

Spacefaring Gazette

Vol. 11, No. 2 Apr/May 1995

Creating a Spacefaring Civilization in Our Lifetime...

The Right to Dream Heroic Dreams

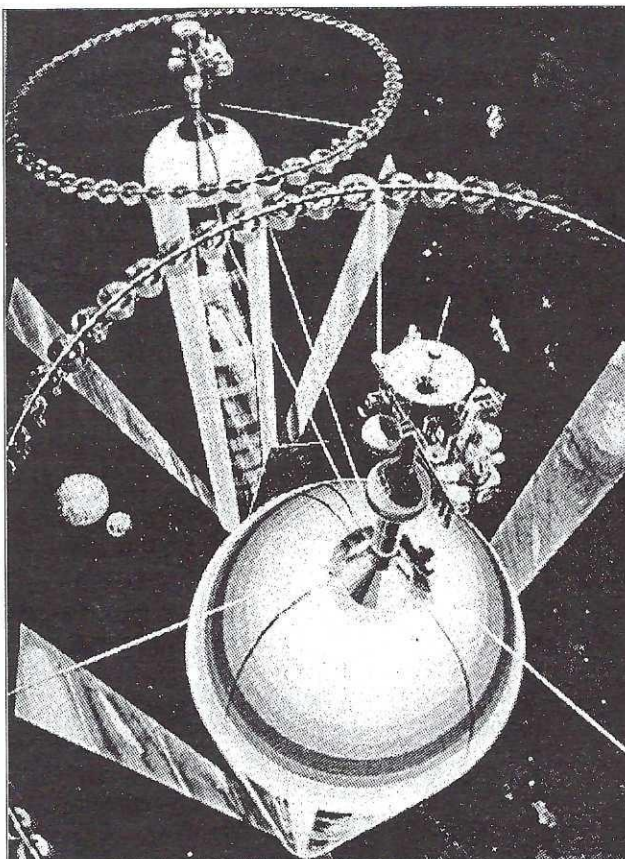
Remarks by Rep. Newt Gingrich,
Speaker of the House of Representatives

I have a very optimistic vision of the future. This space stuff is sort of gut American tradition...in fact, as Reagan said in his first inaugural, "We have every right to dream heroic dreams. After all, we are Americans." The tradition of our society has been one of being very aggressive in trying to find frontiers. We are at the edge of a period where we can have very bold frontiers both here on the planet—at the beginning of what I think will be considered the age of molecular medicine—and, at the same time, we can have very bold frontiers off the planet.

By the way, I have very good credentials in this area, in that...I go back to the age of *Missiles and Rockets Magazine*... and I was interested in space very early. When I was, I think, a sophomore, I introduced a Northwest Ordinance for Space, which was looked at as a joke at the time. It raised the question, "when there are enough people off the planet, what are the organizing principles by which they apply for statehood?"

Now, I cite that for this reason: Jefferson launched Lewis and Clark's expedition and bought half a continent. What is a comparable gamble for the United States today? People say they are Jeffersonians, by which

they mean limited government, which Jefferson was for. He never did more than send the Marines to Tripoli, send a scientific expedition across the entire continent, or buy half the continent. And I think as long as



Exterior of "Island Three" space community, with a diameter of four miles and a length of twenty miles.
(R. Guidice, *The High Frontier*)

you stay at that level of limitation.... Well, what is the comparable journey, what are the comparable things?

What Should Our Policies Be?

...We hope that you all will come back and tell us what you think ought to be the right

policies: not the politically correct policies, not the budgetarily correct policies. Let us worry about that. What we need to know from you is, *if we want to maximize the human race's opportunity to move out into space, and if we want maximize freedom as the primary characteristic of those elements of the human race that move out into space, then what should our policies be?*

This leads me to a couple of observations coming down to commercial space.

1) We need a project—with our European and Japanese allies—big enough to genuinely draw together the system. We were driven together by the Soviet Empire. If we don't find several very big projects that tie us together, we are, in fact, gradually going to fall apart. And they have to be real projects. They have to ... [consist of] everyday people working with each other. A minimal one would be to land on Mars and to

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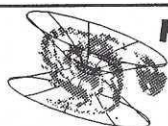
A 21st Century Space Policy

by Charles E. Miller

I am here as the Vice President of External Affairs of the California Space Development Council (CSDC), an organized coalition of pro-space grassroots interest groups in California. CSDC is entirely composed of citizen volunteers who are extremely excited about the possibilities inherent in the human future in space.

I have worked with space activists for more than ten years now, and I submit that there is something very important going on with these people. That if this energy and

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MARS & BEYOND

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GAZOO TIME

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Editorial

Of Brickbats and Bric-a-Brac...

Well, it's the first thing that came into my head for this year's April Fool Issue of the *Gazoo*. For those of you who not familiar with our annual fantastic, harebrained, crazy and otherwise inane romp of poking fun at ourselves (and other space advocates) may or may not be in for a treat.

First, let me point out that the serious humor begins on page 5, but I couldn't help myself when I ran across the two pictures on the facing page. "The X-Prize" is a serious article by Peter Diamandis. The Prize itself is also serious, but it brought to my twisted mind images of the early aviation attempts: the wild egg-beater; flapping wings; and multi-wing (like five or six) stacked wing designs of the teens and 20s. I'm sure Peter and his friends will collect some lulus.

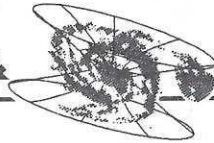
Second, this issue of the *Gazette*, usually divided into many bite-sized sections, has three, long (by our standards) pieces: the lead by Representative Newt Gingrich, the second lead by Charles Miller, and "X-Prize," plus the "Mars & Beyond" news bytes by John Jossy.

March turned out to be an important watershed for the California Space Development Council. CSDC's VP of External Affairs, Charles Miller, along with the Space Frontier Foundation folks, organized a briefing for key member of the US Congress. Ten grassrootsers from around the country (four from California) converged in DC for ten days of non-stop talks with 50+ Reps and Senators. You'll be hearing more in coming issues. Charles Walker from NSS HQ gave the keynote address at the breakfast briefing.

Third, just enjoy a little bit of humor...

