

PRINCIPIA PURPOSE

SUMMER '17



EXPLORING SCIENCE: ECLIPSES, ORCHARDS, EXOPLANETS

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Marshall Ingwersen

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Meet a Few of This
Year's Graduates

Know Someone Who Should Visit Principia?

The best way for prospective students and their parents to get a feel for Principia is to visit—explore campus, sit in on classes, meet students, and make themselves at home. In many cases, we'll even cover most of the airfare!



Middle and Upper School Visiting Weekends

Fall 2017

- September 23–25
- October 28–30
- November 11–13

Adriane M. Fredrikson
School Director of Admissions
314.514.3130



College Visiting Weekends

Fall 2017

- October 12–15
- October 26–29
- November 9–12
- November 30–December 3

Tami Gavaletz
College Director of Admissions
618. 374.5187

Contact us online to let us know of any family or friends we should invite to visit.
Or give us a call—we'd love to chat!

www.principia.edu/contact-us

The mission of the *Principia Purpose* is to build community among alumni and friends by sharing news, updates, accomplishments, and insights related to Principia, its alumni, and former faculty and staff. The *Principia Purpose* is published twice a year.

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Dear Reader,

As I've read the *Purpose* over the years, the wide, global scope of Principia and Principians has always been apparent in its pages. Now that I have an insider's view of what students and alumni are doing, I see more vividly how remarkable this range of impacts and activities is—both on and off campus.



In this issue, you'll get a taste of Principia's impact on education from the cover story. It describes some of the one-of-a-kind science learning our students engage in from kindergarten through college. Not many elementary school children get to work with their local zoo monitoring turtles. Not many prep school students have the opportunity to plant a permaculture orchard or catch, measure, band, and release wild birds, contributing their findings to a national database. And not many undergraduates are able to work side-by-side with their physics professors doing cutting-edge research published by NASA. But that—and much more—is all happening here.

You'll also learn about two global studies classes' interactions with refugees and the work alumni are doing to support the new American community in St. Louis and Ohio (p. 38). And we share how another alum and her husband encourage incarcerated youth to chart a productive path forward (p. 34).

Also in this issue, meet Middle School teacher Samantha Dry and see the working sequence of cogs and levers her eighth graders built to illustrate the interconnectedness of key events during World War I (p. 18). And get to know alum artist Abigail Swartz, whose work was featured recently on the cover of *The New Yorker* (p. 14).

We introduce you to a few of this year's graduates as well and, as always, end on a high note with our Christian Science in Action column (p. 48)—written this time by College President Dr. Jonathan Palmer.

This issue gives just a glimpse of what's happening here, but it's packed with news, achievements, and insights.

A handwritten signature in dark ink, appearing to read "Marshall Ingwerson". The signature is fluid and cursive, with a long, sweeping underline.

Marshall Ingwerson (C'79)
Chief Executive

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Congratulations on the “Policing with Principle” story! The alumni aspect was crucial to the story, but did not render it parochial. The piece was both relevant to alum readers (who are pleased to see Prin precepts in action) and also relevant to the way they live in society. Thanks for it!

Fred Hunter (US’51, C’55)

Just wanted to let you know that you do a very superlative job putting out the *Purpose*. For a very small school, the quality and scope are truly amazing. Nice job giving us meaningful articles and keeping the home fires lit for us alums. With so many of us having left CS, I appreciate your secular approach as well. Only gripe: so Very Few items on classmates in *Connections* [the alumni news insert]. I guess you’re dependent on others sending them in, but maybe you could find a way to coax more submissions somehow.

Rick Childs (C’62)

You are rock stars! This latest issue knocked it out of the park, both in terms of design and substantive content. Reading it makes me proud to be a Principian. Just had to write and thank you for your outstanding work!

Heather Vogel Frederick (C’79)

I am hoping that you could pass along to Armin Sethna, Trudy Palmer, Omba Ngoma, Mike Bond, Abi Carper, John Cooper, Eli Morris, and Taylor Harper that “Policing with Principle” was the most impactful read in all my years receiving the *Purpose*.

Thank you for writing it, thank you for interviewing law enforcement officers, thank you for giving truthful answers, thank you for being bold with your word, thank you for serving with integrity and faith.

Please note: I have been reading the *Purpose* for over 25 years.

Respectfully,
Felicia Woodall (US’89)

To submit your letters to the *Purpose*, e-mail purpose@principia.edu or write to Principia Purpose, 13201 Clayton Road, St. Louis, MO 63131.



Winter ’17 Photo Caption Contest Winner

“Trust me, I trim my dog’s hair all the time and he’s never complained.”

— Carol (Fritz, C’82) Tisdell



For the next contest, submit your caption for the photo above to purpose@principia.edu by October 1, 2017. The winner will be announced in the Winter ’18 issue.

Upper Schoolers Demonstrate Entrepreneurial Spirit

The introduction of an Entrepreneurship class for freshmen this academic year has tapped a deep well of innovation at the Upper School. Each semester, students have set up both for-profit and social enterprises, developing a range of businesses as well as life skills. This spring, class businesses were showcased on www.BizNizZone.com, a website created by one of the freshman entrepreneurs. The site describes the



various products and services offered by the class—including hand-crafted items, apparel, community services, and a community-focused social enterprise—and it includes links to the sites of the individual businesses.

In mid-May, the students participated in a *Shark Tank*-style

presentation, where local entrepreneurs gave constructive feedback—and the audience and “sharks” voted on the top three businesses. Also in May, two seniors working on an independent study and Senior Project in entrepreneurship organized the PrinBiz Open Market in Carey Field House. Their aim is to establish this as a regular West County event that allows student-run businesses from all schools, local vendors, and home-based entrepreneurs to market to consumers.

Teachers Present at Professional Conferences

Over the past year, School faculty have stepped up to the challenge put to them last August—to share the good work they’re doing and contribute to peer learning by publishing and presenting. More than a dozen teachers have presented at conferences, including the following:

- The February 2017 Midwest Educational Technology Conference
- The annual conference of the National Association of Independent Schools (NAIS) in March 2017
- The MICDS Summit for Transformative Learning in June

In addition, an article by Dean of Innovation and Academics Peter Dry was published in the spring 2017 online issue of *Independent Teacher*. And Upper School science teacher Lynne Scott (and her students) had blogs published through the Teton Science Schools.

Upper and Lower School Collaboration Sparkles

Student collaboration across levels resulted in witty and wonderful theatre during March! Lower School actors (grades 4 and 5) sparkled under the talented direction of Upper School seniors, who adapted chapters from Louis Achar’s *Sideways Stories from Wayside School* for the stage and oversaw rehearsals and props. With help from teacher Liesl Ehmke (C’89), the talented troupe also produced two short films based on the opening and final chapters of the book—and starring all fourth and fifth graders.

Fourth Grade “Wax Museum” Brings History to Life

For their social studies unit on Missouri, fourth graders chose famous historical figures to study. By applying an interdisciplinary lens to their research, they learned about a wide range of issues such as politics (President Truman), ragtime music (Scott Joplin), Native American culture (Sacred Sun), aviation (Charles Lindbergh), and even baseball (Yogi Berra). Immersing themselves in the lives of these individuals, the students created their very own wax museum in the Lower School Gym, where—at the tap of a button—the “wax figures” would spring to life and share a well-researched (and well-rehearsed) speech about themselves. Delighted visitors were educated and entertained.

Middle School Evenings of Excellence Excel

One special evening each semester, parents and visitors love participating in a whirlwind tour of the in-depth, high-quality learning taking place in Middle School. At these Evenings of Excellence, every wall, window, and table—and even the ceiling!—in the Middle School Center showcases examples of student work. After an exhibition walk-through of the various stations—science, social studies, language arts, mathematics, integrated studies, Spanish—students make presentations onstage, including slides, videos, or poetry.

These evenings are a wonderful glimpse into how students are developing their writing, reasoning, scientific, quantitative, creative, and collaborative skills.



Middle Schoolers Learn On-Site

Middle School Trip Week in April certainly put the experience into “experiential” education! During a full week of travel and on-site learning, students had opportunities to engage in hands-on discovery about history, science, the arts, language, and cross-cultural communication. The curriculum-based adventures took our students to the following locations:

- The Revolutionary War battlefields of Lexington, Concord, and Fort Ticonderoga (grade 6)
- The shores of Ellis Island and the theatres of New York City (grade 7)
- The mountains, forests, and villages of Costa Rica (grade 8)



And They're Off!

The Class of 2017 received a rousing sendoff on June 3. Audience applause was loud and heartfelt—for the 66 students and for speaker Dean Emeritus Bill Simon (US'54) who received two standing ovations. Simon's message reinforced the opening readings: “Beloved children, the world has need of you, . . . it needs your innocence, unselfishness, faithful affection, uncontaminated lives” (*Miscellaneous Writings 1883–1896*, p. 110). View Graduation at www.principiaschool.org/graduation2017.



Cinderella Brings Fairly-Tale Magic to Ridgway

This spring, Upper School presented a Rodgers and Hammerstein classic—with a modern twist. Based on the 2013 Broadway version, which includes decidedly 21st-century banter, this *Cinderella* offered a witty take on the traditional love story. The cast of more than 25 students, production crew of more than 30 students and adults, and the 20+ member pit orchestra involved participants from first-time freshmen through seasoned seniors. In addition to the regular evening performances, the troupe held a special Friday matinee for local elementary and middle school students.

Best Colleges in Illinois Ranking

In its 2017 rankings, BestColleges.com placed Principia high on its list of Illinois colleges—#5 to be exact. That puts the College in good company with much larger schools, including the University of Chicago and Northwestern University. The ranking process took into consideration acceptance, retention, graduation and enrollment rates, all of which are key indicators of a school's success in providing a rich learning experience and preparing students for rewarding careers.



Godspell on Stage

The Theatre and Dance Department, supported by the Music Department, presented *Godspell* in March, with over 30 students from more than a dozen majors involved on stage and behind the scenes. Juniors Nik Peschke, who played Jesus, and ensemble member Robby Butler were selected to audition for the Irene Ryan Scholarship, a significant national award.

Tennis Sweeps Championships

Both the men's and women's tennis teams won the St. Louis Intercollegiate Athletic Conference (SLIAC) Championships—the second straight year for the women and fourth straight year for the men. Sophomores Paige Cooley and Julian Kitchingman were named Women's and Men's Players of the Year, respectively, while freshman Greg Sovie was Newcomer of the Year. Rusty Jones, the men's Head Coach, won SLIAC Coach of the Year.

Dr. Brian Roberts Wins Teaching Award

This year's recipient of the Horace Edwin Harper Jr. and Evelyn Wright Harper Award for Teaching Excellence is Dr. Brian Roberts (C'88). Known for his project-centered learning initiatives, Roberts teaches political science with a focus on American government and politics. During presidential election years, his students conduct exit polls in nearby communities and provide live radio coverage of election results. In January 2016, he led a field program to Iowa and New Hampshire, where students studied the presidential caucuses and primaries. This summer, Roberts will participate in a selective American history seminar, "The 20th-Century Presidency," led by Bancroft Prize-winning author and historian Dr. Robert Dallek.

The 68th Annual Public Affairs Conference

This year's Public Affairs Conference (PAC), "Media as a Tool for Social Change," urged attendees to evaluate the prevalence of media and consider ways to make positive social change through thoughtful use of technology. Eight speakers addressed the topic, including Shiza Shahid, co-founder of NOW Ventures and the Malala Fund; Kevin Adler, founder and CEO of Miracle Messages; and Christa Case Bryant (C'03), Politics Editor at *The Christian Science Monitor*, among others.

Celebrating 2017 Graduates

A warm spring day set the scene for this year's College Commencement on May 13. Speaker Nancy Challenger (C'81) encouraged graduates to live a life of purpose, sharing insight from a successful business career grounded in her spiritual understanding and conviction that God is her employer. Afterward, friends and family gathered on the Chapel Green to celebrate the 117 members of the Class of 2017. Meet three of the graduates on pages 46 and 47, and view Commencement at www.principiacollege.edu/commencement2017.



