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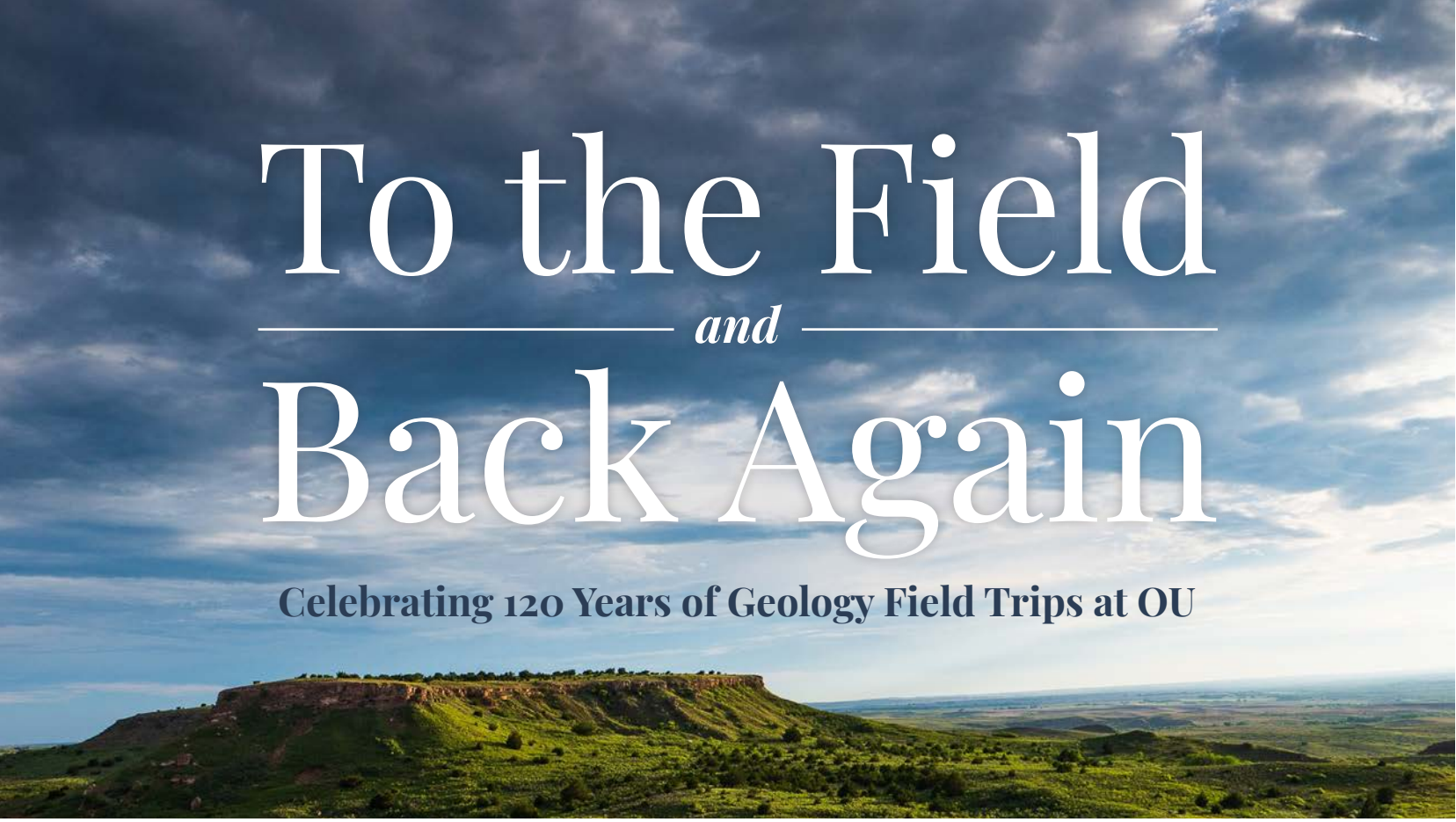

To the Field *and* Back Again

Celebrating 120 Years of Geology Field Trips at OU

Sarah Warren

For geoscientists, field trips are many things: Necessary. Eye opening. They are an initiation, the first taste of a profession that exists equally in the lab and in the field. They are magic – bringing to life concepts known only in charts or formulas. They invite students to return home with more questions than when they embarked.

At the University of Oklahoma, field trips have been part of the geology curriculum for almost as long as the program itself. OU's long history in the field was part necessity and part ingenuity. From the very beginning, the School of Geosciences has shifted, problem solved and innovated to meet the needs of the day.

