
Michigan Today

The University of Michigan

June 1984

Vol. 16, No. 2

3

Parent power
aids Asian kids

6

Technology peeks
into body's secrets

9

Dearborn observing
25th anniversary

13

Amaizin' secret
of best popcorn



Angell Hall

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'Plateaus' force choices Career ladder jams up

By Pat Roessle Materka
News and Information Services

You join the organization, work hard, and win high marks for your performance. Each year you take on new responsibilities and gain competence and confidence.

Finally, a managerial slot opens up. And, boy, are you ready! You deserve this promotion.

You've earned it. You rehearse your acceptance speech.

Then you find out there are 150 other equally qualified candidates.

"Our old ideas of career mobility — rising steadily through the ranks of a single company — are becoming increasingly less viable," observes Raymond E. Hill, associate professor of industrial

relations and organizational behavior in the U-M School of Business Administration. "There are too few high-level jobs for the numbers of ambitious, competent people."

Many companies are retrenching at the same time the workforce is expanding. Many women and men in the 30-to-40 age bracket — the "baby boom" generation — are ready to move on from their entry-level jobs into more responsible and rewarding positions. But career ladders are congested. Prepared to scale the mountain of opportunity, a great many of these workers face a vast empty plain.

A career plateau can represent a closed future, a dead end. Or, it can be a catalyst for finding a better job or exploring new personal interests. Hill says persons who feel victimized by limited opportunities are likely to develop a number of symptoms: a lack of enthusiasm for their job, a decline in productivity, low morale, anger at the employer and at themselves.

"People can experience stress and burnout because they feel overwhelmed by too many responsibilities. But more often, they result from a lack of opportunity and challenge."

The distress is made worse by the fact that many Americans expect more from their jobs than an income, Hill observes. "We have become an incredibly affluent society, despite recent recessions. Most of us don't have to work merely for survival. We expect our jobs to provide us with self-fulfillment."

The search for fulfillment has led many people to reconsider their personal definitions of success. Instead of plodding their way up the ladder of one organization, they may follow a spiraling pattern that takes them through a succession of companies or even several careers.

George Martin (a pseudonym) is a case in point. After switching majors twice in college, he earned a degree in marketing and found a job as a sales representative. But his avocation was architecture. In his travels around the country, he became fascinated with varying building styles. He designed homes for himself and for several of his friends.

At the age of 40, he returned to school and enrolled in an architecture and design graduate program. He now teaches construction technology and continues his design work in private practice.

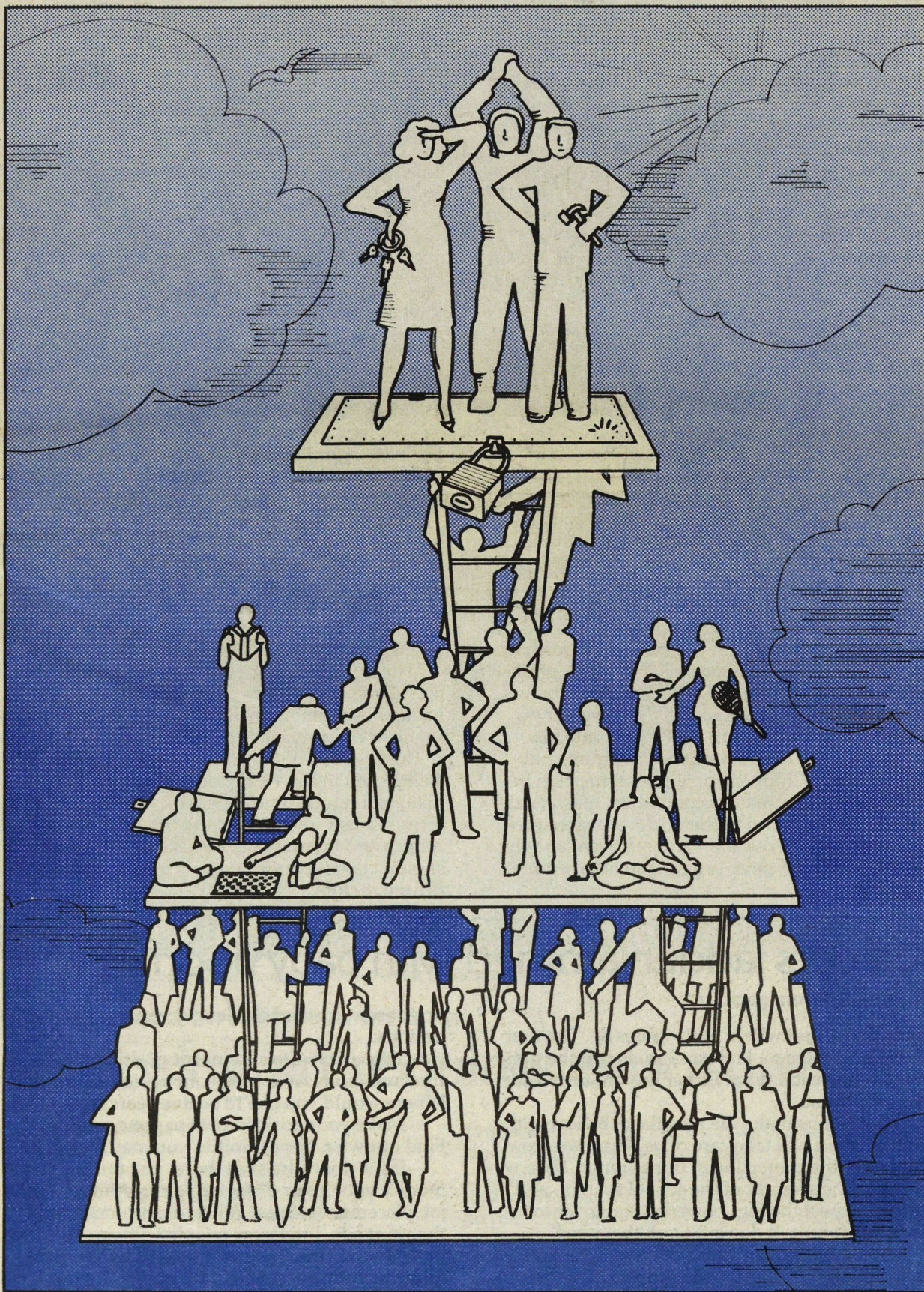
"Society has become more accepting, and even approving, of persons who bypass the traditional routes to success," Hill says. "Besides the spiral, there's also the 'steady state pattern.' This is the worker, often a craftsman, who derives satisfaction from doing one job consistently well.

"A third is the transitory pattern, seen in persons who flit from one job to another. For these individuals, the lack of a pattern is a pattern. They thrive on variety rather than power and status.

"Finally, there's the growing number of individuals for whom career development is secondary. They seek self-realization outside of their work, through hobbies, leisure activities and family relationships."

Reaching a career plateau can give persons an opportunity to take stock of which pattern best

(Continued on page 2.)



U programs ranked third in nation

By Hugh Grambau
News and Information Services

The University of Michigan made an impressive showing in a survey of undergraduate and graduate programs published this spring, coming in third in the nation in both categories.

But while University officials were pleased, they took only a cautious bow for the high rank-

ing, because the rating process remains controversial and full of pitfalls.

The two-volume Gourman Report placed Michigan just behind Princeton and Harvard for its overall undergraduate program and behind Harvard and University of California at Berkeley for its graduate and professional programs.

The survey placed U-M ahead of such other

prestigious institutions as Yale, Stanford, Cal-Berkeley, Chicago, Cornell and UCLA among undergraduate programs; and ahead of Yale, Princeton, MIT, Chicago, Wisconsin and UCLA in graduate programs.

The report was published by Jack Gourman, a political science professor from California State (Continued on page 2.)

Job 'system' traps older women

By Pat Roessle Materka
News and Information Services

Although women over 40 are the fastest growing segment of the U.S. labor force, the overwhelming majority of them are trapped in low-paying jobs with little chance of advancement. Age and sex discrimination may be illegal—but they are rampant.

So say researchers at the U-M Institute of Gerontology. The last three decades have seen dramatic increases in both numbers of working women and the length of time they spend in paid employment, they note. Men's labor force participation and work life expectancy have declined during the same period.

"But for most older women, more work does

not guarantee adequate income. The gap between women's wages and men's wages widens with age, so that after 45, women earn 55 cents for every dollar that men earn," according to Eloise Snyder, Jeanne E. Miller, Carol Hollenshead and Jane Ketchin, authors of the Institute's report.