— Capt'n Cal

MARS & BEYOND



➤ **POWER FROM THE REGOLITH** — The processing of lunar metals and oxygen for near-lunar propulsion is discussed by NASA Lewis Research Center engineers in the *Journal of Propulsion and Power* for November/December 1994. The paper examines several processing techniques, power requirements, and performance expectations for in-situ propellant production on the lunar surface. An extensive bibliography provides ample reference material for would-be space colonists interested in lowering the cost of operations in lunar space.

➤ **A CELEBRATION OF NUCLEAR POWER** — Now that the PC crowd is on the way out, us spacers can say the n-word with out feeling guilty. Robert Zubrin's recent piece in the November/December issue of *Ad Astra* calls for a revival of space nuclear power and propulsion technology. Accordingly, the *Gazette* presents a new concept for a nuclear rocket by F. Winterberg of the Desert Research Institute, Reno, Nevada.

In an article in the June 1994 issue of *Acta Astronautica*, Winterberg presents a design for an innovative pulsed fission engine which would prevent release of radioactive elements into the rocket exhaust.

Fissionable material is contained at the ends of a rapidly rotating combustion chamber. A chain reaction is initiated by shock waves generated by electric discharges creating a fireball and releasing ultraviolet light into the surrounding fuel. The heated fuel is forced out a concentric nozzle, creating thrust.

Incoming liquid propellant for the next cycle flows into the chamber, quenching the chain reaction and forcing the radioactive material back to the ends of the chamber, where it solidifies and is ready for a new cycle.

The rocket would be capable of high thrust and high specific impulse, making it ideal for interplanetary propulsion. Its unique non-polluting design should make the environmentalists happy.

"Mars & Beyond" page 9

Spacefaring Gazette

"To create a spacefaring civilization which will establish communities beyond the Earth in our lifetime."

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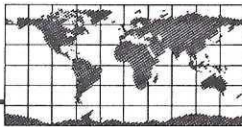
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The "X" Prize

by Dr. Peter H. Diamandis

In the mid-1960s Dr. Richard Feynman announced a \$1,000 prize to his students for the first person to build him a working motor within a 1/64-inch cube. He didn't expect anyone to claim the prize. In just under three weeks, a CalTech student handed him a microscope. When Dr. Feynman looked through the microscope, [he saw] a working electric motor within the volume of a 1/64-inch cube!

Prizes are a method to help humans achieve difficult, seemingly impossible, feats. They focus human ingenuity on a very well-articulated goal without specifying a particular solution or technology.... Prizes work.... Space exploration and development need such prizes, prizes which excite the young generations and initiate long-term, challenging efforts.

Lindbergh's flight was not a technological achievement, it was a socio-psychological achievement. Lindbergh's flight created a global perception that airflight would soon be available to all "individuals"—not only the select few. The flight of the *Spirit of St. Louis* fundamentally changed the consciousness of the world's population about aviation. We in the space program need the same conscious shift to occur for spaceflight.

I'm tired of hearing about billion-dollar prizes for sending people to the Moon and Mars, mostly because I'm tired of the inaction and the stagnation that follows anything with a billion-dollar budget!

The "X" Prize is a \$5M prize for the first human suborbital flight to an altitude of 100 km.

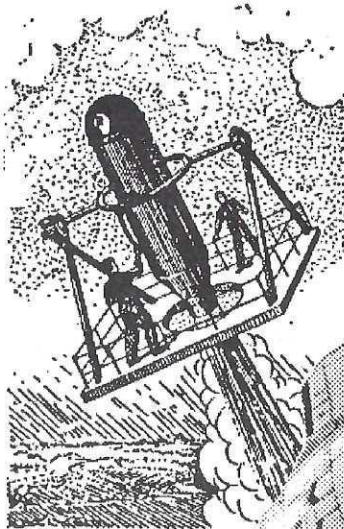
The name "X" Prize has a double meaning. First, it is reminiscent of the original X-planes, and second, the variable "X" can be replaced by the name of the person who puts up the big bucks.

The Purpose of the "X" Prize

The "X" Prize is intended to get people into space, to jump-start the space tourism business, and to change the mind-set that people

have about space and space travel. Once funded, the prize will enable a private group of entrepreneurs to develop the craft required to launch private citizens into space for an affordable cost. While there will only be one winner of the "X" Prize, there may be as many as a dozen alternate efforts trailing closely behind—all of which will strive to commercialize their efforts and recoup their investment.

These entrepreneurs will first launch their paying customers on short suborbital rides to an altitude of 100 km, outside the atmosphere high enough to see the whole Earth from horizon to beautiful horizon, high enough to see an



orbital Sun rise, and high enough to enjoy the freedom of Zero-G. Soon after, others will begin launching customers into orbit. Hundreds, perhaps thousands, of people will seek this opportunity—the adventure of a lifetime. Within a few years, the focusing forces of capitalism will demand that the first hotels be built in low-Earth orbit. Hotels such as these will be built by multibillion-dollar conglomerates headed by Hilton, Marriot, Obyoshi, or Shimizu.

The "X" Prize Rules

Thus far, the following rules have been established:

1. The spaceship must be privately financed (no government funding) and must be privately built for a cost and utilize a method that is repeatable.

2. The spaceship must be able to accommodate (lift at least six adults [900 lb pay-

load equivalent]) to a minimum altitude of 100 km.

3. The winning flight must carry at least two adult humans onboard and an additional payload of 600 lb (the equivalent weight of 4 human adults).

4. The spaceship must be reusable, and in order to win the "X" Prize, the same ship must be flown again within seven days, to a minimum altitude of 100 km.

5. Both the crew and spaceship must return safely to Earth from both trips.

6. The propulsion utilized on the spaceship must be "refuelable" and operate as a single-stage vehicle without any expendable components.

7. The entrants must specify their take-off and landing locations prior to the flight. They must implement a controlled landing within 100 meters of their chosen landing site.

8. Each entrant for the "X" Prize must submit a letter of intent which details compliance with the regulations and intended launch site and date. The letter must be received no later than three months prior to their first flight attempt. "X" Prize Committee Members must be allowed to monitor both flight attempts.

How Will the Prize be Administered?

