune shapes at many different scales, and rocks with crusty outsides and crumbly insides will keep planetary geologists busy with analyses for a long time. Beginning with the Viking 1 landing in 1976, we now have five sites to study and compare in terms of rock populations, craters, dust, and other formations, as we continue to paint new views of Mars and create new computer terrains. Add to this the tens of thousands of high-resolution photographs by Mars Global Surveyor, Mars Odyssey, and Mars Express, and we are truly building our knowledge base for eventual human exploration.

The last of the giant planetary probes, Cassini, is now in orbit about the solar system’s second largest gas giant planet, Saturn, beginning a four year mission. We’ll look at Cassini and art of its target worlds in the next PULSAR.

The Time Warp Part of This Complete Breakfast

And yes, like this issue, the next issue will be late, though the news will be fairly up to date. Real Life™ gets in the way more often than not, but with any luck at all, the Jul-Aug 2004 issue will come out some time around the end of August. We will get six issues published this year, by thunder.

We’re changing the body copy a bit for this issue and for future issues; some folks have noted that 8 point type is something of a strain, so we’re bumping it up to 9 point for most sections.

Many thanks to all who responded to the call for Mars art. I’m stunned. Check out the captions for the artwork on page 5; there wasn’t a lot of room on the color pages. And lastly, there’s still time to send art for the gas giants issue, so fire up those modems!

Rick Sternbach

Cover: “Mars Exploration Rover” Credit: Rendering by Dan Maas/Maas Digital LLC © 2002 Cornell University. Used with permission of NASA/JPL (the fine print; Dan made me do it — Ed.). Dan worked from MER engineering drawings to create his renders and animations in Lightwave and various other applications. See <http://www.astrobio.net/news/article827.html> and <http://www.astrobio.net/news/article866.html> for some excellent background articles on how he did it.

ARTIST PROFILE: TERRY SUNDAY

Continued from Pg. 6

them flyable) near El Paso, Texas.

As did many other artists and engineers, Terry drew great inspiration from the works of Chesley Bonestell. He found the von Braun/Bonestell “Space Program of 1953” especially stimulating, and devoured books such as “The Conquest of Space,” “Conquest of the Moon,” and “Rockets, Missiles and Men in Space.” He painted his first pieces of “real” artwork in the mid-1970s, using Liquitex acrylics on gessoed cold-press illustration board. His subjects included cutaway rockets, orbiting space stations, manned and unmanned spacecraft exploring Jupiter and Saturn, and a few planetary scenes. With no formal art training, he really enjoyed drawing and painting space “hardware,” but he then tended to lose interest in doing the surroundings. So he has a stack of detailed space vehicles on plain white backgrounds. His output of space art increased when he discovered Caligari’s trueSpace software for his PC several years ago. His first foray into the computer graphics world was an homage to Chesley Bonestell—a rendering of the moonship fleet and the Space Station in orbit around the Earth, arrayed very nearly as the master had done 50 years earlier. Terry soon added Bryce and Dark Tree Textures to his software repertoire, the former to make planetary landscapes and the latter to generate procedural textures. These software packages encourage unfettered experimentation, and often create bizarre effects, but Terry continues to strive for realism and authenticity in his digital images. Terry has also written extensively on aircraft, flight testing and aviation history, and is currently authoring a novel about secret orbital rocket planes in the early days of the space age. Visit his website at www.zianet.com/sundayt to see more of his digital space art.

The Colors of Space, Part 2

Continued from Pg.18

meteor showers, eclipses, etc. with 35mm film. I could go on and on. As you might imagine, a place like this tends to attract astronomy enthusiasts, whatever else is required specifically for the job. I don’t have time much to monitor this listserv, so if you continue the discussion please excuse me in advance for not being there. Feel welcome to email me directly if you’d like. If any one would like a reprint of a recent Sky & Tel article on how we color Hubble images, please contact me (directly, not via the listserv) and I’ll send you one. Provide your postal address. Also, while I’m at it — I recently put together a little photoshop color palette file which you can install and it will give you an RGB color picker by the *visual* appearance of stars by spectral type and temperature. :-) Useful if you paint in Photoshop. It works in the PC version; I haven’t tested it on a Mac. Email me if you’d like to try it.

