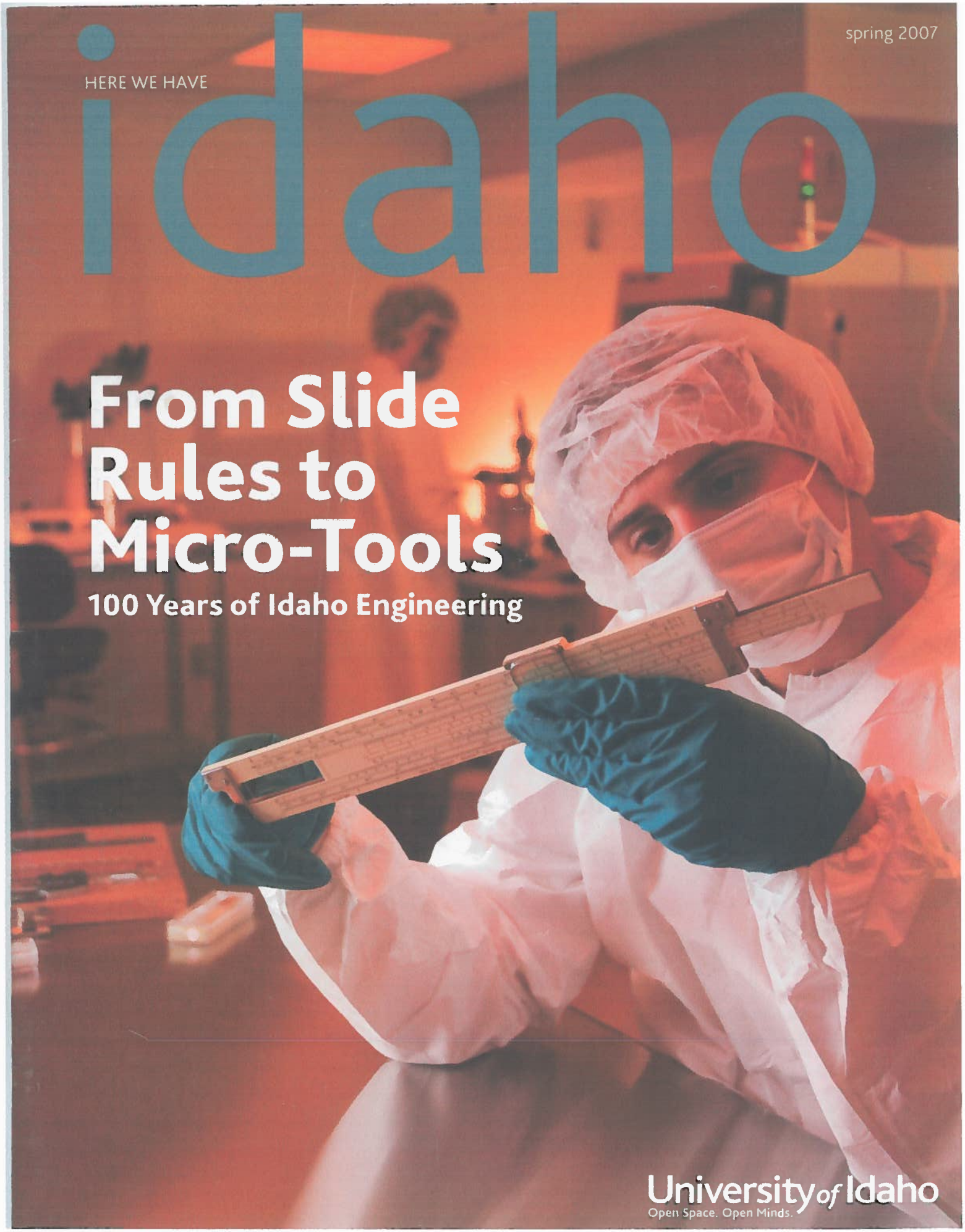
spring 2007

HERE WE HAVE

idaho

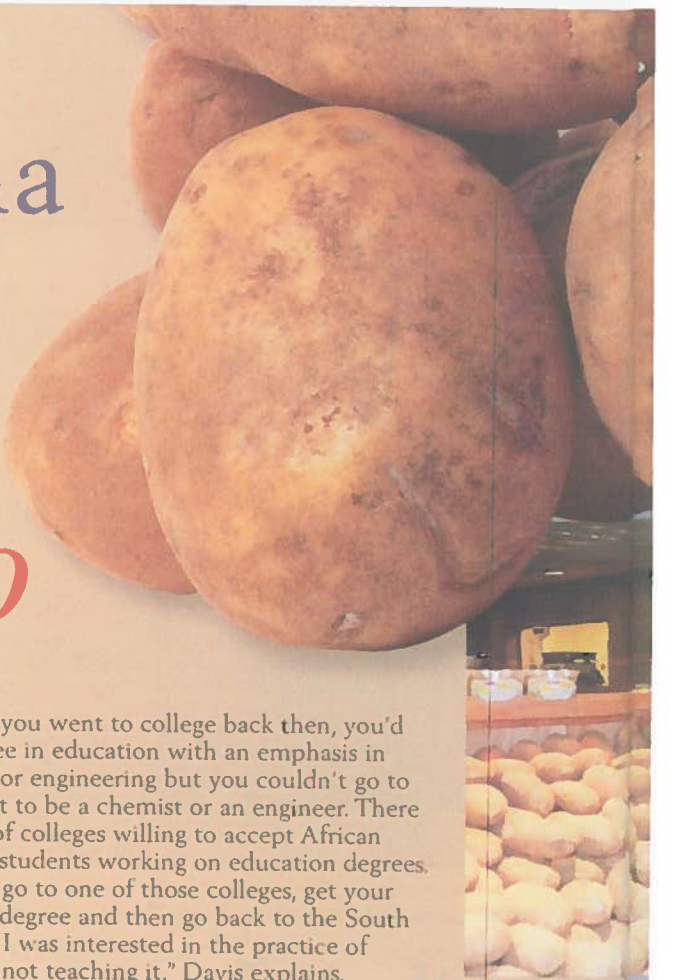


From Slide Rules to Micro-Tools

100 Years of Idaho Engineering

University of Idaho
Open Space. Open Minds.

An Alabama Chemist *Whips an Idaho Potato*



BY RANDY LANKFORD

When William Davis '65 enrolled at Alabama's Talladega College in 1952, he had no idea he would eventually study potatoes at the University of Idaho. Growing up in Valdosta, Ga., he was raised on rice. The only potatoes he knew anything about were the sweet orange ones people baked into pies.

Now, at age 80 and chairman of the Department of Natural Sciences at St. Philip's College in San Antonio, Texas, Davis credits two men with his love of science; his father, a self-taught pharmacist and George Washington Carver. Davis was fascinated with what his father was able to do with just a few simple plants and in awe of Carver who had saved southern agriculture with his crop rotation discoveries. That was the kind of applied chemistry he was interested in when he entered college.

Once he'd earned his chemistry degree at Talladega, Davis was chosen as one of only three G.W. Carver Fellows to attend the Tuskegee Institute in 1956.

"Dr. Carver had passed in 1943 but his foundation was still very active. It was one of the few places a black scientist could work at that time.