A top level committee of individuals (The "X" Prize Committee) will be brought together for the purposes of:

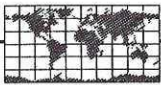
- 1) identifying the funding for this prize; and
- 2) monitoring/judging any attempts to win the prize.

Sixteen eminent scientists, astronauts, researchers, active engineers, authors, astronomers, public servants and physicists have agreed to be members of this committee; among them, Arthur C. Clarke, S. Pete Wordon, Lowell Wood and Patrick Collins.

"X" Prize Foundation Officers: Peter H. Diamandis, Chairman; Byron K. Lichtenberg, Secretary; Colette McClaren, Treasurer; Tom Rogers.



[A U.S. non-profit 501(c)3 Corporation has been formed called The "X" Prize Foundation. The purpose of this foundation is to implement the effort described above. The foundation is headquartered at 10721 Gloxinia Dr., Rockville, MD 20852. Tel: 301468-5554; Fax: 468-5553.]



"Dreams" from page 1

begin the permanent human habitation of the Moon.

But you need to think about what is big enough, over the next 20 or 30 years, for large systems; because, if you take the total economic resources of the United States, Europe, and Japan, these are enormous systems. And for a relatively tiny percentage, the amount we spend, say, on dog and cat food, you can in fact achieve enormous breakthroughs if it is spent intelligently.

When we do that, however, let's not replicate the last generation of government bureaucracy. Let's try to find methods to find entrepreneurial models of incentive to maximize the rate at which people move, so you have *the cheapest possible, and fastest possible ways of getting there.*

I've been asking defense contractors to find a way to lower the amount of time for fielding a new system by 80 percent, and the cost of production by 40 percent—a sort of minimum goal. There's no reason that technology only rises in cost if the government uses it. In every other field, technology has an inherent crash in cost.

So, we need an entrepreneurial model for the European, U.S., Japanese commitment to have—to reach Mars early in the next century, and I don't want a design that comes back and says it costs an impossible amount of money to prove we can't do it, so we can avoid taking risks. *You have to have Drake's spirit of adventure.*

This is a country where the risk avoid-mentality of its government leads people to go out and hang glide, or they do cave diving. I mean, we want projects for volunteers, for people who understand they're at the cutting edge of the human future, and that means that there are some risks involved. And if the Wright brothers had encountered OSHA, we would never would have had Kitty Hawk.

2) We need to look at—and very boldly—to a next-generation process of building the right kind of space shuttle.

My recommendation is that NASA adopt the role of Delta or United or American and become a customer. That we encourage all the large contractors to form a single—a joint—project. That they build a vehicle that meets commercial and government needs and they themselves govern space on the vehicle. And the government provide initial funding, by contracting for a certain amount of guaranteed purchase, if they'll in fact meet the specs. And *just do it.* No committee meetings. No government procurement models. No long planning sessions. No micro management. No budget reviews. *Just, exactly what you would do if you were Boeing*

or McDonnell-Douglas selling to an airliner. I've been told by some contractors that they think they could come in for as low as 40 percent of the cost currently projected for the second-generation shuttle, and probably do it in about half the time.

3) **The current shuttle**, frankly, **should essentially**

be contracted out. Running the Shuttle is a contract problem. I mean, you have to have reasons why you want to run it as efficiently as possible. It's a direct management problem. It's not something the government does particularly well. And it seems to me *we ought to find a way to have a major contractor, or several contractors, take it over on bid, run it on a commercial basis, have to meet the specs, and have big incentives for downsizing.* Allow them to keep 20 percent of the savings. But give them real incentives to go out and find ways to do it cheaper, faster, better. Because, if you look at the private airline model of efficiency, and then you look at the way we currently design space products, it's irrational. It makes no sense. And, it stops us from getting into space. It stops us from doing what we want to do!

Commercial Space

Reasons for wanting to maximize the development of commercial space:

➤ It's going to create a lot of jobs here in America.

➤ There are going to be things that we can create in space that you can't create in environments that aren't weightless.

➤ There are going to be things that I think we're going to learn, that we will look back 50 years later and say, "well those are all obvious."

People always understand the present, and are confused about the future. The fact is, we are at the edge of a whole series of revolutions. In micro miniaturization, ...[imagine] 70 electric motors on the little space one-fourth the size of a postage stamp. We can't quite imagine, given this kind of technology, what we're going to be able to do when we put our mind to it, in an environment that we've never worked in very much. But the odds are pretty high we'll find a lot of useful things to do. And that they'll be productive, they'll improve human health, they'll improve incomes for America, and that for national security reasons, we want to be the leading country in space. And *the best way to be the leading country in space is to lead commercially, so you'll have a lot of self-generating resources driving entrepreneurial spirits.*

And this is the point I want to drive at. Entrepreneurs are different. I teach a course called "Renewing American Civilization," in which we spent two hours on entrepreneurial free enterprise and two hours on the spirit of invention and discovery. And in a sense they are about the same thing. Because people who are creative are different from people who are routine and rule-dominated. People who go out and force success, force achievement, get the job done, cut through the red tape, are different psychologically than people who dot the i's, cross the t's, and make sure they've met the requirements. We are, preeminently, the best country in the world at being entrepreneurial.

Cut the Baloney

What we want to do, and where we need your help: we want to cut through the regulatory baloney, we want to create clean, simple zones of risk-taking. We want to establish a tax code which dramatically favors entrepreneurship. We want to create large tax incentives for getting into space. We want to explore the use of prizes, which have been used since the late seventeenth century and have had a big impact on ship-board navigation. We want to explore the