Would the IAAA ever be interested in meeting here? We could probably arrange for some interesting talks...

Thanks for the inspiring [art]work. What you do is what got me started in all this and I suspect I’m not alone!

John Stoke stoke@stsci.edu

The Colors of Space, Part 2

In Part 1, IAAA member John M. Stoke of the Space Telescope Science Institute provided a self-contained "Q&A" session regarding the acquisition and publication of Hubble Space Telescope images. He continues the discussion here:

HST is there to provide astrophysical data too, not just publicity shots.

Don Davis replied, "Yes but is not a major part of what makes Hubble worthwhile the ability to obtain a similar data set of familiar objects in higher resolution? If most of the great observatory images of nebula are made with RGB filters why should similar images not be made for a more direct comparison with familiar views? I find it difficult to believe that someone with access to this telescope has not wanted to repeat in high res what they and many other astronomers have done with observatory and back yard telescopes. Can it be the Hubble people are not people who enjoyed making such images and are a bunch of 'ivory tower office astronomers'? Why has professional interest in visual astronomy declined?"

Well, there's a lot there, let me try to unravel it.

First, it would be helpful for you to know that we don't have a joystick here! Nobody gets to steer Hubble around and take snapshots in the off hours because there aren't any off hours. The people with 'access to the telescope' are those who have gone through a highly competitive peer review process to receive observing time. Hubble is oversubscribed ten orbits for every single one that exists. Time is at an absolute premium. Therefore, a proposal must carry high scientific merit to be approved by the international committees that are established for this purpose. Everything gets reviewed, including proposed filters and exposure times -- all with an eye to advancing scientific knowledge.

The reality is that the pictures we put out are, quite often, not the science. The science is done at the fringe of detectability, at the limits of the signal to noise ratio. The images that scientists analyze are the raw, high dynamic range grayscale images, not the color press release photos. And incidentally, these original images are available in the public data archive; you can go get 'em and make your own color renditions. You'll need some special software to open the HST flavor of FITS files. And you'll have lots of cosmic ray cleanup and chip seam blending to do if you want your picture to look as good as ours!

Regarding the question "Are Hubble people not people who enjoyed making such images and are a bunch of 'ivory tower astronomers'?" first I can say that very few of the 500+ people who work *here* are so detached from the meaning of the mission as to not enjoy palpable excitement when a cool new image appears. I'd say the same is likely true of the thousands of people associated with Hubble around the globe. We have many people here who enjoy a look through an eight-inch Celestron as much as anyone else. Our imaging lab staff are all avid amateur photographers. The fellow who develops the prints was the Mt. Wilson photographer who worked with Allen Sandage on the great Hubble Atlas of galaxies. His assistant regularly photographs comets,

Continued on Pg.19

PULSAR

WORKSHOP NEWS

• **February 6-13, 2005 — Death Valley. Contact:** Rick Sternbach (rsternbach@earthlink.net). Your editor continues to have discussions with the groups sales contact at the Furnace Creek Ranch. Based on a poll of members online, the Feb.6-13 week seems to have won out over the week preceding, so we are working on the assumption that the dates will stick. We'd be arriving on a Sunday and leaving the following Sunday, so that should give us plenty of time to get out into the field as well as do a bit of studio work and give evening presentations. And generally relax and catch up with old friends and make new ones. We're hoping to coordinate schedules with NASA scientist Chris McKay and former NASA educator Don Scott (also a former park ranger and devotee of Lewis & Clark).

