Engineering building named for Fontana

Trustees of Ohio State University on March 6 approved the naming of the Metallurgical Engineering Building, 116 W. 19th Avenue, as the "Mars G. Fontana Laboratories."

Professor Fontana served as chairman of the Department of Metallurgical Engineering from 1948-1975 and retired from active teaching as Ohio Regents Professor Emeritus in 1976.

Mars G. Fontana

A faculty member since 1945, he is a past director of the Fontana Corrosion Center at Ohio State, member of the National Academy of Engineering and a fellow of the American Institute of Chemical Engineers.

He is a past president of the National Association of Corrosion Engineers, an honorary member of the American Society for Metals and holds the ASM’s Gold Medal, among a number of other awards and honors.

He is a native of Iron Mountain, Mich., and earned three degrees from the University of Michigan, which also gave him an honorary degree in 1975.
Electron microscopes help magnify student experiences

By Bob Reynolds
Lantern staff writer

Hidden in the basement of Fontana Lab among equipment that would make Dr. Frankenstein jealous, are some microscopes that can make a quarter look like a truck tire.

They are called scanning electron microscopes. Instead of glass for lenses these microscopes use electrons focused by magnetic fields.

The four electron microscopes in Fontana can magnify an object 150,000 times.

"We can enlarge the eye of a fruit fly so much that you wouldn't be able to tell what it is," said Clare McDonald, an electron microscopist in Fontana Lab.

McDonald said the auto industry is one example of a field where hands-on experience and a working knowledge of an electron microscope will help a student in getting a job.

An unusual thing about these microscopes is that undergraduate students are allowed to use them.

"I've never been anywhere where undergrads could take more than a five minute look (at the microscopes)," McDonald said.

Most of the students who use the microscopes are in metallurgical engineering or in one of the other engineering disciplines, but the microscopes are available to any department that wants to use them.

The electron microscopes use about 25,000 volts focused into a beam of electrons that scan the object to be magnified.

"By the use of magnetic lenses we're able to drive the electron beam back and forth. It then goes to the photo-multiplier and converts energy into a picture," said Tom Donford, a graduate student in metallurgical engineering from Jacksonville Beach, Fla.

The composition of a metal can be read on the computer screen. The computer can also be directed to look for specific elements in a sample.

To illustrate this, McDonald placed a quarter into one of the microscopes. It showed the quarter to be made almost entirely of copper and a little bit of nickel.

The microscopes are used for many other purposes from analyzing metals in welding to looking for corrosion effects on aircraft structures.

Donford used one of the microscopes to study the before and after effects of corrosives, such as salt water on airplane aluminum.

"Salt water corrosion is a very real threat to airplanes," he said. By examining the effects salt has on metals, it can be determined which ones are the most corrosion resistant and will, therefore, hold up best under stress and weather. This kind of research can help make flying safer, he said.
The vacuum chamber of the Metallurgical Engineering Department's electron microscope sprawls across a desk in the Fontana Corrosion Center. The microscope has the ability to magnify thousands of times and is used to look for signs of corrosion on aircrafts and other metal structures.