Two Featured Speakers



Anthony Menendez (left), this year's Ernie and Lucha Vogel Moral Courage Lecturer, shared the story of his discovery of questionable accounting practices at Halliburton, a global energy giant, and his realization that its executives were knowingly violating Securities and Exchange Commission rules. Urging students to consider ethics in business and the importance of integrity in all aspects of life, he encouraged them to choose wisely in making career decisions.

Principia also welcomed Bill Siemering as an Annenberg Scholar this spring. One of the most significant innovators in American radio, Siemering wrote the original mission for National Public Radio in 1970 and was its first Director of Programming. He also helped develop *All Things Considered* and brought Terry Gross and *Fresh Air* from a local to a national audience.

New Book by Religion Professor

In March, Associate Professor of Religion Dr. Gretchen Starr-LeBeau's most recent book, *Judging Faith, Punishing Sin: Inquisitions and Consistories in the Early Modern World*, was published by Cambridge University Press. Co-edited with Dr. Charles H. Parker from Saint Louis University, it explores religious reform and social discipline through a comparative treatment of Catholic inquisitions and Calvinist consistories.



Entrepreneurship Center Hosts Innovation Challenge

Principia's newest institute—the Center for Entrepreneurship and Innovation—hosted its second *Shark Tank*-style Innovation Challenge in April. Nine teams pitched business ideas before a panel of judges, who awarded prizes to the top three teams. The winning projects included a mobile app to help high schoolers organize college applications and customized water bottles made from recycled materials. Earlier in the semester, a series of workshops helped students consider branding, website designs, and legal protections for a new venture.

Awards and Achievements

SCHOOL

Sustainability Class Wins Award

A food-waste reduction campaign implemented by the Upper School Sustainability class won 2nd place in the statewide Green Schools Quest, run by the Missouri chapter of the U.S. Green Building Council. Peer education, social media updates, and inter-House competition helped reduce Dining Room waste by 21 lbs. per week.

Artists Earn Accolades

Six seniors were recognized at metro, regional, and national levels for their creativity and artistic skill:

- **Storey Pearson's** digital work won a Gold Key in the 2017 Scholastic Art & Writing Awards for Missouri.
- **Marlaina Mathisen's** ceramic *View from Home* was selected from 1,413 entries for this year's National K–12 Ceramics Exhibition in Portland, Oregon.



Gold Key artwork by Storey Pearson (US'17)

- **Gastuvus Balukake, Jessica Bayne, Corey Carter, and Stanton Ott** had work selected for the juried 2017 Young Artists' Showcase.

Students Attain Eagle Scout Rank

Principia Boy Scout Troop 554 members **Noah Fredrickson** (US'18), **James Masten** (US'17), and **John Woodall** (US'17) earned their Eagle Scout badges this academic year. Noah helped construct outdoor game equipment for CedarS Camps; James refurbished a gazebo at the School; and John renovated the tool room for the School's E-STEAM makerspace.

Playwrights Win Contest

Three seniors won awards in The Tesseract Theatre Company's first national high school playwriting competition: **Julia Schuck**, 1st place; **Grace Stringer**, 3rd place; **Zoë Wade**, honorable mention. Tesseract Artistic Director Taylor Gruenloh also recognized Upper School theatre teacher Liesl Ehmke (C'89) for her work with the students. Tesseract will produce these plays in the fall.

Student-Athletes Excel at State in Several Sports

- **Corey Carter** (US'17) won 1st place in the boys' 100 m and 2nd in the 200 m. His 100 m time set a School record.
- **Josh Aleman** (US'17), **Bramwell Havi** (US'20), **Boone Steele** (US'18), and **Nathan Babcock** (US'19) took 3rd place in the 4 x 800 m relay.
- **Siwa Asinga** (US'19) came in 4th in the girls' 100 m and 8th in the 400 m.



State champion Corey Carter (US'17)

- **Alphince Baraza** (US'18) and **Nick Saucedo** (US'18) joined **Nathan and Bramwell** in the boys' 4 x 400 m to win 8th place.
- **Girls' varsity soccer** won 3rd place with a 3–0 victory over Fatima High.
- **Caleb Kelly** (US'17) won 3rd place in wrestling in the 120-pound class.

COLLEGE

Model Illinois Team Shines

At the March Model Illinois Moot Court competition, several students (all juniors) won honors: **Connor Fiddler** and **Emelie Fredrikson** claimed first place as Best Team, while **Maddie Demaree** and **Sean O'Hagan** took third place in the same category. Emelie won Best Attorney and **Gabriella Burns** earned Best First-Year Attorney. In addition, the team's coach, **John Williams** (C'76), received the Lifetime Achievement award for creating and shepherding the state Moot Court competition for nearly three decades.

Rugby Makes Top 10 in the Nation in DII 7s Competition

In May, the Thunder Chickens, Principia's rugby team, competed in the men's DII USA Rugby College 7s National Championship. They are the first team to earn a spot in the championship four years in a row. The team placed 10th this year.

Track Athletes Compete at Nationals

At the NCAA DIII Outdoor Track and Field Championships, held in May in Geneva, Ohio, senior **Shane Witters-Hicks** placed 7th in the 3,000-meter steeplechase, earning All-American honors. In addition, junior **Zach Matthiesen** finished 14th in the 1,500-meter race.

Samuel Sugarman Wins 4-H Award

In January, the National 4-H Council announced that freshman **Samuel Sugarman** won the 2017 4-H Youth in Action Award for Agriculture. He is one of only four Youth in Action Pillar winners nationwide. Last year,



National 4-H Award winner Samuel Sugarman
Photo courtesy of Elizabeth Sugarman

Sugarman earned a Congressional Gold Medal for Service for his work in agricultural education.

Junior Receives Chemistry Award

A biology major with minors in chemistry and sustainability, **Natasha Telschow** won an Outstanding Junior Chemistry Student Award from the American Chemical Society.

Theatre Professor Receives State Award

John O'Hagan, Associate Professor of Theatre, was awarded the Faculty Service Award for the state of Illinois at the Region III Kennedy Center American College Theatre Festival. O'Hagan is also the College's Teacher of the Year, determined by student vote.

ALUMNI

Jennifer (Cassel, US'73) McCurdy
Wendy (Cassel, US'75) Mulhern
Sisters Wendy Mulhern and Jennifer McCurdy have created *Vessels: A Conversation in Porcelain and Poetry*, released by Schiffer Publishing. The book features color photographs of works by McCurdy, an acclaimed ceramicist, accompanied by lyrical poems written by Mulhern. Both artists' careers began with explorations made during their respective Upper School May Projects.

Paul Goodsell (C'81)

A longtime news reporter and assignment editor at the *Omaha World-Herald*, Paul Goodsell was recently named Managing Editor of the paper.

Christina Day (US'03, C'07)

A leading scorer in Principia College women's soccer, Christina Day was recently inducted into the St. Louis Intercollegiate Athletic Conference (SLIAC) Hall of Fame. Day tallied 83 goals over her four years and was ranked 15th in NCAA Division III in goals and 22nd in total points. She was also named SLIAC Newcomer of the Year in 2003 and Player of the Year in 2006.

Ricky Seaman (C'10)

The all-time leading Principia College men's soccer scorer, Ricky Seaman was inducted recently into the SLIAC Hall of Fame. While at the College, Seaman was named an All-Midwest Region player three times and an All-Conference player four times. With his

help, the team advanced to the NCAA Tournament in 2007 and 2009.

Kate Wells (US'06, C'10)

A reporter at Michigan Public Radio since 2012, Kate Wells has won numerous awards. Most recently, the Detroit Chapter of the Society of Professional Journalists named her Young Journalist of the Year.

Christian Hagenlocher (US'07, C'11)

Traveling across North America in 2016, Christian Hagenlocher became the youngest person to see over 700 species of birds in a calendar year for the American Birding Association's Big Year competition. With 752 birds recorded, Hagenlocher was one of four birders to break the 2013 record of 749 birds.

Extending the Blessings of a Principia Experience

by Armin Sethna



With a demanding job as Communications Manager for the Motel 6 corporation, helping parent a toddler, and serving his branch church, weekends are just as busy as the work week for David Bates (C'07).

But he still makes time to support Principia as a volunteer in multiple capacities—as an Alumni Association Board member, class agent, and mentor for CareerConnect (Principia's online career network). And he and his wife, Holly, help organize and host local Acorn program gatherings for parents with preschool-age children. Bates is motivated to do all this—and to be a consistent annual donor as well—because he sees Principia as “unique,” “transformational,” and “exceptional.”

“I loved my time at Principia, and I want to do what I can to help make Prin known to others,” Bates says. “That’s why I started getting involved in Prin Clubs.” In fact, even as a young child, Bates recalls being impressed by the Principia student ambassadors he met through a local Principia Club event in his hometown. That simple encounter planted the seed that led him to attend the College years later.

“My experiences at Principia College continue to be invaluable,” he says. “It’s where I learned to think and analyze, get involved and be productive and juggle activities—doing things I never thought I would do—all the while make lasting friendships, traveling the world on study abroads, and expanding

my horizons.” Bates adds that he obtained broad exposure as a mass communication major and is “using each of those skills in my work now.”

Even more important to him, Bates shares, were the many ways he grew while at Principia—in character, in “making Christian Science more practical” and applicable to daily life, and in developing a love of learning.

For Bates, supporting Principia is about giving back to the institution—and giving others the opportunity to benefit from Principia as he has. “There are so many things to do, and many don’t require too much of a time commitment,” he says encouragingly. “Even just a little effort will go a long way to enrich someone else’s life by helping them know what they could get out of a Principia experience.”



If you'd like to get involved, visit www.principiaalumni.org/volunteer.

COME HOME FOR A SPECIAL HOMECOMING WEEKEND

OCTOBER 13–15, 2017

**WE'RE CELEBRATING THE GRAND OPENING
OF THE FULLY RENOVATED VONEY ART
CENTER AT THIS YEAR'S HOMECOMING!**

**Calling all art majors—don't miss the special reception in your
honor on Saturday night!**

Catch up with your fellow art majors and see the gorgeous
upgrades to the studios where you spent hours with pen, paint
brush, or spatula in hand.



WEEKEND HIGHLIGHTS

Voney Art Center Opening
Reception

Voney Art Center Reception
for Art Alumni

Alumni games

- Baseball
- Cross country
- Rugby
- Soccer
- Swimming and diving
- Volleyball

Live Band on the Pub Patio

LEARN MORE AND RSVP:
www.principiaalumni.org/homecoming

January 1969

by Brad Newsham (US'68, C'72)

Richard Nixon was in the White House. The military draft and the Vietnam War were on everyone's mind. In those days a Christian Science Reading Room was located in the basement of the College student center, and one morning I was there, reading the Bible Lesson, when I had an experience that has stuck with me ever since.

On the morning of my brush with grace, a book is open in my lap and I am reading, when I notice that I am surrounded by an *awareness*, a gentle and overpowering consciousness of profound peace. I have read accounts of people who report serenity and calmness during near-death experiences; I regard my interlude in the Reading Room as a near-Life experience. It eludes description. Right now, nearly 50 years later, the word *clear* comes to mind. I remember a stand-alone sense of total well-being. Fear does not exist. Nor can a single problem even be imagined. I am saturated in an ironclad knowledge: *Each and every one of those things I constantly worry about? Absolutely meaningless. Powerless.* In the past I have suspected as much, but in the Reading Room, effortlessly and without thought, I simply *know*.

This sudden awareness is connected to nothing that I can identify. I have not prayed for it, have not issued it some subtle invitation. There is no trail of breadcrumbs to trace back to a source. It has arrived fully formed,



Photo by David Kidd

unprovoked, preceded by nothing. More precisely, it has not actually *arrived* at all; instead, I unexpectedly awaken directly into the middle of it, innocent, engulfed, and buoyed by a pillowy support that seems as though it always has been, and always will be, right here, surrounding me.

Two other students are also in the Reading Room with me. I look up from my book expecting to see on their faces the same awestruck smile that I feel on mine. It would not surprise me to see them floating, hovering in the air above their overstuffed reading chairs, or perhaps leaping up and bursting into dance. This *thing* I am experiencing is so big, so powerful, that the entire human race will be feeling it. It is far

too momentous to have visited only me. Life on Earth will never again be the same—from here on out it's going to be just one big, happy family throwing a blowout party. The very notion of religion—any religion—seems small, inconsequential, laughable.