We're creeping up on the magic minimum number of 10 rooms to get the rate discount. We'll be getting a rate of \$95 a night, normally \$140 a night. We're studying a couple of options on making the reservations. The first involves attendees making reservations individually; the first night's room and tax would be charged on a credit card and in the event of cancellation, that charge would be refunded up until 48 hours before February 6, 2005, and forfeited if within that 48 hour period. The second option involves the IAAA reserving the total number of rooms necessary with a larger deposit and a non-forfeit cancellation window that closes 30 days before February 6, 2005. We're leaning toward the first option; members would call the Ranch reservation office and give a booking number that we'd provide.

The deadline for making reservations is January 6, 2005. This is still a ways off, but we all know that time has a way of evaporating, so if you *can* make plans to attend this workshop, please do so. After January 6, the Ranch will release all unreserved rooms and you'll be stuck paying the higher rate if you can even get a room.

We can rent a meeting room with a projection screen, chairs, and tables, and discussions are ongoing about evening programs, including portfolio showings and movies. The same laptops that can show Photoshop space art files can show DVDs; Bob Kline has offered to bring "Robinson Crusoe on Mars." The meeting room will be at the Furnace Creek Inn, a short distance up the road from the Ranch; we have been assured that the room at the Inn is much nicer than a similar one at the Ranch, and it will be available all day and night, for the entire week. The Ranch's meeting room is already booked for staff meetings and gatherings by other organizations.

NOTE: For those members who are not online or who do not frequent the email discussion list, and who **are planning on attending** the Death Valley Workshop, please take a moment to fill out the enclosed questionnaire to better help us in our planning. Mail the completed questionnaire to:

Rick Sternbach
IAAA/Death Valley Workshop
12417 Hesby St.
Valley Village, CA 91607 USA

• **May 2005 or 2006 — Columbia Ice Fields. Contact:** Paul Hoffman (paul@digitalspaceart.com)

Mar-Apr 2004

EXHIBITION & GALLERY NEWS

As of June 26, 2004, Director of Exhibitions Joy Day reported:

"Hi all you great artists! I have repackaged the Artists' Universe and have nearly gotten the jurying done. The repackaging has opened up some more room for smaller pieces. If you have any that would fit the required FRAMED sizes below, please let me know and submit jpegs of them. Sizes must be the exterior of the frame: 13" x 15" x 2" deep; 13 x 33 x 1; and 13 x 14 x 1. Thanks!"

Previous to this message, Joy reported: "The crates were held down in Pasadena, near JPL, for a time, awaiting the jurying period for new pieces, in case a show came up. None did, so the crates have now been transported to our studio. The Artists' Universe show is currently taken apart and each piece has been thoroughly checked over and any problems have been fixed. I have openings now for new works, since 6 pieces were removed. I have also repackaged the crates, re-ordering the pieces for a better fit, giving even more room for additional pieces that will enhance the value and appeal of the show. I received a good response from my call for entries and from that pool, 11 works from 10 artists have been chosen. I still have four more spots that can be filled (due in part to the re-ordering), so I am contacting various artists who showed interest to see if they have anything that would fit these new dimensions. Replacing 6 pieces with 15 new will make the show significantly better, with a wider array of pieces, artists and styles. I have not as yet notified the new artists that their pieces have been chosen. I intend to do that this week, after all spots are filled. I will make a general announcement to the list congratulating these artists. Since I had extra room, I successfully included each artist that submitted pieces. No artist will be turned away, and the range of new works is quite wonderfully varied, but all professional and assets to the show.

"All artists who have requested their paintings returned have received them, as well as artists who are no longer members, and artists that did not respond to my question about if they wanted their painting back or to continue. Every piece that I have in the crates is specifically granted to continue in the show. Once I finish with the jurying and put the new scans into the show collection, the new pieces and their sizes and prices will be added to the website. With the new pictures, I am also intending on producing a short run show catalog that will be sent to museums, planetariums, etc. This will generate more interest and action than the prior use of the website alone."

Joy Day
P.O. Box 3939
Carmel-by-the-Sea, CA 93921
Email: joy@glassnebula.com

IAAA Board Election Results

The following members have been elected to serve on the Board beginning July 1, 2004 until June 30, 2006: Don Davis, David A. Hardy, B.E. Johnson, Dirk Terrell, Richard Bizley, Jackie Burns, Paul Hoffman, and Rick Sternbach. Walt Barrows will stay on as US Membership Secretary.

