Private Eye

By E.S. Strout MD

Tuesday, March 2, 2004:
Mars exploratory rover Opportunity finds evidence that water may have once existed in large quantities on the Martian surface at Meridiani Planum. The possibility of some form of organic life on the Red Planet arises . . .

NASA website

1.

NASA/JPL Budget Conference, Tuesday, Feb. 22, 2011, 0930 hours:

"Hello, Scott," Professor Anne Elizabeth Truex said to a slightly overweight blond young man engrossed in a stack of invoices.

He looked up, nodded. "Professor Franklin wants a new Mars Rover."

Dr. Truex helped herself to coffee and a doughnut, nodded to a tall black man with a trim mustache sitting across from her.

'Good morning, Emory. Got something good for us from Extraterrestrial Geology?"

He smiled. "I do, Anne. Is my presentation ready, Scott."

JPL's Chief Financial Officer handed him a laser pointer.

Franklin clicked a remote. "This is a photo taken by Mars Rover Opportunity seven years ago."

Another click. A second photo appeared on the wall screen.

"And this one the same day."

"Professor Franklin believes he's found something new in a bedrock outcropping of *Meridiani*

Planum," Scott Adkins said.

Forty year-old slender, dark haired Professor Truex, JPL consultant on Martian topography took a bite of her doughnut, drank some coffee.

"These are seven year-old Mars photos, Emory. I see the same topography. Same bedrock slabs and mineral deposits. We know that Mars may have had oceans or salt lakes. What's different?"

"I've cleaned up the old disk images with new technology, Anne."

"Please show me."

Franklin pressed another key.

"This enlargement was taken at 0800 hours Mars local time, Thursday, February 26th, 2004. There's a separation between these two rock faces."

Another click.

"This second one was taken at 2100 hours, same day. The gap has disappeared."

Dr. Truex's hazel irises dilated in surprise.

"Interesting. Can you bring me closer?"

"Wish I could, Anne. Our new procedures are good but we couldn't overcome Opportunity's lack of closeup high resolution."

"I'd have preferred a carbon-wired fiberoptic probe but JPL funding back then wouldn't cover it. Same today."

"I know." Truex said with a pronounced sigh. "Budget proceedings give me an ulcer, Scott."

"Not my doing, Dr. Truex," Adkins protested. "I'm just here to run the numbers, make recommendations."

"What do you think this vanishing space means, Emory?" Dr. Truex asked, ignoring Adkins's sulk.

"Contraction and expansion in response to drastic Martian temperature variations," he replied.

“Plus 9 degrees Fahrenheit during daylight hours to minus 111 degrees after sunset.”

“Could it be due to a tectonic shift?”

“No seismic activity was recorded by Opportunity’s sensors on that date.”

“What do you think it means?”

“We have a fifteen centimeter space that expands and contracts. The space is too dark for any detail. If that blackness represents basaltic rock formation it could prove a theory I have about prior Martian volcanic activity.”

Anne Elizabeth finished her doughnut and coffee. “Is it of enough significance to warrant another rover?”

“I believe so,” Emory insisted.

“What do you think, Mr. Adkins?” Anne asked.

“JPL and NASA are committed to a second Phoenix lander,” Scott said. “No funds are available for other projects.”

Anne twisted a strand of auburn hair around an index finger, gave a sigh of frustration.
“If you don’t mind, Scott, I’ll go talk to Space Exploration Appropriations myself.”

“Be my guest,” Adkins grumped with a contemptuous huff.

“I’ll get back to you, Professor Franklin,” Anne said.

2.

One month later. JPL/NASA Administrative Office.

“What have you got for me, Anne,” Professor Franklin asked. “Took you long enough.”

“Bureaucratic red tape, Emory. Faster than a speeding glacier.” She smiled. “There is one possibility.”

“Lay it on me.”

“They approved another rover mission. It will combine the search for biologics to enhance the Phoenix findings of three years ago with your geologic exploration. It will be named FORTUNE.”

She smiled. “There is one caveat, of which I am sure Mr. Adkins will remind us. Scott?”

“Who pays for the fiberoptic systems?” Adkins asked.

Dr. Truex nodded. “What if we don’t need them?”

“What could replace fiberoptics, Anne?” Emory asked.

She gave him a cryptic grin. “Private Eye.”

“Which is?”

“Stanford University Genetics has cloned a human eyeball.”

“Science fiction,” Franklin exploded. “This is B.S.”

Dr. Truex took a breath, did a slow exhale. “Do you want to go back to Mars, Professor Franklin?” she asked in a calm but ice-encrusted voice. “If not, NASA will be glad to continue on Phoenix-II by itself.”