"We are faced with a paradox: growing public acceptance of working women; greater flexibility of roles; in some cases, equal pay and employment rights — yet many women, particularly older and minority women, earn wages so meager they are barely enough for survival. And they are doomed to retire into continuing poverty."

The "older woman worker" is broadly defined in the U-M study:

— She may be only 40 but already has been denied employment and advancement opportunities because of her age. This circumstance is so common that Congress has enacted legislation on her behalf, but enforcement has never been adequate.

— She may be in her 50s and suddenly single, with urgent financial need but ill-equipped to support herself. The proportion of mid-life divorced women has doubled in the last two decades, and the average age of widowhood is now 56.

— She may be past 65 and still working because she cannot afford to retire. Half of all employed women hold jobs not covered by pension plans. In general, women receive less than half the retirement income men receive.

"Certainly, older women are found in important new roles in the 1980s: corporate executives and government officials, skilled tradespeople, distinguished professionals. But they are overwhelmingly outnumbered by those trapped at the bottom end of the scale. In 1982, more than half of all working women 45 and over earned less than \$10,000," the authors point out.

The outlook is particularly dismal for women who are single, widowed or divorced, the U-M researchers continue. Seventy percent of women over 55 live alone, and one-third in this age group have incomes below poverty level. Between 1972 and 1982, the number of households headed by women increased by 57 percent.

"These problems are compounded for minorities. Forty-two percent of black families are headed by women, making up a disproportionate segment of the black poor," the U-M study says.

The Institute of Gerontology report, "Old' at 40: Women in the Workplace," traces current and historical trends. It underscores matters related to hiring, salary and fringe benefits, Social Security reform and other issues that, say the researchers, should concern policy makers in both public and private sectors.

U-M is consistent frontrunner

In other recent surveys of higher education, The University of Michigan has consistently ranked among the nation's best.

In the June, 1983 issue of Money Magazine, U-M's Ann Arbor Campus was called one of the 10 best public universities for undergraduates.

The article called U-M "one of the world's leading research universities. The U-M is known for its fine humanities faculty and for research in the social sciences. Most of the star professors teach bachelor's degree courses."

U.S. News & World Report published a survey of undergraduate programs in its Nov. 28, 1983,

issue which rated universities by size and mission. U-M was ranked 7th in the category "National Universities."

In a May 1983 reputational survey of graduate schools, conducted by Everett C. Ladd of the University of Connecticut and Seymour Lipset of Stanford University, U-M placed fifth overall.

In late 1982 and early 1983, the Conference Board of the Associated Research Council (ARC) released evaluations of graduate departments in a study entitled "An Assessment of Research-DocTORate Programs in the United States."

U-M emerged as one of the top eight universities in the country among 288 surveyed. For the single measure of faculty quality, Michigan was rated among the top ten universities in 15 of 32 disciplines, tying with MIT. U-M was out-ranked in the total number of top-ten-rated department faculties only by Berkeley, Stanford, Harvard, UCLA, Chicago, Princeton and Yale.

In a survey ranking the quality of engineering programs based upon the achievements of graduates, compiled by Ohio State University Engineering Dean Donald D. Glower and published in the Chronicle of Higher Education in 1980, U-M was ranked in 14th place for all programs according to the number of citations.

The U-M chemical engineering program was rated 6th for undergraduate achievements, and first for achievements by both masters and Ph.D. graduates. The U-M civil engineering program ranked sixth for undergraduates, 12th for achievements by masters and fifth for Ph.D. graduates.

The electrical engineering program ranked 8th for undergraduate achievements, and fourth for achievements of both masters and Ph.D. graduates. The mechanical engineering program was ranked 11th for undergraduate achievements, 14th for masters and 4th for Ph.D. graduates.

In a survey of library science programs published in the Chronicle of Higher Education in 1981, U-M was ranked second in the master's degree program, third in the doctor's degree program in library education and research, and third in the doctor's degree program in library administration.

Rankings survey flattering, but own measures important

(Continued from page 1.)

University-Northridge and a private research organization called the National Education Standards in Los Angeles.

Gourman's reports, which have been published for the past 30 years, are attractive, U-M experts say, because they are one of the few such surveys to attempt an overall ranking of the quality of undergraduate programs. In addition, while other recent surveys have scanned the reputations of various graduate programs, Gourman comes out with an overall total score which creates an instant ranking hierarchy.

The controversy arises out of the methods used to arrive at the rankings. While some surveys, such as the Associated Research Council's (ARC) reputational survey of graduate programs, publish elaborate descriptions of how they gather and tabulate their statistics, Gourman's exact method is a proprietary secret.

Generally Gourman's system involves ratings of both the academic quality of a school's various departments (faculty publications, for example) as well as rating of such non-departmental features as size of library, quality of the governing boards and activity of the alumni association.

"The results are certainly flattering to the University," commented R. Sue Mims, director of the Office of Academic Planning and Analysis, "but many educators question Gourman's methodology."

Robert S. Holbrook, associate vice president for academic affairs and professor of economics, noted that the University conducts its own ongoing evaluation of undergraduate and graduate programs.

"We take pride when the reputational survey rankings reflect our own evaluations," Holbrook said, "but we know that some of our departments are better than Gourman says and some are not as good. We feel our own assessment is more valid."

Billy E. Frye, vice president for academic affairs and provost, expressed his fears about reputational surveys, when the ARC ratings of graduate programs (also very favorable to U-M programs) appeared last year.

"I fear that the way external peer review has come to be expressed and perceived through the ratings is pushing us, with other universities in the nation, toward homogeneity and away from individuality; toward lopsided values and objectives which create campus environments focused to a distressing degree upon competition and decreasingly upon collegiality. . .," Frye wrote in the University Record.

Careers ladder jammed with baby boomers

(Continued from page 1.)

suits them, and where their values lie. The first thing to recognize, Hill stresses, is that the ultimate responsibility for career growth rests with the individual.

"Many of us make the mistake of believing the organization will take care of us. First, we grow up under the protection of our parents. Then we move to the security of the school system, and finally, expect the big, powerful employer to insure our future. It doesn't work that way."

Instead, view the organization and your job as instruments of your self-development, he advises. When they no longer provide you with suf-

ficient rewards and challenges, you have these options:

—Take stock of your current position and future ambitions. What are your primary interests? Where would you like to be five years from now?

—Make your goals known to your employer. Find out what opportunities you may anticipate.

—If the doors are shut there, you must either modify your goals or revise your resume. Check job placement offices, talk to counselors, study the want ads. Interview people who are working in fields that interest you. It takes hard work to discover your next niche, Hill warns. You can't be passive in going about it.

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ART SCHOOL Dean George V. Bayliss seated beside a canvas of student artwork.

Selection based on instinct, not reason

Choosing art requires exposure

By Pat Roessle Materka
News and Information Services

Above your living room couch is a large blank wall. You would probably hang:

- A bullfighter painted on black velvet.
- A brass sunburst.
- A painting you love by an unknown (undiscovered?) art student.
- A mirror.
- All of the above.

If you chose "c," you not only may be displaying good taste but also making a wise investment, suggests Prof. George V. Bayliss, former dean of the School of Art.

"Absolutely stunning works of art are being created by students. You could acquire an original oil painting or a bronze sculpture — often at little more than the cost of the materials. You would be risking very little capital, and helping a young artist."

There are courses that train you to create pieces of art, and slide-lectures that attempt to instill appreciation for it. But there are no easy five-step

formulas for buying art, Bayliss assures. How does a beginning collector make choices?

"First, expose yourself to a broad range of art and learn what really appeals to you," the dean advises. "Go to the gallery openings and museums. Befriend artists and dealers. Become as familiar as you can with the medium you like best. Sure, it's possible to be attracted to sculpture, architecture, films and lithographs, but pick one or two to become very knowledgeable about."

Then, follow your instincts. Art is not something a person buys rationally, as one buys a car. You need to go out and confront a piece of art, Bayliss says. Open yourself up to feeling. Permit your intuition and sense of pleasure to take charge. If, in that context, the piece really affects you, consider acquiring it.

Art may prove to be a good investment, but it is risky and speculative. New York has replaced Paris as the center of the world art trade, with

'Push' at home helps Asian kids achieve

By: Kate Kellogg

News and Information Services

An extra "push" from home may account for the superior academic performance of Chinese and Japanese elementary school children relative to their American peers, according to a U-M professor of psychology.