This year marks the 120th anniversary of the first OU Geosciences field trip. It is a milestone that could not be more meaningful to faculty and students alike. When the OU community banded together to slow the spread of COVID, field trips were cancelled for an entire year.

"I always knew field work was important," said geology junior Faith Thompson, "but when I couldn't go and see the volcanic field that my Igneous Metamorphic term paper was over, I realized how important field work really is. Everything was harder without it."

This year, 120 years after we first ventured into the expanse of Oklahoma, we returned. Already in 2021, students and faculty have ventured to the fields of Oklahoma, Colorado, France and Tanzania.

In celebration of the anniversary, we ventured back 120 years to see what got us here in the first place. The answers are amazing but not surprising. OU Geosciences has a legacy of professors willing to break barriers, change when needed and dream of the future.

GOING TO THE FIELD

When Charles Gould, who would come to be known as the father of Oklahoma geology, arrived at the University of Oklahoma in 1900, he was one of seven OU faculty members. The entire campus consisted of one

building, 300 students and exactly zero supplies for teaching geology. All he was given was a desk in the corner of biology professor A.H. Van Vleet's office.

OU geology students in the field, 1905. Image courtesy of the University of Oklahoma Western History Collection.

"There was absolutely no equipment for carrying on the work of the department," Gould recalled later in his life, as recorded in University of Oklahoma, A History, Vol. 1 by David Levy. "No classrooms, no laboratories, no collections, no library, nothing but a young chap just out of college, turned loose on his own resources and permitted to sink or swim."

Not to be waylaid, Gould brought his personal collection of fossils, rocks and 200 books for students to use. Supplies were still thin, and Gould wondered how he would teach his students. The answer came from a providential friendship with well-known paleontologist E.O. Ulrich, who urged Gould to bring students to the field.

Gould took Ulrich's advice and developed a style of instruction that would use Oklahoma itself as one vast geological laboratory.

Norman is an ideal location from which to launch geological field work. It lies in the heart of the Mid-Continent region and virtually atop two paleo plate boundaries – conferring a wealth of unique geological areas. It is 90 miles from the Wichitas – one of very few fossilized mountain ranges in the world – and 60 miles from the Arbuckles' famed outcrops. Within a day's travel are Precambrian and Cambrian granites and gabbros, and a full spectrum of both siliciclastic and carbonate sedimentary rocks spanning the Phanerozoic. A very long day's drive leads to the Ozarks to the east and the Rockies to the west.

During the 1901 Christmas break, Gould took OU geology students on their first field trip to the Arbuckle Mountains to look for fossils. Three students came that year. Four the second year.

The course was set. For OU geology students, the land was the laboratory.

Academic geological field trips were not a common practice in this area of the country at the time. John Wesley Powell led what is believed to be the first academic geological field trip in 1867 at Illinois State University, but did not become a trend, especially in this area of the country. According to a representative at the Geological Society of America, records of the introduction of academic geology field trips in the Midwest are scant. Anecdotal and verbal history places OU's entrance into the field among the earliest.

Despite the lack of needed equipment, (or perhaps because of it), Gould's teaching philosophy would launch the study of geology at OU and grow it quickly. It would also save the program on its darkest day.

Levy recounts the night of Tuesday, Jan. 6, 1903.

> *The night watchman spotted the flames shortly after 11 o'clock. He noticed them issuing from the southeast basement, the room where Professor Gould taught and kept his geological collections. The watchman shouted the alarm…and within minutes almost the entire citizenry had gathered at the site. Campus lay outside the town limits and the longest hose was too short to reach the nearest hydrant. Bystanders grabbed some buckets and… began 'a heroic effort' to save the building.*

The wood floors of Building One had just been oiled, propelling the flames to burn hot and fast. Students and faculty worked valiantly to save a small number of items from the top floor of OU's only building, but the geology department suffered a total loss.

Once again without supplies, Gould did what he had always done in his short teaching career: he stepped outside. Oklahoma was waiting. The plains, mountains, fossil beds and outcrops of this future state were always his true lab.

The program lost no momentum, and 11 months later, Gould hosted his third annual geology field trip. This time a dozen students attended, including the university's first female geology students. It was during that trip that Pick and Hammer, a student organization still active today, was formed.

All was not lost. In fact, it was just beginning.