"The things that Carver had done for farming and the way agriculture was practiced really impressed me. Another part of my thinking was that Dr. Carver had done what he did in a hostile environment. He'd worked his entire life in the Deep South where there was a lot of oppression at the time. He had not only proved his worth, he had proved it under some of the most difficult circumstances possible. I wanted to be able to do that same thing. I wanted very much to follow in his footsteps."

Davis earned his master's degree in organic chemistry in 1958, a time when African American college students were encouraged to become teachers.

"When you went to college back then, you'd get a degree in education with an emphasis in chemistry or engineering but you couldn't go to college just to be a chemist or an engineer. There were lots of colleges willing to accept African American students working on education degrees. You could go to one of those colleges, get your education degree and then go back to the South and teach. I was interested in the practice of chemistry, not teaching it," Davis explains.

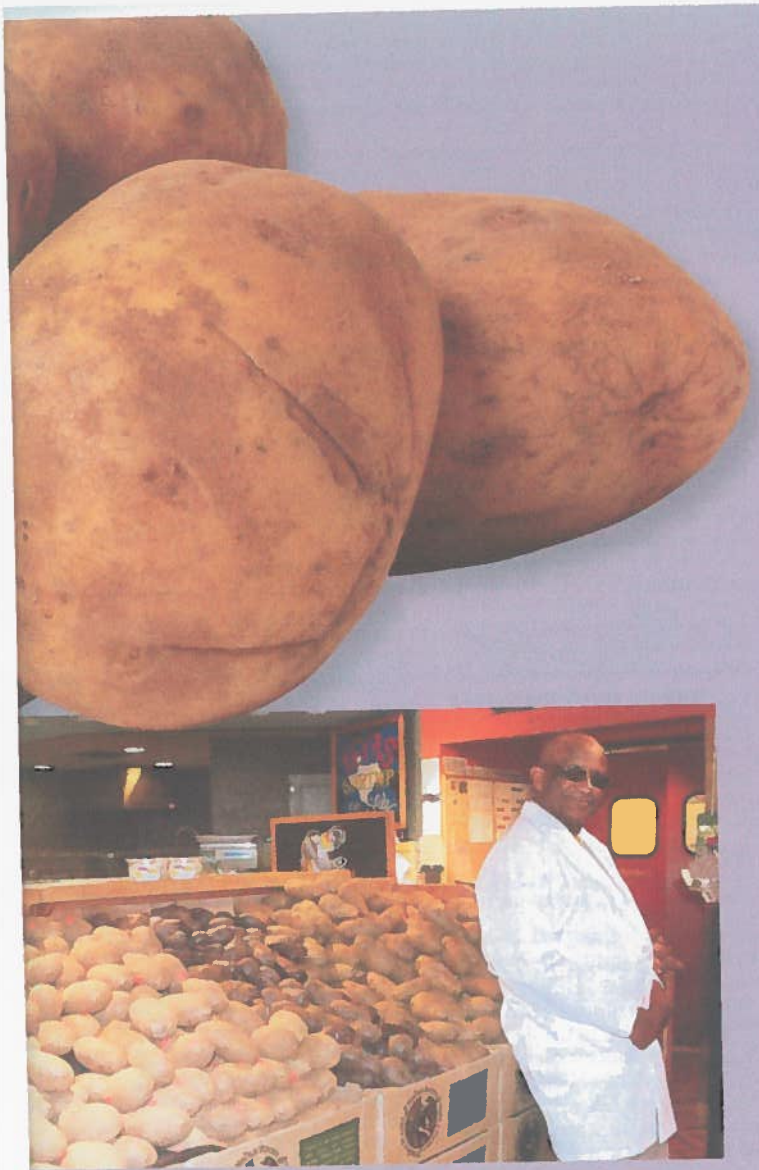
While Davis, the younger brother of actor Ossie Davis, applied to several colleges to pursue his Ph.D., Idaho was the only one willing to let him earn his doctorate in biochemistry with no strings attached.