I close my book. I stand. I walk from the silent room. I ascend the stairs toward the student center lobby. I comprehend newly the gift of my miraculous body: feet, legs, knees, hips, climbing. The stairs themselves, the entire building, the entire campus: further miracles. I stand in the miraculous lobby, my back to a miraculous brick wall, and watch the parade of miraculous students and faculty and staff who, by some reverse miracle, all

seem oblivious, unconscious. No one notices me and my uncontrollable grin standing there off to the side.

Morning classes have just ended. The dining room is opening for lunch. Boy-men dart along the edges of the crowd, gaming the lineup. Several people are opening their mailboxes,

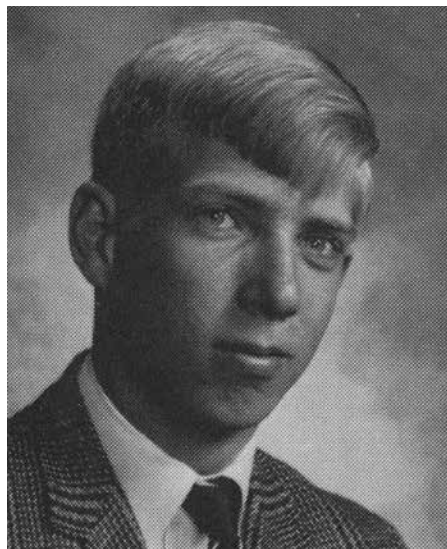
The shimmery, skin-popping, omniscient aspects of this awareness escort me throughout the rest of the day. I skip my afternoon classes and instead sit in my dorm room, alone, marveling: *All of my young life's considerable worry? Worthless. Wasted energy. There is nothing to worry about.* . . . Later I walk in the woods above the Mississippi River,

On each of the following three mornings, I awake into an electric afterburn. The air itself seems tinted with color—gold mostly, with flecks of burnt orange. For some 72 hours of clock time, I hang out with my Real Self. And then around noon of the fourth day, it's all over. And I am again Brad Newsham. Seventeen. Clueless college freshman. ■

I regard my interlude in the Reading Room as a near-Life experience.

hopeful. I overhear snatches of conversation, mostly complaints and negative judgments. A few outliers scan the crowd, anxious to spot someone to eat with. Fear: I see it latched onto every face, undisguised by the happy-masks. Uncertainty: people are twisted up, expending extraordinary energy trying to hide or override this aspect of life. I feel that already in my young life I have earned a PhD in Fear and Uncertainty, but right now the two beasts are alien, irrelevant, entirely false. The things these passersby are worrying about, the same things that I traditionally worry about—grades, finances, the draft, the war, Nixon, my parents, lining up a weekend date—these are unworthy, unnecessary preoccupations. This moment, however . . . This moment is spectacular. And eternal. *Not one of our worries matters in the least.*

conversing wordlessly with bare-limbed trees and watching barges the size of football fields roll downriver toward New Orleans.



Brad Newsham his freshman year at Principia College

Brad Newsham is the author of three books. This story is adapted from his most recent book, Free Ride: Mercy and Madness on the Streets of God's Favorite City, which chronicles the year 2010 as seen from behind the wheel of his San Francisco taxi, with a memoir of his life woven through it.

What's your Principia story?

To submit a story (up to 800 words) about your Principia experience, e-mail us at purpose@principia.edu. Selected submissions will be edited with the author's permission.



OFF TO A ROARING START

Abigail Gray Swartz: Creating Art That's Engaged and Engaging

by Armin Sethna

The February 6, 2017, cover of *The New Yorker* magazine epitomizes just how effectively one Principia alum has managed to combine both art and activism in forging a career that is successful and satisfying—and complements her personal and family life.

With her thoroughly 21st-century take on the classic World War II image of Rosie the Riveter, Abigail Gray Swartz (US'00, C'04) depicts the power and diversity of the women's movement today. Judging from the widespread media coverage of her *New Yorker* cover—from *The Huffington Post*, the *Daily Mail* (UK), the Canadian Broadcasting

Corporation, and dozens of blogs—Swartz's portrayal spoke meaningfully to a diverse, global community.

The Rosie the Riveter of the 1940s—urging women to support the U.S. government's war effort and the men on the frontlines—was a white woman who typically wore a polka-dot headscarf and blue factory-floor overalls. Swartz's Rosie is a woman of color who sports a pink knitted hat with pussycat ears—the galvanizing symbol of the many women's marches held around the world on the Saturday after President Donald Trump's inauguration.

Getting Started

In some ways, achieving her longtime dream of being featured on the cover of *The New Yorker*—a dream shared, no doubt, by many illustrators!—was the work of only a few days. (See sidebar.)

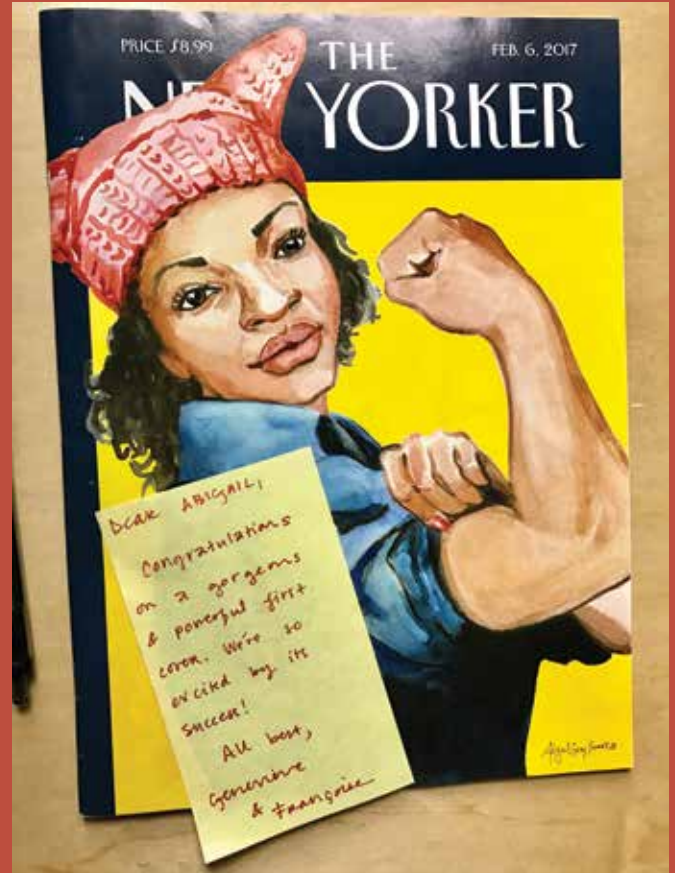
But getting to this point—where Swartz can create art, run a brisk online business, and spend quality time with her family—has been the work of years.

Even as a kindergartner, Swartz was always painting, drawing, sketching . . . or all of the above! Her mother, grandmother, and great-grandmother were all practicing artists, and an inspiration to young Abigail.

From her teens onward, Swartz engaged with individuals and issues beyond her immediate circle. As an Upper School boarder, she tutored newly arrived immigrants in English during study hall; at the College, she supported an Amnesty International student chapter and other social causes.

Since graduating with a BA in studio art, Swartz has pursued her broader interests and developed her art skills. She obtained an MFA from the Pennsylvania Academy of the Fine Arts in 2008. She traversed the country (from the East Coast to Alaska and back again) and worked in retail and as a freelance illustrator. Hired for a three-month residency to illustrate the *Motherlode* blog at *The New York Times*, Swartz had to meet very tight deadlines, pinpointing key concepts in each writer's message and creating art to illustrate them.

"I really attribute being able to work like this to my art education at Principia," Swartz says. "There were so many assignments where we were encouraged to turn 'thoughts' into 'things'—which prepared me for conceptualizing ideas and turning them into images." Adding to that, Swartz says, "The many art history classes that I took from Colette Colletter [Professor Emerita of Art History] aided in teaching me how to use symbolism in art." More broadly, Swartz notes, liberal arts training "makes one very adaptable and flexible"—qualities she depends on. "As one who's making a living from art, I've seen that I have to diversify in my art career," she explains. >>



From Sketch to Cover in Four Days

Swartz summarizes the whirlwind of creative activity and communication leading up to her *New Yorker* cover:

- Monday—Ideas, sketching, a daub or two of paint; a quick e-mail proposal off to *The New Yorker*
- Tuesday—A response, followed by more e-mails, more sketches, more changes
- Wednesday—Putting the final touches and color to the finished work; couriering it to New York
- Thursday—A somewhat tense day of tracking the package, waiting, and wondering; finally, an after-dinner phone call saying, "It's a go!"

After Swartz burst into "happy tears," she and her family celebrated with friends that weekend. The following Monday, she was stunned to find hundreds of e-mails, posts, tweets, and comments—and many interview requests.

Focus on Young Alumni

“That’s why I have the portraits, the greeting cards, and also do editorial work,” she says, referring to the variety of product lines available through her online business, found at www.graydaystudio.com.



What Drives Her

“Using your voice and your privilege to help a community that needs advocates is very important,” says Swartz, who traces her deeper understanding of social issues to her Principia College First Year Experience courses, which exposed her to civil rights history and included a visit to the National Civil Rights Museum in Memphis, Tennessee. Currently, Swartz is part of a group that’s helping new Syrian refugees get settled in the Portland, Maine, area, and she supports occasional knitting and weaving circles that bring together refugee women and longtime residents. Swartz is also active in other civic groups, including those “mobilizing on a local level for the 2018 elections.”

As a mother of two young children, Swartz says she wants “to educate them at an early age about important issues and role models and leaders.” She was, in effect, “marching for them, too,” she says, when she joined marchers in Augusta, Maine, on January 21, wearing a pink hat and sporting a cloak emblazoned with the words “Equality for Womankind.”

Thinking of the younger generation more broadly, she believes it’s important for children to see and be familiar with a diversity of role models. “Although I received some pushback for

being a white woman painting a woman of color [for the *New Yorker* illustration], it just felt natural to me to paint diversity,” she says. In fact, as part of her online series of inspiring leaders and quotes, she’s created cards featuring former President Barack Obama and his wife Michelle, which are proving immensely popular. “Several schoolteachers have bought those for their classrooms,” she notes. Other cards in the set include Maya Angelou, Rosa Parks (left), Gloria Steinem, and Malala Yousafzai (below).


What’s Next

Since publication of the *New Yorker* cover and all the media coverage that ensued, Gray Day Studio’s sales have jumped; agents are getting back to Swartz about several manuscripts for children’s books that she had sent out earlier; and her husband, Cameron, is working with her part time to help manage the flow of orders, printing, and shipping.

“Having my ‘15 minutes of fame’ was fun,” she concedes. “But it was intense and definitely not sustainable!” She is eager to use her higher profile and recognition “in an appropriate and meaningful way,” including doing more public art and murals. Now that Swartz and her husband are settled and laying down roots in Maine, she would love to branch out, eventually hiring a full-time assistant and working toward obtaining an artist’s grant to build a separate, larger studio on their property.

In the meantime, Swartz is enjoying the opportunities and acknowledgements that are coming her way. When we spoke, she was preparing for a trip to Seattle to receive an honorary degree from Cornish College of the Arts. ■





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Iceland Adventure

August 20–28, 2018

Allure of Autumn: Montreal to New York

September 23–October 3, 2018

MEET SAMANTHA DRY

Global Thinker and Innovative Teacher



In this kinetic model depicting how 18 key events of World War I affected each other, eighth-grade Integrated Studies students creatively demonstrate their understanding of history, physics, and woodworking.

When Sam Dry joined the Middle School team in 2015, she introduced two classes to the curriculum—Integrated Studies and Digital Media. Having taught in schools around the world—England, Japan, Norway, Australia, and her native South Africa—Dry is a firm believer in developing students as global citizens. She and her husband Peter Dry, Principia School’s Dean of Innovation and Academics, have three children at the School.