NEWS BITS

NASA Marks Passing of Noted Artist and Agency Curator

Robert Schulman died of cancer March 20, 2004, in Annapolis, Md. He joined NASA in 1974 to develop NASA's Corporate Identity Program. Schulman was NASA's Fine Arts Curator from 1976 to 1994. The NASA Art Program documents and celebrates the history of the American Space program as seen through the imagination of the artist. He received the First Presidential Award for Graphics Design Excellence at NASA from President Ronald Reagan. The program enabled Schulman to select and commission outstanding American artists to join astronauts, scientists and others architects of the space age to witness, document and interpret history in the making.

Ron Miller's Message About Jack Coggins

Jack Coggins is one of the last remaining old masters of space art. Most of the baby boomers among us were probably influenced to some degree by his classic children's books, "By Spaceship to the Moon" and "Rockets, Jets, Guided Missiles and Space-ships" (among others). He will be 93 on July 10. His mental faculties are doing well (one of his first questions to me yesterday was if I'd heard any news yet about Space-ship One), but his health is very poor. He had to stop painting this year, too, sadly. It would be nice if any of us who cared to would send him a greeting (his Rudaux award is framed and proudly hung in his studio).

His address is:

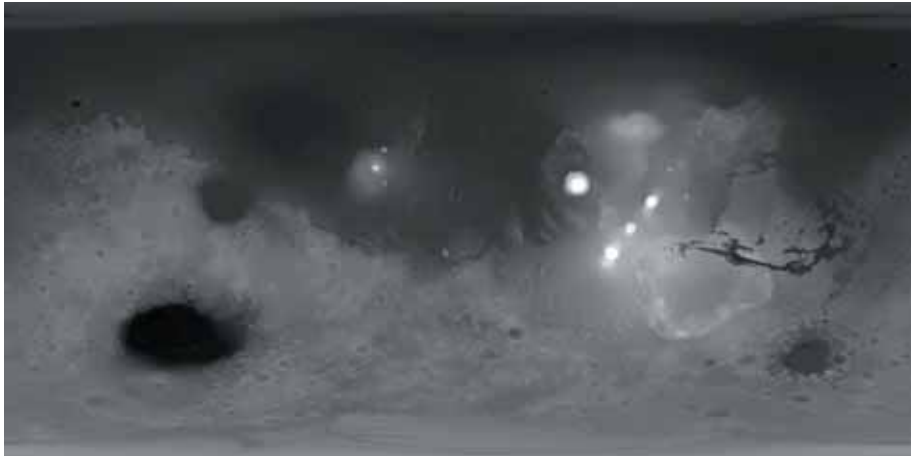
Jack Coggins, P.O. Box 57, Boyertown, PA 19512 USA

PULSAR Submission Guidelines

We're always looking for news and images for PULSAR. Feature articles generally run 500-1500 words; news bits can be as short as a few lines. Even in this age of internet email lists, if you have anything of interest to the space artist, you can share it here.

Hard copy, mailed: Text should be typewritten, double-spaced. Images can be photographic prints, sketches, or photocopies suitable for scanning, either black & white or color. Mailing address: Rick Sternbach, IAAA/PULSAR, 12417 Hesby Street, Valley Village, CA 91607 USA.

Email and Other Web Options: email all text to rsternbach@earthlink.net. Text files can be saved in any format which can be opened by Microsoft Word. Text files can also be placed on a website for downloading; please furnish the proper URL. Images should be roughly 1800 pixels wide or better. Images can be PSDs, JPGs, GIFs, or PNGs. Other formats, like QuickTime, are also acceptable; please check with your editor first. If emailed, please keep file size to 2MB or zip-compress larger files. Large images can also be placed on websites for download; again, please furnish a URL. Please provide credit and copyright information for articles and images. If no copyright information is provided, a © notice will be placed with the artist's name and current year. For images, please provide a **real title and a sentence or two about the subject**; a file name like "jup345.jpg" won't tell us what we need to know.



