

Since it befitteth not poor men, and especially such as live by charity, to give the children's bread unto dogs . . . woe unto those that in sin take their diversion with the birds of the air.

Statute of King's College, Cambridge, 1441

No part of the funds . . . shall be available for . . . any individual who . . . willfully refuses to obey a lawful regulation or order of the university or college which he is attending . . . to the disruption of university or college administration.

U.S. House of Representatives—May 9, 1968



School of Fine Arts, Paris

A.D. 1440: Parisian police (right) apologize for invading university privileges.

Student demonstrators may lose Federal aid

Congressmen forge a weapon that university administrators don't want

The behavior of scholarship students has always been a concern to those who give the money, although the nature of the undesirable behavior may change.

A House amendment to the National Defense Education Act and a similar one added the previous day to the National Science Foundation Appropriation Act were sponsored by Representative Louis C. Wyman (R-N.H.) in reaction to recent student demonstrations, especially the insurrection at Columbia University (SN: 5/18 p. 471).

Debate made clear that Congressmen are as furious at disruptive activity among students as was an earlier lawmaker, King Henry II, when he ordered English scholars to return from Paris because he suspected them of intrigues with supporters of the exiled Archbishop Thomas à Becket.

The Columbia situation, where student riots have resulted in the virtual closing of the university, also prompted the New York legislature to action. On May 8 the State Senate passed a bill sponsored by majority leader Earl W. Brydges (R-Buffalo) which would deny state aid to students convicted of any of

a long list of felonies and misdemeanors, many related to demonstrations and rioting.

Ironically, the actions of both the legislators and of the students are combining to undermine university administrators.

In some cases a university's own actions cost it control of the situation.

At Columbia, an exasperated administration called in the police; 609 students await trial on various misdemeanor charges, and the university now finds it may no longer be able to control what happens to them.

Other disruptions afflict campuses across the United States and around the world—and are meeting similar reactions.

In Paris last week, intervention of the municipal police led the faculty and labor unions to call a general strike in support of student demonstrations; in Berlin the actions of municipal police last month against demonstrating students have raised the ire of many ordinary citizens, and have led editorial writers to despair of the future of democratic politics in Germany.

Many American Congressmen, as the

debate on the Wyman amendments showed, find the demonstrations unforgivable. To these Congressmen, a college education is a privilege to be worked for, and if the students to whom Federal financial aid is given take part in disruptive demonstrations instead, then their scholarships should be given to deserving students who will work hard.

Congressman Wyman and his supporters want to give the university administrations a telling disciplinary weapon against the alienated students. Under the Congressman's amendments, it is the universities, in their administration of about \$1.4 billion in NDEA money and the \$46.5 million in NSF money that ends up as salaries for research associates and assistants, that would certify which students are unfit to receive benefits because of offenses committed.

University administrations are responding as if this were the last weapon in the world they want.

"Poor and unfortunate," says Harvard President Nathan Pusey and adds that Harvard will do all it can to oppose the Wyman amendments before the Senate.

"Unenforceable and unworkable," says Stanford University Provost Richard W. Lyman, "unlikely to help us in our essential task of re-establishing respect for due process."

The Columbia administration "opposes legislation passed in the heat of the moment with groups or individuals in mind." Deans at Princeton and Harvard Universities also expressed opposi-

tion to a Federal fund cutoff, but said they had not studied the amendments enough to comment in detail.

Caution is also being expressed in the Administration. Dr. Donald F. Hornig, the President's Science Adviser, says the Wyman amendments put university administrations in an impossible position. Harold Howe II, Commissioner of Education, whose office administers NDEA programs, says of the amendments: "In general I think they are extremely undesirable and unnecessary and kind of a triumph of resentment over wisdom."

Student reaction varies, dividing along political lines, among others. A representative of the conservative Young Americans for Freedom said he thought most of his membership would approve the Wyman amendments. But Pat Sturgis, editor of NEW LEFT NOTES, finds the Congressional reaction understandable: "When you are trying to change the government, you can't expect it to

walk arm in arm with you." Passage of the Wyman amendments would not necessarily be bad, says Sturgis, since it would make clear that the government is not interested in furthering education regardless of the political views of those who receive the aid.

Nobody on the firing line expects that the Wyman amendments would do away with demonstrations. "There are many reasons for demonstrations," says Sturgis. The amendments might even furnish another.

University administrators also expect disturbances to continue.

