ANNOUNCEMENTS!

Web Surfin’ Sites to check out:
- http://www.waa.at/bericht/2002/03/20020311karrer.html
- http://history.nasa.gov/SP-4206/sp4206.htm
- http://www.dinosaurland.co.uk
- http://www.geometrek.com/~paulsam/milkyway/
- http://www.spacedinoaart.com
- http://amesnews.arc.nasa.gov/imagearchive/archive.html
- http://www.gric.at/home_frame.htm
- http://www.michael-boehme.net
- http://www.michael-boehme.net/home.flash.net/~ajivj/bd/uss1.html
- http://novaspace.auctionshare.com
- http://www.pao.ksc.nasa.gov/kscpao/images/large/02pd0217.jpg
- http://www.kurzweilcyberart.com/
- http://www.geowproctor.simplenet.com/labyestr.htm
- http://www.dfrc.nasa.gov/Projects/X38/index.html
- http://www.astronomynowstore.com


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- http://www.michael-boehme.net
- http://www.michael-boehme.net/home.flash.net/~ajivj/bd/uss1.html
- http://novaspace.auctionshare.com
- http://www.pao.ksc.nasa.gov/kscpao/images/large/02pd0217.jpg
- http://www.kurzweilcyberart.com/
- http://www.geowproctor.simplenet.com/labyestr.htm
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IMPACT IN 3…2…

Last Flight by Richard Bizley A Quetzalcoatlus makes its last flight as the six mile diameter asteroid thunders beyond towards the sea. Rich included a pterosaur to give a symbolic feel to the painting as both the creature and the asteroid are making their final flight.

Editor: Jon Ramer

IAAA Website: http://www.iaaa.org
From the Editor- Hi Gang! You may have noticed the date for this issue of the Pulsar, February to April, not February to March. Every year the December-January issue spans the new year and holiday seasons. Not only is it difficult to produce during that time of the year, but it is also difficult to mail, being just one of millions of mass mailings of the season. By adjusting this one month we now will have six issues all produced within one calendar year. More importantly, Pulsars will be printed in line with the annual dues period and folks will get their annual dues reminder one month earlier - and before the holidays. So, hope you’re not upset with the month delay, we’ve needed it for a while and now seemed like the best time to do it. To make up for it, there will be a special surprise in the next issue. Betcha can’t wait to see it now, eh?

Jon!
Profile: John Stoke

John Stoke currently serves as Manager of Informal Science Education with the Space Telescope Science Institute’s (STScI) Office of Public Outreach, overseeing a range of Hubble Space Telescope products and services for the planetarium and science museum communities (see http://informal-sci.stsci.edu). Prior to joining STScI, he spent several decades in the planetarium and museum world, as a program writer/producer, exhibit developer, and technical consultant. John’s past employers have included the Franklin Institute Science Museum, American Museum of Natural History, Maryland Science Center, and Arizona Science Center. During his eight-year tenure with Sky-Skan, Inc., he participated in the development of one of the first immersive, digital-all-dome systems for planetariums. Though he is not an astronomical artist, John has worked with many on many projects and looks forward to many more! He can be reached at stoke@stsci.edu.

Kudos Korner

- Dave Hardy is on a roll this issue: Missed mentioning Dave’s ANALOG covers for Sep, Oct, Dec 2001 and March 2002, Dave also had two illustrations for the article “Return to the Moon” by John Young in the February SPACEFLIGHT, plus Dave has a nice painting in the latest “Planetary Report”. The painting is a very well balanced symmetrical piece of the earth in the foreground, the Moon in the middle and Mars at the top of the painting with a rocket zooming up through the middle of the painting.
- In the same issue of the “Planetary Report” Dan Durda wrote a nice article - Dan also seems to be on a roll, his New Horizons Pluto spacecraft painting is used on pages 24 and 25 of the April “Sky and Telescope”
- Not to be outdone, Joe Bergeron and Mark Garlick also contributed to April’s “Sky and Telescope”. Joe has a stunning painting of Jupiter as seen from Europa near an ice melt area and shows Io in front of Jupiter while Mark Garlick has a beautiful depiction of a microquasar for an article on microquasars in our Milky Way galaxy.
- To continue linking kudos - the 20 March 2002 issue of "Science News" features art by four IAAA members to illustrate an article about the Earth’s water coming from space. Bill Hartmann has the cover art and within the article are studies by Garry Harwood, Don Dixon, and Mark Garlick.
- And now full circle: The latest "Astronomy Now" features a cover by Mark Garlick, titled "Long Hair". Inside Richard Bizley has an illustration of extra spatial dimensions leaking into our familiar three for a news item. Richard has a second piece with a view of the expanding Sun which is adjacent to a spacecraft over Io by Pat Rawlings. Finally, there is an article on the continuing search for exoplanets illustrated by none other than David Hardy.