Cylindrical projection, grayscale heightfield map, Mars

NASA planetary science teams and planetary map enthusiasts, with varying amounts of detail and surface color "correctness." If you're already familiar with 3-D apps like Lightwave, Maya, 3D Studio, or Bryce, you'll know to configure your surface map with a higher resolution than the resolution of your rendered image, or else you'll end up with a soft or even "jaggy" look to your planet. "Painting" a surface map onto a computer-generated sphere is the first step in making a realistic-looking world; a good second step is to add a *bump map* (see above) based on the *heights* of features. A bump map doesn't produce true relief, but does produce good-looking highlights and shadows. For a planet like Mars, height data can be nicely registered with surface image data. The Mars Orbiter Laser Altimeter (MOLA) on Mars Global Surveyor scanned the planet to make the height map; the data can be downloaded from <http://pds-geosciences.wustl.edu/missions/mgs/megdr.html> at different resolutions. Use only the maps labeled "topography" in a program like 3DEM or MacDEM. Some rendering apps can use *displacement maps* to produce relief in the form of actual polygons (based on the height image), but the memory usage skyrockets. Additional controls over surface materials (reflectivity, etc.), additional maps for atmospheres, and lighting controls all can add complexity to your rendering, but also added drama and realism. We'll have more on DEMs (digital elevation models) in the future.

Paul Hoffman tell us a bit more of the **MARS VISIONS** website that he's set up: "In January, after the Mars Exploration Rover named Spirit had landed, and when the other MER, Opportunity was soon to arrive on the red planet, I thought that the public interest spurred by this double-barrelled mission might pique the public interest in depictions of Mars created by our members. I thought that any bit of added exposure would help our artists and the organization, so I purchased the rights to "marsvisions.com", built a prototype page, and solicited entries from the membership. As of this writing (March 21), the site features 45 paintings & digital works from 8 artists. Traffic is pretty low, averaging between 40 and 50 visits a week, around half of them coming from the links at the IAAA Gallery page and on SolarVoyager.com."

Page 7:

- "Frosty Slopes" by Ron Miller. An illustration for the new edition of "The Grand Tour."
- "Candor Chasma" by Kees Veenenbos.

Pages 8-9:

- "Marsonaut Hand with Rock" by Detlev van Ravenswaay. Subtitled "The Reason We Came Here," Detlev photographed the scene on a "wonderful Mars landscape on center island of the Santorini Islands, Greece."
- "Olympus Mons" by Dr. Mark A. Garlick. A diagram showing "Olympus Mons compared in scale to Maxwell Montes on Venus and Mount Everest on Earth."
- "Mars Walker" by Lynn W. Perkins.
- "View of Home" by Frank Hettick. Winning entry the adult category contest to design a poster for the upcoming Mars Society conference.
- "Olympus Mons" by Brian Smallwood. "A massive dust storm sweeps down the flanks of Olympus Mons."

Page 10-11:

- "Coprates Chasma" by Ron Miller. Another illustration for "The Grand Tour."
- "Distant Shores" by Pat Rawlings. Pat tells us "After driving a short distance from their Ganges Chasma landing site on Mars, two explorers stop to inspect a robotic lander and its small rover. This stop also allows the traverse crew to check out the life support systems of their rover and spacesuits within walking distance of the base."
- "Martian Mysteries" by Hilda Green Demsky. Published on the back cover of The Planetary Report, December 2003.

