

Reaching for the stars

Stargazing in New York's new planetarium

Its assemblage of fossils, gems and specimens of animal and plant life, the American Museum of Natural History has added the cosmos. The new \$210 million Rose Center for Earth and Space ambitiously updates the idea of what a planetarium should be and gives earthbound visitors a full perspective on the universe they inhabit. The Rose Center, opening Saturday, replaces the obsolete Hayden Planetarium, which was built in 1935. A cube of 736 panes of glass houses the Hayden Sphere. Exhibits both in and around the sphere illuminate profound astronomical concepts. Here are some highlights.

—John Jurgensen

1 The Cosmic Pathway

The evolution of 13 billion years unfolds along this looping walkway, where each arch represents 3.5 million years. Starting with the Big Bang, the path marks the birth of the first stars and the Milky Way.

Human history also has its place, portrayed at the end of the walkway as the thickness of a human hair.

2 The Big Bang Theater

Standing on glass flooring, visitors peer down into an 8-foot-deep bowl to watch a laser-driven representation of the chaotic birth of the universe.

3 The Carl Zeiss Mark IX Star Projector

This precise, versatile projector sphere displays the night sky from Earth, including the Milky Way, the constellations and deep-sky objects.



4 32 lenses, thousands of stars

The specially designed "Universarium" is the world's most advanced star projector. Arrays of fiber optic strands attach to 32 lenses, through which shine the twinkling light of 9,100 stars. Amazingly, the programmable device can show the appearance of the night sky from any location, on any night during the last 10,000 years and through the next 10,000.

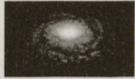


The Orion Nebula as seen in the Space Theater.

5 Space Theater and the Digital Dome

A narrated show worthy of Hollywood transports visitors from this 429-seat theater to the edge of the observable universe.

It takes a supercomputer to translate raw astronomical data into a graphic display. This rendering is sent through fiber optic channels to seven high-definition projectors positioned in the Digital Dome. The end result is a three-dimensional view of the universe that has never been observed on Earth.



A view of the Milky Way from the theater.

6 Hall of the Universe

Divided into four zones, the hall features interactive exhibits that illuminate the processes leading to the creation of stars, planets, galaxies and the universe. The Willamette Meteorite, a longtime piece in the museum's collection, has found a new home here.

Opened in June 1999, Hall of Planet Earth With specimens from around the world, such as 2.7 billion-year-old sulfide chimneys, the hall puts Earth's dynamic processes and geologic history into perspective.

Sources: American Museum of Natural History; Polshek Partnership Architects LLP; "Natural History"; Carl Zeiss

Scientists produce creative, interesting vegetables

POUND RIDGE, N.Y. (AP) — Every now and then breeders create vegetables with a novel spin that tickles the palate and adds imaginative vistas to our gardening of the future.

Right now, broccolini, a cross between broccoli and a Chinese kale, is having a run in the supermarket. A few years ago, a maroon carrot made its debut in Texas.

And biotechnology is doing plant wonders, like a just-announced lettuce with greatly enhanced Vitamin C, thanks to a rat's gene.

The Vitamin C lettuce, for example, needs much regulatory screening

before it can even be tasted.

Biotechnology allows breeders to swap genes between unrelated species, a huge step beyond conventional cross-breeding that limits hybridization to plants from the same families. But opponents of genetically engineered plants worry about possible side effects.

Broccolini is not a genetically engineered plant, but a cross between two members of the same family, broccoli and kale. The resulting plants resemble broccoli florets, but with long stems like asparagus.

Three slightly maroon carrots ap-

pearing unexpectedly in his experimental pots in 1989 prompted a Texas horticulturist to enhance the red color. Leonard Pike, director of Texas A&M's Vegetable Improvement Center, at first did it as an entertaining novelty because the school's colors are maroon and white.

In time he found the new carrot was sweeter and boasted unusually high content of nutritious beta carotene. It went on to Texas produce shelves with the name BetaSweet in 1998, but seeds are not yet available for gardeners.

Genetically engineered, the Vitamin C lettuce is the creation of two

other Texas A&M scientists, Craig Nessler and Ashok Jaim.

A tuber called oca, which looks like an elongated sweet potato, has already made it to New Zealand, where it is sold as a "New Zealand yam," Flores said. It is high in Vitamins A and C and in starch and comes in many colors.

Another, a radish called maca, grows at 14,000 feet, the highest altitude crop in the world, Flores said. Spicy like a radish, it dries naturally and people can keep it for food a long time. Some of these crops may be grown at lower altitudes.

Ecologist warns of potential nitrogen fertilizer hazards

BETHEL, Minn. (AP) — A University of Minnesota ecologist is warning that the agricultural landscape could turn ugly within 50 years if farmers continue to depend heavily on nitrogen fertilizer.