"Dreams" continued on page 9

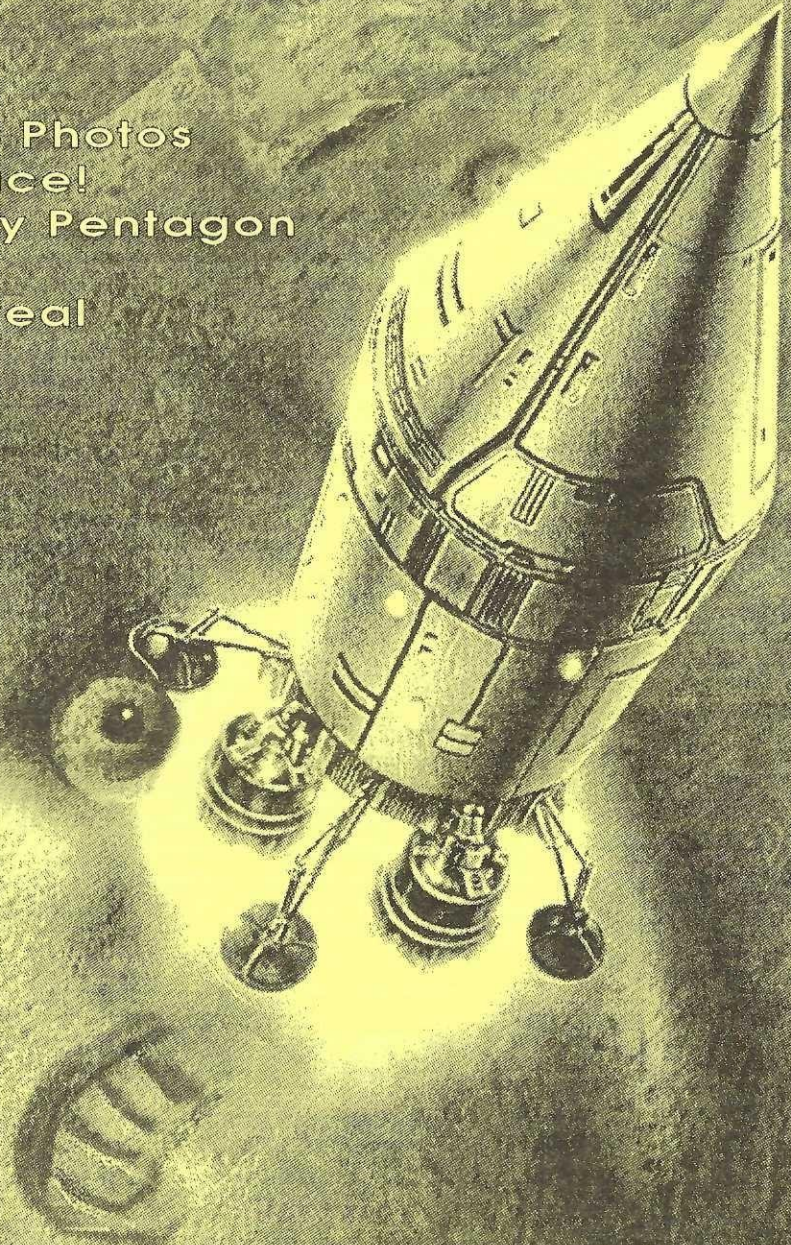


OWNI

"Only the UFO's fit to print..."

April 1, 1995

- Stunning Hubble Photos Reveal True Face!
- UFO Cover-Up by Pentagon Revealed!
- Aliens in DC Reveal True Mission!



almost the first word

SPACE ALIEN MEETS WITH NEWT! What Else Is New!
By Chaz "The Traveler" Milner

The Ambassadors for space aliens recently met with **The Newt, Bobby Doledrum** and other congressional leaders to discuss the baseball strike and other important Earth-based policies.

The Newt declined to discuss the meeting but spokesman **Jim Muncemeat** described the talks as "very intense."

Kym Tyger, senate aide, denied rumors the aliens were seeking financial aid for extraterrestrials who have secretly colonized Earth, saying "I can assure you that no extraterrestrial that comes from

outer space would be eligible for welfare benefits of any kind."

Senator Doledrum said, "I'm not at liberty to say what we discussed but I can say it was one of the most productive meetings with an extraterrestrial we've ever had."

Yet another Washington source said: "The aliens and The Newt discussed nearly every topic concerning the United States — but the primary issue was The Newt's future plans and ending the baseball strike."

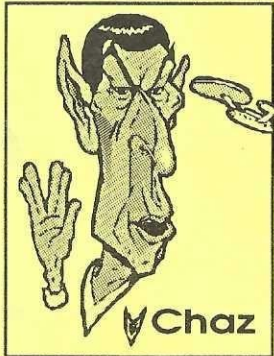
"The Speaker has said many times in the past he isn't interested in being President but the aliens encouraged him to reconsider that decision. The aliens (pictured here) indicated he strongly supports The Newt's policies and would guarantee the 10 million votes if he decided to run for President."

The aliens' home planet

share reusable launch vehicle technology with the United States and even took **The Chelsea** on a ride in a space ship.

The alien Ambassadors endorsed **Clintown** in the last election, but the alien, **ROArrbkrrr**, has since met with conservative talk show host **Gush Limbo** and expressed disappointment with Clintown's performance. He was quoted by Limbo as saying "the Clintown Administration pays more attention to the Russian space program than it does to our secret base on Mars. They pretend that our secret is actually still a secret." The Clintown Administration has recently adopted a controversial "don't ask, don't tell" policy regarding the evidence of a "Face on Mars" (see cover) and an alien colony on Earth. Limbo opposes this Clintown policy, and is asking the Republican Congress to put his face on Mars.

Space alien psychoanalyst **Rick Tumbleweed** said the Newt-alien meeting is a harbinger of the galactic future of the United States. "The Newt is taking the high road once again. America will renew this untouched alien civilization. They have a lot to learn about us — and we have a lot to teach them."



The alien's home planet is technologically more advanced than Earth, and is reported to be the true source for all technological advances in Silicon Valley.



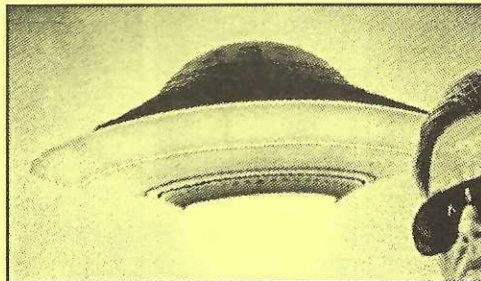
ROArrbkrr g BRUN^{^(ca)} Wil[^]KER3

is technologically more advanced than Earth, and is reported to be the true source for all technological advances in Silicon Valley. They made an offer to

Pentagon Cover-up Reveals True Mission of UFOs!