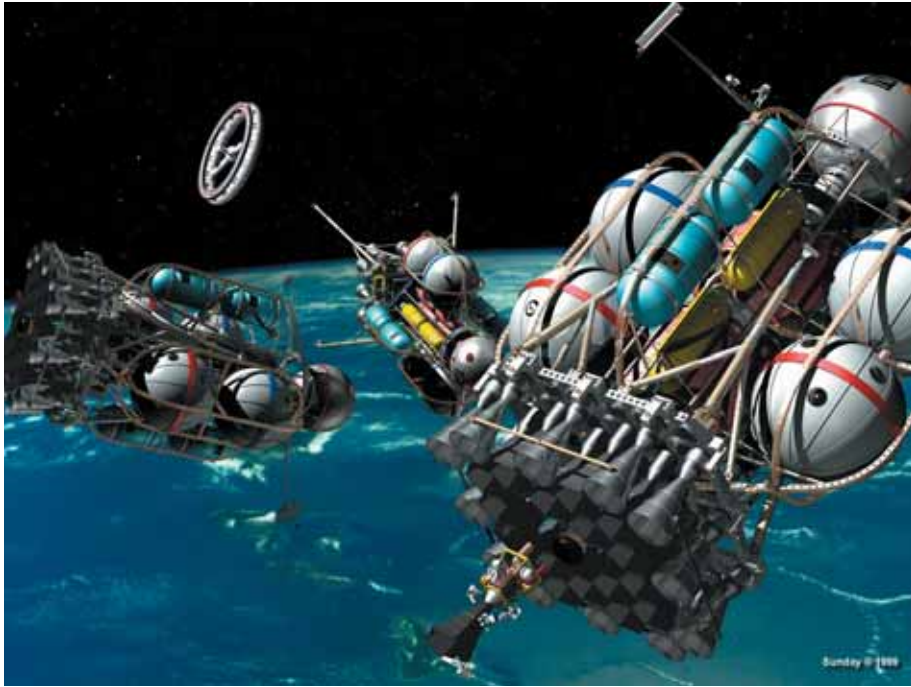
Pages 12-13:

- "Canyon City, Mars" By Charley Kohlhase. "Father and daughter tend cactus-like plant in field-controlled dome on Mars in late 21st century. Scene created digitally with over a million polygons using Poser, Bryce, and Photoshop."
- "Sunset Over Noctis Labyrinthus" by Kees Veenenbos.
- "Exploring Mars" by David A. Hardy. Dave writes: "Here we see a Mars Rover equipped with grappling arms, enabling larger samples to be obtained than by astronauts alone. This is able to travel over a variety of terrains; seen here is a rock field, dunes and hills. Note that no national emblems are shown. In the future such missions will, hopefully, be international, but countries such as Japan, China and even India are entering the arena of spaceflight."
- "Hillside with Water Vapor" by Dr. William K. Hartmann.

Page 14:

- "Abraded Surface" by Julie Jones. "The Mars Exploration Rovers, Spirit and Opportunity, carry on board an abrasion tool for scraping away the outer layers of rock. This is an abstract/representational piece of the many images sent back."
- "Mars Base" by Richard Bizley. "Here is an image of a Mars base set not in the too far distance future. I decided to place the colonies half way up the cliffs, so that they do not have too much problems with dust settling on the domes, and the colonies would have a grand view of the canyons being perched up high."

ARTIST PROFILE: TERRY SUNDAY



Having gotten exceptional inspiration from the works of Chesley Bonestell, Terry created this first digital space scene as an homage to one of the master's paintings of 50 years ago. All three of the moonships and the Space Station were rendered separately in trueSpace and then composited over a background image of the Earth.

Growing up in the 1950s in Fort Lauderdale, Florida, just down the coast from the launch pads at Cape Canaveral, Terry naturally became interested in spaceflight at an early age. He was an avid fan of the "far-out" comic strips of the time, such as Flash Gordon, Buck Rogers and, especially, Sky Masters of the Space Force. He still vividly remembers drawing a large, detailed cutaway of Sky Masters' moonship when he was ten years old. With a bad case of "Apollo fever," he earned a B. Sc. in Aerospace Engineering in 1970. But NASA's lunar program was winding down at the time, and jobs in the manned spaceflight field were hard to find. Terry ended up with the Martin Marietta Corporation in Orlando, Florida, working on the Sprint anti-ballistic missile system. In his 30-year career, he worked on the Scout launch vehicle, the Cooperhead Cannon-Launched Guided Projectile, the Patriot air defense missile and the Miniature Homing Vehicle (America's only successful non-nuclear satellite interceptor). He also worked for many years on classified programs, with nothing to show for them but a big hole in his resume. Currently he is the Director of Development for War Eagles Air Museum, a collection of 30 World War II and Korean War aircraft (most of