Q. What led you to teaching?

A. For as long as I can remember, I have enjoyed helping people understand concepts. Back in year 12 [senior year of high school in South Africa], I

studied with a friend for finals, and I so enjoyed that feeling of helping to shift her understanding and become better at something she had struggled with before.

Q. What do you love about teaching?

A. Seeing growth in students, seeing them move closer to their best selves. I love being part of shaping students’ thinking and watching them discover new ideas.

Q. What do you find most challenging about teaching?

A. Time! You never feel you have quite finished or are completely ahead. There is always something to improve, some-

thing to tweak to ensure your lessons are the best they can be.

Q. Can you share a character education moment you’ve had at Principia that particularly stands out to you?

A. I had the opportunity to support a student’s recognition that she can be a strong person and rely on her own moral compass. This student had been involved in some inappropriate behavior involving her friends and, as a result, had developed an attitude toward others that was both morbid and unkind. Things came to a head one day, and we spent over an hour talking about the choices she had, what her true character was, and what it meant to rely on God for all decisions.



She started to respond by changing her demeanor and becoming more pleasant to be around. She has also shifted from being swayed by her peers to standing on her own and standing up for what she wants to do. As a result, she has made improvements in her choices. Seeing this change has been very gratifying.

Q. Can you tell us about a recent professional development activity you participated in?

A. Along with two other faculty members, I made a presentation at a recent annual conference for NAIS, the National Association of Independent Schools. It's always exciting to be able to share what we are doing at Principia.



Sam Dry works with a middle schooler in one of her Integrated Studies classes.

Dean of Innovation and Academics Peter Dry, English teacher Steve Henn, and I spoke about creating innovators within a college prep school context.

I particularly like this topic as, in the Middle School Integrated Studies classes, we are creating daily, and the students are experiencing what it means to fully engage in our globalized, 21st-century world.

For instance, our eighth graders took up the challenge of Cogs and Consequences, figuring out how to use gears, levers, and cogs to visually represent 18 key events of World War I. The students grappled with coming to an understanding of how gears work as well as how to show their

understanding of a particular event in history through this medium (see main photo).

Q. What work would you pursue if you weren't a teacher?

A. A personal assistant! I love being organized, and, in particular, I love problem solving. I have a very positive attitude and am always searching for ways to make a situation better. I don't believe anything is impossible, and if you want something to work, there is always a way to make it happen. As for whose personal assistant I'd like to be . . . I've never narrowed it down, but I can start interviewing next week!

Q. What would people be surprised to learn about you?

A. That I'm much lazier than I seem. I'm not afraid to sit on the couch and watch a few episodes in a row of whatever series I'm watching.

Q. If you had a day off and weren't allowed to use it to catch up on work, what would you do?

A. Go out for lunch, watch a movie, and spend time with my family.

Q. If you could give students only one piece of advice, what would it be?

A. Embrace everything! 📖





EXPLORING SCIENCE: ECLIPSES, ORCHARDS EXOPLANETS

The upcoming eclipse got us thinking about all the science study taking place on our campuses, so we're offering a peek here at the range of research projects underway at Principia—from the youngest grades through college. Though we have room to share only a handful of examples, we think you'll agree that our outdoor laboratories—*a.k.a.* campuses—are enriching student learning immeasurably through hands-on encounters with nature.

Of course, not all nature lends itself to hands-on study. Take the planets, for example. As you'll see on page 32, though, faculty expertise is narrowing the unknown by helping students visualize planets that are light-years away.

Enjoy exploring science on—and above—Principia's campuses! >>



PREPARE FOR THE ECLIPSE WITH DR. LAURANCE DOYLE



"Don't miss the upcoming eclipse! I've never heard anyone who saw an eclipse say, 'Gosh, I'm sorry I saw that.'" With that bit of humor, Dr. Laurance Doyle, an astrophysicist and self-described eclipse chaser, opened his Deans' Colloquium at the College in April. Dr. Doyle is also a research scientist at SETI Institute in California and the Director of Principia College's Institute for the Metaphysics of Physics.

To help Purpose readers better understand the upcoming August 21, 2017, solar eclipse, Dr. Doyle shares here some tips and explanations from his presentation.

ECLIPSE TERMS

The **Sun**, our home star, is a dwarf star. Its diameter is about 109 times the diameter of Earth. The Sun is about 80 billion hydrogen bombs exploding every second. The sunshine we're getting now was made inside the Sun a million years ago—that is, it took a million years to get to the surface.

Solar eclipses are probably the most dramatic, safe thing that nature does. A solar eclipse happens when the Moon goes in front of the Sun. The Moon is 1/400th the size of the Sun, and right now, even though it's moving out about an inch a year, the Moon happens to be 1/400th the distance between the Earth and Sun, so it fits

perfectly over the Sun. During a solar eclipse, you can see the **corona**—the Sun's atmosphere—which is made up of high-energy electrons.

Lunar eclipses—which occur when the Moon goes into Earth's shadow—are easier to see than solar eclipses. Solar eclipses occur more often than lunar ones, but it's rarer to see them because the shadow of the Moon is so small.

WHAT TO LOOK FOR

Before the eclipse takes place, you'll see little **crescents** on the ground. These are formed by the leaves, which act as little pinhole cameras.

1918

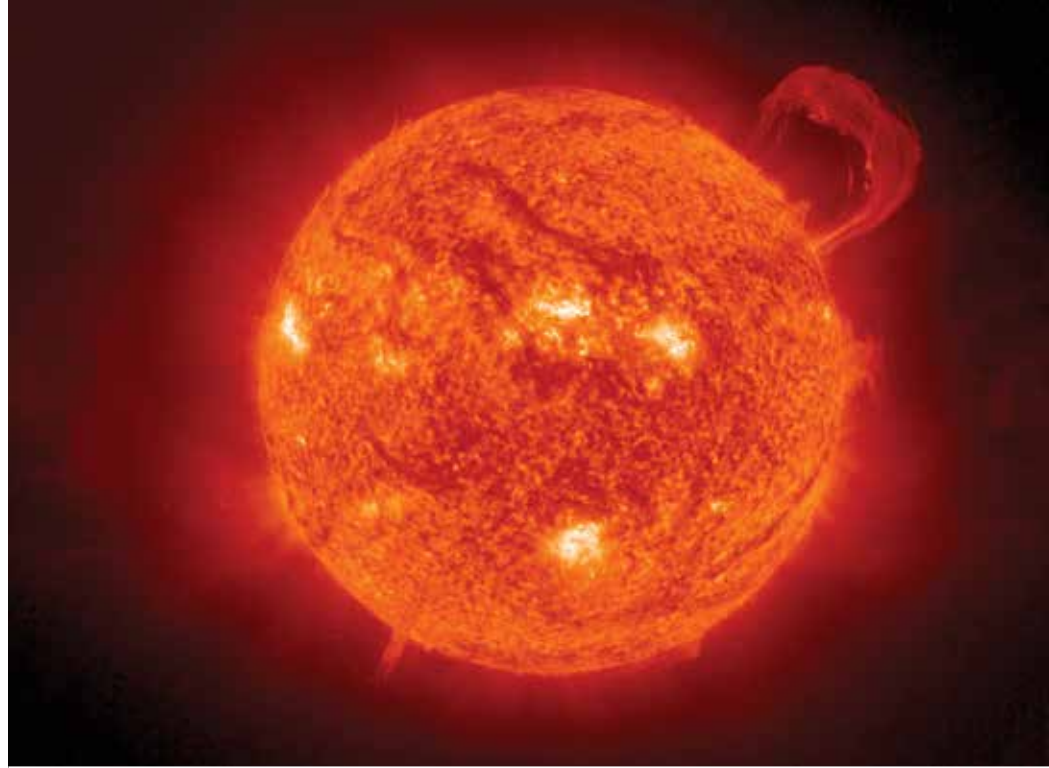
The last time a total solar eclipse went solely across the U.S. coast to coast

Discovered in 1836, **Bailey's Beads** appear around the Moon just before totality. They're caused by the Sun shining through the valleys of the Moon. Each of the beads is a valley—while the Moon is blocking the Sun, the valleys are letting through some of the sunshine.

Just before the Sun disappears, you can see something called the **Diamond Ring Effect**. (It's okay to take a picture of this as long as you're not looking through optics. Fortunately, most people have digital cameras now, so they can look at the LCD.)

First noted by Carl Goldschmidt in 1816, **shadow bands** occur when the Moon is starting to cover the Sun. These are fluttering shadows due to atmospheric scintillations (turbulent air cells) making the crescent Sun sparkle. The turbulent cells closest to you start the twinkling, and then as the Sun's crescent gets narrower and narrower, the cells from the jet stream cause the flickering to speed up. (No one has ever gotten a good picture of shadow bands because the contrast is only about 1 percent, and the scale is changing.)

Look for the **Moon's shadow** zooming at you, moving across the landscape at



38

The number of years since there was a total eclipse over any part of the continental U.S., much less across the entire country

Top: A handle-shaped solar prominence flies off the Sun's surface in this photo taken on 9/14/1999. Bottom: The Diamond Ring Effect occurs just as the Sun disappears behind the Moon.

about 1,000 miles an hour. You'll see it coming, and then suddenly it will get cold, and all the animals will go to sleep. Stars will come out, and there will be a gold glow around the horizon.

The **Emerald Tiara** looks like an emerald halo around the Moon as the Moon goes across the Sun. It's an atmospheric refraction phenomenon especially visible during eclipses near the horizon.

(Editor's Note: Dr. Doyle discovered the Emerald Tiara in 2002.)

During totality, you'll see **solar prominences**, twisted magnetic field lines on the Sun that cause curling hot plasma to fly off the surface. You'll also see **solar flares**, another phenomenon of the hotter interior of the Sun exploding on the surface. >>

The **solar chromosphere** is the thin surface layer of the Sun just over the photosphere. Basically, it's the skin of the Sun, and it flashes mostly green. You can see it in the flash spectrum taken during solar eclipses.

A QUICK REVIEW

When you're standing outside, eclipse glasses in hand, here's what to look for:

- Crescents under trees
- The shadow of the Moon coming toward you
- Shadow bands (Look for these on the ground.)
- Bailey's Beads*
- The Diamond Ring Effect*
- Prominences and flares*
- Totality (This is when you'll see the corona.)

11:41
a.m.

.....
The point (in central daylight time) when the Moon will first make "contact" with the Sun during the eclipse on August 21, 2017

Most important of all: don't miss the eclipse! Even if it's raining, it often clears when the temperature drops, so keep watching. And since this eclipse starts at 11:41 a.m. (CDT), the Sun-

Moon pair will be almost straight up in the sky during totality—a great position for viewing.

Finally, have fun—and don't forget to take the lens cap off your camera! Also, a warning: Twenty-five percent of the people who go to a solar eclipse spend the rest of their vacations chasing them. So don't be surprised if, like me, you wind up chasing eclipses across the globe! 🌍

**Be sure to wear your eclipse glasses if you're looking at these phenomena directly (i.e., not through the LCD of your digital camera). You can take the eclipse glasses off during totality, when the Moon is completely blocking the Sun.*

JOIN US FOR THE ECLIPSE!



WATCH THE ECLIPSE WITH ASTROPHYSICIST DR. LAURANCE DOYLE

WHEN: August 21, 2017

WHERE: Principia School campus in St. Louis

WHAT: The day will include a talk by Dr. Doyle, lunch, info booths created and hosted by Upper School students, and your own pair of Principia eclipse glasses!

For more information and to RSVP, visit www.principia.edu/eclipse.

CAN'T MAKE IT TO ST. LOUIS?

You can still order Principia eclipse glasses and view a talk by Dr. Doyle about the history of solar eclipses at www.principia.edu/eclipse.



ACROSS THE SCHOOL, OUTDOOR LEARNING TAKES ROOT—AND BLOSSOMS

by Armin Sethna

With 360 acres of rolling prairie, ponds, and woods at their disposal, Principia School students and teachers are blessed with multiple opportunities to take their learning outdoors, where nature provides occasion for all sorts of hands-on science study.