Out of it all, says Dr. Colin S. Pittendrigh, dean of Princeton's graduate school, may come a re-examination of the complex university administrative structure. Students, by definition, he says, will never make administrative decisions, but the unrest may bring them more regular channels for making their feelings and opinions count.

MONEY TALKING

Bright prospects for graduates

In recent years starting salaries for college science and technology graduates have been rising much faster than wages generally. Since 1960, for instance, industry has upped its starting offer to natural science graduates by 50 percent.

A part of this, of course, is due to inflation. The major part is due to the burgeoning demand for scientists and technologists of almost all stripes.

A significant contribution has been made to the increase, however, many labor analysts believe, by industry's desire for fresh blood, the belief that the new graduate has all the latest answers at the tip of his tongue.

So college graduates in science this year will share what the U.S. Department of Labor expects to be an embarrassment of riches in employment opportunity—if they aren't drafted.

A record 820,000 are expected to receive degrees this year—670,000 bachelors and 150,000 advanced degrees. For them, the Labor Department says, "employment prospects are exceedingly bright."

There are expected to be more jobs offered than there are graduates who will take them. Many of the bachelors will try for advanced degrees and many more will be drafted. Competition among employers for the remainder has driven starting salaries 5 percent higher than last year.

As is often the case, the demand for engineers outstrips that for other technology graduates. In fact, it exceeds the demand in all fields except accounting. Chemical, electrical and mechanical engineers are the most sought after, with

starting salaries averaging \$750 a month.

In mathematics and the natural sciences, bachelor's degrees in physics will draw the highest average starting salaries. The Labor Department describes opportunities for chemists and physicists as excellent in industry, government and teaching. Physicists are being offered an average of \$750 to start, chemists about \$725.

Mathematicians have a very good outlook for employment, especially in fields such as computer technology and insurance. Mathematicians who have some background in engineering and the physical sciences are being sought for jobs in operations research, quality control and systems analysis. Starting salaries average about \$700 a month.

Medical research programs seek Ph.D.'s in biophysics, biochemistry, microbiology, physiology, pathology and pharmacology. Among biologists these are in particularly strong demand. Prospects for bachelors in biological sciences generally are limited to jobs as technologists and research assistants, and starting salaries for this group average about \$600 a month.

Openings in the earth sciences call primarily for advanced degrees, though petroleum companies are recruiting a few bachelors in geology.

The Labor Department says the outlook for graduates in health fields is very bright this year. This is due primarily to a continuing shortage of staff in hospitals and nursing homes. Pharmacists are in particular demand; pharmaceutical companies are hiring them to fill positions in sales and production.

MIGHT HAVE IDENTIFIED RAY

Computer encoding of fingerprints

In all of the fingerprints ever studied, no two impressions from different fingers have ever been found to be identical. The Federal Bureau of Investigation alone has some 187 million sets of prints on file, including duplicates. About 64 million of the individuals represented are ordinary citizens; 17 million are in the criminal file.

Since the minute details of a fingerprint remain unchanged through a lifetime, they offer positive identification when they can be matched. However, under the system of classification most widely used for large fingerprint collections, this identification cannot be made easily unless all 10 prints are available for comparison.

Problems arise when only one print or partial prints are available. Then the identification process can be either very time-consuming or impossible.

Such a situation prevented the FBI, with all its resources, from piercing the alias of the suspected assassin of Dr. Martin Luther King Jr. for days after the slaying. Now a concerted attack by computer experts is expected to shorten such a search to a minute or two.

The commonly used Henry system takes account of the different patterns—arches, loops, whorls—and ridge counts. It uses information from all the fingers and, even with a computer to help, requires an expert to be able to recognize the basic patterns.

These recognition problems are serious obstacles to any effort to automate the Henry system. So scientists are looking for another way of using computers to classify and identify fingerprints.

Two fingerprints can be shown to belong to the same finger by comparing a dozen details. Authorities generally accept the demonstration that 12 details agree, with none in disagreement, as proof the two prints originate from the same finger.

A new system, just developed at the National Bureau of Standards by Dr. J. H. Wegstein, replaces the loops and whorls of the Henry system with ridge endings, bifurcations, incipient ridges, slands and enclosures. Once the location of these details is established, a computer can classify and identify a single fingerprint.

But the input to the computer has to be done by hand. The experts who classify the fingerprints sort them according to the X and Y coordinates of the details, as well as their orientation with respect to each other.

From this information, the computer calculates a set of descriptors that are