For at least the past two decades, American children have lagged behind Chinese and Japanese children in scholastic achievement, starting only a few months after entering first grade. Results of a three-nation study, recently completed by Prof. Harold W. Stevenson of the Center for Human Growth and Development, indicate that parents' involvement in children's schools and schoolwork may be a key to high academic performance.

"American parents have become disengaged from schools, while Japanese and Chinese parents show strong support, both through great respect for teachers and the interest they take in their children's schoolwork," says Stevenson.

Funded by the National Institute of Mental Health, Stevenson's research project studied a total of 1,440 students. The sample included 240 first graders and 240 fifth graders from each of three cities: Taipei in Taiwan, Sendai in Japan, and Minneapolis in the United States. Stevenson chose Minneapolis because its schools receive stronger-than-average public support and its residents tend to come from native-born families.

"If problems were to be found in Minneapolis, we assumed they would be compounded in other American cities," Stevenson explains.

The four-year study included reading and mathematics tests, classroom observations and extensive interviews with the children's parents and teachers. On the average, the Japanese and Chinese children scored higher on the reading tests than the Americans, even though American children tended to be overrepresented among both the best and worst readers.

The Japanese and Chinese clearly outshone the Americans in mathematics; among the 20 American fifth grade classrooms studied, not one classroom achieved an average score equivalent to that of children in the worst-performing Japanese fifth grade classroom.

"We were surprised at the initial test scores — that the differences in achievement levels were as great as they are," Stevenson says.

The explanation for that achievement gap, he concludes, lies in the home as well as in the schools — and definitely not in genetic differences, as some researchers have theorized. Stevenson's study found no evidence of inferiority in cognitive abilities among American children.

Starting with the first grade, Chinese and Japanese parents make their children's education a focal point of family life. Not only are Asian children assigned far more homework than American children (an average of 77 minutes per day for first graders in Taipei compared to 14 minutes in Minneapolis) but their parents also devote a proportionately greater amount of time to supervising their children's homework.

"In Taiwan, the children bring home notebooks in which parents as well as students write questions about school and homework assignments," explains Shin-ying Lee, a graduate student in developmental psychology who has worked with Stevenson on the project. "Parents can have ongoing communication with teachers through these notebooks, as well as through personal visits." Such notebooks also are used in Japan.

Asked what they would do if their child had difficulty in school, 80 percent of Chinese and Japanese parents reported that they would help them. Less than 10 percent of the American parents emphasized helping their child as an important response.

"We found the Americans were more likely to get involved in their children's school and would encourage, rather than help their children."

(Continued on page 7.)

(Continued on page 7.)

State-of-the-art for Engineering

New building is door to future

By Suzanne Tainter
Health Sciences Relations

For generations of students, the arch on the West Engineering Building at the corner of East University and South University avenues has been a gateway to Central Campus — a vaulted entrance that literally links the Diag lawns and walkways with the world beyond.

On May 17, the College of Engineering broke ground for a new building on North Campus. When it is completed in about three years, the College will be vacating most of its Central Campus complex and its venerable arch, but the new facilities will allow the College to solidify its links to Michigan and its industrial base.

The new structure is at the heart of College of Engineering efforts to remain in the forefront of engineering worldwide and to help Michigan revitalize its economy.

Principal speaker at the groundbreaking was Michigan Gov. James Blanchard, whose presence underscored the partnership between the state and the College to strengthen and diversify Michigan industry. The building will be totally funded by state appropriations and from the proceeds of the sale of bonds by the State Building Authority.

The \$30 million structure will have \$10 million of equipment in state-of-the-art laboratories and experimental manufacturing facilities to produce the ultra-small, high-speed microelectronic devices of the future.

Needle-fine brain probes to operate artificial limbs, blood sugar sensors for an artificial pancreas, touch-sensitive "finger tips" for robots and microscopic, laser-fired optical circuits will be among the future engineering developments on North Campus.

Construction of Engineering I is the final step in the move to North Campus for the College, an idea with a genesis 35 years ago. It is the culmination of an aggressive initiative at the University to maintain

premier status among the world's engineering centers, say College officials.

"We presently conduct world-class research and instructional programs in all the areas commonly identified with high technology — robotics and automation, microelectronics, lasers and holography, high speed computers, and even more exotic areas such as artificial intelligence," says Dean James J. Duderstadt.

"This new facility will be among the finest in the world and will allow us to train engineers and industry leaders for the 21st century, as well as to research technology critical to the future of Michigan industry," the dean says.

College officials note that the building will be very prominent on North Campus, located at its geographic center, and is expected to become a focus of student life.

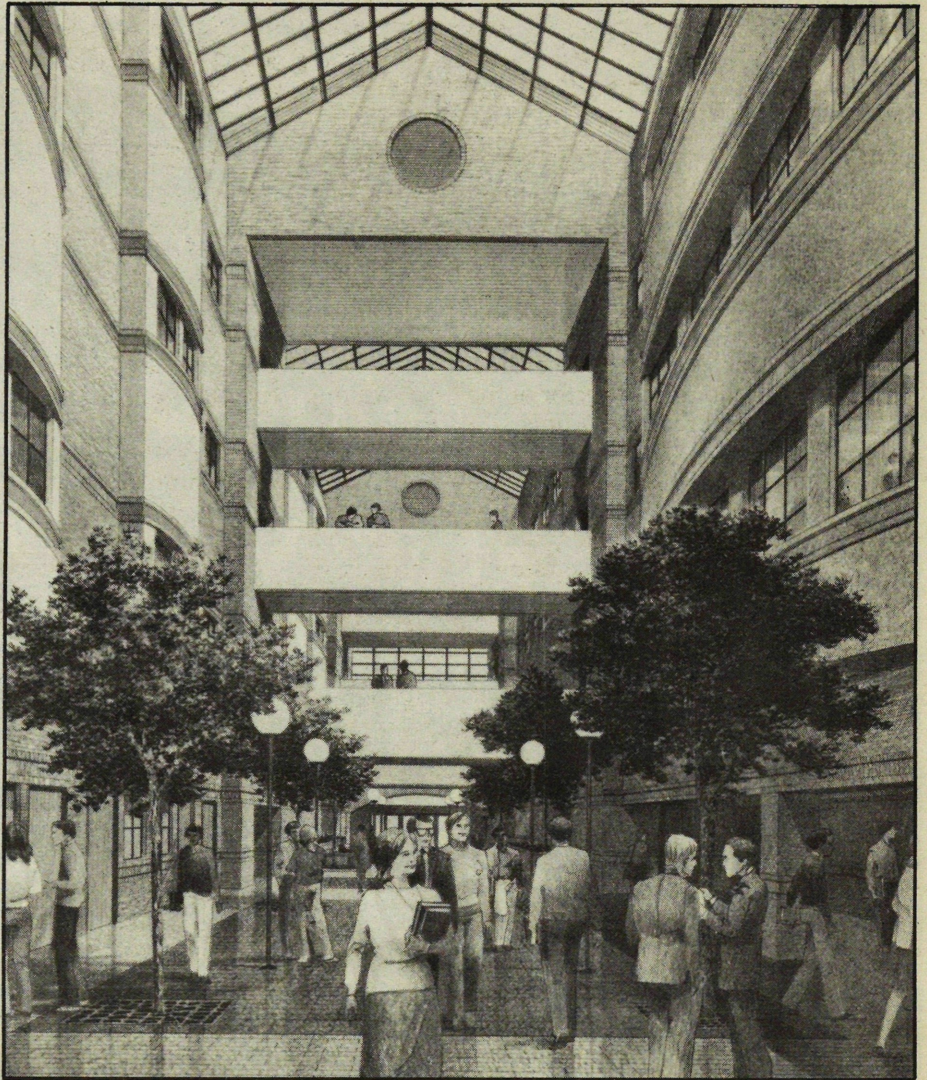
"It is going to give a sense of entity to the College," says Victor Cardona, a U-M architecture graduate and architect for Smith, Hinchman, and Grylls, the design firm for the building.

The new 232,000 square foot building will rise four stories between the G.G. Brown Building to the north and the Walter E. Lay Automotive Laboratory to the south, and will be connected to both.