Flight of the Eagle  by Mark Garlick

This is my first go at soft pastels (not oil pastels) in about 18 years. The background crater field is almost entirely black and white pastel on gray card, but I added some highlights with a white colored pencil. The ship, meanwhile, was painted in acrylic, copied from a model I made. The image shows the lunar excursion module coming down to land on the Moon. The crater field is actually based on an Apollo 16 photo of the lunar far side, whereas the Eagle of course landed in the Sea of Tranquility. Artistic license! This is not a good scan. The original has less contrast on the craters and very little of the color that this scan seems to have enhanced. It’s entirely gray and looks much better in real life -- honestly!

Sentinel  by Gary Tonge

“Between two gigantic waterfalls, a lone structure pierces the sky. Bearing down upon the landscape the tower is almost overpowered, in spite of its enormity, by the sublime beauty of the landscape which supports it.” I’m pretty pleased with the composition of this image. I wanted to purvey the immense structure and at the same time show that despite its incredible scale, it is still a mere accomplishment compared to the world on which it has been created. This image was digitally hand drawn in Photoshop 6.
Riding the Big One... from Gary Harwood

Here’s an interesting discussion on the mechanics of wind generated waves vs tsunamis. The picture that most people have of a “classic” tsunami is typified by Hawaiian surf — a single big, curling wave like the wave depicted in Hokusai’s famous 19th century print. Why should a tsunami "break" differently than the type of wave exploited by surfers? Wave breaking is always a non-linear process and therefore extremely difficult to describe analytically, but in essence most non-linear wave phenomena are due to a dependence of the wave speed on the wave amplitude. To illustrate how this can lead to a steepening and overturning of the wave, consider the formula for the wave speed in shallow water: \((gh)^{1/2}\) where \(h\) is the undisturbed water depth and \(g\) = the acceleration of gravity.

The speed of the top portion of the wave will be the largest, while the speed of the bottom of the wave will be the lowest. Because the top of the wave travels the fastest, the wave will steepen toward the front and eventually topple over. In effect the height increases until the wave can no longer support its own weight and it collapses catastrophically. This gives an idea of the classical picture of wave breaking. So far, so good.

Now, unlike wind generated surf, tsunamis are frequently shallow water waves (long periods and wavelengths) even while propagating in water a mile deep or more. "Typical" wind generated waves rhythmically rolling in, one wave after another, might have a period of about 10 seconds and a wave length of 150 m. A tsunami, on the other hand, might have a wavelength measured in 100’s km and a period on the order of one hour. From the formula above you can verify that in an ocean, say, 4000 meters deep the tsunami speed is about 200 m/s or around 400 mph. \((9.8 \times 4000)^{1/2} = 200\text{ ms}^{-1} = 700\text{ km/h}\) . Because the rate at which a wave loses its energy is inversely related to its wave length, tsunamis not only propagate at high speeds, they can also travel trans-oceanic distances with little energy loss.

In contrast to wind-generated waves, in which water is momentarily displaced vertically, tsunami waves transport water forwards and backwards. Although the wave is shortened from its deep-water wavelength as it approaches shore, unlike any wind-generated wave it still extends several kilometers crest to crest, and, on approaching the shore it amplifies due to the decrease in depth. The layperson tends to associate this amplification with a conservation of mass principle. After all, the depth is getting smaller — shouldn’t the wave height get larger to "conservate mass"?

The answer is no! Conservation of mass certainly holds, but only for fixed masses. The wave is propagating relative to the fluid mass and such reasoning fails. This is just conservation of energy. Ultimately, this energy conservation law implies that the amplitude increases as \(h^{1/4}\), where \(h\) is again the local water depth. This -1/4 law is referred to as Green’s law and has been known for over a century. The waves never attain infinite amplitude as predicted by Green's law and typically break forming a stepwise white water region known as a moving hydraulic jump or "bore" -- a turbulent vertical wall of water. Longer waves that feel the bottom before shorter waves become unstable and break further offshore in deeper water.

In conclusion, a much more accurate depiction of a super-tsunami would be a wall of turbulent white water, not a Hawaii-style big curling wave.

From the Board:

To All Members:

This is to notify you that elections for the next Board are upon us. The current Board invites all interested artists to submit your application and or nominations of other artists to serve in the decision making arm of the IAAA. Elections will be held near the end of May in the selection of the next Board whose two-year term begins July 1, 2002 and ends June 30, 2004. Applications and Nominations will be open until May 15th, 2002. There are eight seats to be filled for the next term.

If you have never participated in any administrative positions before, this experience will add to your personal repertoire of how non-profit corporations operate. The decision-making is a group effort based on informed knowledge and information. If you have had previous experience in other organizations (or this one) then your input would add to the dynamics of the Board. The Board meetings are held on-line with discussions surrounding a host of issues that move our organization and our genre forward – always increasing the IAAA's visibility and professional commitment to maintain our high standards.

Anyone seeking any additional information about the level of involvement, expectations of Board Officers et cetera, I invite you to express any concern you may have to this list server where our current members of the Board, as well as previous members of the Board, may respond and share their own experience to your questions.

