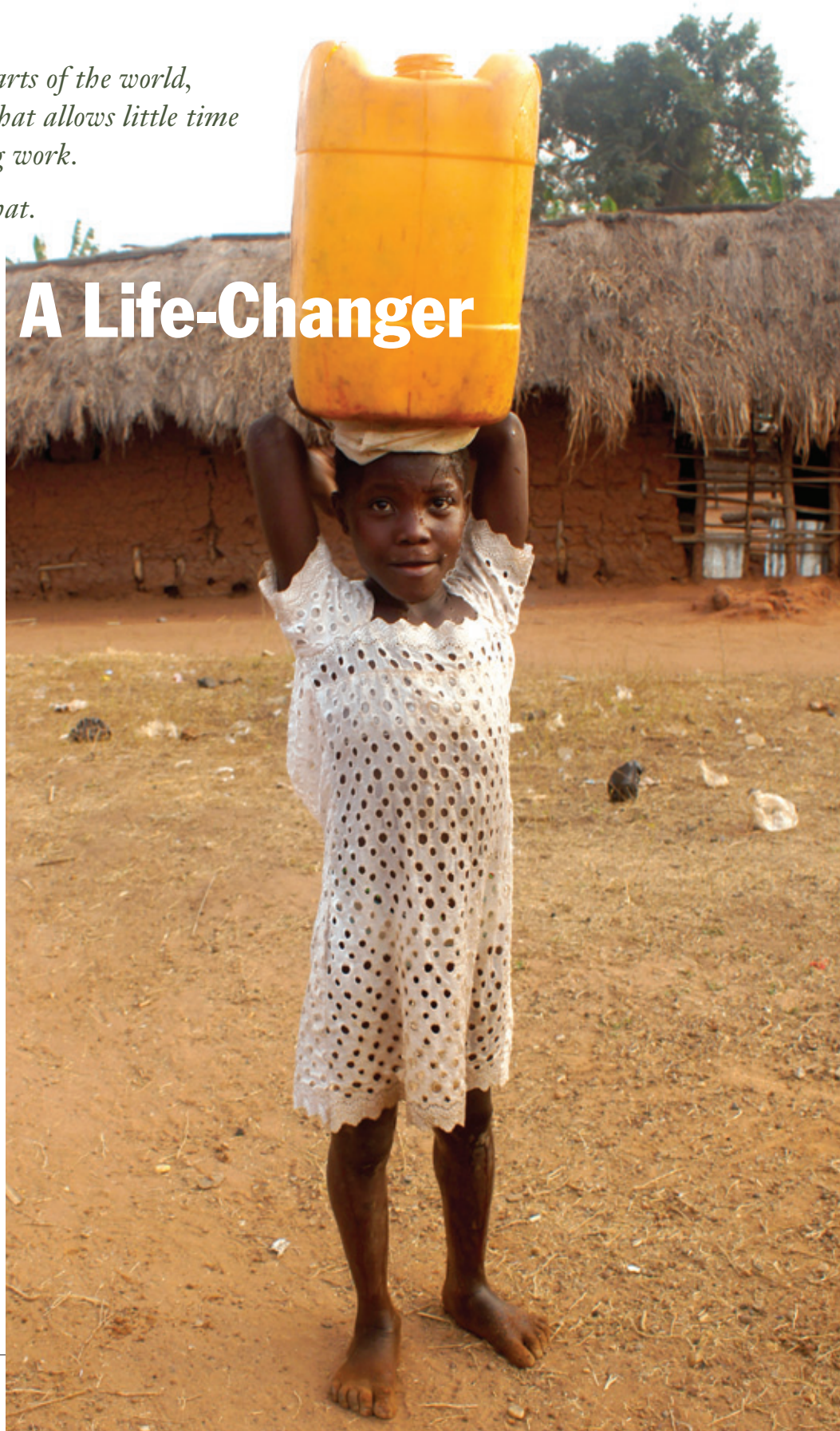
A WORLD OF DIFFERENCE

UNIVERSITY OF IOWA ENGINEERS WITHOUT BORDERS

SPRING 2013

For women and girls in many parts of the world, getting water is a daily reality that allows little time for education or more rewarding work.