The structure will house the department of electrical engineering and computer science, parts of mechanical engineering and applied mechanics, administrative offices and other engineering programs and student services. Its labs and classrooms will be utilized by 1,600 students and 100 faculty.

The old "Engine arch" is captured conceptually in a 30-foot wide atrium that runs east and west, the entire 365-foot length of the new Engineering I. Like its Central Campus counterpart, it will serve as a pedestrian "gateway," although the North Campus arch will open to interior

(Continued on page 5.)



ARTIST'S RENDERING of the atrium in the Electrical Engineering and Computer Science Laboratory now under construction on the North Campus. The area depicted is outside the H. Earl Hoover Student Activities Center.

Engineering goal to help revitalize state economy

One of the key goals of the College of Engineering is to be a major player in revitalizing Michigan's economy.

"There is a growing recognition that the key to the economic recovery of this state and the survival of the Michigan economy will involve a major transition from 'experience-based' to 'knowledge-based' activities. This will require a massive infusion of high technology, both to revitalize existing Michigan industry in the short term and to attract new industry into this State over the longer term," says James J. Duderstadt, dean of the College.

"To put it simply, the keys to regaining competitiveness will be ideas and people. State government

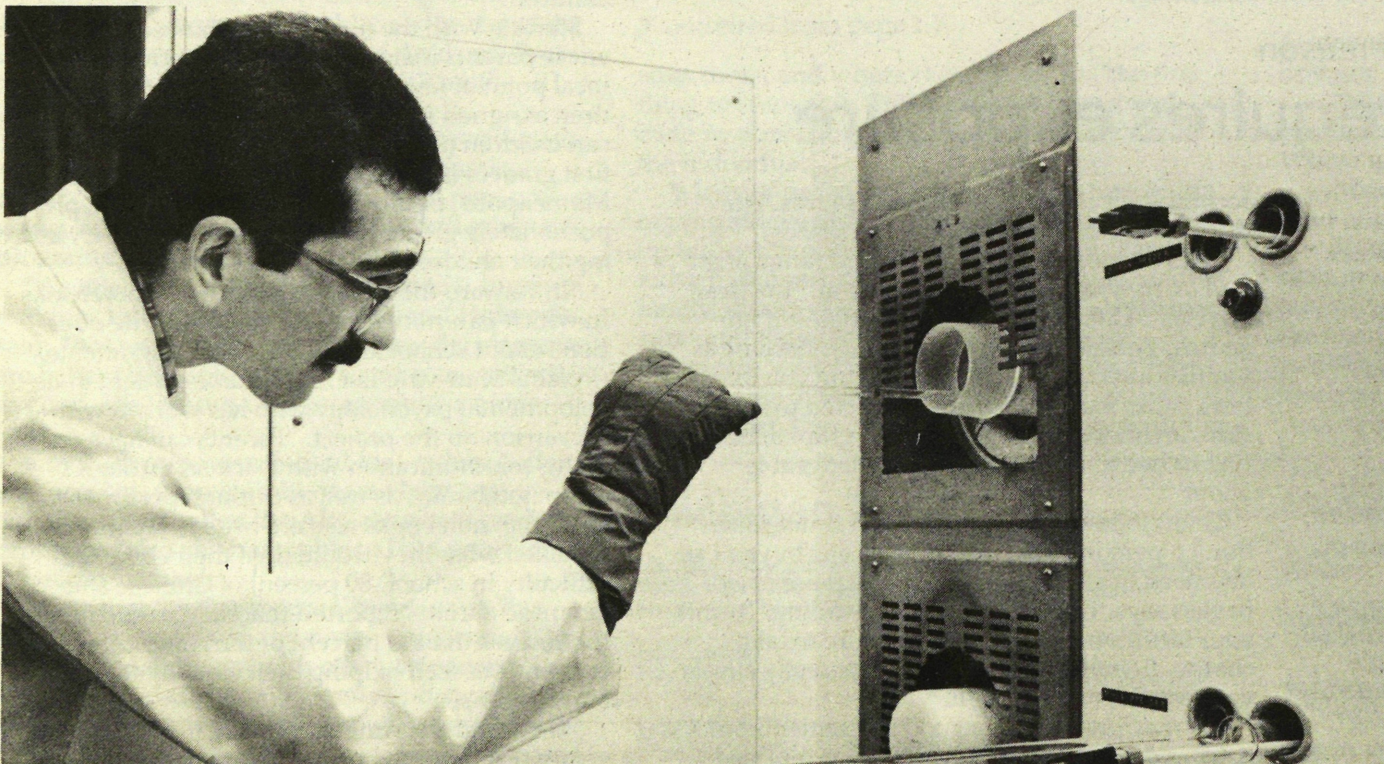
and private industry have turned increasingly to the primary sources of these critical ingredients, to this nation's great research universities, to provide the intellectual creativity so fundamental to technological innovation and the talented, broadly-educated scientists and engineers who can understand and implement this technology."

The College has consistently ranked among the leading engineering schools in the nation and in the world. It is third among schools in total number of degrees awarded and claims more than 40,000 alumni worldwide.

"Today, the College of Engineering attracts the best students graduating from Michigan high schools. Our average entering freshman now ranks in the 98th percentile, with SAT scores of roughly 1300 and a high school grade point average of 3.7 or higher," Duderstadt points out. "These students certainly represent Michigan's most valuable resource for its future."

The College has some 320 faculty, 650 staff and 6,000 students enrolled in its 20 degree programs. Each year it graduates more than 1,000 B.S., 500 M.S., and 100 Ph.D. degree engineers — the majority of whom continue to accept positions of leadership in industry in Michigan and the Great Lakes area.

"This new engineering building provides the facilities to match the outstanding human and intellectual resources of the College, and enables the College to fulfill its commitment to serve as the technological fulcrum to shift Michigan into a high technology economy. It comes on top of an additional investment of \$36 million from private sources to complete the College's move to its North Campus site," explains Charles Vest, associate dean.



ENGINEERING GRADUATE student Khalil Najafi wears thick gloves to protect himself from the very high temperatures—more than 1,000 degrees Celsius—of a diffusion furnace. The furnace supplies the critical temperatures needed for a variety of processes used in fabricating electronic devices.

U has applications 'boom'

By Harley Schwadron
News and Information Services

The number of freshman admissions applications to the University has reached an all-time high.

Applications for the fall term totalled 14,635, a 17 percent increase over figures of a year ago, according to Clifford F. Sjogren, director of the Office of Undergraduate Admissions.

The current total surpasses the previous high of 13,378 applications in 1969, during the time the "baby boom" generation reached college age, said Sjogren.

Of more than 50 large publicly supported universities participating in a survey of the Associated Chief Admissions Officers of Public Universities, the U-M had "the most significant increase in applications during this admissions year," said Sjogren.

U-M applicants will be selected to a freshman class of 4,200. Among various schools and colleges at U-M which admit freshmen, the College of Engineering drew an unusually high number of applications. In that school, there were 3,400 applicants to fill 750 freshman places this fall.

Among explanations for the increase, Sjogren noted that "students today are seeking colleges and universities that offer high quality academic programs in an educational setting characterized by diversity among students, educational offerings and activities outside the classroom."

He said the U-M fits that description well because of the geographic, ethnic, political and religious diversity of its student body, and the variety of educational, cultural and recreational opportunities on campus.

"Expanded recruiting activities and an improving economy have also contributed to the increased interest in the U-M," said Sjogren.

"It has become apparent to the public that the severe financial problems faced by the University and the state of Michigan have not adversely affected the traditional quality of Michigan's academic programs."

Sjogren pointed to other highlights of this year's recruitment program:

— Michigan leads all publicly supported universities in the nation in the number of entering students who received "non-institutional" sponsored National Merit Scholarships. (Some universities fund their own Merit Scholarships; the U-M does not.)

— Michigan was surpassed only by the University of California at Berkeley in the number of admitted students who presented College Board Advanced Placement Program credits and examinations.

— College Board exam scores of entering Michigan freshmen have increased in recent years, while scores nationally have levelled off after a long period of decline. Entering U-M freshmen achieved median Scholastic Aptitude Test (SAT) scores of 550 for the verbal portion and 620 for the mathematics portion (compared to national mean scores of 425 verbal and 468 math).

"Because this admissions year has been particularly competitive, it is expected that the entering class this fall will be somewhat stronger academically than any in recent years," said Sjogren.

Solid-state lab points to future

(Continued from page 4.)

rather than exterior space. Its doorways will have canopies with an arch motif.