David Tilman has been studying the long-term effects of nitrogen fertilizer on plots he and colleagues have tended north of the Twin Cities near Bethel for nearly two decades.

On 207 plots, each about 16 yards square, they have measured how plants handle varying levels of nitrogen, a powerful fertilizer that is a key factor in how plants fare.

Over time, a trend has emerged. As more nitrogen is applied to plots, progressively fewer species of plants survive. The ones that do are usually less-desirable, non-native ones such as quack grass, which needs high doses of nitrogen to thrive.

Now Tilman has taken that level of inquiry a step further. As part of a broader effort involving other scientists, he has tried to determine what the world will look like in 50 years assum-

ing 25 percent. And as nitrogen levels continue to increase, species are lost at a greater, though less dramatic, rate, leveling off at declines of 40 percent to 70 percent.

"The bad news is that low rates of nitrogen are having more impact than expected," Tilman said.

To get world food production to double over the past 35 years, farmers have had to use seven times as much nitrogen as they used to, effectively doubling the amount that already comes in from the atmosphere, he said.

"Our estimate is that by 2050, the use of nitrogen will quadruple," he said.

By then, the world population is projected to increase by almost 50 percent, Tilman said. It

also will become increasingly affluent, resulting in buying power 2.4 times that of today's population and producing a demand for twice as much food, he said.

Unless agricultural methods are changed or technical adaptations are made, he said, that will amount to three to four times more need for nitrogen.

But society is not without options,

Tilman said. For farmers to continue to adopt U.S. agricultural methods that depend heavily on nitrogen for high yields. That picture isn't pretty, he said.

Oxygen-starved "dead zones," such as the one now in the Gulf of Mexico, will become increasingly prevalent and many plants will die off, while fewer — and less desirable ones — will take over, he said. The result will be less diverse and less healthy ecosystems for plant and animal life.

To arrive at that conclusion, Tilman took his own experiments on nitrogen and incorporated them with the best available world population, income and consumption patterns. He already had found that as the amount of nitrogen doubles, species diversity declines by

"Humans now dominate the ecosystems of the world... It's not clear what the wisest path is, but if we continue on the current one, we're going to create a world we really don't want."

— David Tilman
University of Minnesota ecologist

Spring Break!

You've been lugging books and stress around all semester. Now's the time to lighten the load and take a break...Spring Break, that is! Spring Break is definitely a great stress-buster and the best party ever! More friends, fun (hopefully, sun) and guys than you can imagine! To help get ready for the college experience of a lifetime, here are some helpful tips (from someone with personal experience) that will get you off to Spring Break 2000 and out on the beach as fast and fabulously as possible!

Cardinal Rule #1: At all costs, do NOT over pack! Have you ever lugged a heavy bag with a sunburn?

What You MUST Bring:

- Sunglasses**, cool hat and lots of suntan lotion! (Banana Boat® sunblock is my personal favorite because it comes in a variety of SPFs and smells great.) Remember, a burn on the beach means no more fun in the sun.
- 2 bathing suits** to add some pizzazz and to always have one that's dry.
- 2 to 3 pair of shoes** - Definitely bring cool sandals for cruising the beach and a comfy set of walking shoes so you can hit the boardwalk...
- Sundresses** are a great space saver and look awesome on the beach during the day or out on the town at night. The perfect excuse to show off a tan!
- A stash of tampons** - Just in case! (As a tip, try Playtex® Tampons. -They're perfect for packing and really are so comfortable you can't even feel them.)
- The basics:** travel-size soap, shampoo, lotion, toothpaste and razor - Pack in plastic to avoid gross surprises at the other end when you unpack. (Throw a couple of Wet Ones® Singles moist towelettes in for you and your friends. You'll find a million uses for them - at the beach, after lunch and to wipe that suntan lotion off of your hands.)
- On to the good stuff... a Camera** to record the memories and something to play your favorite tunes on the beach. - Remember to buy extra film and batteries BEFORE you leave...
- Of course it won't rain, but bring a **deck of cards** - just in case.
- One credit card (and only one)** for emergencies. (What if the cash machine doesn't work?)

Don't torture yourself - leave it at home:

- Your heavy-duty hair dryer** - Check with friends and vote for one person (whoever has the smallest) to lug it.
- Laptop**, or any other expensive electronic equipment. Sand, sun and sea air will wreak havoc, and tempt thieves. Why risk it?
- Your entire CD collection.** Grab a few of your favorites and hope you like your friends' choice in music too.
- Too much make-up.** It will melt in all that sun - and anyway, the natural look is in.
- Text books!** Intentions are always good, but a good paperback is much more practical to pack and won't scare anybody on the beach.
- Last but not least.** Leave your boyfriend, your ex, or your current love interest behind. There's plenty of fun to find on the beach. Keep your options open!

SPRING BREAK 2000, HERE YOU COME! ENJOY!



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