CONTINUING THE TRADITION

As the program grew, so did the students' field experiences. A.J. Williams joined the faculty in 1916 and headed up freshman field trips. According to OU Geosciences professor emeritus and author of History of the School of Geology and Geophysics: The University of Oklahoma, by the time geology students finished their first year, they had been to the Arbuckles, "to geologSical processes along the South Canadian and Washita Rivers, the oil field at Pauls Valley, the view from Seven Sisters Lookout, asphalt pits, Turner Falls, the Vendome well at Sulphur, the rocks in the Camp Classen area, the granite exposures south of Mill Creek, East Timbered Hills, White Mound, and the geological section along old Highway 77."

At the Arbuckle Mountains, geology students stand at the Burning Mountain Spring in 1910. Image courtesy of the University of Oklahoma Western History Collection.

Upperclassmen also traveled around the region for class field trips, some by bus, others by train. Some trips involved tent camping. Eventually, a bunkhouse was built for female students at a site south of Davis. Programs and trips evolved and changed, adapting with the times, embracing new technology, adjusting for two World Wars, and growing with the program.

The legacy of field work continues at the OU School of Geosciences. Today nearly all geology courses, including general-education classes for non-geology majors, have some sort of field component.

"Field work is necessary for geoscience students because our sphere of interest is outside," said Shannon Dulin, OU Geosciences assistant professor and director of Bartell Field Camp. "By showing students geological processes and helping them make observations, they are able to come to a better understanding of their surroundings and how geology and meteorology interact in their everyday lives and spaces."

IDENTIFYING BARRIERS TO A GEOLOGY EDUCATION

Geological field trips were nothing new at the dawn of the 20th century.

"In the late 18th century, geological field excursions were conducted at universities in Italy, France, Germany, Sweden and Scotland, including the University of Edinburgh, which is where Darwin trained as a geologist," said Kerry Magruder, curator and John H. and Drusa B. Cable Chair of the History of Science Collections at the University of Oklahoma.

According to Renee Clary, Ph.D., professor of geology at Mississippi State University and committee chair for the Geological Society of America's Education Committee, geological field trips in England date back to the early 1800s during the Golden Age of Geology.

At the time, geology was taught at top universities like Cambridge and Oxford. "William Buckland at Oxford University and Adam Sedgwick at Cambridge University led field excursions, with students riding on horseback," said Clary.

Just as today, field trips provided students with valuable experiences to contextualize lectures. But still, the trips and studies did little to expand the field of geology beyond the upper echelons of society.

"Geology was considered a gentlemen's profession in the UK during modern geology's early years and its emerging professionalization," explained Clary.

Not only were the degrees issued from England's

Dr. Charles Harper at Field Camp in 1973. Image courtesy of OU alumnus Otto Knight.

most prestigious universities, but there was another barrier to enter geology: students had to own their own horse. It was a luxury reserved for those at the top rungs of the societal ladder.

Owning a horse. It was that simple requirement that first kept the field of geology relegated to the elite. Centuries later, faculty at the OU School of Geosciences set out to ask an important question: What are our barriers to entry? Like the horses in the earliest days of the discipline, are there structural or systemic impediments keeping students from the profession?

As it turns out, there are. So, like Gould who famously pivoted to provide the best education to his students, OU Geosciences is embracing something new and creative to meet the needs of our students today.

BRINGING THE FIELD HOME

Faculty identified three core barriers that prevent students from entering or completing a degree in geoscience. A recent structural renovation to the Sarkeys Energy Center's O'Brien Plaza necessitated the removal of landscaping. This blank canvas has the potential to address all three barriers.

Still in the fundraising stages, Mewbourne College is preparing to bring parts of the field home.

Proposed renovations to the O'Brien Plaza will transform it into a one-of-a-kind collection of interactive geologic learning spaces. The renovation will not replace field trips or stifle a 120-year academic culture that prioritizes field education. Rather, it will prepare students to enter the field and succeed once there and help remove barriers that keep students from studying geosciences in the first place.

Barrier 1: Retention

"One of the first barriers to entry is commonly geological maps," said Lynn Soreghan, director of the School of Geosciences.

Incoming geoscience students must quickly develop 3-D visualization skills and learn to interpret geological maps in their first geology course. Soon thereafter, they must begin to learn how to make such maps themselves

Addressing this barrier is the Geoscape, a life-size, walkable geological map complete with a fault line and stream, all defined by different types and shades of rocks. Classes will visit the Geoscape together, but the space will also be available for those students who need to spend extra time outside of class when they can walk the map.
When students do not gain mastery of this essential skill, they often struggle in upper-level courses. Some leave the program entirely.

"The O'Brien Plaza will allow students to easily practice field skills during the short intervals of class and lab times, and thus be able to hit the ground running when they get into the field."