UIEWB has set out to change that.



Clean Water: A Life-Changer

Most of us in the United States take clean water, available with a simple turn of the tap, for granted. Imagine how different your life would be if you had to spend hours every day getting the water your family needed.

The University of Iowa's student chapter of Engineers Without Borders (UIEWB) is in the midst of a five-year project to improve access to clean water and advance sanitation in the village of Kobriti in Ghana, West Africa. As the project got started, UIEWB surveyed the villagers and found that clean water ranked among the top concerns.

Working with the community, the UIEWB team hired a Ghanaian company to drill a new well in Kobriti in 2012. In summer 2013, a group of UIEWB students will travel to Ghana to deploy a solar-powered pump to automatically bring water from the new well to an elevated storage tank. A filter system and shock-chlorination in the storage tank will prevent contamination.

UIEWB President Brianna Knoll says that even when the students are in Iowa City, they've stayed in touch with their contacts in Kobriti. She admits it can be challenging to make decisions this way, citing the recent determination of where to locate the water tower. "It was really important to the group that this was the community's decision," she says.

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Building a Better Latrine

Water is scarce in the rugged mountainous country near the Philmont Boy Scout Ranch in New Mexico. As a scout, Lee Hauser learned to carry clean drinking water while hiking near Philmont, and he also experienced the hazards of primitive latrines he calls "double bombers." Exposed to weather, insects, and wildlife, these latrines "opened my eyes," Hauser says.

Building a better latrine may not be glamorous, but Hauser knows from experience that it can have a real impact.

Hauser is a member of the University of Iowa's student chapter of Engineers Without Borders (UIEWB), which is partnering with the people of Kobriti, Ghana, on a five-year project focused on drinking water and sanitation issues. Hauser leads a group of EWB volunteers working to design a functional, sustainable latrine for the people of Kobriti.

For Hauser, it's all part of a fascinating puzzle, and the opportunity to improve the lives of others is an incredible bonus.

Hauser, a senior who will earn a B.S. in civil and environmental engineering this spring, says his team will work with the people of Kobriti to decide what type of latrine is the best fit: composting or a simple pit. Although there are advantages to the composting latrine, which does not have to be moved as frequently and can provide fertilizer for crops, cultural issues also come into play. "The idea of using human feces as fertilizer can be mind-blowing," Hauser says.

When Hauser and his team travel to Ghana this summer, they will also build a solar-powered pumping system for drinking water. The new pump will free Ghanaian women and girls from the hard, time-consuming labor of hand-pumping water for the family's daily needs.

A natural sense of curiosity led Hauser into engineering, where he puts his inquisitive nature to work to solve problems and improve the lives of others. He is focusing on environmental engineering and water issues, which he says have a tremendous impact on us all, even in Iowa where water is usually plentiful.

Hauser also works with Assistant Professor of Civil and Environmental Engineering Craig Just on a project that places wireless electronic sensors on river mussels to monitor water quality. Hauser says he's found working with mussels so fascinating that he hopes to continue the research as a graduate student next fall. "You kind of go in as an engineer and come out as a biologist," Hauser says.

For Hauser, it's all part of a fascinating puzzle, and the opportunity to improve the lives of others is an incredible bonus. "It's always nice to know you've made someone's day better," he says.

CLEAN WATER CONTINUES

With the village chief and other key community members, they worked long-distance to make a decision. Twelve members of the Kobriti community also serve on a local Water and Sanitation (WATSAN) committee that will collect fees in the village and take responsibility for maintenance and repairs.

For Knoll, the hard work has definitely been worth it. She remembers a moment when a Kobriti woman presented her with three precious eggs, laid by her own hen, as a token of appreciation. "I know that does not sound like a big deal," Knoll says, "but for them to give away even one egg is a sign of great thanks."