In line with the School's Experiential Education Master Plan, and under the guidance of Outdoor Learning Coordinator Doug Hoff and Sustainability Coordinator (and Upper School science teacher) Lynne Scott (C'01), large areas of campus have been reclaimed from invasive overgrowth—and newly claimed for learning in and from the natural environment.

The ongoing clearing process in the East Woods and around two campus ponds uncovered a hidden creek, which now means that students can research several ecosystems—savannah/prairie, woodland, pond, wetland, and stream—all within a 10-minute walk of each other. A natural next step has been to re-seed some areas with native plant species that attract and support locally adapted bird, animal, and insect life.

Now, other locations are being purposefully integrated into the curriculum at all levels. This move has gained added momentum from a multiyear, professional development partnership with the Teton Science Schools, which is supporting teachers in connecting people, nature, and place in learning across disciplines. As Head of School Travis Brantingham (US'94, C'98) explains, "The aim of making optimal educational use of our campus [is to] infuse Principia academics with relevance, immediacy, and multiple opportunities for hands-on, integrated learning."

In any given week, weather permitting, a visitor to campus is likely to find students from kindergarten through grade 12 involved in a place-based project in their outdoor classroom. Whether tracking box turtles, building a boat dock, banding birds, planting a permaculture orchard, or collecting data for FrogWatch USA, our students are developing crucial skills in scientific inquiry, communication, and problem-solving. (And they think getting messy in the great outdoors is pretty fun, too!)



A kindergartener journals in his special spot in Principia's East Woods.

Lower School WEEKLY WORK IN THE WOODS

After spending mornings immersed in literacy and math, our Lower School students love applying these skills during the rest of the school day. Kindergarten and first-grade students especially enjoy doing this during Adventure Ed, when they get to connect with the outdoors. Led by Outdoor Learning Coordinator Doug Hoff, they observe nature, record and share observations and data, and frame questions that guide further inquiry. >>



Seventh graders put the finishing touches on the boat dock they built to support the study of pond ecology.

Each child has a fold-up camping seat and a designated spot in the woods where he or she can note what happens to the trees and leaves over time—and wonder why and how these changes take place. “We encourage the children to draw, label, and note what they hear, smell, and see in their journals and to write down questions,” says first-grade teacher Rissa Arens (US’91, C’95). “Then, we use the questions they’ve generated to focus our thinking so that we can go back to the classroom and research more information.”

As part of Adventure Ed this past year, Lower School students contributed to several campus improvements, helping to build two outdoor classrooms (with tables and tree-stump stools), a foot-

bridge over a stream in Principia’s East Woods, five bee barns for the permaculture orchard, and a fire ring.

Middle School FROM POND PLAY— TO POND ECOLOGY

As soon as a path to the northwest ponds was cleared in the spring of 2016, our intrepid middle schoolers took the opportunity to test out wooden rowboats they had built during an exploratory class. They organized a race among administrators—and were thrilled when their Principal, Dr. Kimiko Ott, won. This spring, the three Houses rowed against each other, with Black House coming in first.

But Middle School’s use of this incredible natural resource hasn’t been just for fun and games. Throughout the 2016–2017 academic year, the seventh-grade Integrated Studies class used this area to create an outdoor classroom and curriculum that has enriched learning on multiple dimensions—and will serve as an educational resource for other students, too. Under the tutelage of teachers Sam Dry and Dan Sheets (US’81, C’85), the students have built a boat dock and learning stations, wooden boxes to attract wood ducks, and periscopes to help view underwater pond life.

While learning basic carpentry, they also strengthened skills in planning, accuracy, and teamwork. Working

indoors during the winter months, the students focused on intensive research and writing, preparing informational and teaching materials as well as guides to pond ecology. During May, students from Pamoja Prep Academy, a St. Louis public school, visited and spent several hours in this outdoor classroom, learning from the guides and instructional materials our students had prepared.

Upper School

DIGGING INTO SUSTAINABILITY CONCEPTS—LITERALLY

Students in the Upper School Sustainability class, taught by Scott, have taken the lead in establishing a permaculture orchard, thanks to funding from a generous alumni donor.

The orchard's swales (for natural water collection and drainage) and berms (for planting) carefully follow the contour of the slope. For several weeks in April, the class was hard at work outdoors, mixing compost into the soil in preparation for planting. Other Upper, Middle, and Lower School students joined in as volunteers. By mid-May, nearly 250 seedlings, saplings, and shrubs had been planted—including fruit trees such as apple, pear, persimmon, and paw-paw; herbs such as oregano, sage, and thyme; and junberry and honeyberry bushes.

"Permaculture systems are an excellent example of sustainability in action," says Scott. "While a typical orchard would normally have one species of tree in it, our orchard [has] multiple fruit tree species and incorporates com-

panion plants that provide necessary nutrient inputs into the soil as well as plants that are natural pest deterrents."

Multilevel

TURTLE MONITORING PROJECT TAKES OFF

With the numbers of wild, native box turtles declining in Missouri, the Box Turtle Project works to educate and inform both scientists and citizens about these creatures. A recently developed partnership with the Saint Louis Zoo's Box Turtle Project is expanding opportunities for School students to participate in and contribute to real-time, real-world scientific research.

In the spring of 2016, project scientists visited campus to help the Upper School Field and Natural History class locate and radio-tag two box turtles—Dory and Mack. They plan to tag a third turtle soon.

Our students record data on the turtles' movements—which indicates their feeding range—and examine the state

of their shell, skin, etc., for signs of stress or damage. Data from Principia's suburban environment adds to the richness of that obtained from the project's two other sites—one urban, one rural. This information is logged into a central database and then analyzed for patterns and possible action steps that might protect the state's box turtle population.

Over the summers, at least one student helps Upper School teacher Scott monitor the turtles, and the two attend meetings and workshops at the Saint Louis Zoo. Last summer, Washington University Professor and project leader Dr. Stephen Blake, his students, and educators from other school districts, visited campus to observe the project.

Multilevel

BIRD BANDING

Each spring, the School's woods, ponds, and fields burst into a constant chorus of bird song and avian activity! During this busy breeding and nesting season, dozens of local and migratory bird species make their homes on

>>



Photo by Steve Shedd

Students pitch in to prepare the permaculture plot for planting.



Photo by Lynne Scott (C'01)

Lower School students are all smiles after successfully radio-tracking one of the tagged turtles amid dense undergrowth.



Biology teacher Ross Furbush teaches a freshman the proper grip for handling birds during an early morning bird-banding session.

campus—providing a rich resource for on-site observation and learning.

In April 2017, the School established its own songbird banding station, joining a research network that stretches from Alaska to Argentina. Upper School biology teacher Ross Furbush (US'11)—a self-described “bird nerd”—is leading the initiative, with the support of the World Bird Sanctuary, located in nearby Valley Park, Missouri.

Under his enthusiastic guidance, students, teachers, and even interested parents have participated in bird identification and data collection at two locations on campus. Mist nets, made of thin, wispy thread, are set up at these sites to passively catch birds traveling across their plane. Only certified handlers are allowed to extract the birds from the nets and apply a small, lightweight, serially numbered aluminum band to their ankles. Furbush is approved to do both tasks, and a number of other Principia teachers are certified for bird extraction.

Students are allowed to participate in all other aspects of the data-collection process—species identification; scientific measurements (wing and tail length and body weight); and noting sex, age, and general health conditions—before releasing the bird.

The student-recorded data is shared with the World Bird Sanctuary and eventually submitted to the Central Banding Lab at the U.S. Geological Survey to help with tracking the health, movement, and migration of bird populations throughout the Americas. ■



STUDYING SCIENCE IN NATURE ON THE COLLEGE CAMPUS

by Heather Shotwell

Principia College's 2,600-acre campus is a boundless resource for scientific discovery, study, and research. Forests, ponds, and wetlands provide fertile outdoor classrooms. And a remarkable range of plant and animal species call the campus home, from a maple-dominated woodland to timber rattlesnakes. And then there are the skies. Just because Principia can't lay claim to the latter doesn't mean students can't study them on campus—the observatory is perfect for that. Here are just a few of the ways the College campus functions as a laboratory for science learning.

MAKING AND MARKETING MAPLE SYRUP

Principia's Sugarbush Management course provides experiential learning in a range of fields as students explore the historical, scientific, business, and conservation aspects of managing a maple-dominated woodland for syrup production.

"Students learn each step of the process," explains biology instructor John Lovseth. "They tap the trees at the start of the semester and return later to collect the sap. Next, they bring the sap to a rapid boil—a delicate process requiring constant attention. Then the sap sets in a refrigerator before it is poured into a large turkey cooker and returned to nearly boiling before bottling."

Along with the math and science components of the course—studying tree identification and anatomy and working through equations to predict how much syrup can be produced from the sap based on its sugar content—students put key business principles



College students tap maple trees as part of their Sugarbush Management course.

into practice. The class designs labels for their bottled syrup and decides how to market their products, which, depending on the year's yield, may include maple candy, cake pops, candied pecans, and ice cream, in addition to syrup. "Part of the course is learning to manage a small business and gain an understanding of the value-added process," Lovseth explains.

To say the course is hands-on would be an understatement. Students split and haul firewood, operate pumps, drill holes, drive ATVs and trucks, make fires, boil sap, measure trees, and use chainsaws. Needless to say, safety is a high priority. "No prior experience is required," Lovseth says, "but sound judgment and thoughtful prudence are fundamental to success in the class." >>



Dr. Scott Eckert (right) and sophomore Ian Armesy capture a timber rattlesnake for measuring and tagging.

No surprise, the class is popular. As one student put it, “It’s probably the sweetest class I have gotten to take here (pun intended)!”

You can watch a video about the Sugarbush Management class at news.principia.edu/maple.

TRACKING TIMBER RATTLESNAKES

The research program “Home Range and Habitat Use of the Threatened Timber Rattlesnake (*Crotalus horridus*) in the Principia College Forests” begins its third summer this year. Supported by the Principia Summer Research Assistantship Fund and other donor-funded programs, it is modeled after the National Science Foundation’s Research Experience for Undergraduates, with each student receiving a stipend while learning professional research methodology. Student researchers also have an opportunity to attend and even present their research

at conferences. For example, this summer the three students participating in this project will attend the Joint Meeting of Ichthyologists and Herpetologists, where the program’s research results from 2015 and 2016 will be presented.

Following careful training, the research team captures timber rattlesnakes near the entrances to their winter dens as they emerge each spring. Each snake is then measured, weighed, and sexed; a small blood sample is collected for DNA; and a microchip is embedded. Some snakes are also implanted with VHF radio transmitters by the veterinarians at the Saint Louis Zoo, which houses one of the finest reptile collections in the country. Students radio-track the rattlesnakes daily, a challenging task that involves hiking many miles through hilly terrain in all weather conditions. Such high-resolution tracking is vital in understanding how this species, threatened in Illinois, is using Midwestern forested habitats, which are also in decline. (Less than .01 percent of presettlement forests remain in Illinois.) The status of this flagship species serves as a strong indicator of the status of Illinois oak-hickory forests.

“The value of this program to both Principia biology students and to the faculty researchers cannot be over-emphasized,” says Dr. Scott Eckert (C’79), who oversees the project. “Students benefit tremendously as they are enabled to work at a very high level and are given considerable responsibility.”

The program is preparing students well for professional experiences in biology. Recent graduate Andrew Jesper (C’16)

will be the lead author presenting the team’s results this summer at the Ichthyologists and Herpetologists meeting. Also, largely due to the skills he learned on this project, sophomore Samson Myers was invited to do a summer internship at the Saint Louis Zoo.

DETECTING PLANETS FROM THE COLLEGE OBSERVATORY

Principia College’s observatory is a popular spot for student researchers. That was certainly true for Mark Evans (C’10), who detected an extrasolar planet his senior year.

Working with physics professor Dr. Jonathan Langton (US’97, C’01),



A student conducts research in the College’s observatory.

Evans used the “transit” method to detect CoRoT-2b—a planet much like Jupiter or Saturn. CoRoT-2b is 800 light-years from Earth and orbits its parent star every 1.7 days.

