

BY ALISHA HOROWITZ

# An Astronomer Shifts His Gaze from the Stars to the Earth



William Blair '75, Ph.D.

Author's note: William Blair, Ph.D., graduated from Olivet College in 1975 with a bachelor's degree in physics and math. He says that earning these degrees in the context of a liberal arts education made a difference in his long-term career path. Though he did take "hard science" courses, he says that the broad perspective of a liberal arts education, along with good communication skills, and a multidisciplinary approach have served him well and made a difference in his career. Dr. Blair also says that the idea of "lifelong learning" is a concept that definitely came out of his time at Olivet. In May 1998, the college honored him as a "Distinguished Alumnus."

In the fellowship hall of Babcock Presbyterian Church, Dr. William Blair prepares to give his sermon, "The Creation Connection." It's the second delivery that morning. He tests the microphone and then walks among the audience of about 30 people, stopping to chat with parishioners.

"Didn't you come to the first service?" he asks a woman, who is dressed all in pink, down to her flip flops with bright flowers. "You're double dipping," he says, smiling.

Blair is standing in for the pastor on this sweltering summer July day in Baltimore to deliver a talk he gives each year on a topic he cares passionately about. "As an astronomer and a person of faith, I am highly attuned to the awesome complexity, enormity and mystery of God's creation," he begins.

"I won't hold one up here today, I'll let you use your imagination, but you may have seen me use rolls of toilet paper to illustrate the concept of time," he says. Blair makes a rolling motion with his hand as if holding a roll.

He goes on to explain that if each sheet in a roll of toilet paper were to represent 10,000 years, then all of

human history would fit on one sheet. A 1,000-sheet roll would represent 10 million years. But it would take 450 rolls of toilet paper end-to-end to get back to the formation of the earth, some 4.5 billion years ago. Blair uses this point to illustrate that God cared for creation a long time before humans were around.

"As Christians, it is our duty and responsibility to care for God's creation. The Christian church as a whole needs to wake up to this call and re-establish its 'creation connection.' Maybe it can start right here at Babcock. Maybe it can start within each of us," Blair concludes.

Blair's fear that people might not survive for the equivalent of even one more sheet of toilet paper is propelling him to speak out about the health of the planet. It's a story that he tries to share as often as the life of a busy astronomer will allow.

William Blair has been an astrophysicist and research professor at Johns Hopkins University for the past 25 years. But in recent years, he's found a new passion that has brought him closer to earth. He became interested in climate change issues in 2007, when he attended a talk by Dr. Nathan Lewis, a professor of chemistry at *Caltech*. Although Lewis focused on world energy needs rather than global warming, Blair immediately grasped the staggering ramifications of what would happen if people continued to try to fulfill these needs using fossil fuels. Given the projected growth of the world's population, he understood the system would not be sustainable. "But adding in the impacts on climate change goes way beyond a 'sustainability' issue for me and turns it into a moral crisis as well," he says.

The ever-curious scientist, Blair began educating himself on the science behind climate change. He recognized the urgency of the situation. "We should have been doing this stuff 20 years ago. We've just dropped the ball." He took his newfound interest seriously enough to consider changing careers and moving from the study of the universe to the earth sciences.

When Blair speaks, he rarely stays still. He throws his arms up in the air to emphasize a point or taps his fingers on the table, his thick gold wedding band with three embedded diamonds sometimes clicking against the wood. The boyish Blair looks younger than his 57 years, with expressive brown eyes that often widen when he emphasizes a point. As he sat in his office one day recently, discussing his work, swirls of color exploded onto a computer screen—all images from space. Nearby, another computer rotated through nature photographs of forests, sunsets and mountains that Blair had taken on his many work trips to telescopes in Arizona, Chile and Hawaii. The ever-present tug of space and nature.

Blair's office walls are covered neatly with colorful posters of nebulae. One poster, which he has had since his college days at Olivet, shows a lenticular cloud against a bright blue sky with the words "God is Subtle," printed underneath, a quote by Einstein. Shelves bulging with mementos and books line the walls. Family photos of his wife of 33 years, Jean (Shaffer) '75, and children, Amy and Jeremy, are tacked on a bulletin board above one of his two desks. He and Jean adopted Amy from South Korea and Jeremy from India as infants more than 20 years ago. Blair walked his daughter down the aisle at her wedding last year.

A group photograph shows Blair, wearing one of his signature plaid shirts, and colleagues from the Far Ultraviolet Spectroscopic Explorer project, or FUSE. The eight-year \$225 million FUSE project was developed, managed and operated by Hopkins—the largest and most complex astrophysics mission

ever operated from a university setting. Blair first served on the FUSE project as head of mission planning and later as chief of observatory operations.

"Heading up FUSE was tremendously challenging, but tremendously satisfying," he says.

FUSE analyzed far-ultraviolet light by spreading it into a spectrum, a technique known as spectroscopy. The instrument complemented the Hubble telescope because it observed

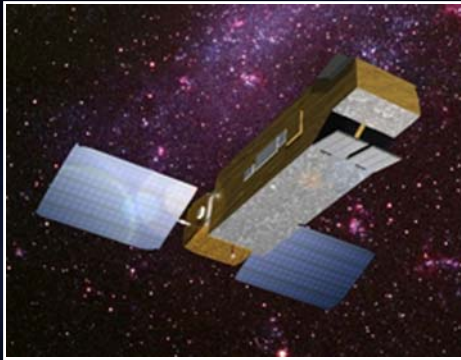
farther into the ultraviolet. One of the most significant findings gleaned from FUSE's 65 million seconds of data was evidence that our Milky Way galaxy is surrounded by a huge, very hot, but very tenuous, halo of gas. Blair was

exceptionally skilled at coordinating such a large project, says Jeffrey Kruk, a principal research scientist who ran the technical side of FUSE. "It can be a little like herding cats. Everyone involved is already doing their own thing. Bill is good at gently beating them about the head and shoulders," Kruk says.

