Instrumental Beauty

Tools used by great minds of the past show the artistic side of science and provide a link between then and now.

By Larry Laneer
Photos by Hugh Scott

When was the last time you measured the surface tension of a liquid using a Du Noüy ring tensiometer? Or determined humidity with a human hair hygrometer? If you wanted to measure the concentration of a coloring agent in a solution the old-fashioned way, where would you find a Duboscq colorimeter?

You could begin your search on the fifth floor of Bizzell Memorial Library in the History of Science Collections, which has on public display a fascinating group of early 20th-century scientific instruments and apparatuses. The instruments have been lovingly rescued and restored by Stewart Ryan, David Ross Boyd Professor Emeritus in OU's Homer L. Dodge Department of Physics and Astronomy. Individual instruments — and the collection as a whole — have an integrity and beauty that could be called artistic. If not for Ryan's efforts and the cooperation of department chairs in physics and chemistry, the devices could have been sent to university surplus where the Becker chainomatic or the Nörrenberg polarizing apparatus may have collected dust for decades or been sold for next to nothing.

"The idea of the collection is to illustrate the instruments used in the early days of the university," Ryan says. "Many of the brass and wooden instruments are truly beautiful."

The earliest pieces were purchased when the physics department was established in 1909. Electronic instrumentation improved significantly in the late 19th century, so the newly acquired equipment was state of the art for student laboratories and academic research. Ryan claims physicists never throw anything away "since you never know when it might be useful," so over the decades, as the instruments aged and became obsolete, they were stored in boxes and cabinets that lined the hallways of Nielsen Hall, which is still part of the physics complex today. To appease the fire marshal, the instruments were shuffled around the building, with many eventu-

At left and below - These early 20th-century scientific instruments, including a Bausch + Lomb microscope purchased in 1888 by a St. Louis doctor, and a Weston D.C. voltmeter, were saved from destruction and restored by OU David Ross Boyd Professor Emeritus Stewart Ryan.

ally housed in Nielsen's attic.

Ryan came to OU in 1977 and, a decade later, helped clean out the Nielsen attic. Recognizing their value, he saved more than 100 items by securing them in department cabinets and, at times, undisclosed locations.

How the instruments were preserved and displayed started with a night at the opera. Well, operetta. Ryan saw Kerry V. Magruder, curator of the History of Science Collections, at a performance of Gilbert and Sullivan's *Iolanthe* by Norman's Cimarron Opera Company in 2012 and told him about the scientific pieces. In 2015, the History of Science Collections was preparing for a renovation, so Ryan and Magruder decided the lobby of the collections' quarters would be an ideal place to showcase the artifacts.

Before the instruments would be suitable for display, they had to be cleaned and repaired. Ryan set to work with Old English furniture polish, Scratch Guard and "trisodium phosphate substitute" to remove soot, mold and grime. He glued a few wooden cabinets and replaced some missing screws.

Ryan not only preserved and restored these wonders of last-century technology, he also compiled a carefully annotated inventory of the collection. He includes, for example, the type of instrument (earth induction apparatus), manufacturer or vendor (Central Scientific of Chicago), date of manufacture (1909), catalog number (1776), often price ($17.50) and whether the apparatus was used for teaching, research or both.

The Smithsonian Institution Libraries has a collection of hundreds of scientific trade catalogs from the 19th and early 20th centuries available online. Ryan used the catalogs to find the instruments' specifications.

He also figured out the university's method of keeping track of the equipment and included inventory numbers in his annotations. For the earliest instruments, identification numbers were carved into Ebonite, hard rubber panels on some equipment, or stamped on the wooden cases. In the late 1920s or early 1930s, OU started attaching metal tags with identification numbers.

According to the annotated inventory, "proper electrical or mechanical functions have NOT been tested." Ryan noted known problems. The Dolezalek quadrant electrometer is missing a "conducting quartz fiber."

The names of the instruments sound like something from science fiction or poetry: astro-compass, triple point of water cell, falling ball viscometer, radial planimeter, prism spectrometer and glass desiccator. He even noted the arachnoid "spider silk for optical cross hairs (one strand only)."

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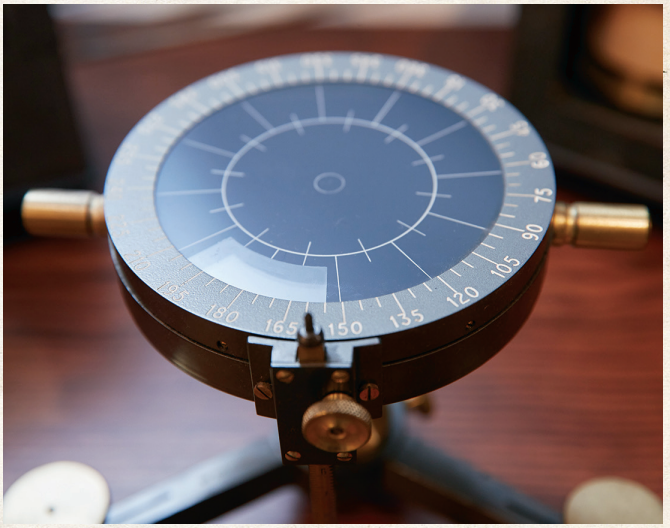

Clockwise from top left are a 1915 potentiometer, which measures electrical voltages; a dip needle used to measure the angle of a magnetic field; an 1880s nephoscope used to determine the direction and angular velocity of clouds, a Bunsen burner and a glass pharmacy bottle made by the German company Schering Chemical Company.

Today, the instruments are on view in a 36-foot by 6-foot oak display case comprising 36 bays of glass shelving in the Barbara Brite Paul Grand Foyer of the History of Science Collections. The display is known informally as the Physics Instrument Collection, although some are from chemistry. The plan is to double the number of display bays and add items from other disciplines, such as medicine and meteorology.

Not only a history of science, the collection is also a history of OU. A Bausch & Lomb microscope, circa 1910, belonged to Dr. Dixie Young (1893-1978), who earned her Bachelor of Science in 1921, a master's in 1922 and a Ph.D. from Yale in 1937. She taught at OU and was later director of the Department of Biology at Texas State College for Women in Denton. The collection also links the past to the present.

"The instruments on display are a compelling attraction for many visitors," Magruder says. "Their sheer physical craftsmanship arrests attention. But even more than that, they awaken fond memories of mentors in the sciences or perhaps long-ago student experiences in the laboratory. They provide a historical sensibility, which helps form anyone's professional identity. They contribute in intangible ways to how students feel about their chosen fields.

"The collection, as a whole, represents the history of physics and astronomy on campus," says Magruder. "It connects the rare treasures in the vaults of the History of Science Collections with what goes on in Nielsen Hall every day."

Larry Laneer writes about the arts from Norman.