Over the course of a night, using a CCD (similar to a precision digital camera), Evans took hundreds of images of the star that CoRoT-2b orbits and its neighbors. Later, he and Langton used a computer to measure the brightness of the star in each picture and graphed its brightness over the course of the night. (When a planet moves in front of a star, the star’s level of brightness drops, so even though you can’t see the planet, you can tell it was there.)

This detection was a milestone for Principia’s observatory, proving that its telescope is powerful enough not just to detect but to discover planets beyond our solar system.

CAMPUS BEEKEEPERS

The Principia Beekeepers Association was started in fall 2013 as a student-led Sustainability Club project. Right from the start, it was all hands on deck as the group hosted a hive-building workshop, during which students built hive boxes by hand. Work continues today as students maintain a hive adjacent to the community garden behind the Science Center. Bees build out comb and store honey in quantities beyond their basic needs, and students harvest the excess.

The group maintains memberships in two professional societies—St. Clair Beekeepers Association in Illinois (one of the oldest beekeeping associations in



A student beekeeper inspects the hive.

the country, founded in 1917) and the Eastern Missouri Beekeepers Association. Students regularly attend workshops and meetings to keep current and educate new students interested in beekeeping.

TURNING ROOFS INTO GARDENS

After placing third in the fall 2016 Boundless Innovation Challenge (spon-

sored by the Principia College Center for Entrepreneurship and Innovation), junior Jeff Lewis used his award money to build a green roof atop a segment of Old Watson (part of the Science Center). Then, in the spring, he grew chemical-free baby kale and leaf lettuces for Dining Services.

Lewis cares deeply about sustainability, and although he’s testing his roof garden in Elsah, he’s especially interested in the concept’s potential in urban areas. “Across the country from Seattle to Washington, DC, green roofs are becoming the next big thing in cities,” Lewis says.

“Urban farms, in particular, bolster green space, build communities, combat the urban heat island effect, and provide fresh fruits and vegetables to urbanites and local restaurants,” Lewis continues. “The green roof at Principia College is just a small part of a greater movement to rethink the way we design our built environment so that it more closely mimics the natural landscape.” ■



Baby greens thrive in College junior Jeff Lewis’s garden on the roof of Old Watson.



EARLY EXPOSURE TO CUTTING-EDGE RESEARCH

by Heather Shotwell



Early in 2016, Dr. Jonathan Langton (US'97, C'01, pictured above), Assistant Professor of Physics, collaborated with research scientists at MIT and the University of California–Santa Cruz on a data analysis study and provided the visuals for a NASA-produced video simulation titled *The Wild Temperature Swings of an Exoplanet*. The objective was to illustrate what the exoplanet HD80606 b looks like when it swings close to its star, which occurs every 111 days. This planet has an eccentric orbit comparable to Halley's Comet, taking it very close to its star and then back out again. Tumultuous variations in weather develop on the exoplanet, and with a mass four times that of Jupiter, it is a gas giant.

For this research, Langton engaged three current students—senior Shane Witters-Hicks and sophomores Liam Foster and Konrad Peterson—as well as recent graduate Shea Cheatham (C'15), now a graduate student in Stanford University's Earth Systems Science Department. The group wrote code to

produce the animation with the goal of creating a simulation of planets that appear as realistic as possible. Achieving this required in-depth research about infrared light and the way planets are formed and evolve in our galaxy.

Then in the summer of 2016, Foster and Peterson worked with Langton as part of Principia College's Summer Research Assistantship Program. Often working into the night, the trio conducted research in scientific visualization and fluid dynamics. Their initial intention was to study the dynamics of polygonal vortices in a differentially rotating fluid, but they wound up investigating the effects of hyperviscosity on numerical simulations of fluids as well, ultimately producing realistic visualizations of extrasolar planets. "In less technical terms," Langton explains, "the students had to think through how fluids act, taking into account possible obstructions and other conditions. They spent hours running code while changing the parameters to create scenes that were scientifically accurate."

The Impact of On-Campus Research

The students' research with Langton propelled them to pursue scientific discoveries beyond Principia. "Computational modeling of oceanic and other environmental flows has been a focus of my graduate work thus far," says Cheatham. "Working closely with

a top-notch physicist would be rare, if not impossible, as an undergraduate at larger institutions. My senior capstone was an investigation of the dynamics behind polygonal vortices, and as a post-graduate intern at Principia, I worked on a computational hydrodynamic model."

For Witters-Hicks, the project with Langton led him to the National Renewable Energy Lab, where he was selected for a Research Experience for Undergraduates last summer. While there, he immersed himself in the world of renewable energy through collaboration with professionals and use of state-of-the-art technology and software. The experience helped him fine-tune plans for his senior capstone in physics and develop ideas about graduate study in the field. "I learned tons about the data visualization process, a very useful skill for physicists," Witters-Hicks says. "It's currently a niche field but is quickly growing as the potential for extracting meaning from increasingly large and complex data expands. I feel very fortunate to have learned the necessary skills as an undergrad."

Foster and Peterson plan senior capstone projects related to data visualization and have their sights on graduate study in related fields. Meanwhile, Langton's work continues this summer—he will focus on cloud modeling for a similar project related to planet formation, with Peterson assisting him. ■

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Sharing a Message of Hope

by Trudy Palmer

On a regular basis, Jan (Mosteller, C'82) and Gary Duke, CS, join a few dozen boys for an evening of education and fellowship. The occasion? Life Skills classes at Hogan Street Regional Youth Center in St. Louis, a maximum security juvenile detention center serving up to 35 young men from ages 14 to 21. Gary and Jan have been going to Hogan for over two years and have conducted 38 classes. The residents are not required to attend, but the sessions are always full.

"I think they feel the love," Jan says. "When we first met with them, we stood at the door to greet them and shake hands, and most wouldn't even look us in the eye. There was no rapport whatsoever." Now, she reports, each one greets them with enthusiastic hellos and high-fives. "Just that little bit of modeling made such a difference," she notes. (The Dukes credit Principia with this idea, having seen the value of their daughter learning to greet her preschool teacher with a handshake each morning.)

Following greetings, Gary begins each session playing a Christian Science hymn on his guitar. Three boys help lead the singing, each trying to get his third of the group to out-sing the others. Then Gary says the first words of a sentence on page 262 of *Science and Health with Key to the Scriptures*: "To begin rightly is . . ." And the boys fill in, "to end rightly." "That's right," Gary confirms. "And that's why we start with inspiration."

Topics for the classes vary widely, from leadership and business to the Sermon on the Mount. The Dukes spent four sessions on the latter, exploring the "universal principles of successful living" found in Jesus' sermon. (Life Skills classes are not supposed to be religious, so the Dukes keep their comments ecumenical.)

The Dukes also spent multiple sessions on finances, exploring the importance of saving and the benefits of compound interest. Another popular multi-session topic was relationships, with content based on Andy Stanley's *The New Rules for Love, Sex, and Dating*, a biblically based approach to companionship.



Jan (Mosteller, C'82) and Gary Duke hold the award they received for outstanding service from the Missouri Division of Youth Services.

After each presentation, the Dukes serve treats to the boys, walking through the group, letting them choose what they want from a tray. This is also a good time for Gary and Jan to chat individually with the boys and learn about their interests, which often leads to the Dukes bringing back a book for one or another of the boys. "Readers are leaders," Gary tells them often. And many have taken that to heart.

If one were to sum up the Duke's message in a word, it might be *hope*. As Jan explains, she and Gary tell the boys, "The universe is conspiring for your success! All you need to do is figure out what the rules are and play by them. If you do that, you're going to be happy and successful." ■

Occasionally, the Dukes bring guest speakers to class. Anyone interested in sharing expertise or life lessons with the boys—in person or via Skype—is welcome to contact Gary at gary@garydukes.com or Jan at jandukehomes@gmail.com.



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Q & A

WITH CHIEF EXECUTIVE MARSHALL INGWERSON

Principia's new Chief Executive, Marshall Ingwerson (C'79), former Editor of The Christian Science Monitor, had been on campus barely a month when we sat down with him to discuss his first impressions and plans for moving Principia forward. Below are highlights from our conversation.

Q. How do you see your career as a journalist transferring to an educational institution?

A. Both are information industries trying to communicate not just information but understanding. In that way, they're siblings. Parallels also exist in the people and culture. Journalists tend to be independent-minded, smart, and self-directed, and they have a certain disdain for authority. That's part of the culture of education as well. So, these are my people! This is the culture I grew up with professionally.

I also grew up in a family that was involved in education. My dad was a teacher and later an administrator in schools at various levels, and then for a long time he was a school superintendent. Our dinner-table conversations were often about running

schools—teachers, students, unions, school boards, parents. I grew up with a sense of the complicated human factors and many points of view involved in every decision—of the subtleties and the process required to ensure people were included in the decision-making process. Occasionally, I would go to the weekly school board meetings as well, where I heard community input and observed how the board dealt with the administrators. As a result, I grew up with respect for some of the nuances involved in education.

Q. What key differences do you notice between academia and journalism?

A. The biggest one is that there are so many different stakeholders in academia that you need to think carefully about process so that you can include

people in the right way. As a result, things tend to move slowly and involve a lot of voices—and that's a good thing.

By contrast, journalism moves very quickly, and there's almost no process. It's a "just do it" culture. Much of journalism turns around in a 24-hour cycle. You get the beginnings of an idea and talk it through with whomever you can reach. Within hours, you've refined that idea, and within a few more hours, you're polishing up the presentation for the public. It's a very quick turnaround. Also, it's a small-group or even individual enterprise. Academia and journalism are polar opposites in these ways.

Q. What early observations do you have about Principia?

A. The School and College are very high functioning and are thriving in



“On both campuses, faculty and staff are doing really good work . . . I’m not sure people fully appreciate how well Principia is doing.”

many ways. On both campuses, faculty and staff are doing really good work and providing a high-quality product for students. I’m not sure people fully appreciate how well Principia is doing.

Q. What has surprised you most in your first month here?

A. I knew the College well since I’m an alum and have had contact with the College over the years—through Monitor Night Live and various faculty members. But I didn’t know much about the School. From the time I walked in the door, I’ve been impressed with the great atmosphere. It feels sunny and open and forward-leaning. You get the sense that a lot of progress is being made. Data certainly supports that, but you can also just feel it.

Q. What will you be focusing on in the short term?

A. We have some key tasks to accomplish—in particular, our search for a

new College President is a priority. And once that person has been selected, the on-boarding will be critical. Right now, though, I’m primarily listening and learning. Hopefully, I’ll always be listening and learning—but now, especially, I’m trying to listen first and decide later.

Q. Have any clear three- to five-year goals emerged?

A. Our generous endowment has helped us a great deal, and it has helped Principia students by keeping costs down, but we’re drawing too heavily on it. That has to be addressed.

We also need to figure out if our models are right. Closely connected to that is the fact that the world is going to change in a lot of ways in the next three to five years, only some of which we can foresee. Technology is changing education in the same way it transformed journalism, and we have to figure out how Principia needs to

change in order to stay ahead of the transformation underway.

Any evolution that Principia continues to make, however, will be driven by how best to serve the Cause of Christian Science. One of the ways we’re approaching this is to ask ourselves, “What does the Cause of Christian Science most need from Principia now and over the next 10 years?”

Q. What would you most like readers to know about Principia?

A. Principia is an excellent school—at all levels—and it serves a surprisingly wide diversity of students. Also, people here are determined that it’s going to get ever better year by year. ■

With the surge in migration across borders worldwide, we thought readers would be interested in a recent opportunity College students had to learn about refugee resettlement and in two alums' experiences working with new Americans in St. Louis (page 39) and Ohio (page 40).

BREAKING BREAD AND BARRIERS

by Heather Shotwell

Principia College junior Cassie Steedman with a new American at the International Institute of St. Louis

Sometimes lunch is more than a way to fuel oneself through the afternoon. That's true at the International Institute of St. Louis (IISTL), which regularly holds lunches that bring long-standing community members and new Americans together. Dr. Sally Steindorf (US'93, C'97), Director of Principia College's Global Studies Program, describes these lunches as "a strategy toward a global solution—community building and integration of refugees and U.S. citizens to reduce 'fear of the other'—through interaction." She adds, "They're also a great way for Principia

College students to practice global citizenship without having to travel across the world to do it."