"They didn't require me to take any education courses. That suited me just fine so my wife, Ocia, and I moved to Moscow."

The geography wasn't the only thing different. Davis felt like he was in a different world.

"We moved to Moscow in 1960. It was an entirely different culture. I'm pretty sure I was the first black student in the University of Idaho graduate school and Ocia became a secretary in the Sociology Department at the University. She was the first black secretary at the school.

"I love that part of the country because everyone is so warm and welcoming. I never felt like I was treated any differently than anyone else on campus. It was just a normal society. They dealt with me based on my capabilities. I wasn't treated any better or any worse than anyone else, either on campus or in town. I wasn't given any favors but I got the same opportunities as anyone else. Coming from Alabama, it was a very different culture than what I was used to."



William Davis '65

The change suited Davis who went to work as a teaching assistant and became involved in research to determine the sloughing rates of different types of potatoes.

"Different applications call for potatoes that degenerate at different speeds. For instance, a soup company wants a potato with a long shelf life. When they put a chunk of potato in a can, they want it to still be a chunk when that can is opened perhaps months later. Others want potatoes that fall apart easily and whip up light and fluffy for mashed potatoes. That's the kind of research we were doing."

Davis also was working on a project to determine what caused potato chips to blister when they were fried.

Just across the state line in Pullman, Washington State University's industrial research department was trying to determine what it was about larch trees that was causing saw blades to gum up at lumber mills around the state.

"J.M. Neal was the lumber company involved," Davis recalls. "They put up the money for the research and were asking for anyone who was interested in working on the project to contact Washington State's industrial research department.

"Pullman is only eight miles from Moscow and I was interested in learning more about chemistry, so I signed up."

Davis' research at Washington State determined that saw blades were becoming clogged with a gummy, glue-like substance called arabinogalactans, that are found in plants, fungi and bacteria. They're a nondigestible soluble dietary fiber. They also are thought to stimulate the colonic growth of such bacteria as bifidobacteria and lactobacilli. These bacteria may confer certain health benefits.

"We were able to extract the arabinogalactans as a dry, crystalline powder," Davis said. "But there didn't seem to be any practical application for them. Rehydrating the powder just created a sticky paste. I didn't see much value in it."

At the same time, working at Idaho, Davis found that if he removed the compound that was causing potato chips to blister, they disintegrated.

He wondered if the desiccated potatoes could be reconstituted. He tried adding water only to end up with a bowl of wet flakes. Davis was frustrated with his results.

"I thought both lines of research were failures. The arabinogalactans weren't good for anything and the potato flakes couldn't be reconstituted. I was very disappointed."

But, one of the most important lessons Davis learned at the University of Idaho is that any research results are good results, and that led to an unexpected discovery.

He combined his two experiments and found that when he added the arabinogalactans to the potato flakes, they absorbed the water and fluffed up into an edible mound.

As with most discoveries, Davis didn't have the classic Hollywood "Eureka" moment. The potatoes he rehydrated weren't what busy mothers serve their families today. His research was advanced and modified by others until it evolved into today's familiar staple. While Davis' discoveries weren't patented and never made him rich, he's proud to have been part of the team of scientists that eventually made instant mashed potatoes an appetizing reality.

"I never set out to invent instant mashed potatoes, but that's what we ended up with," Davis laughs.

Many more uses have been found for the arabinogalactans Davis isolated. They are a natural sweetener and their binding qualities are what make non-dairy whipped toppings and soft-serve ice cream possible.

A man who never intended to be a teacher, Davis has been a professor at St. Philip's since 1983.

"I promised my father that I would spend the last part of my career teaching," he says.

Davis doesn't have any plans for retirement, nor does he consider himself or his career remarkable.

"I'm just an average man who happens to be very curious. It's a wonderful time to be alive. There are so many new discoveries being made that I want to learn about. They might call me 'Feet-first Davis,' because that's the way they're going to have to carry me out of here."