When the FUSE project was winding down in 2007, Blair started looking for new opportunities, and began seriously to consider changing career tracks and moving to the earth sciences. He says he was able to consider the change because he was at a crossroads in his career, and his long-latent interest in environmental issues and his Christian obligation to work toward justice spurred him on.

In 2008, Blair volunteered to be part of an initiative at Hopkins to explore how to reduce the university's carbon footprint. It seemed perfect in light of his recent interest in global warming issues. As part of a new task

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force, the university formed three working groups. Blair coordinated part of one working group's effort to define what other colleges and universities were doing. He also organized three campus-wide speaker forums.

At the same time, Blair looked into a master's program in the Department of Earth and Planetary Sciences, thinking that he might need some "street cred to

possible, speaking at libraries, schools, senior centers, churches and any place else that would have him. He tailors each presentation to his audience. Blair averages one, sometimes two, presentations a month, depending on the time of year—quite a challenge to fit into his busy life as an astronomer.

In some ways, Blair considers it to his advantage that he is an independent voice on this issue. His independence gives him more credibility, he says. "Many in the general public mistakenly believe that unless 100 percent of scientists believe global warming is real, then it must not be true," Blair says. However, as he explains, that isn't how science works. "The worst part is the political aspect, the intentional misinformation to cause confusion," he says.

Blair uses his presentation simple, describing the

greenhouse effect and the consequences of carbon emissions. He even throws some astronomy into the mix, and talks about Venus, the closest planet to earth and the same size as earth, but with a carbon dioxide atmosphere 100 times denser. On Venus, things have reached a different balance point than on earth, but not one that is anywhere close to supporting life forms.

Julian Krolik, a professor in physics and astronomy at Hopkins, attended a research seminar that Blair gave to his colleagues at Hopkins in 2007 called "Framing the Global Warming Discussion: The Role of Non-Specialist Scientists." While typical seminars generally attract only about 20 attendees, more than 60 people showed up to Blair's. Krolik wanted to learn how a colleague presented such technical material to a general audience. He had also been considering creating a new course for undergraduates on the physics

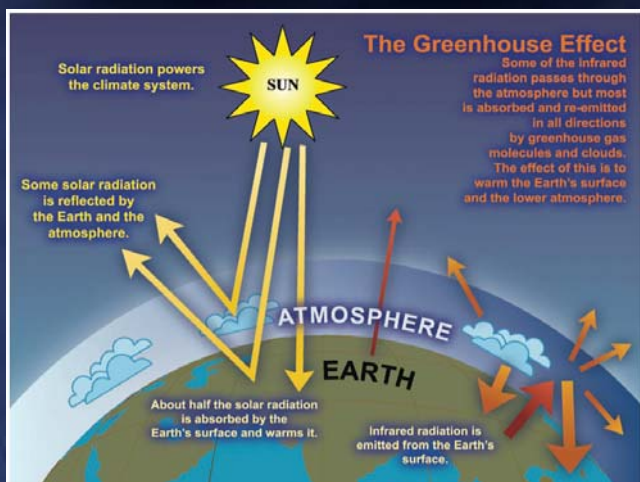
of human energy use. Blair's talk strengthened his resolve to make it happen, and he developed the course and has taught it twice since attending the lecture. "He stepped out to the plate and got out there and did it," says Krolik.

Besides encouraging others to reduce energy consumption, Blair takes his own message to heart. Whether it's dragging the recycling bins from his church over to his house every Thursday night for the recycling pick-up or turning off the lights in his building at work, he keeps looking for ways to make a difference, however small or large. Recently while filling his tank at a CITGO gas station, Blair found himself staring at an overflowing trash bin. He loaded his car with the casually discarded items of fellow drivers and took them home to be recycled. "Why throw that stuff in the landfill?" he asks.

"The thing that people like about him is it's a calling," says Janet Jones, associate pastor at Blair's church. "He even evangelized the minister," she continues. Blair convinced the minister to get an energy audit done for the church, set out boxes for recycling and do away with bottled water. "He asks, 'Where can we start?' He meets people where they are," says Jones.

Blair, however, takes a humble view of his efforts and stops short of saying that he is pursuing his calling. "Coming from a religious perspective, 'calling' is a strong word. If it was truly a calling, wouldn't I drop everything else I am doing and go do that thing?" he asks.

However, spending some time with Blair makes clear that faith is an essential part of this man, both in his role as environmental educator and as astronomer. One day in his office, he describes one of the Hubble telescope's most famous images, often referred to as "Pillars of Creation." It shows three smoldering gas pillars towering like giants among the stars. "The view you're seeing is one light year across," says Blair. "How does that not impact you that this is all created somehow? How can you not be awed by that?" ▲



switch tracks." His wife Jean, who is a librarian, told him to go for it. Blair realized, however, that at the rate it would take him to complete the degree while continuing his regular job, he might be retired by the time he got through.

Instead of changing tracks, Blair decided to continue his work as an astronomer and stick with his self-education approach. He particularly wanted to address what he perceived to be some of the "intentional misinformation on the global warming side and to try to get down to the basics of the problem." From his research and reading about global warming and climate change, he put together a presentation on the science behind climate change, highlighting it in a straightforward way, and calling it "The Good, the Bad, and the Ugly." Blair started taking "his mini Al Gore thing," as he calls it, on the road whenever