This spring, Steindorf's Global Citizenship class and her Strategies to Global Solutions class participated in one of these lunches. In fact, they prepared the lunch the night before in kitchens at the College, cooking for 100 people.

The next day, students delivered the food to IISTL and learned about the organization's wide-ranging offerings, in-

cluding English classes, cultural orientation, computer training, health screening, anti-human trafficking counseling, job development and placement, and free babysitting so that parents can attend sessions. New Americans holding advanced degrees receive additional support seeking employment to match their skills. And the Institute offers microlending to help individuals open bank accounts and start businesses, all with the goal of placing them on a road to self-sufficiency.

After the info session, it was time for lunch. Groups from other schools and organizations had contributed food as well, creating a striking display of culinary delights. Dispersed among the new Americans, students were intentional about hearing individual stories, pressing through language barriers, and learning more about the complexities of assimilating into a new culture. More than one student had to overcome some initial uneasiness. For freshman Hannah Hathaway, one of Mary Baker Eddy's remarks helped. "Prior to arriving at the International Institute," Hathaway explains, "I was really nervous that language would be a barrier, and at some points it was, but the quote, 'When the heart speaks, however simple the words, its language is always acceptable to those who have hearts,' became very evident and real for me" (*Miscellaneous Writings 1883–1896*, p. 262).

Students' takeaways from their interactions were overwhelmingly positive. Freshman Emily Staunton was very impressed by a Vietnamese man's earnest efforts to speak English. "He specifically asked me to correct his pronunciation and took his time in making sure he was saying words correctly," Emily recalls. "I admired his work ethic and determination. At the same time, my heart went out to him because I know his value is more than a language, and I wanted him to feel valued and successful. I know that people feel empowered when they get to share pieces of themselves, so I asked him how to say hello in Vietnamese."

Sophomore Matthew McLeod-Warrick broke through barriers, too. "I learned how really wrong the stereotypes about refugees are," he comments. "Refugees are just people. Meeting them really showed this to me. Yes, they come from different parts of the world and speak different languages, but they have the same enthusiasm, kindness, and affection for people. They're just humans who are trying to make a life for themselves." ■

An Alum's Career at IISTL



"As I work with our new American clients, I'm so grateful to be in a unique position to make a difference as they strive to build a better future for themselves and their families," says Lany (van L. Maas, US '75, C '79)

Clough, Immigration Specialist

at the International Institute of St. Louis. Now in her 26th year at the Institute, Clough helps legally-admitted refugees and immigrants navigate many aspects of resettlement—obtaining green cards, applying for U.S. citizenship, and petitioning for family members to join them, for example.

"I never anticipated that the world would come to me as much as it has here in the heart of the Midwest," Clough says. "Yet St. Louis has become much more international in recent decades." Clough began at the Institute as a volunteer but was soon invited to apply for a full-time position. "I certainly didn't expect to stay this long," she says. "But I've learned in Christian Science that thoughtful people can change the world. Some of the most poignant cases I've worked on have related to Special Immigrant Visas. These involve men from Iraq and Afghanistan who placed their lives on the line while serving as interpreters in their home countries."

Clough was also instrumental in connecting Principia with one of the many Bosnian refugees who wound up in St. Louis in the 1990s, following the ethnic conflict in Bosnia-Herzegovina. Learning that Principia School had an opening in Housekeeping, she referred Zufer Bander, a new arrival with great skills but no English. Bander was hired and is now Custodial Supervisor, overseeing many other Bosnians hired during subsequent years.

"Our new American clients are so grateful to be free and safe while they build new lives in peace," Clough says. "And I'm very grateful to be of service."

—Heather Shotwell



HELPING NEW AMERICANS FEEL AT HOME

by Trudy Palmer

Photos by Tariq Mohamed



Aside from family vacations, arriving at Principia College was the first time Jeremy Hollon (C'05) had left his hometown of Lima, Ohio. "The world was very small to me," he says, "but Prin really broadened that—and very quickly, too."

Hollon had planned to major in art and become a high school art teacher back home. He still paints as a hobby, even selling pieces occasionally, but the global community he encountered at Principia shifted his focus completely.

Hollon became very involved with the international student community at the College and loved learning about sociology, anthropology, and women's studies. By the time he graduated, he was eager to serve the bigger world Principia had introduced him to.

PURSuing A NEWFOUND PASSION

Back home in Lima, Hollon found work related to his new passion—people. He landed first in his county's Children's Services Department and then in a nearby county, helping youth and those on public assistance. His work in these counties was quite hands-on, but when he moved to Columbus three years ago, he assumed management of a much larger public assistance program, supervising a staff of over 100.

Then, less than a year ago, Hollon switched to his current position at Community Refugee and Immigration Services (CRIS), where he helped develop and is growing a grant-funded mentoring program that matches community members—ranging from university students to retirees—with refugee students in Columbus's public middle and high schools. As Hollon explains, "The kids are kind of lost in translation" among the myriad details involved in orienting a refugee family. His program addresses that oversight. In the six months since Hollon joined CRIS, the program has grown from five or 10 mentors working with students in one school to 70+ mentors working with mentees across six schools.

MAKING A DIFFERENCE THROUGH MENTORING

Mentors meet with students both in the schools—during lunch or study halls—and in the mentees' homes. Sometimes

the match between mentee and mentor is purposeful—perhaps they share the same native language or the mentee is interested in the mentor's profession.

But not all relationships are so strategic, and often companionship is the primary objective. "Our program is big on helping kids academically but also on letting a kid be a kid and talk about soccer or go to a baseball game or just have a friend," Hollon notes. "We want to blur that line so that the mentor is more like family."

Mentors commit to at least one full year of weekly, in-person contact with their mentees. Along with strengthening the relationship, that consistency lets the mentor get to know the mentee's family—often becoming an honorary family member and, thereby, getting to know the family's needs more intimately than a social worker or other official could. Mentors then share any needs they learn about with Hollon, who works to find appropriate resources for the family. As Hollon describes it, "We want to wrap the families up in positivity."

A CITY THAT CARES

In Hollon's view, Columbus is the perfect place to provide that embrace. The 16th largest city in the U.S. and home to Ohio State University, Columbus is an international city, with the biggest Nepali and Bhutanese communities outside of Nepal and Bhutan and the second-largest Somali community in the U.S. Despite—or perhaps because of—this diversity, Columbus defines itself as "a city that cares," Hollon says, adding that sometimes the city even puns on its name: ColumbUS. "We're not defined by color, gender, preference, or religion," Hollon points out with pride. "We're defined by a city that cares about each other."

But settling new Americans into Columbus isn't a one-way street, with the city doing all the giving. "Our refugee community brings a lot to the table," Hollon notes. "They're not exploiting our benefits, they're not disrupting our city or taking up space. They come into the workforce, own their own businesses, bring their cuisines and cultures—all of which helps our diversity."

The mentors are a diverse group, too, coming from across the city, a variety of industries, and two universities. A few even >>



"I THINK THE HIGHEST JOB YOU CAN HAVE IS TO HELP YOUR NEIGHBORS."

—JEREMY HOLLON (C'08)

arrived in the country as refugees themselves. But most knew little about Columbus's vibrant refugee community before becoming mentors. Many also assumed their mentees would be fragile, given the upheavals they have experienced, but the opposite is true. The mentors can't say enough, Hollon notes, about "how awesome" their mentees are.

The mentors also discover that their mentees are, for better or for worse, teenagers. "They're going to Snapchat or Facebook you," Hollon says. "They're not going to listen to you sometimes. They're going to talk back to you. They're going to love you. They're going to do whatever kids do." Of course, the very fact that these kids can be kids is a sign of the mentors' and program's success.

TRACKING PROGRESS AND GROWING THE PROGRAM

Hollon keeps track of the 70+ mentor/mentee relationships online through a Google doc journal in which the mentors describe each visit with their mentees. Hollon spends Sundays reading the entries. "It shows that the mentoring is happening," he says, "and tells the story of how things are going." Hollon also learns from the journal about families' needs and mentees' wishes, which he then sets out to meet—whether it's a need for employment or a wish to attend an Ohio State basketball game. That level of individual responsiveness is typical of the program. There are no set topics for mentors and mentees to cover. The relationships grow organically, led by each mentee's interests and needs.

The program's stunning success makes it all but certain that grant funding will continue, but "since the mentors are volunteers, this could be a very self-sustaining program even

without the grant," Hollon comments. Indeed, much of the growth so far has come through word of mouth. "I get texts or e-mails or kids just grabbing my shirt, saying, 'I want a friend, too,'" Hollon says. The same goes for the mentors (with the exception of the shirt-grabbing).

Hollon's vision for growing the program extends beyond serving more students. "I want to continually add layers of support," he explains. "We're talking about having a conference where all the mentors and mentees can come together and meet businesspeople and educators, and I'd like to do stronger individual case management." He's also planning a focus group with mentees to learn what worked for them this year and what more they need. And he's got a mentor Lunch 'n Learn coming up, where mentors can learn about relevant community resources and share ideas.

GLAD TO GO ABOVE AND BEYOND

There's no hiding Hollon's enthusiasm. "I'm kind of surprised I get paid to do this," he says, "because it checks all the boxes that I've ever wanted to do in life: help Ohioans . . . work with families, work with schools, and help shape this next generation, not only surrounding them with people who accept and care about them but showing them that they belong just as much as anyone else."

"I think the highest job you can have is to help your neighbors," he continues. "I work a lot of hours, but . . . it's not really work because I'm doing something I love. Why wouldn't I want to go above and beyond for other human beings?" ■



School Performing Arts Center Opens

by Armin Sethna

This spring, the School rejoiced in the unveiling of its renovated Performing Arts Center. The refurbished 12,000-square-foot space puts the School's various band, choral, and dance programs in close enough proximity to create in collaboration, yet sufficiently separate for independent experimentation and practice. The space includes the following features:

- A large symphonic band practice and rehearsal space
- Three dance studios, including one that's the size of Ridgway stage
- A large choral practice room, with breakout rooms for smaller ensembles
- A fully soundproof percussion section practice area
- Changing rooms with shower facilities
- World-class acoustics

On a recent evening, Performing Arts Department Chair Martha Stitzel recounts, every single space was occupied by student singers, pianists, percussionists, tap dancers, choreographers, ballerinas, and would-be rock 'n' rollers—all working hard and enjoying themselves.

"To say I was moved is an understatement" Stitzel says, adding, "It's thrilling to observe these young, passionate artists practicing their craft. They no longer have to practice in the hallways, the dressing room, or backstage. Instead, they can work together in one grand, dedicated rehearsal facility—this Center!"

A generous donor's gift provided this exceptional opportunity to build on the School's legacy of achievement and excellence in the arts. For decades to come, this state-of-the-art Center will allow Principia School to provide excellent training and opportunities for both novice and accomplished musicians and performers. As Stitzel puts it, "This facility teeming with creativity—for all of us to be a part of together—is a big blessing." 🎵

Coming Up

In the next issue, learn about the full-scale renovation of Voney Art Studio at the College, opening this fall.

Meet a Few of This Year's Graduates

by Phebe Telschow and Heather Shotwell



Caleb Kelly

Committed to Excellence

Caleb Kelly would be the first to say that his life is very different today than when he started as a freshman at the Upper School. The biggest difference is a fundamental change of thought.

Caleb openly admits that he started out with a B average—and was okay with that. But before long he started to notice that something was different at Principia. “The Christian Science standards here provide a great atmosphere,” he says. “But in addition to that, the faculty, staff, and coaches are all super-supportive and caring. One time my English teacher stayed with me for an hour and a half after school to help me with an essay. The level of commitment of everyone around me made me want to care, too.” That one change produced great results. He maintained a solid A average for the remainder of high school.

That same caliber of improvement showed up in athletics, too. While

Caleb qualified for the State wrestling tournament his freshman year, he lost all his matches. He recalls, “One of the biggest shifts in my thought was realizing how much time and effort it takes to achieve a goal and to be excellent.”

As a sophomore, Caleb began practicing with more consistent intensity and commitment—and the results were immediately apparent. He won 3rd place in his weight class at State that year, 4th place as a junior, and another 3rd place as a senior.