Atrium skylights will provide natural light for the interior faculty offices and laboratories. The building also can be described, say its architects, as two parallel four-story structures — one for offices and one for laboratories — connected by the atrium.

Bridges through the open space on the upper floors will connect laboratories on the south with offices on the north. Pedestrians will be able to observe what is happening on the lower levels.

Engineering I will house robotics, optics, radiation and computer laboratories. One of the most striking facilities will be the solid-state electronic laboratory.

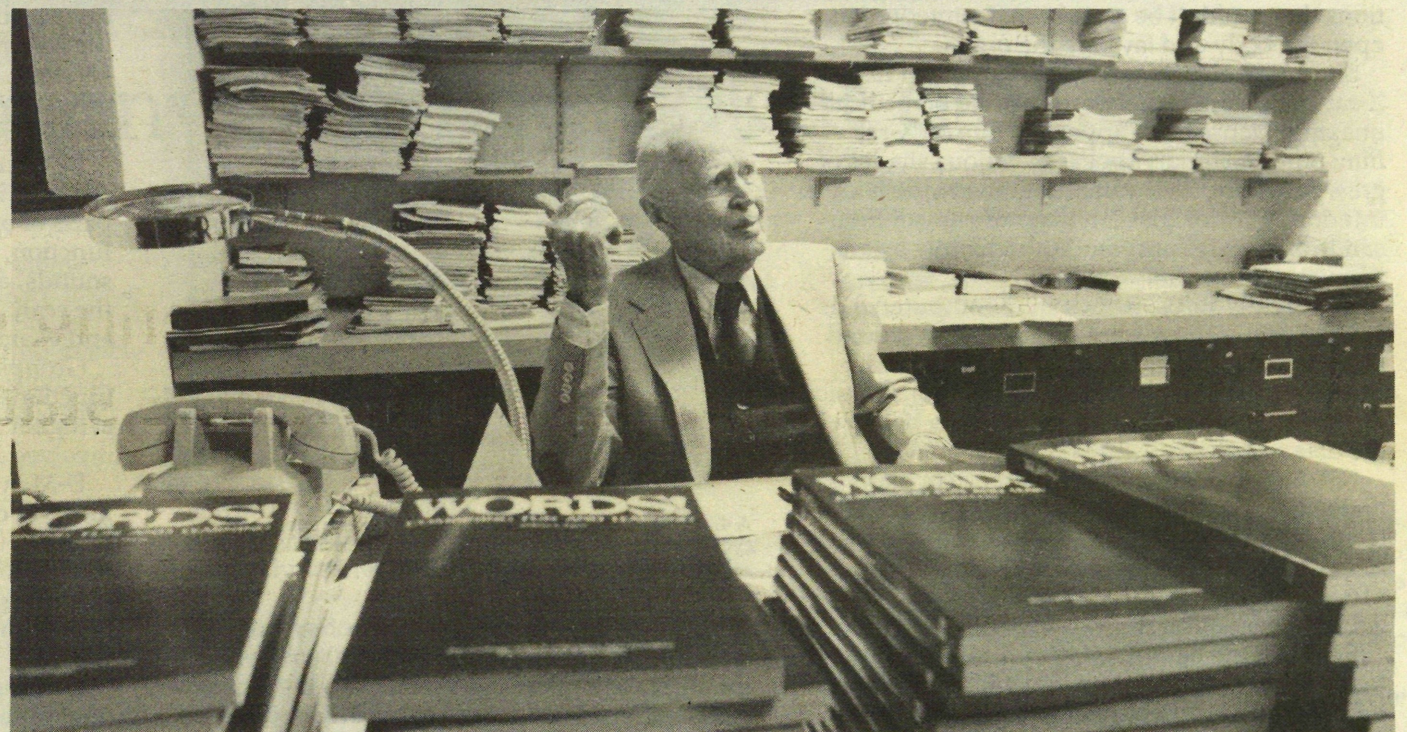
Including equipment moved from the present laboratory, the equipment will cost about \$10 million, estimates Kensall Wise, director of the solid-state laboratory and professor of electrical engineering and computer science.

"The 9,500 square foot solid-state fabrication facility will contain approximately 5,100 square feet of class 100 clean room space — where the air has fewer than 100 half-micron particles per cubic foot. Another portion will be even cleaner — class 10. That is an extremely clean environment," Wise points out. "Clean rooms in pharmaceutical firms pale by comparison. But a speck of dust could wipe out an entire circuit.

"Specifications for temperature and humidity are just as precise as air quality since they affect both the equipment and the processes. Temperature will be controlled to a quarter of one degree Fahrenheit."

The focus of the lab will be advanced solid-state devices and sensors, Wise says.

"A computer isn't the box sitting on your desk. It's one piece of silicon — a chunk of refined sand — with 200,000 transistors arranged on it," Wise points out. The number



WILLIAM A. PATON, professor emeritus of accounting and of economics, is the author of "Words! Combining Fun and Learning," an unusual new book published by the Graduate School of Business Administration. Praised by Rudolf Flesch, one of America's foremost authorities on word usage, the new book offers word squares, puzzles and other games, sayings, examples of word use and misuse, even a discussion of humor. Now nearing age 95, Prof. Paton accumulated material for his book during a 55-year career as a university teacher, national lecturer, and author of a score of books and more than 200 articles.

of transistors which can be integrated on a chip is doubling each year.

A piece of ordinary writing paper is about 100 microns thick. Visible light is about .5 of a micron in wavelength, Wise explains. "We're talking about wafers of silicon with complex geometrical patterns — the transistors and connecting wires — made up of lines that are less than one micron in width."

The future of solid-state devices "depends on our ability to define improved device structures in semiconductor materials such as silicon or gallium arsenide," Wise says. Silicon is currently the standard semiconductor material. Gallium arsenide is considered a major contender for the material of future device applications, particularly optoelectronics.

Also important is the development of improved processing and manufacturing of devices such as those utilizing very large scale integrated (VLSI) circuits.

The miniaturization of integrated circuits has provided lighter, smaller computers which use less energy and operate faster because the electrons have shorter distances to travel, the U-M electronics expert explains.

Circuits are usually printed onto the chips using masking and selective chemical etching to inscribe the correct connections. A complex chip is built in successive layers. Thin layers of dielectrics are placed onto the semiconductor base, and portions of the layers are removed to set up the proper connections in each layer.

The new engineering facility will have the necessary equipment for highly sophisticated circuit fabrication, including submicron lithography, ion implantation and molecular beam epitaxy. Submicron lithography uses a focused electron beam to photoengrave lines less than a micron wide directly on the chip, rather than using the masking and chemical etching method.

Ion implantation is a method for "doping" — adding impurities that alter properties of the selected areas of the chip and form areas capable of functioning as transistors.

Molecular beam epitaxy is a high vacuum, tightly controlled process for growing very thin semiconductor films. The properties of the chip can be modified very precisely, as layer upon layer of a chip is laid down in vertical dimensions that are practically atomic. "We are virtually stacking up atom upon atom," says

Wise.

The laboratory will focus on research in development of high-speed/microwave/millimeter-wave devices and device technology for use in telecommunications, and on the development of integrated solid-state sensing systems for use in health care, transportation and automated manufacturing. Such sensing devices are used to obtain pressure, temperature and chemical readings in medical and environmental applications, and to form microscopic pressure sensors and tactile imagers for robots.

"This is a basic research and development facility," Wise explains. "We are interested in defining new devices and understanding their performance limitations so that we can point the way to improvements."

"Our solid-state sensing devices have many applications. We're working on implantable microelectrodes that should lead to improved understanding of the nervous system and may one day find application in a number of prosthetic devices," Wise says.

The facility will provide a chance for "hands-on training" for undergraduates and separate areas for graduate research in advanced device structures.

Technology provides anatomical 'windows'

New machines 'open' body

By Suzanne Tainter
Health Sciences Relations

Your throat burns and aches. Using a spoon as a tongue depressor, you shine a flashlight down your throat and look in the mirror. You see your raw red skin and the white spots of strep infection as reflected light bounces off the tissue. Special cells in the retina of your eyes detect the lightwaves and form an image of your throat.

Your brain tells you it is time to see your doctor.

But suppose your chest rather than your throat aches?

Medical imaging technology goes where the eye cannot.

