Institute combines theory, experiments

By ROBERT SCHEYER
For the Emerald

A scientist entering a laboratory of the University's Institute of Theoretical Science would see nothing of the bubbling test tubes and half-filled beakers familiar to a scientist's methods.

Instead, he'd be greeted with flat table tops covered by computer readout sheets and various writing instruments. But to a scientist these laboratories are the origin, the genesis of scientific thought.

Robert Mazo, head of the chemistry department and a member of the institute since 1962, says, "The institute was formed to break down the artificial and geographical barriers between departments, and it is a way to attract the best scientific minds."

Chemistry Prof. Tarrill Hill began the Institute of Theoretical Science with another chemist in 1961. It has since grown to 11 members representing physics, chemistry and mathematics. All members are part of another department and teach classes in their respective fields.

A theoretician works closely with experimentalists (the scientists with the bubbling test tubes) to interpret nature.

"There are two ways a theoretician works with experimentalists." Mazo says. "First, we try to develop ideas for new experiments and second, we must interpret what the numbers mean. Science is not numbers, but an understanding of nature."

Few other institutes exist where theoreticians of different disciplines interact in one department.

Paul Csonka, the institute's director, says the institute is "not a common arrangement."

"Very large universities can't do this type of thing because there are too many theoreticians . . . and very small institutions don't have enough theoreticians, and most intermediate institutions don't have a sufficiently enlightened administration to realize how useful it (the institute) is," Csonka says.

Areas of research at the institute are picked "partly as a result of previous measurements, and partly due to the needs of society, such as cancers, the energy crisis. And, it is a question of personality," Csonka says.

Work done at the institute has created a mathematical model that can pinpoint tumors in the body. Theoretical physicists, who compose most of the institute, are researching the particles that make up the elements of nature. These particles come under the general category of quarks and constitute how elements (substances that cannot be further broken down) of nature interact. Csonka is currently developing high-intensity and X-ray lasers.

"The work done here is very complicated and expensive, but very fundamental because it tells us what the world is made up of," Csonka says.