Caleb observes, “I’ve heard it said that we all end up being a combination of the five people we hang around with the most. One of the greatest things about Prin is that it gives us an outstanding range of people to choose from. Being around great people has encouraged and inspired me to be better myself.”

Caleb will be attending the U.S. Naval Academy in Annapolis, Maryland, in the fall, having chosen it over the U.S. Military Academy at West Point, where he also received a nomination to attend. He says he was especially interested in these places because of the strong focus they place on a purpose greater than oneself.

With a confidence born of experience, Caleb adds, “Unselfish motives make for great environments.”



Caitlyn Demaree

Actions That Speak Louder Than Words

Asked to describe herself, Caitlyn Demaree would likely offer a shy smile and a small shrug. If pressed, she’d add that she’s on the quiet side. But that humility can’t hide her accomplishments—Caitlyn’s high school résumé speaks for itself.

Best known as an athlete, she has 12 varsity letters to show for her four years of playing tennis, basketball, and soccer. She scored a total of 1,340 career points and earned All-State honors in basketball, maintaining more than an 80 percent average from the free-throw line for each of the past three years.

That high level of achievement is no accident. It was earned through countless hours of what Caitlyn calls “performance-based discipline”—diligent practice before and after school, in and out of season (despite her other



sports), 12 months a year, for years on end. She says her favorite thing about competition is the focus on improvement. “There’s really no point in doing something,” she notes, “unless you care about improving and being as good at it as you possibly can be.”

Caitlyn’s indefatigable work ethic and commitment to excellence also shone through her nine years playing trumpet in the band program. And she served as a House captain and as Treasurer of the senior class, all while completing DiscoveryBound’s four-year National Leadership Council program—earning a Congressional Award in the process—and maintaining a cumulative GPA that enabled her to graduate cum laude.

Reflecting on all of this, Caitlyn says she learned more about her relationship with God through each of these experiences, which in turn has helped her think, speak, and demonstrate from a higher standpoint than her own personal sense of things. “The true source of ability is God,” she says. “Whatever I’m doing is better as a result of being focused on God and reflecting God. It eliminates fear. And letting go of fear is key to succeeding in any area of life.”

Caitlyn is headed to Calvin College in Grand Rapids, Michigan, to participate in their top-25 basketball program and to pursue her interest in civil engineering.



Noah Ostler

Leading by Example

When Noah Ostler visited Principia, he says it just “felt right.” From Northridge, California, and the oldest of four children, he still remembers the conversation with his parents about how much he wanted to attend Principia. “They were supportive,” he says. “I’m so grateful we were able to work it out.”

Noah played football and was a member of the wrestling team for four years. “My coaches at Prin have been role models of gentlemanliness,” he comments. “They have the kind of authority that comes from spiritual strength.” A two-time State qualifier, Noah says, “Wrestling taught me how to be a mental fighter—how to grit my teeth and really work. It taught me about a productive sense of fun rather than a leisurely sense of fun.”

This year, Noah was elected by his peers, for the second time in a row, to be part of the “Core”—a group of five boys who take initiative in various

dorm activities and lead by example. “Being part of the Core taught me to meet deadlines and has given me the confidence to speak publicly and lead dorm meetings.”

One of the well-known themes in the Boys’ Dorm is painted on the wall of the living room: “Honour all men. Love the brotherhood” (I Peter 2:17). For Noah, that means establishing a sense of selflessness. As he puts it, “There are plenty of challenges around here that require growth. Principia gives students the right tools to face those challenges. It may not always be easy, but it puts us in a position to see the best in each other. Principia is an environment that ultimately helps everyone’s best qualities come through.”

Noah took two semesters of Bible classes at the Upper School, the first one in his sophomore year and the Advanced Bible Seminar this year. Then he and his sister, Kale, a sophomore at the Upper School, traveled on a Principia trip to Israel this spring. “These classes haven’t just taught me about the Bible,” Noah comments. “They have motivated me to care about and look for “the inspired Word of the Bible,” (Mary Baker Eddy, *Science and Health with Key to the Scriptures*, p. 497).

Noah will be expanding his Principia experience as a freshman at the College in the fall.

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COLLEGE

Meredith Hamilton

A Wide-Ranging Experience

"I wanted a rigorous academic experience and definitely found that here," says Meredith Hamilton, who is also a 2013 Upper School graduate. "I'm very grateful for all the opportunities I've had, especially the immersive travel, which shaped my college experience."

An English and political science double major with a minor in Spanish, Meredith is passionate about education, which led her to make a two-year commitment as a Teach for America corps member. "Education is key to ending the cycle of poverty in low-income schools," she says. "Teach for America's purpose deeply resonates with me, and I'm excited to teach second grade in an underserved school district in Richmond, California."

Off-campus learning opportunities abounded for Meredith, who traveled on the Spain Abroad, England Abroad, and the "Race to the White House" field program in Iowa and New

Hampshire. Her enthusiasm for these travel opportunities abounds as well: "These were certainly the highlights of my college experience," she says. "England was a deep dive into theatre and literature. Spain featured a home-stay experience, and the field program brought me closer to the political process than I ever thought possible. There I was—just a few feet away from presidential primary candidates from both ends of the political spectrum, asking policy questions!"

Meredith co-directed this year's Public Affairs Conference. "I developed very transferable skills in this role," she says. "Our board was responsible for everything from selecting the topic to finding speakers to planning logistics." Meredith was also a soloist for the Christian Science Organization Sunday services, and she served as a student senator, writing tutor, resident assistant, and on her house board.

Meredith's membership in Phi Alpha Eta, the College's honor society, confirms her commitment to academics. So did her capstone project—researching Jane Austen's *Persuasion* to assess its religious, social, and political context. "I'm deeply grateful to faculty who supported my progress," Meredith says. "The academics here were certainly very important to me, yet it's the spiritual atmosphere and deep friendships I've made that I treasure most," she says.



COLLEGE

Zacher Lewis

Diving into Finance

Developing a strong work ethic in the classroom, in the pool as a member of Principia's swim team, and as a finance intern, Zacher Lewis is ready to make his mark in the financial world. This summer, he'll begin his career as a Portfolio Accounting Associate at Fisher Investments in San Mateo, California.

A business administration and economics double major and a Phi Alpha Eta (honor society) graduate, Zacher took full advantage of support from Principia faculty across the liberal arts curriculum. "I came into college with a love of math and science, and a desire to further develop my analytical skills," Zacher comments. "I've definitely been able to do that—and more—here." Serving as a teaching assistant in lower-level business and economics classes, he brought a "Finance is fun!" spirit to the classroom, sharing his passion and breaking down complex ideas. For his senior capstone, he researched property rights in relation to investment in land

improvements and economic growth. After gaining some work experience, Zacher plans to earn an MBA.

Zacher was on the swim team all four years, achieving season and lifetime bests in individual and relay events this year. “The team is very inclusive with an awesome group of people,” he says. “I knew I could make a difference on the swim team, and this was a big reason I chose to attend Principia. I’ve experienced much growth in Christian Science through swimming.” Zacher will continue swimming in a U.S. Masters Swimming program in California.

A highlight of his College experience was attending speaker events. “For example, I had dinner with Halliburton whistleblower Anthony Menendez when he came to campus this year,” Zacher says. “His emphasis on the importance of integrity in business even in the face of significant opposition truly resonated.” Making the most of other opportunities, Zacher served as a resident assistant and on his house board. “I also loved attending athletic events to support friends achieving their goals after much dedicated work,” he comments.

A lifelong Principian, Zacher has made deep friendships. “I know these relationships will last,” he says. “And I’ll definitely be back to visit—and to compete in alumni swimming events!”



Jami Wissman

From Programming to the Stage to Entrepreneurship

A computer science major with a minor in dance, Jami Wissman is equally at home coding or choreographing. Her skill and confidence in programming led to her participation in the 2015 Washington University Hackathon in St. Louis, where she placed as a finalist and won the Best Use of Domain award. At the College, Jami has shared her love for dance on and off campus—teaching classes, and choreographing pieces for Principia’s annual Dance Production and for the Halloween flash mob with children in Alton.

During her junior year, Jami was integral in the founding of Principia’s newest institute, the Center for Entrepreneurship and Innovation. “Students have great business ideas, and it was very exciting to be part of launching this initiative,” she says. “The Institute has a unique space on campus that is open to students 24/7, equipped with walls covered in IdeaPaint and with

technology to help students explore ideas, collaborate, and launch businesses.” Jami did just that when she and her business partner claimed first prize at the *Shark Tank*-style innovation challenge in the fall for a texting service for Amazon products. They used the prize money to launch their company, and Jami has developed several new enterprises since then.

Her initiative and ability caught the attention of Capital One, leading to a full-time position as a software engineer in Richmond, Virginia, starting this fall. Interning twice with increasing levels of responsibility at Hyland Software in her Ohio hometown, Jami found supportive Principia faculty ever ready to help. “My professors really got to know me in the small classes here,” she comments. “This close interaction particularly helped while preparing for a series of technical interviews with Capital One, which were very difficult.”

Earning awards for computer science and dance at graduation, Jami found the balance enormously beneficial throughout her college experience. “I was able to pursue my top two interests even more thoroughly than expected,” she reflects. “And I see others doing the same—I know a lot of students who are very passionate about something and are able to run with it because they feel so supported. I love the inclusive and loving atmosphere at Principia.” ■



Unhampered and Unlimited

by Dr. Jonathan Palmer

Principia founder Mary Kimball Morgan clearly expressed one of the goals for her school in a 1924 letter to students: “To provide a school in which the sons and daughters of Christian Scientists may pursue their education unhampered by the laws of materia medica and unlimited by the mortal fears and beliefs of psychology . . .” (*Education at The Principia*, p. 165).

That unhampered and unlimited foundation serves us well every day. The freedom to work together while relying on Christian Science grounds students, faculty, and staff both on and off campus. During my time as College President, we’ve successfully overcome situations with student groups on abroad—from finding transport off a stormy mountain in Nepal to terror threats in Europe.

This unlimited expectation of good has also been mirrored in our partnership with the Jersey County Health Department. During my first year as President, we faced the prospect of having to quarantine over 100 students during spring break. While waiting for a decision from the Health Department, we engaged students, parents, and staff in prayerful support. We were grateful to learn the quarantine was unnecessary, and a fine spring break was had by all.

Each week the testimonies in our Christian Science Organization (CSO) meetings serve as a barometer for how well our community of practice is doing in proving the effectiveness of Christian Science. I am so grateful for students’ articulate sharing of how they have prayed and of the spiritual growth that resulted, along with the healing of a wide range of issues—from depression, smoking, and physical ailments to relationship problems, financial difficulties, and academic challenges. And these are just the healings we hear about at CSO! Often, students specifically acknowledge that living in a Christian Science community, unhampered and unlimited, aided the change in thought that brought healing.

A few years ago, Principia learned that the National Collegiate Athletic Association (NCAA) proposed regulations requiring all NCAA schools to designate a medical doctor on staff to oversee all health care activities related to athletes. Naturally, we were concerned about the legislation. We met the NCAA Chief Medical Officer and other staff members at their headquarters in Indianapolis, Indiana, and although we felt heard, it was clear that we needed to request a waiver. We also invited the Chief Medical Officer to visit Principia. It was a positive visit that included interactions with athletes,

coaches, Christian Science nurses, and our leadership team, as well as attendance at our weekly CSO meeting. In the end, the Council determined that Principia’s standard of health care would allow us to maintain our status as an active Division III member, without any need for a waiver.

That unhampered and unlimited foundation serves us well every day.

In her *Message to The Mother Church for 1901*, Mary Baker Eddy spoke to our individual roles in supporting the Cause: “As Christian Scientists you seek to define God to your own consciousness by feeling and applying the nature and practical possibilities of divine Love: to gain the absolute and supreme certainty that Christianity is now what Christ Jesus taught and demonstrated — health, holiness, immortality” (p. 1).

How grateful we are to strive for this at Principia—unhampered and unlimited. ■

Dr. Jonathan Palmer (C’78) is President of Principia College.

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