Continued on Pg. 19

PULSAR

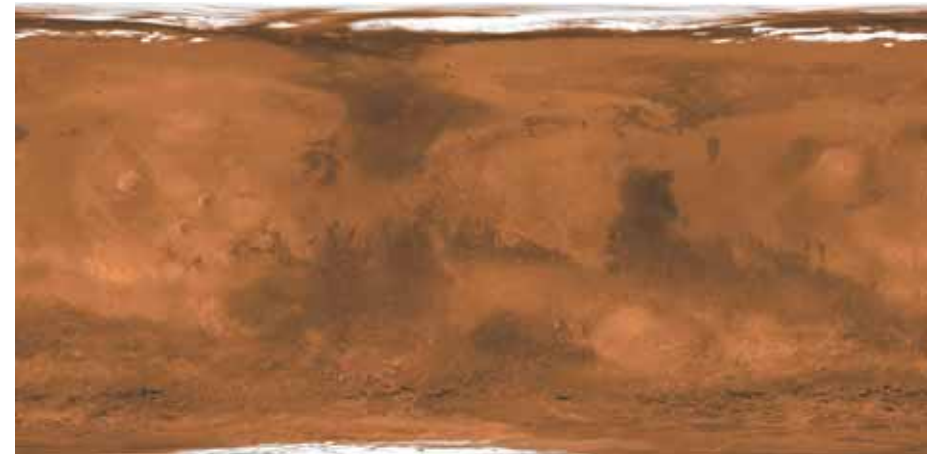
COMPUTER OPERATIONS

Rendering Planetary Objects, Part 1



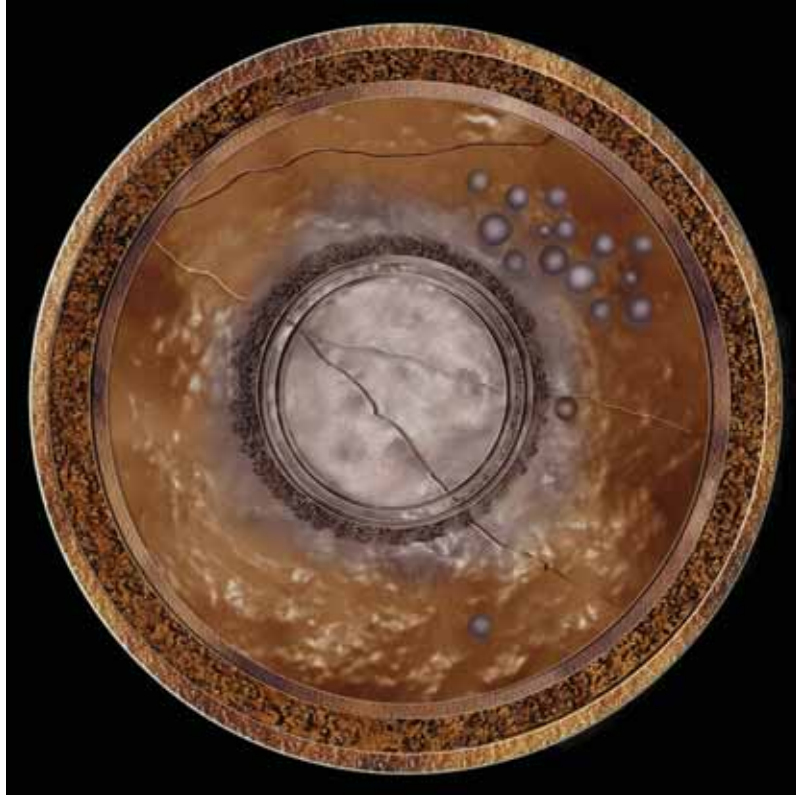
Mars Northern Hemisphere Seen in Lightwave 7 - Rick Sternbach