Documents, uncovered by this reporter at the Pentagon, indicate that UFOs have been in touch with world-famous **Karl Sargon**, BHA, for the last 25 years. The records clearly show that Sargon, in the pay of the CIA, has been trying to convince the public that space flight is unhealthy for humans.

"I've never denied it," says



General "Thumbs" Clapphammer, Pentagon's CIA liaison. "I've known all along, but no one ever asked

me before." Files in his possession show that the aliens who own the UFOs are, in reality, nothing more than high-flying, interstellar, real-estate brokers. Apparently real-estate on the Earth is cheap compared to say, Tau-Ceti III. "It's better than 1098 to 1," says Clapphammer. "And ol' Karl's been cleaning up acting as intermediary. Bet he's getting more than 12% commission."

continued page 34

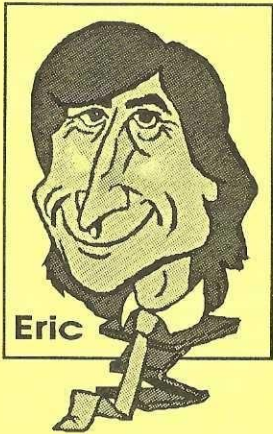
CAUGHT IN THE ACT! First Time Anywhere!!
By Eric "Red" Tellúrruum

Space Opponents Turn Nasty, Enlist Small Rodents in Lobbying Effort

Fearing they are losing the Space Station battle, Station opponents have recently stepped up their lobbying efforts. Reminding Congresscritters that European ships brought the first rats to America, the foes of the Station have warned of mutant space rats (shown above) which will infest the country if we go ahead with our space efforts. In a unique twist: the



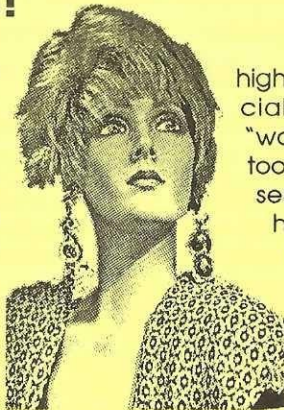
rodents themselves are lobbying Congress, literally biting the hands that feed them. Several Congressman, bloodied and bandaged, have already agreed to vote against the Station with their remaining fingers.



OWWI's undercover photographers have once again scoured the globe to capture the finest moments in space news this week. Here, uncensored and in all their shocking detail, are the true, naked photos you won't find anywhere else.

Lady Cosmonaut Hoax: Russians Only Sent Dummies!

OWWI has photographic evidence that the Russians have never sent women into space, despite their propaganda to the contrary. In an exclusive picture, you can see for yourself that the alleged lady Cosmonaut from a recent mission was, in fact, a mannequin! A



high ranking Russian official told OWWI that "women were needed too badly at home" to send any into space, hence the experiment with "fully functional" mannequins as part of the Russian Space Program.

CAPT'N CAL AS A KID: ANGELIC



OWWI has purchased this exclusive picture of the infamous Capt'n Cal at age 9. Far from the curmudgeonly-looking geezer we've come to know and love, we can see that Capt'n Cal was a true little angel. Still, even back then he had that weird expression on his face. Wonder what he was thinking of... Next week: Capt'n Cal and Nicole Simpson - caught in the act!

"Black holes are places where God is dividing by zero."

- anonymous

I think the mistake a lot of us make is thinking the state-appointed psychiatrist is our friend.

-- Keith Trollope

Frogs to Travel in Space!

Top Scientists have recently discovered that frogs are built for space travel. Here, an X-ray of a frog skeleton reveals that it looks exactly like those spaceships from Space 1999 we all know and love. Scientists were baffled by the similarity, until they realized that the frogs may be planning to leave the planet soon in a mass migration. Space 1999 was clearly an attempt to warn us of this, but scientists spent much time in their labs and too little time watching the show to notice until now.



nearly the last word

A GOSSIP COLUMNIST'S WORK IS NEVER DONE!

By Brooke E. Mantaray, EOTU

this Time It's Personal. Have you heard about my newest petition campaign? I'm calling it "I Want To Go Too." (Sound familiar?) And my mission is to collect lots of signatures from people who all want to send ME into space. That's right, me. Because I really, really want to go, and I *promise* I'll send postcards. I'm also accepting donations from anyone who'd like to support my efforts. Besides, if I whine enough, people will *have* to sign.



Brooke

One of the driver's is suspected to be connected with the notorious SB2 cartel, and probably driving under the influence of laughing gas. Did you hear the one about the scientists scanning Sagittarius B2 for signs of building blocks of life? You know, junk like amino acids and stuff. Sagittarius B2 is this big ol' molecular cloud way far out in the boonies of the galaxy about 25,000 light years or so. But instead, they find nitrous oxide. Who says the universe doesn't have a sense of humor? I therefore propose, that when y'all send me into

God's Cosmic Chuckle.

space...well, you know where to send me.

When Galaxies Collide.

The Intergalactic Space Patrol is on the lookout for the drivers of two galaxies, license plate numbers NGC4038 and NGC4039. The fugitives abandoned the scene of a major collision on the interstellar highway near the Corvus the Crow interchange. Of course, all the rubberneckers are slowing traffic in the area. One of the drivers is suspected to be connected with the notorious SB2 cartel, and probably driving under the influence of laughing gas.

I'll Buy That For A Dollar.

Among the odder items going on the block at a big 2-day space auction in Beverly Hills (aside from the green plastic mermaid of Gemini 5 and some contraband Moon dust from Dave Scott's spacesuit) is a packet of apricot pudding. Rumor has it that it's a leftover snack Buzz Aldrin brought home from Apollo 11. The catalog duly notes, "From the looks of

this we can see why it was saved and not eaten on the flight."

The Eyes Have It.

Speaking of strange things for sale, you ain't seen nothing yet. How about the eyes of Albert Einstein? They're going for \$5 million. Einstein's ophthalmologist, Dr. Henry Abrams, has kept them in a safe deposit box since 1955 when he removed them at the great scientist's autopsy.

Just for the Taste of It.