“If there’s nothing further,” Scott said, rising from his chair. ”I vote we adjourn.”

Dr. Truex slapped a hand on the tabletop. “Not so fast, Scott. I’ve got more.”

Adkins’s neck flushed an angry creeping red. “And what might that be, Professor Truex?”

Anne winced, chewed two antacid tablets.
“Dr. Alvarez is here at my invitation. She’s head of the Stanford Genetics Private Eye project. May I introduce her?”

Adkins smiled. “A detective agency? Is somebody missing?”

Professor Franklin stood, all six-feet four inches of him. His voice was low and menacing. “I suggest we hear Anne’s guest, Mr. Adkins.”

Scott paled, sank in his chair, nodded. “I agree.”

3.

Dr. Carmen Alvarez, a hyperactive, dark haired Colombian woman wore a brilliant multicolored silk scarf at her throat. She touched a key on her laptop's keyboard. An enlarged image of a human chromosome appeared on the screen. Segments of its arms were marked with tiny red arrows.
"These are the chromosomal loci responsible for optic generation."

Emory frowned. "Not my second language, Doctor."

Alvarez nodded. "Sorry, Professor. I'll try to clarify. As Dr. Truex mentioned, a human eye. We obtained marrow stem cells from Astronaut Madeleine Stowe. She piloted the first Mars flyby mission. May I continue?"

"By all means," Anne said.

"Captain Stowe's eyesight is the best NASA has ever seen. Twenty-ten vision and no astigmatism, color blindness or other inherited defect. Am I boring anyone?"

"Please continue, Professor," Emory said in an abashed whisper.

She smiled. "Thank you. We've made a few modifications, Dr. Franklin. The red component of the retina has been increased to give a sharper image on night videos. Also, we've decreased the number of retinal cone receptors to provide better contrast in the reddish brown hues of the Martian daylight atmosphere."

"That air is thin but harsh, Carmen. Sand, dust, increased ultraviolet assault," Anne Elizabeth said. "Could be brutal to organic tissue."

She nodded. "Yes, Anne. Some external changes were necessary. An ultraviolet corneal shield and a tough clear plastic reinforced lens cover to counteract wind-blown sand, and most important, an on-board infusion system for maintaining the Eye with electrolytes and nutrients as human blood flow does for ours."

"Sounds like you've got everything covered," Dr. Truex said.

Dr. Alvarez smiled. "Optic nerve replaced by carbon filament wiring. Computer-simulated occipital lobe cortex. Everything but lids and lashes. Any questions?"

“The price tag?” Adkins asked in a whisper.

She smiled. “Our Bioscience Division will spring for the Private Eye payload in exchange for first copy of all pertinent findings, Mr. Adkins. You will be responsible only for the vehicle.”

“I like it,” Anne said.

“What about field testing, Dr. Alvarez?” Franklin asked.

Another smile. “Sub-zero runs at the Lake Vostok Research Station in Antarctica, Professor. Minus 75 degrees. In West Texas, we used a thin atmosphere wind tunnel with added sandblasting. The Eye aced every test.”

“What about effects of the hard landing?” Anne Elizabeth asked. “Spirit and Opportunity did lose some of their more delicate components.”

“We’ll be using retrorockets,” Emory said.

4.

JPL/NASA Mission Control, four months later:

FORTUNE’s soft landing at *Meridinani Planum* went without a hitch. The next morning’s celebratory hangovers were alleviated by analgesics and gallons of black coffee.

“Picture’s out of focus,” Dr. Truex noted as she ingested a double dose of Tylenol tablets. “What are we looking at, Emory?”

“Can’t tell yet,” he groaned. “I’m getting the rover oriented.”

Dr. Truex eyed the screen, chewed more antacid. “What’s this brown haze?”

“Damn,” Emory said. He tapped keys.

“Gale force wind velocities, 65-70 mph,” Anne read from the screen. “Sounds ominous.”

“Fortune is stuck in a Martian sand storm,” Emory explained. “These can last hours or days, Even longer.”

CFO Adkins said, “You can wait in JPL’s executive lounge.”

“Good. I could use a drink,” Emory said.

“A big icy Stoli on rocks would improve my attitude a great deal,” Anne Elizabeth concurred.

Adkins shook his head. “Sorry. Soft drinks only. Liquor is not covered in our budget.”

“That was predictable,” Dr. Truex said with a resigned sigh.

“How about we bring our own, Dr. Truex?” Emory said with a wink.

She held up a hand. “We need a dozen pizzas and a case of Budweiser. The tech’s have been here 24-7, as have the rest of us. Do something useful for the team, Scott.”

Mr. Adkins had disappeared.