Using sound waves, radio waves, positrons, gamma rays and X-rays, medical scanners see inside the body. From these signals, computers put together images which tell the doctor what is there.

The U-M Medical Center, with its rare constellation of technologies, uses all these energy forms to penetrate the body to determine its appearance and how well it works.

Some of the newest technologies reveal conditions that couldn't be seen even if surgeons cut open the body and lay bare the organ.

Since Wilhelm Roentgen's discovery in 1895, X-ray has been the standard method of medical imaging. Dense bone appears white on X-ray film; other materials appear in various shades of gray, providing an invaluable guide to the body's interior. A radiologist can diagnose any of thousands of diseases and conditions simply by analyzing an X-ray film.

In the early 1970s, X-rays were computerized. A CT (CAT) scanner rotates 360 degrees around the body or head and sends a thin X-ray beam through tissue. Sensors detect X-ray transmission through the tissue. Then the computer analyzes the data and forms the image.

"CT has made the major difference in making brain surgery safer, replacing other diagnostic techniques that were dangerous and less accurate," says U-M neurosurgeon Julian T. Hoff. "Thanks to CT, we know exactly what we are going to encounter during surgery."

But even the best of today's CT images, obtainable in high resolution and with split second processing, are based on only one characteristic of tissue — density or ability to stop X-rays.

The newest technology in operation at the U-M Medical Center, magnetic resonance imaging (also called nuclear magnetic resonance), can measure not only density, but also the chemical composition of tissue.

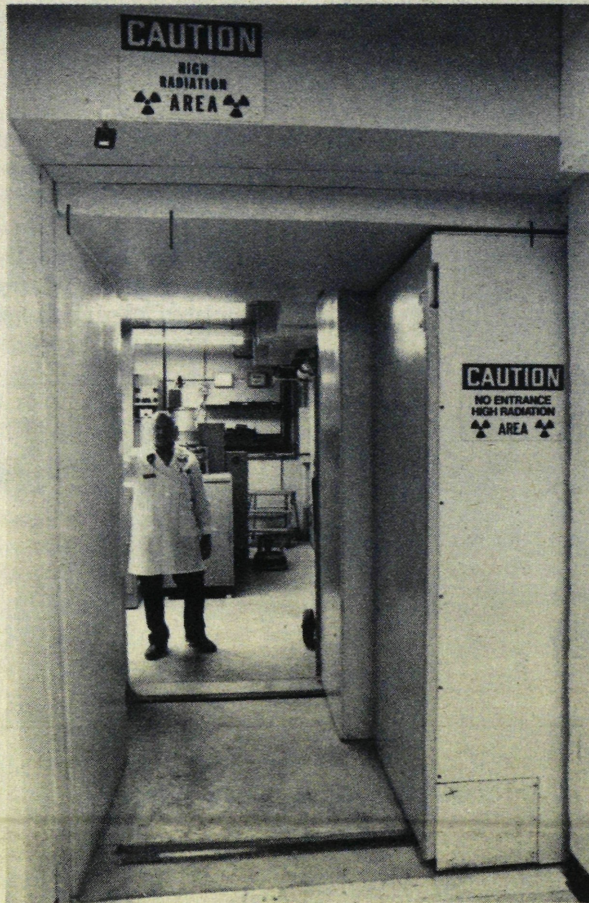
This \$1.5 million machine maps tissue by using a magnetic field 7,000 times greater than the Earth's, and radiowaves in the range of the FM dial. It uses no ionizing radiation (X-rays). Magnetic resonance imaging (MRI) excites researchers because of its potential for obtaining physical, chemical and motion data.

"This technology will revolutionize radiology," says William Martel, M.D., professor and chairman of the department of radiology.

When a patient is placed in a 7 foot by 9 foot scanner tube, the hydrogen atoms, which are tiny spinning magnets, align with the axis of the magnetic field. When the correct radio frequency is beamed at the atoms, they pick up energy and change alignment.

After the radio signal is turned off, the atoms "relax" into their original orientation with the magnetic field, "broadcasting" radio signals as they do so. The imaging scanner's radio transmitter acts as a receiver, picking up the signals from the hydrogen nuclei.

A computer transforms the signals into an image of body tissue, based on the intensity and duration of the signal.



A 47-TON, six-foot-thick door guards the entrance to the cyclotron which produces radioactive pharmaceuticals necessary for scanning in the U-M PET Center.

MRI maps not only the density of hydrogen atoms, but also reveals the chemical environment. The chemical lattice, and thus the signal, is different for various types of healthy or diseased tissue.

Although it's currently applied only in clinical research, MRI is already considered superior to the best CT scanners in some ways. The imaging allows radiologists to obtain image "slices" through a body on any plane without moving the patient. MRI is superior to CT in delineating gray matter from white matter of the brain, and revealing brain tumors at the base of the skull, where they can be over-shadowed by bone on CT scans.

MRI also is unsurpassed in its ability to distinguish among the soft tissues of the body, says Martel.

Some U-M investigations being considered include stroke, cardiac, liver and kidney studies. "To the extent that MRI can predict the pathology of diseased tissues, it provides 'knifeless biopsies'," says Martel.

MRI may prove a reliable way to determine benign tumors from malignant ones, especially in breast tissue, and it may be possible to determine the extent of body involvement by malignant

tumor — called staging. A U-M evaluation of MRI as a tool for staging lung tumors is under way, and investigators also are developing methods and techniques for improving MRI scanning techniques.

While CT and MRI reveal anatomy, positron emission tomography (PET) shows the brain at work.

PET is a sophisticated form of nuclear medicine imaging or "inside-out X-rays," whose images are created from radioactivity coming from inside the body. No rays are beamed through the body; instead, sensors record emissions coming from low-level or briefly radioactive compounds which are injected into or inhaled or swallowed by the patient.

The very short-lived radioactive chemicals used by the PET scanner have to be prepared nearby. Thus, that facility needs a cyclotron on-site as well as a lot of specialized talent for preparing the radiopharmaceuticals which emit positrons.

The use and development of special radio-labeled chemicals that allow physicians to map body tissues have been the forte of the U-M division of nuclear medicine, which has been at the forefront of this field specialty for more than 40 years. William H. Beierwaltes, M.D., who directs the division, is also a principal investigator in the PET/cyclotron project.

PET reveals which portions of the brain are active when we hear, look, think or move. "The parts of brain that are active for a particular function, such as when you are listening to sounds, are in a sense 'ignited' and light up on the scan," explains Sid Gilman, M.D., professor and chairman of neurology.

Groups of brain cells responsible for those functions will use glucose, the sugar fuel of cells, at higher rates than other portions of the brain not involved in those functions.

U-M investigators use short-lived radioactive forms of carbon to tag a form of glucose that can be taken up by busy cells, but not broken down further for energy. The radioactive label emits positrons. Also, it is possible to measure blood flow with PET using radioactive oxygen to label water.

Clinicians already use PET in evaluating strokes, epilepsy and dementia. It also may provide psychiatry with objective ways to diagnose psychoses. Huntington's disease, stroke, OPCA (olivopontocerebellar atrophy), brain tumors and dementia are major targets of the U-M imaging program.

Gilman is one of three major investigators in the U-M's \$7.8 million PET/cyclotron project, funded by the National Institutes of Health. He says the value of PET is dramatically illustrated in dystonia, a neurological disorder that causes postural contortions and uncontrollable movements.

"Even at autopsy, the brains of dystonia victims look normal, but they had not functioned normally. PET reveals these functional aberrations," Gilman explains.