It is strongly recommended that artists from the UK and/or Europe also have an appropriate representation on our Board. The IAAA is an international commitment to the genre of astronomical art and your voice in the decision-making process is important to our fulfillment of our aspirations.

Please send your applications and or nominations to me at: <iaaa-board@yahoogroups.com>

Sincerely yours,
Kara Száthmary
IAAA President and Chairman of the Board
LAST WEEK AND TWO HUNDRED MILLION YEARS AGO

from the List server

On Saturday, 16 March 2002, an IAAA 'mini-workshop', organized by Richard Bizley, was held in Lyme Regis, Dorset, England. The aim was to search for fossils, which are quite common on this coast, aided by Steve Davies of the Dinosaurland Fossil Museum (www.dinosaurland.co.uk).

Despite an atrocious forecast, the weather was kind; attendees even had blue sky and sunshine for a while. The walk went very well, and everyone enjoyed themselves, including, of course, the evening meal with the obligatory Orange Food. Richard and Ruth are to be congratulated on their hospitality, and Richard's work was much admired too. A few fossils, mainly ammonites, were found, but the fun was in the looking. Thanks, too, to Steve Davies, the fossil expert, who led the Walk and gave us much useful information on dinosaurs and such. That evening, Dave Hardy was presented with his framed Rudaux Award by Jackie Burns.

The best time, apparently, to find fossils at Lyme Regis is in the early spring. High tides and storms churn up the deposited fossils, and after a recent rain-fall, the water running off the cliffs around the local beaches wash down fossils and open up new sections of the cliffs after land slides.

You may ask what has paleontology to do with astronomical art? Aside from the fun of having a get-together, both are looking back in time. A *long* time. Much of astronomy is really paleophysics. It's hard to imagine...

...proceed to the beach. But who is that headless fossiker wearing Gavin's jacket?

Io Volcano by Lionel Bret

Lionel's aim was only technical practice rendering rocks. However, this could also be a landscape of a volcanically active satellite of an extrasolar gas giant. A pastel drawing on black paper.

DID YOU SEE IT?

A rare astronomical event happened back in March – twice! The Moon occulted the planet Saturn, some diligent astronomers turned their cameras that way and took some great photography. If you've got any neat astronomical photographs, send them my way and we'll put them in the Pulsar. Photo from Sky & Telescope web page.
Got a real treat this month! This is a "digi-tip" from Paul Hoffman on how he does some of his digital artwork, specifically on photos taken at the Astrium Workshop. Paul says:

"This page depicts the process I use to go from a digital photograph to an artistic treatment of the subject. The steps as shown here are a simplification; there is a lot of back-and-forth work, and in this particular case there were several intermediate attempts which went awry and were thrown out. Also, somewhere along the line I have to figure out how large I want the final print to be - and then scale the working image to about half that size at a reasonable dot-per-inch setting. I use S-Spline to do this scaling, and use it once more at the end to scale up to the final print size.

**Step One:** We start with a rather dull digital image. The brightness of the lights overhead and reflected in the satellite panel caused the camera to under-expose the rest of the image.

**Step Two:** The image is cropped, brightened, and then a watercolor filter is applied to accentuate the color areas and abstract the shapes slightly. If the filter causes the loss of too much detail, I keep a version of the original image (prior to the watercolor filter being applied) on a layer underneath, and transparentize the layer above a little, to let more detail from the original image come through.

**Step Three:** The figures needed to be lighter to bring them out more, and to express the whiteness of their clean-room coveralls. You can either marquee them and apply the brightening, or copy the figures to a new layer, or copy the whole image to a new layer and cut a hole in it. (I usually like to work a change like this on a different layer so I can blend the differences if the effect is too strong.)

**Step Four:** A very soft edged vignette is placed on the next layer. I usually mark a large oval with a very feathered edge, and then invert the selection so the outer part of the image area is the active selection. Then fill with white. The layer is transparentized slightly.

**Step Five:** To bring the whole panel and its supporting structure to the foreground, I judiciously erase parts of the white vignette.

**Step Six:** Here's where it's important to have a scaled-up version to work from. If, from this point on, you are working with too small an image, your "pencil" strokes will be heavy, crude, and not realistic. A composite produced at any stage beyond step two can be loaded into Painter for the creation of the hand sketch. Painter has a "clone with tracing paper" system that lets you draw on a washed-out image of the source file. I usually use the "2B Pencil" brush in Painter. The size of the "brush" depends on the total size of the image I'm working on. In this case I was working on a version about 2K wide, so I used a particularly "heavy" tip - about 3.5 pixels. For screen-resolution images I usually set it to 1.5 pixels.

**Step Seven:** The sketch is brought in on a final top layer, and transparentized enough to bring the colors out. No special compositing or blending technique is used, just normal blending. Sometimes, when I see the faded result, I'll go back to the lower layers and increase the saturation so more color comes forward.

"Hope you like the result...."