Emory laid some bills on the table top. Anne matched his contribution.

5.

0330 hours. Executive quarters.

Adkins’s cell phone screeched. “Tech’s just woke me,” Anne said. “Wind died down five minutes ago. Emory is here. Get your ass in gear. Dr. Franklin and I each owe you two dollars for this phone call.”

“The screen’s black, Anne. What am I missing?” Dr. Franklin asked as he swallowed a gulp of day-old reheated coffee.

Anne tapped a clear-polished fingernail on the screen. “These little white dots are stars, Emory.”

“Oh, hell. Fortune is looking at the sky. Blown over in the storm.”

Dr. Truex groaned as she chewed another antacid tablet. “More millions down the rathole.”

“Not yet. There’s a backup system.” Emory said. He entered commands with furious strokes. “I’m activating the hydraulic jacks.”

“Explain, please.”

Franklin smiled. “Ever watch the Indy 500, Anne?”

She returned his grin. “No. I have watched the Daytona 500.”

“Different kind of pit stops. Hydraulic jacks raise Indy cars for tire replacement and fuel. The ones on Fortune can be rotated sideways to raise a capsized rover to upright.”

Emory pressed a key. Minutes passed as the signal raced through space to the rover on *Meridiani Planum.*

6.

“Fortune is moving,” Dr. Truex said

“Damn.” Emory pounded keys. “It’s tilting downhill. It could flip over and crush all the Eye paraphernalia.”

There was a sharp tap at the door. Dr. Alvarez poked her head in. “What’s happening with my Eye?”

“We’ve had some problems,” Anne Elizabeth said.

“I can see that. I need some coffee, Mr. Adkins.”

Scott poured her a Styrofoam cupful. “It’s from yesterday. We haven’t had time to make more.”

Alvarez took a swallow, made a face. “Make fresh. “What kind of problems, Professor Franklin?”

“Sandstorm and an overturned rover,“ he said. “The situation is iffy. I’m trying to fix it now.”

“Any damage to the Eye?”

Anne pressed keys, scrolled values. “All systems are A-okay.”

7.

0400 hours, local Mars time:

“Got it,” Dr. Franklin announced, “Fortune is upright. Location just south of the *Meridiani

Planum* anomaly by star sightings and Mars GPS."

"Can we extend the Eye yet?" Dr. Alvarez asked,

"Couldn't it be damaged by this rough terrain?" Dr. Truex asked.

Alvarez nodded. "There's a sturdy tubular telescoping arm, like a gastropod or crab eyestalk. But you're right. let's wait."

Emory said, "Fortune is moving forward. Want to drive, Anne? You know Martian terrain characteristics."

"Okay." She took a seat at the console, tapped more keys as Franklin, Alvarez, Adkins and the tech's watched. "Anomaly in sight. Adjusting track five degrees left. Good. I think we can position the Eye now, Carmen."

Alvarez nodded, pressed a key. "Eye is deployed. Adjusting color, focus and contrast. Fine tuning as we approach. CD recording is on."

"Time to target?" Dr. Alvarez asked.

"Ninety minutes," Emory said.

8,

0600 hours. Martian sunrise:

"Check that color contrast and tint," Dr. Alvarez exulted. "Better clarity and sharpness than I had predicted."

"You were right about retinal red cones reduction, Carmen," Dr. Truex said. "Normal Earth tones. Bright and clear."

"Thirty foot rise to my rock face," Emory said.

"Ten minutes," Anne told him. "I'm dodging some large rocks now."

"There's that separation between the rock faces. Anne. Track two degrees left, please."

She mopped perspiration from her forehead with a tissue and tweaked the controls. "I'm on it,

Emory. How odd. Smooth ground now. No rocks anywhere."

Dr. Franklin viewed metric distances scrolling down the left screen margin. "Fifteen centimeter gap confirmed."

"Check the Eye parameters now, please, Anne," Alvarez said.

"UV and lens protector shields engaged and in place. Extending Eye towards the gap," Anne said.

"Twenty centimeters. Fifteen. Ten . . ."

"It's black in there," Emory observed. "Basalt. I was right. Result of volcanic activity." Then a puzzled frown.
"Something strange. Basalt doesn't have a reflective surface."

"Sodium chloride crystals." Anne said. "From an evaporated ocean."

"How odd," Dr. Alvarez said. "I'm seeing a mirror image of the Eye. The color's off a little, I'll go to an extreme closeup view . . ."

Alvarez suddenly recoiled from the screen with a gasp of disbelief stuck in her throat. "Holy Mother of God!"

"What's wrong, Carmen?" Dr. Franklin asked.

"It's not a reflection, Emory."

"It blinked."

The End