

Paul Christman . . .

would have graduated from Missouri this spring, and that never-before published story can tell you a lot about the character of Missouri's premier all-American and the affection he felt for his University.

You see, what with the War and marriage and a job, Paul got away from Columbia five hours short of a degree. It obviously didn't keep him from becoming highly successful, but he was never happy about it. So on one of his trips to the campus a year or so ago, he asked whether there was some way he could earn those final five hours. There was, and an independent study program was arranged. Paul was working on the last 2½-hour course this semester.

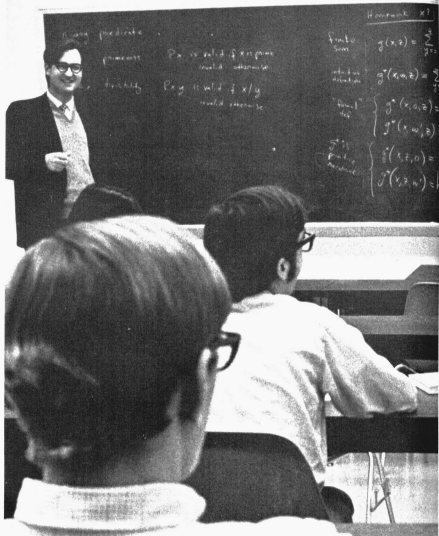
Paul Christman, of course, was a Missouri legend long before he died on March 2. To thousands of Tiger fans who never saw him play, he symbolized football greatness at Missouri, and there hadn't been much of that before he arrived. To those hundreds of alumni around the country and friends around the campus who knew him well — who knew how freely he had given of his time and energies over the years for Ol' Mizzou — he simply symbolized greatness. —S.S.

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COMPUTERS

By Thomas W. Melham

For many collegians, the future is becoming surprisingly dim. They pursue additional degrees, yet receive fewer job offers. Even the scientist, a traditional mainstay of industry, faces unemployment caused by oversupply.

"Science people are much more plentiful and job opportunities aren't as good today," says Dr. Raymond W. Lansford, B&PA's placement director. "We're now having more difficulty placing advanced degrees than we've had since World War II. Money is tight and industry is making about 25 per cent fewer offers this year than last year.

"That is, unless you're in computer science. Here, the demand is increasing. Far more people are needed than the number being trained."

To alleviate this dearth of computer people, new programs are evolving at many colleges, and the Columbia campus is



Enrollment in computer programming courses increased from 179 to 300 this semester, according to the chairman of the computer science department, Dr. Paul Blackwell, teaching on opposite page. Above, Dr. Blackwell explains computer memory banks to students Beth Meng and Janet Matusofsky in new Mathematical Sciences Building.

STILL NEED PEOPLE

no exception. The computer science department, initiated in 1968 as part of the College of Arts and Science, soon hopes to offer a master's degree in that field.

Interest in such a degree has prompted several hundred students to enroll in the department's computer programming courses: "Usually there's a drop in enrollment between the fall and winter semesters," says department chairman Dr. Paul Blackwell. But the University's enrollment this spring went from 179 to 300, a "significant increase," in view of the rising need for trained personnel.

"Computer people are much sought after by industry — the whole field is growing exponentially," Blackwell warns. "If you look back at the last

10 years, the next 10 are breathtaking."

The department is housed on the Columbia campus in the Mathematical Sciences Building, completed only last year. "It is a great convenience to have the mathematics, statistics, and computer science departments together in one building with the Computer Science Center and the Mathematics Sciences Library," says Blackwell.

And while the department is small (three faculty members, including Blackwell), its importance is interdisciplinary: "Many departments, such as atmospheric science, mathematics and psychology, use computers."

Similarly, business and government are relying increasingly upon computers to simplify and organize

their paper work, compute bills and control industrial processes. The need for qualified personnel is well-established. On the Columbia campus, courses and curricula are set up, and graduate students are enrolling in departmental courses at ever-increasing rates. Little wonder that Blackwell is looking forward to a specific computer science degree.

Until then, students must take the masters in related fields, such as engineering or applied mathematics, although their specific courses are in computer science.

An MS degree in computer science must first be approved by the graduate council, a group of deans and administrators from all four campuses. Then it must pass the Board of Curators, which also determines the program's funding.

Despite this delay, education continues: Sixteen courses are offered in the University's five-fold computer science program. In addition to computer programming, the areas stressed are computer design (offered in the College of Engineering), numerical analysis, automata theory, and systems programming.

"Systems programming" covers the many types of computers, including "big" ones that handle several operations simultaneously and perform on multiple programs. Numerical analysis explores procedures in carrying out fundamental mathematical operations, and automata theory is an abstract approach to the question of what machines cannot do.

Programming supplements lectures.

"Overall, the courses are lectures supplemented with a large amount of programming. Elementary courses — those in computer programming — contain 40 to 50 students; the more advanced classes draw about a dozen.

But despite their size, these advanced courses are frequently the most challenging to teach because of the complexity of material covered. Instead of the usual "abstract, symbolic method that looks like you're doing mathematics," Blackwell favors "cute illustrations to bootleg into the course what is on the frontier of research. If you approach the right way, you can illustrate more complex problems of computer systems. It livens up the course a little."

Lively or not, MS candidates must take 30 hours of such courses to qualify for their degrees. The curriculum has been designed so that it may serve

as a terminal degree, providing suitable training for a future systems analyst, programmer or computer center administrator.

However, the proposed MS also will be sufficiently flexible to serve as a foundation for the PhD degree, which means higher wages and the chance to teach at a large university. Because of the enormous need for computer scientists, "There is excellent opportunity for them in most any area of business, government or commerce," Lansford says.

You can teach with a master's.

Blackwell agrees: "All over the state, you've got insurance companies, businesses, banks and others, all heavy users of computer science people. You could even teach with a master's. Not at a large university, but in colleges, smaller universities and high schools where programs are being started."

But even with this increased training of computer scientists, the present shortage will continue, for "There simply aren't that many departments in the country capable of turning out PhD's." Unable to satisfy its needs with the available doctorates, industry must turn to masters and bachelors in the field.

Being in such demand gives computer scientists a distinct edge in expected starting pay — of all "green" PhD's, computer people claim the highest median salary, topping \$18,000 in 1968. Only physicians ranked higher. Lesser degrees in computer science received proportionately high wages, an obvious incentive to students in the department.

As the number of graduate students increases, Blackwell ultimately hopes for approval of a doctoral computer science degree. A departmental BS is not planned, although many of the present courses are open to undergraduates.

An over supply of programmers?

So computer science education is rapidly expanding to meet the demands of our computerized economy. But will today's emphasis in this field result in an oversupply of programmers in five or ten years?

"I don't know," Blackwell says, "There's a tremendous need. Look at McDonnell-Douglas in St. Louis — they're enormous. They could absorb a lot of programmers just at that one plant. But there's never been a shortage that couldn't be overshot." □