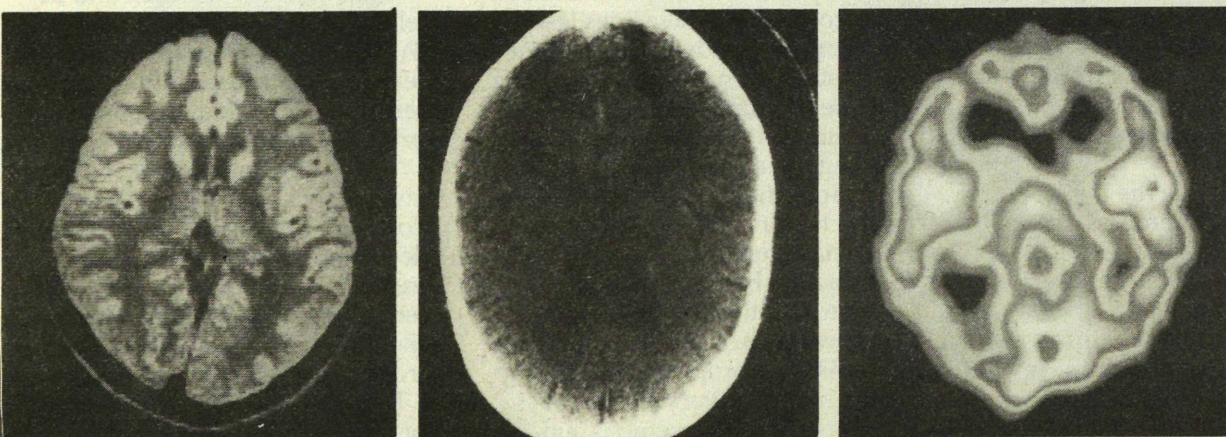
Other PET investigations being considered at U-M include comparison of PET and MRI images, especially in stroke. Since the images are digital information, manipulated by computers, the images could be analyzed together.

"The future direction of PET that is so exciting," says Gilman, "is the imaging of neurotransmitter receptors."

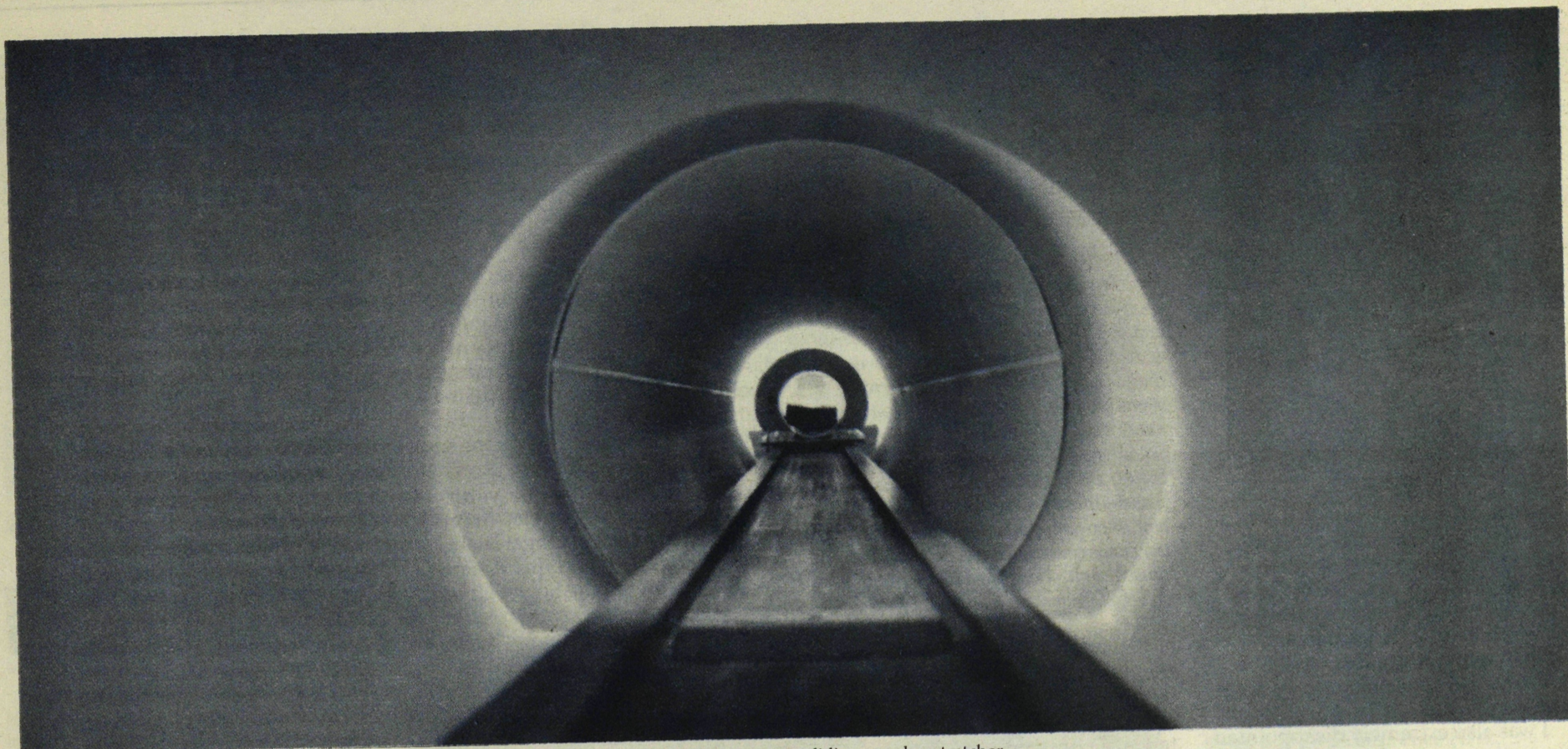
The billions of neurons in the brain communicate with one another through electrical and chemical signals. Between each nerve cell is a gap called a synapse. Neurotransmitters are chemicals that carry signals from one neuron across the gap, then excite the next neuron. Receptors are locations on the next neuron where the neurotransmitters bind.

If, through injury, a neuron doesn't get the neurochemical signals it's used to, it responds by proliferating receptors. "We think the neuron is hungry for any little squirt of neurotransmitter it can get," Gilman explains.

"If we could enter the nervous system and tag those receptors," Gilman says, "eventually that may lead to therapies for maintaining nerve cell communication in diseases where this has failed."



THREE DIFFERENT imaging devices produce "cross-sections" of the human brain: left, a MRI (magnetic resonance imager) scan which utilizes radio waves; center, a CT (computerized tomography) scan, utilizing x-rays; and, right, a PET (positron emissions tomography) scan which utilizes radioactive emissions.



A LOOK down the bore of the Magnetic Resonance Imager. Patient rides into the huge magnet on a sliding wooden stretcher.

Imaging options give new look at old hearts

By Suzanne Tainter
Health Sciences Relations

Cardiology is one area where every single means of imaging is being applied. Heart disease is the number one killer in the United States. Researchers are always struggling to find reliable indicators of heart disease, its progression, and the effectiveness of medical and surgical treatments.

Another use of ultrasound — and focus of major research efforts at U-M — is echocardiography. U-M cardiologists are teaming up with engineering and computer science researchers to apply specialized programs for improved edge detection and shape change descriptors to improve computer interpretation of ultrasound images.

For 20 years, cardiologists have been evaluating coronary artery disease using arteriography. Its inventor, F. Mason Sones Jr., was awarded a Lasker Clinical Medical Research Award for the technique last year.

Doctors thread a thin tube — a catheter — into tiny arteries that supply blood to the heart. A chemical contrast medium, opaque to X-rays, is injected through the tube into arteries. Then X-ray movies show the blood flow, outlining narrowings and blockages in the arteries, and allowing the cardiologist to estimate the seriousness of the blockage.

These movies now have been digitized — turned into numbers for computer analysis. Called Digital Subtraction Coronary Arteriography, the system uses a computer to "subtract" or erase images of the ribs, muscles and other organs in the chest so that the image of the heart can be better seen.

The computer can detect finer differences between shades of gray — 256 to about 40 for the human eye — so that less contrast "dye" needs to be used. The advantage, says Bertram Pitt, M.D., chief of the cardiology division, is that instead of 50 cubic centimeters of contrast, each procedure requires only 5 to 10 cc.

"For severely ill persons who may not tolerate the contrast medium, it is a great benefit, and it means the procedure can be repeated after therapy to check on a patient's progress," says Pitt.

Furthermore, using a modification of missile guidance software, U-M researchers at the Veterans Administration Hospital in Ann Arbor have developed a system that turns this anatomical mapping into a functional test, allowing cardiologists to measure the rate at which blood can flow through the arteries and feed the heart muscle.

Magnetic resonance imaging (MRI) has potential in cardiology for revealing the interior architecture of the heart — the walls, valves, even

cholesterol plaque buildup in coronary arteries. Another MRI technique allows investigators to measure blood flow. U-M cardiologists and MRI specialists also are developing gating procedures — selecting the same portion of the cardiac cycle in several consecutive cycles to build an image.

Whole body positron emission tomography (PET) scanners also are used to determine functioning of the heart muscle. PET has been used, says Pitt, to determine if what appears as scar tissue on other modalities is actually functional tissue capable of improving after a bypass graft.