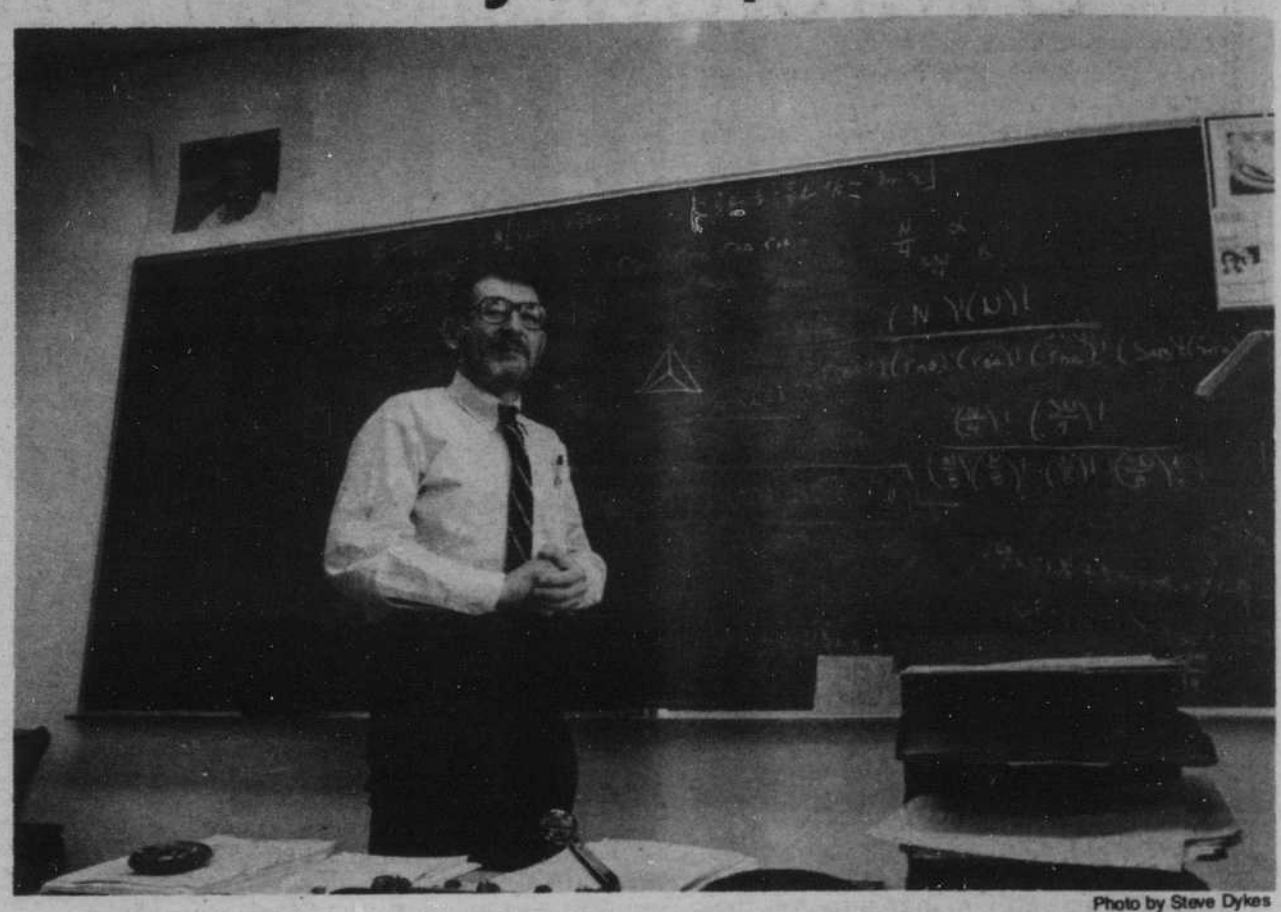

Photo by Steve Dykes

Theoretician Robert Mazo says, "Science is not numbers, but an understanding of nature." He and other members of the University's Institute of Theoretical sciences work with experimental scientists to interpret nature – an uncommon arrangement, says Director Paul Csonka.

Funding for the institute is done through the federal government's National Science Foundation and Energy Commission. The theoreticians at the institute compete with scientists around the nation for funds and bring in between $300,000 and $500,000 a year. About $150,000 goes to the University as overhead, or what should go to buy the clerical help necessary to run the institute. However, the institute is seriously understaffed in this area.

Csonka believes that much of this overhead goes into other University projects, but that isn't what he objects to.

"I'm sure the University needs those extra funds; it's not doing anything evil, it's just that I also need those funds." Csonka says.

"It is difficult to get the required funds and even if I need more (funds) I couldn't get them. I just think the system to distribute those funds could be modified to become more flexible, say the institute could receive 10 percent of the total overhead, but this type of problem also exists elsewhere," Csonka concludes.

Congress sets pace for inflation

WASHINGTON (AP) — President Carter's inflation watchers might want to check into an industry that produces the same volume it did 20 years ago but requires more than twice the workforce and seven times the money.

That industry is Congress.

After the close of each two-year session, a box score is printed in the Congressional record that summarizes items such as the number of days, hours and minutes the Senate and House met and the total of bills introduced and enacted.

It's strictly numbers and so omits a great deal about any congressional session and the complexity of the issues faced.

But the numbers are part of the story and they've remained remarkably stable over the years.

In 1977, the first year of the 95th Congress, 15,386 bills were introduced and 1,320 were passed. This year, another 6,927 measures were introduced and 1,648 passed, some of them holdovers from the previous year.

The 85th Congress was in session 20 years earlier.

In 1957, 14,013 measures were introduced and another 6,591 the next year. The totals for bills and resolutions that passed were 2,408 in 1957 and 2,718 in 1958.

To handle that workload, staff sizes have more than doubled in 20 years. In 1958, the budget for the House was $37.8 million and for the Senate $22.3 million. The House figure for 1978 was $282.6 million and $166.4 million for the Senate.