Before you scoff at Coca Cola's recent space taste test aboard the shuttle, remember, this is a small step for a Coke, but a giant leap for space tourism. There are certain aesthetics that are mandatory—*especially* for people on vacation, and a cold Coke is one of them. If they can put a man on the Moon, but this was the first time they finally got to try the soda chilled from a fountain. On the previous two orbital taste tests, they had to drink *warm* Coke. Yuck!

Game over, man.

the last word

Save The Planets

Dear Doc Lou Freedguy, I was really, really glad to see that OWWI also thinks that the other planets like the Moon, Mars and Jupiter should not be despoiled by the money-grubbing, aerospace-capitalists. It's bad enough that they think they must make a profit on everything they do here on our poor Ghia, Mother of us all, but to expand to the other planets and and wreck the environment of the Moon is totally despicable.

Mother Nature, the Mother of our beloved but spoiled Ghia, never intended that humankind should set foot on and wreck Mars. Our deep gravity well proves that! We must learn to love one another and live in Peace and Harmony before we even think of trying to leave Ghia, Mother of us

all. She would want it that way.

We should learn to communicate with our Pleidesean brothers and sisters when they visit us from distant galaxies. They have learned great lessons from Mother Nature and have been trying to tell us these mysteries for centuries, but our silly pride stands in the way!

— Muffi Dreamer
Estes Park, Colorado

Dear Doc Lou Freedguy, When will they ever learn? Now that they've torn up the Earth, they want to do the same with our beautiful Moon! No longer will the Moon be safe from the clutches of industrialists once cheap access to space becomes a reality. They propose chewing up the pristine Moonscape to mine minerals and helium! How can we be poetically inspired when we look at a raped Moon!

We must learn to love our children and stop burning the trees

of the rain forest! It's BAD! I expect that if the scientists and engineers of the capitalist ever get to Mars they try to make it habitable for humans!! Do they ever think about the possible Martian feelings? NO! That say that the Moon and Mars are there for the taking! What gives them the right to take and take and take?

We should meekly look from afar. Let us learn by observing. We've already spoiled the environment of space with our satellites and telescopes! Let's stop there! I don't want to go, and no one else should go either!

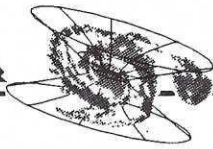
— D. Uppers
Berkeley, California

You are both correct in assuming that physical scientist and engineers will spoil the planets unless we push for pure, robotic research. If we dirty our hands we'll dirty our souls. - Doc



"Doc" Lou

"If we dirty our hands we'll dirty our souls."



➤ **TERRAFORMING MARS IN A DECADE**—Imagine wrapping Mars in a gigantic semi-transparent plastic canopy. If this could be done, a super-efficient greenhouse effect would warm the planet, allowing the polar caps to sublime and the air pressure to rise. The Mars wrap would shield the surface from ultraviolet radiation and allowing plant life to produce oxygen.

The process would begin with highly specialized self-replicating nano-robots programmed to penetrate the surface as seeds of an artificial plant. Using solar energy and raw materials from the ground and air, these tiny molecular factories would sprout roots and runners, providing raw materials and structural support for a polymer canopy. Their exponential growth rate would encircle the planet rapidly and make it habitable within 10 years.

A bit too fanciful, you say? Judge for yourself. The nano-robots with the right stuff are described by Charles R. Morgan in the August 1994 issue of the *Journal of the British Interplanetary Society*.

➤ **SEARCHING FOR STARSHIPS**—Methods for detection of starships passing within 10 light years of the Sun are described by Gregory L.



Matloff of New York City College in the January 1994 issue of the *Journal of the British Interplanetary Society*. Three types of starships were analyzed for their radiation emissions. A nuclear-powered “world ship” or an accelerating laser-ramjet could be detected by an infrared telescope placed on the far side of the Moon. A microwave sailer powered by beamed energy from the home world could be detected by existing ground-based radio telescopes.

➤ **PROXIMA OR BUST**—A mission architecture for reducing roundtrip interstellar flight times to a fraction of a human life has been designed by a Russian engineer. Mikhaial Victorovich Shuklin of NPO Energia describes the scenario in the *Journal of the British Interplanetary Society* for June 1994.

To reduce the initial mass, the crewed starship would be resupplied by a series of unmanned tankers launched early on trajectories spaced out along the main ship flight path. Fusion rockets were compared with those powered by antimatter. The author concludes that up to five of the nearest star systems could be explored within roundtrip flight times of 20 years with fusion engines. If antimatter is used, up to 1000 stars could

be explored within a radius of 100 light years.

➤ **SSI ADJUSTS TO CHAOTIC TIMES**—The Space Studies Institute is expanding its mission to adapt to changes in the space sector’s loss of momentum and new discoveries regarding near-Earth asteroids (NEA). With the recent impact of comet Shoemaker-Levy on Jupiter and many close approaches of NEAs, government officials have become increasingly interested in the early detection and possible deflection of these objects that could threaten life on Earth.

SSI is changing direction to capitalize on these concerns. The Institute is also funding research into more cost-effective methods of space operations, such as teleoperations and self-replicating machines, in response to shrinking space budgets.

Efforts to detect and characterize NEAs will be funded. In addition, research into ways of remotely capturing and mining NEAs will be supported, because the wealth of materials they contain may further reduce the cost of implementing SSI’s core mission - that of building space colonies for folks like you and me.

For more information, contact the Space Studies Institute, P.O. Box 82, Princeton, New Jersey. Δ

"Dreams" from page 4

use of prizes where, if we have a goal we want to achieve, let’s set up a prize and whichever entrepreneur gets there first gets the money.

We need a totally different style of operating our adventure in space. I know Bob Walker is talking right now about the idea of a tax shelter on profits made in space. And by the way, these are not all going to be high-tech profits. I will bet anybody that, *if we’re daring enough, by the year 2015, a major profit center in space will be operating a hotel.*

The people who currently will go around the world—there’s no reason in terms of weight that you can’t get into space for about the first class cost of going to Sydney, Australia from Los Angeles. That’s the fuel expenditure to get into space. We just make it artificially more expensive. Now, if that’s

your goal, and you figure out how many people last year flew first class to Sydney, and then you say, imagine yourself on your honeymoon in weightlessness, and I’m not for the purposes of this story going to step beyond that. ...