This isn't meant to be a complete tutorial, but more of a starting point for the space artist who wants to get deeper into computer rendering or simply wants to produce geometry and lighting aids for a traditionally painted scene. As we have known for some years (and are learning more), even Chesley Bonestell prepared plaster landscapes and spaceship models as steps toward final images. How can we arrive at the image at top? First, get familiar with a 3-D application that can at least do texture maps (wrapping images). Second, procure a cylindrical map image like the one below. Various sources exist on the Internet, among them <http://www.johnstonsarchive.net/spaceart/planetcylmaps.html> and our own Bjorn Jonsson's http://www.mmedia.is/~bjj/planetary_maps.html. The available maps have been assembled by both official

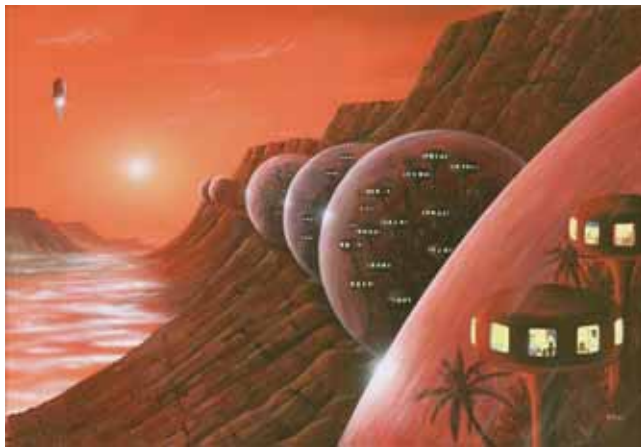


Cylindrical projection, Mars

MARS



“Abraded Surface” by Julie Jones ©2004



“Mars Base” by Richard Bizley ©2004



“Frosty Slopes” by Ron Miller ©2004

MARS

A PULSAR SPECIAL FEATURE



“Candor Chasma” by Kees Veenbos ©2004

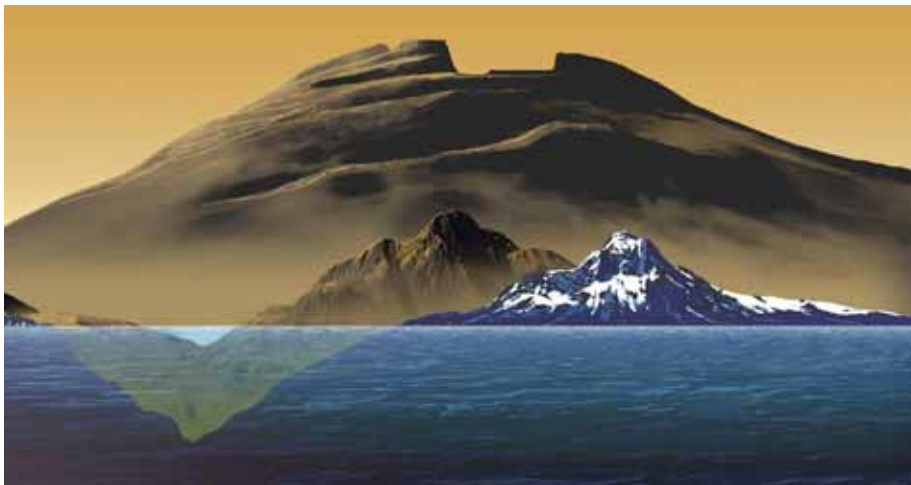
MARS



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“Exploring Mars” by David A. Hardy ©2004



“Olympus Mons” by Dr. Mark A. Garlick ©2004



“Hillside with Water Vapor” by Dr. William Hartmann ©2004

MARS



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"Mars Walker" by Lynn Perkins ©2004



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“Distant Shores” by Pat Rawlings ©2004



“Martian Mysteries” by Hilda Green Demsky ©2004

MARS