Knoll, who plans to go to medical school next year, says her work in Kobriti has revealed to her just how powerful the collaboration of doctors and engineers can be. She says she definitely plans to continue service work after graduation.

"Being there firsthand was one of the most powerful experiences of my life," Knoll explains.

Knoll says the people of Kobriti are friendly, industrious, and hard-working, and that includes the children — who often have responsibility for pumping and carrying water for their families.

But for the children of Kobriti, that load will soon become a whole lot lighter.

Helping UI students change the world

In July 2010, when UI Professor of Engineering Jerry Schnoor won the prestigious Clarke Prize recognizing contributions to the area of water research and technology, he traveled to California to accept his $50,000 award and medallion, and give a lecture.

Schnoor decided to include information in his lecture about Iowa engineering students and the innovative work they were doing with his colleague Craig Just through the UI chapters of Engineers Without Borders (UIEWB) and Engineers for a Sustainable World.

"By the time I finished writing the speech, I realized I wanted to give the award money to the students," Schnoor says.

And he did. Shortly after returning from California, Schnoor worked with the UI Foundation to make a $50,000 gift to the UI Engineers for a Sustainable World Fund.

When Craig Just, assistant professor of civil and environmental engineering and UIEWB adviser, heard the news, he was thrilled — and inspired to make a gift of his own.

Just and his wife, Tracy, a hygienist in the UI College of Dentistry, matched Schnoor's gift.

The $100,000 boost to the Engineers for a Sustainable World Fund will enable more students to participate in service-learning partnerships with developing countries. And to Just, these real-life partnerships are essential to his students' education.

"There is absolutely no substitute for going and immersing yourself in the culture," he explains.

In 2011, UIEWB made a five-year commitment to a village in Ghana.

"In Ghana, students will have the opportunity to work on water sanitation, solar energy, and other basic infrastructure projects that will benefit the people of Kobriti," Just says.

Just, who is also an assistant research engineer at IIHR—Hydroscience & Engineering, leads the trips to Ghana. Each five-week trip involves four to six students. According to Just, the first thing they do upon arrival is listen. "Often the people there know exactly what they need," Just says. "They just don't have the resources to make the necessary improvements."

In Kobriti, UIEWB has assessed the village's needs and conducted health and resource surveys, aiming to implement technology and processes to improve living conditions.

"There is so much need," Schnoor says. "This fund will not only help our students, it will help our students change the world."

Thanks in part to the generosity of Schnoor and Just, UI students are solving real-world problems. "And that," Just says, "is what engineers do."

TOP Professor of Engineering Jerry Schnoor (center) and student members of his research team examine samples of a hybrid poplar tree used to break down toxic substances in the environment.

BOTTOM Assistant Professor of Engineering Craig Just (center) serves as adviser to the UI student chapter of Engineers Without Borders.

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This was the proposed site for a well and water tower, until the team learned that the site is an old cemetery.

Clean Drinking Water …

Priceless!

The University of Iowa student chapter of Engineers Without Borders USA partnered with Pure Home Water, a nonprofit founded by MIT Professor Susan Murcott, to provide drinking water filters to families in Kobriti, Ghana.

The filters are made in-country of porous ceramic that is coated with a thin layer of silver metal paint; the filters are placed in a bucket with a spigot and a lid. The porous ceramic removes particles, and the silver paint kills bacteria and viruses. The bucket and lid provide a safe storage vessel to prevent recontamination of the drinking water.

During a training session with EWB students in January 2012, community members learned about the use and care of the filters. They showed a strong interest in improving their at-home water storage, and were very enthusiastic about the filters! As a result, UIEWB organized a subsidy program to help make the filters affordable for Kobriti families.

Many participants in the 2012 UIEWB Friendraiser chose to subsidize a filter. As a result, more than 20 filters were purchased, delivered, and are now in use in Kobriti!

A UIEWB student helps conduct water filter training.

Kobriti residents learn to use the new water filters.

The ceramic water filters, painted with amalgamated silver for disinfection, dry in the sun.