Tourism and travel is the second largest industry on the planet. So when you talk about space, why shouldn’t tourism and travel be the second largest industry in space? Or the largest? So, if you say, “All right, let’s get ‘this’ generation into space. Now, yes, it’s a risk. So is going on safari in Africa. So is going down the Amazon. The number of people who do various National Geographic and American Museum and Smithsonian trips and risk diseases and risk all sorts of things. In a free society, you’re allowed to take some risks, as long as you’re informed. And so one of our goals ought to be, to say, “You tell us how bold we have to be.”

There’s something Walker and I have been too timid about; when I look back on our careers, it just frustrates me unending. We’ve been talking for a decade about a tax-free earning of profits in space. We ought to set up the right length of time: 10 years, 15 years—you tell me the length of time—for I’ll be fascinated to see how Joint Tax scores us. Because since there are currently no taxes coming from space, it is hard to see how they score this as a loss. And, in fact, you could make a pretty good argument that the number of jobs that would be created on Earth that would be paying taxes to sustain the profits from space will clearly mean that you’ll have a large tax increase for the government, or revenue increase for the government by creating the incentive in space.

Bill Archer and Bob Walker have agreed to have joint hearings on this. My hope

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CALIFORNIA EVENTS

Golden Gate Space Frontier Society

1 Apr (Sat)-10:00 am Business Meeting - 1st Saturday each mo. Lyles' home, 1075 Foster St., Alameda. Directions-Kent 510/814-0368. Agenda Info-Jean Marie Walker-510/283-5876.

19 Apr (Wed) 7:00 pm Dinner, 8:00 pm 3rd Wednesday each month. Info-Jean Marie Walker 510/889-9216. Ricky's Sports (and Space) Lounge & Restaurant, 15028 Hesperian Blvd., San Leandro; Ricky's phone-510/352-0200.

6 May (Sat) 10:00 am Business Meeting-see Feb. info.

17 May (Wed) 7:00 pm General Meeting-see Feb. info.

OASIS/L5 (LA area)

1 Apr (Sat) OASIS meeting, Stokey residence, 789 S. Oak Tree Dr., Covina. Events hotline-310/364-2290.

Orange County Space Society

Info-President Michael Byron 714/509-9676.

Sacramento Chapter of the L-5 Society

8 Apr (Sat) 2:00 pm General Meeting-2nd Saturday each month. Info- Robert Compton 916/344-3290 (msg.), 3945 Grey Livery Way, Sacramento, CA 95842.

13 May (Sat) 2:00 pm General Meeting. Info-see above.

San Diego L5

13 Apr (Thurs) 7:30 pm Lecture Series-2nd Thursday each month. Reuben H. Fleet Space Theater, Balboa Park. Info-619/295-3690; call first.

11 May (Thurs) 7:30 pm Lecture Series. Info-see above.

Silicon Valley Chapter

13 Apr (Thurs) 7:00 pm General Meeting-

2nd Thursday each month. Harry's Hofbrau (back room), 399 El Camino Real (at Bonita), Mt. View. Info-Kurt Bohan 510/783-0713 and krbohan@interstellar.com or Joe Gillin 415/967-2183 and 74101.526@compuserve.com.

11 May (Thurs) 7:00 pm General Meeting. Info-see above.

Western Spaceport Chapter

Info-Jim Spellman 619/379-2503, 4617 Oak Lane, Mountain Mesa, CA 93240-9713.



OREGON EVENTS

Deschutes Space Frontier Society

17 Apr (Mon) 7:00 pm General Meeting-3rd Monday each month. 65128 Hunnel Rd, Bend, OR. Info-Richard Richardson 503/388-3781 or Michael Guidero 503/388-8143.

15 May (Mon) 7:00 pm General Meeting. Info-see above.

Environmentalists for Space Study Groups

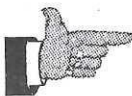
on Solar Power Satellites, EOS, RTGs, Nuclear Propulsion, etc. Info-Tom Cleveland, EFS, PO Box 2113, Eugene, OR 97402, 503/683-8100 (10:00 am-10:00 pm); FAX 503/683-8188.

Oregon L5

Info-Bryce Waldon 503/655-6189, P.O. Box 86, Oregon City, OR 97045-0007 and 76166.3071@compuserve.com.

Oregon State University L5

Info-Gary Oliver 503/758-5549; 3420 NW Elmwood Dr., Corvallis, OR 97339.



SPECIAL EVENTS

14th NSS International Space Development Conference

18-21 May-Cleveland, Ohio. Program includes lunar rover demonstration, nuclear propulsion, NASA Lewis Research Center tour, May Roads to Space session. For information on program, rates and accommodations, call (216)826-0330.

The Institute of Environmental Sciences Technical Meeting and Exposition

2-3 May-Disneyland Hotel in Anaheim, CA. John Casani, chief engineer of NASA's Jet Propulsion Laboratory in Pasadena, CA, will give the keynote address on solar system exploration. The meeting is free. Contact Julie Kendrick at (708)255-1561.



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CSDC - The California Space Development Council

(CSDC) is a representative body of California space advocacy groups dedicated to promoting the rapid development and settlement of space through educational, research and political activity. Its mission statement is "To create a spacefaring civilization which will establish communities beyond the Earth within our lifetime." The Council meets three times a year in various sites in California. It sponsors an annual conference in February.

C•S•D•C Officers
President Ben Muniz, 1319 Gonzales Rd., Simi Valley, CA 93063. 805/581-2420.

V.P. External Affairs Charles E. Miller, 1200 Spyglass Pkwy, Vallejo, CA 94501. 707/649-0225

V.P. Events James George, 2641 Ostrom Ave., Long Beach, CA 90815

Secretary Karen Savage, 3021 Via Montez, San Jose, CA 95151. 408/945-7633.

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Policy Chair David Anderman, 7584 Rush River Dr. #29, Sacramento, CA 95831. 916/421-2621.

Attention Events Coordinators!