Barrier 2: Equity

Geology field trips are integrated into classes, which mean they are not optional add-on experiences for affluent students. Thanks to the scholarships from generous alumni, the school is able to cover incidental expenses that could hinder some students. But

OU Geology students at the Oklahoma Geology Camp bus in 1977. Image courtesy of OU alumnus Otto Knight.

OU Geology Field Camp in 1957. Images courtesy of OU alumnus Otto Knight.

students often find value in venturing into the field during the weekends or evenings.

"That is a significant barrier for students who work one or more jobs or those who are caregivers," explained Soreghan. "So, we began looking at how we can provide a modicum of field experiences for all of our students."

With a goal to bring realistic field experiences to campus, the O'Brien Plaza's specimens must be massive and realistic. Just as if they were in the field, students will be able to make outcrop-scale observations, take compasses measurements, and collect field data.

In addition, an Oklahoma stratigraphy display will consist of slabs of rock, each 6 feet wide and 3 feet thick, representing geologic periods through time. The slabs' 45-degree incline will allow students to practice taking strike-and-dip measurements.

For petroleum geology and petroleum engineering students, rocks representing environment and landscape changes in Oklahoma through time will showcase economically important formations and provide background information on their geological setting and post-depositional histories.

This unique collection will be a big step forward in creating equitable opportunities for all students.

Barrier 3: Accessibility

What if a student's only hinderance to becoming a geologist was a wheelchair?

While accommodations for disabled students are already in place, there are a unique cacophony of challenges for students with physical disabilities in undergraduate programs that comprise three years of geology classes laden with field trips and outdoor excursions.

"The truth is, we simply don't know how many prospective geologists – the ones who grew up marveling at outcrops from the backseat window – have elected to not even apply. At Mewbourne College, we want every student to be greeted with the opportunity to learn and thrive," said J. Mike Stice, dean of Mewbourne College.

The O'Brien Plaza will feature wheelchair paths and provide flexible fieldwork. Class accommodations have and always will be provided, but the Plaza will afford students with accessible and readily available field experiences.

"It is my hope that the Plaza will help reinforce that all are welcome here. A physical disability should not dissuade anyone from pursuing their dreams," said Stice.

The renovated O'Brien Plaza will be a space open for all.

Along with the goals of retention, equity and accessibility, Soreghan and the other visionaries behind the project hope the O'Brien Plaza solidifies Oklahoma as a destination for future geologists young and old.

"It will be an important feature that helps the School of Geosciences recruit prospective undergraduate students, and it will serve as an outreach and education resource for the community and visiting K-12 students," said Soreghan.

The O'Brien Plaza will be open to all. Soreghan and her team dream of quiet Norman evenings and busy OU gamedays where children venture to Sarkeys Energy Center O'Brien Plaza to climb on giant boulders, investigate rocks from around the nation, saunter

across a life-sized map, and hopefully fall in love with geology in the process.

THE MAGIC OF THE FIELD

The O'Brien Plaza renovation is an important tool that will help many students in the OU School of Geosciences, but it will never replace the school's commitment to abundant, informative and robust geological field experiences.

"The magic of field trips occurs when classroom learning meets the real world," said Dulin. "It isn't until you go out into the field that all the pieces fall together and you begin to look at the world like a geologist."

Charles Gould knew that Oklahoma was a geological destination 120 years ago. He understood the value – the magic – that the field brings to budding geoscientists. He built those values and experiences into a program that has lasted more than a century, produced some of the nation's leading geoscientists, and helped shape a university.

Gould approached challenges and constraints with nimbleness, ready to pivot when needed and willing to do things differently when required. It is a legacy that "Lives On" at the School of Geosciences to this day.

We have gone to the field. We have identified new barriers in a field that should be open to all. We have adjusted for a pandemic. And now it is time to return to the field.

But this time, we're bringing some of it home to stay.

Learn More

Learn all about the renovation plans and fundraising efforts for the O'Brien Plaza at ou.edu/mcee/connect/SECplaza or contact the Mewbourne College Advancement Team.

Share your memories

We want to hear your favorite OU School of Geosciences field trip memories! Send us pictures and stories of your favorite OU field trip memories so we can share and archive them for generations to come. rebrand.ly/OUgeo120

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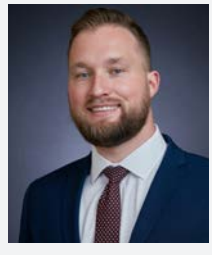

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