If you want your specific events on this page in the Jun/Jul issue, you must send them by May 5th to:

Gayle Lytle
1075 Foster St.
Alameda, CA 94502
510/814-0368,

RGMiller@aol.com, or
KLlytle@aol.com.

"Space Policy" from 1

motivation could be distilled by the leadership of this great country, it could be transferred to the American public at large.

I invite Members of Congress to take advantage of space activists, and the people in this room. Recent history has shown that the space activist community can have a significant effect on the success or failure of policy initiatives in this country, if that policy directly addresses the interests of the activists. Specifically, while the National Launch System, and its sibling the Advanced Launch System, was going nowhere fast, the Single Stage To Orbit (SSTO) program came out of nowhere and has changed federal policy, almost overnight. This is a direct result of the intervention of the grassroots space activist community. And the Member of Congress who took on the SSTO issue in the early days, has established a successful track record because he had the foresight to utilize the resources in the space activist community.

Public Opinion

Jon Miller of the Chicago Academy of Sciences and Alan Ladwig, Associate Administrator for Policy and Planning at NASA published the results of a recent survey of 2,000 U.S. citizens. When asked to rank "space exploration" among a list of ten public policy options, space came in

tenth out of 10. Additionally, fully half of the American public now believes that we are spending too much on the space program.

Try and reconcile this with the fact that 70+% of the public thinks space is neat. Look around - space is everywhere. On the most popular television series. In ads. And in the movies.

It's just not relevant to their lives.

Look at what the American taxpayer gets for \$14 billion on his or her money. Pretty pictures of planets and stars. Pretty pictures of flags and footprints. Pretty pictures of a few government employees going into space. And knowledge about the Universe in general; and our place in it; but at a steadily increasing cost for each marginal gain.

Then they look at the \$200-billion deficits for as far as the eye can see. This is the future projected from a President who brags about his ability to reduce the deficit. And they look at \$4.8 trillion in debt that they will have to pay off some day.

They have a growing mistrust of government's ability to do anything; and with good reason. This mistrust, partially generated by recent events, now extends to NASA.

So space must become relevant to the American people or it will die. People support their schools. People support protection of the environment. People support research

on cancer and AIDS. People support police protection, road construction and the court system. People personally and directly experience the effects of all these things, but they cannot experience the space frontier for themselves.

So How Did We Get Here?

The Apollo program us the wrong lesson. To our detriment, Apollo taught us, incorrectly, that government worked. And we have been living this delusion for the last twenty years.

I compare Apollo to World War II. In both instances our nation was in a psychological state of war, which brought the people of our nation together in a manner which allowed us to achieve things that were otherwise impossible to achieve. In WWII, we were pumping out destroyers every three days. We were rolling a new plane off the assembly lines every hour. In Apollo, we were in a cold war and our entire national self-image was at stake. The Soviet Union told us that our way of life; our culture; was inferior to theirs. We feared that it was true. So we were in a psychological state of war that brought us together.

Everything else has flowed from this. But Apollo was the rare exception to the rule.

We were told that the Space Shuttle
 "Space Policy" Continued on page 12

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"Space Policy" from page 1

would fly 60 times per year, at a cost of \$10 million per flight, and we believed it.

We were told by President Reagan that we would have a space station within a decade; for \$8 billion; and it would do everything. And we believed it.

Then we were told by President Bush that we should go back to the Moon, and on for Mars, for \$400-500 billion.

I want to focus here on the Space Exploration Initiative (SEI) because it is the most recent large initiative, and it illustrates some important points. You could look at SEI as a \$400 - \$500-billion vacation on Mars for eight government employees. Examine the choice that was presented to the American taxpayer: "Let's see. I could take this \$3,000 and have one hell of a vacation for me and my family. Or I can give it to the government so they can send someone I don't even know to the planet Mars. Oh yea, they will send me a picture-postcard too."

I have recently come to view SEI as the Bush equivalent of the Clinton health care plan. It was a dud.

A True Space Program

We have had 15 years of marketing campaigns that have missed the point. These campaigns generally suggest that you should support the space program for some non-space objective, and generally do not give you anything in return.

We need a space program that is of the people, by the people, and for the people. The primary objective of the United States government in space should be to open the space frontier for the American people.

A series of national polls have demonstrated that 40% of the American public wants to take a trip into space. That is nearly 100 million Americans. For all the political leaders in the room, that is a huge constituency. But we have two problems. One is technical. One is psychological.

The technical problem is that we need "cheap access to space." This is the highest priority space policy objective in our national space policy mix today.

The psychological problem is a short-term issue which I call the "snicker factor." Intelligent, well-intentioned, good people snicker at the suggestion that we should open the space frontier for the American people.

If you are one of these people, I have an invitation for you. I invite you to give it up. Give up this instinctive reaction.

One hundred million Americans want to go! You are killing their dreams. This is not good.

I invite you to give up your cynicism, and to give our dreams a chance. Because I want to go. My fellow Americans want to go.

And nothing else matters. Δ

[Ed: Charles E. Miller, Vice President - External Affairs CSDC delivered this address at the seminar "A 21st Century Space Policy" hosted by Rep. Bob Walker (R-PA), Chairman House Committee on Science on March 3, 1995.]

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"Dreams" from page 9

would be that, this year, we would pass a tax holiday on profits made in space, to begin to establish the right incentives. That's how we built the transcontinental railroad. The use of incentives is a long Anglo-Saxon tradition. It's why Drake's tiny ships were often better than Spanish galleons, which were much bigger. They had a different incentive plan. They got to keep the gold. That's at the bottom of what drove the founding of the American colonies. Incentives have a long tradition in our civilization.

And what we need from you is, [for you to] tell us the incentives, you tell us the deregulation, you tell us how to set it up so that it will work. And then we'll work with you so that we create the government framework within which you bring the entrepreneurial spirit and the entrepreneurial creativity. And I look forward very much to seeing a report from you all, and hearing back from everybody who has participated.

Thank you very, very much. Δ

[Rep Gingrich spoke at a March 3, 1995, seminar, "Space Policy for the 21st Century", hosted by Rep. Bob Walker (R-PA) Chairman of the Committee on Science, and organized by Charles Miller, V.P. of the California Space Development Council. Thanks to Joe Gillin, who transcribed the above statement.]

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