Asian parents' interest in children's achievement

(Continued from page 3.)

One reason for American parents' reluctance to help children with homework is lack of confidence, Stevenson says.

"American parents believe they don't know enough about what their children are doing in science and math to help them."

General beliefs about ingredients for success are perhaps the most compelling reason for the Chinese and Japanese parents' strong interest in their children's schoolwork. Stevenson found that

American mothers placed more emphasis on their children's ability and less on effort as a means to success than the Chinese and Japanese mothers.

In other words, the Asian mothers believe that if their children study enough they have a reasonably good chance of achieving, while American mothers apparently don't hold such a firm belief in the value of hard work, says Stevenson.

Related to the American emphasis on ability and potential is the tendency to categorize students, he says. "Japanese and Chinese parents and teachers do not tend to categorize a child as a success or failure as often as they do here. Chinese and Japanese parents are not so likely to label low-achieving children as 'failures' — and thereby further reduce their chances for success."

Paradoxically, the Chinese and Japanese are more critical of their own children's performance than are Americans. While few Japanese and Chinese mothers in Stevenson's study indicated that they were "very satisfied" with their children's performance and with the quality of their schools, American mothers were more apt to say, "everything is wonderful" — even though their children performed less well, says Stevenson.

"The more critical responses from Asian mothers is another indicator that they are more familiar with what's going on in their children's schools (than are Americans) and so have a better basis for criticism."

Americans should view such findings as "sources of ideas for improvement" of American education, says Stevenson. For a start, he suggests we re-examine our priorities.

"Americans tend to overlook the importance of family relationships in academic achievement and to overemphasize school budgets, classroom size and building modernization," concludes Stevenson. "In Taipei, many of the elementary schools have an enrollment of 5,000 students. Classroom sizes in Japan and China average from 40 to 50 students, compared to 25 students per class in the United States."

Although Stevenson does not urge Americans to imitate Chinese and Japanese parents, he notes that cultural differences do not preclude learning from others' successes. Adds Stevenson, "What's so difficult about spending more time with your child?"

Purchase art to grace life, not for investment purposes

(Continued from page 3.)

billions of dollars changing hands in major auction houses.

Shrewd investors can make a fortune. Robert Scull, owner of a New York fleet of taxicabs, bought up the early works of Andy Warhol and other "pop artists" of the early '60s for a few hundred dollars apiece. A decade later, he sold them for a reported \$2.5 million profit.

But the market is wildly unpredictable. English painter Thomas Gainsborough was at the peak of his popularity when he finished his famous "Blue Boy." It sold for \$500,000. Traded again during the Depression, the painting brought barely \$1,000, according to Bayliss.

Now, of course, it is priceless.

The key to success seems simple: buy low; sell high. But the high stakes art industry is no place for the unwary, warns the dean. Artists' reputations can be engineered with the placement of one high-priced advertisement in a trade magazine.

Dean Bayliss's advice is simple: Don't invest in art.

"Invest in the stock market," he says. "Buy bonds. Buy art to grace your life and make you a richer person in the true sense; not in hopes of making a windfall profit."

Good art, on the other hand, not only transforms a room, but in subtle ways, transforms the beholder. "It enriches our very existence. It really makes us change."

Letters...

Superb issue, realistic quotes

To the editor:

The latest issue of *Michigan Today* — Vol. 16 #1 (April 1984) — is superb, particularly the realistic quotes of the Soviet experts. I should like to have two additional copies. Thank you.

Claudia Zaslavsky

Article on Soviet-U.S. relations disappointingly one-sided

To the editor:

I was very discouraged that in your first issue of the publication *Michigan Today* you chose to present a very one-sided outlook on Soviet-U.S. relations. I thought that in academic circles both sides would be presented when controversial items are discussed.

I was also extremely disappointed to see that men with such extremist viewpoints are molding the minds of our young people. One would think we were the aggressors.

Who uses or arranges for the use of chemical warfare?

Who always refuses to permit dependable inspections which are the basis for any reasonable disarmament agreements?

What right do they have to say that we are exporting fascism?

How can they say who has the from the extreme penetration following World War II and who maintained their military strength and included the eastern European nations within their "empire" (so labelled in the article)? Are West Germany, France and Italy part of our "empire"?

Unless you find someone to present another viewpoint in your next issue, don't bother to send me any more. I don't want them!

Bill Cooke, '48 ME

Profs' view of detente misrepresents situation

To the editor:

I recently received my copy of *Michigan Today*. As a 1939 alumnus of The University of Michigan, I was quite disturbed by the article by the four U-M Soviet experts. I hope that these four individuals and their views, as expressed by various quotations on pages 6 and 7, are not typical of that of the entire Center for Russian and Eastern European Studies. I would hope that my University would show the same well-balanced viewpoints as were presented when I was a student at the University.

The unanimity of the opinion expressed frightens me that my hopes may not be true and that the student body is given a slanted viewpoint and one that is anti-American, which is being reflected by the Center's publication. The attitudes are similar to that expressed on the part of many academicians in this country....

When these professors point out that a new detente would usher in "more egalitarian and humane societies at home and abroad," it is a misrepresentation of the situation. The United States has a humane society. The Russians have an inhumane society. The treatment of their own people from the start under

Comments from the Center for Russian and East European Studies on reader reaction to 'Myths...'

EDITORS' NOTE: The excerpts published in the April 1984 *Michigan Today* were not intended to be a comprehensive analysis of the views of the Center for Russian and East European Studies or its individual faculty. The faculty were responding to the interviewer's questions mainly about American misperceptions of Soviet society, Soviet views of the United States, and the relationship of both to Soviet-American relations. To some extent, therefore, the context of the interview may have conveyed a one-sidedness because the questions focused on one aspect of Soviet-American relations.

The wide range of responses to the series of quotes from Soviet area specialists at the University speaks the complexity and importance of contemporary Soviet-American relations. Despite the impressions of some of your readers, none of us, I believe, views the Soviet Union as either "friend" or "foe," but as the one other major world power, besides the United States, on whose actions and outlooks the future of the world largely depends. We are collectively disturbed by how little understanding Americans generally have about Soviet history and society, and about our country's apparent inability to do not speak with one voice, nor do we each agree with the views of

Lenin to that of Chernenkov is a sad commentary on the dignity of man.... Arms control to the Soviet Union is as Secretary of Defense Harold Brown said: "When the United States stops building weapons, the Russians build, and when the United States builds weapons, the Russians also build weapons." The Russians have violated the SALT agreements, the ABM Treaties and others. They have introduced the largest nuclear submarines with the most advanced titanium technology, ASAT weapons, the use of germ and nerve gas via their proxies from the Middle East by Nasser in Yemen to that of Vietnam in Southeast Asia, in Afghanistan and now, possibly in the Iran-Iraq war....

In closing, I am concerned that the *Michigan Today* article is a terrible disservice to my alma mater and a great institution and the great professors under whom I studied and who were my inspiration, such as the late Dean George Granger Brown and Prof. Donald L. Katz.

Bernard W. Gamson

Correction

A number of readers quarreled with the reference to former President Gerald R. Ford as an "All-American center" on the 1932-34 Wolverine football team ("Capital Campaign draws volunteers from across Nation" in the April 1984 issue of *Michigan Today*). We're happy to set the record straight.

Ford was a member of the teams that won back-to-back national championships in 1932 and 1933; he captained the 1934 squad that finished last in the Big Ten. All-American honors in 1932 and 1933 went to Charles Berward of Benton

our colleagues. But we do recognize the need to understand alternative perspectives to those commonly held in this country if the urgent tasks of maintaining peace and avoiding nuclear holocaust are to be pursued successfully. It was in this spirit that Center faculty responded to questions posed by *Michigan Today*.

We think it important for your readers to know that Soviet-American relations are at a dangerously contentious level, and that American policy toward the Soviet Union appears more persistently hostile than at virtually any time in the past three decades. We regard this as extremely ominous. We seek understanding of alternative perspectives, not "concessions," as a foundation for negotiations on a wide range of issues, most importantly, nuclear disarmament.

None of us, I believe, misunderstands the intentions of some Soviet leaders, the nature of Soviet foreign policy, or Soviet military capabilities. Each of us believes, however, that unless we as a nation broaden our understanding of Soviet history and society, and develop at least some ability to understand how others view the world, we will not avoid nuclear destruction.

European studies,
and professor of history

Harbor, the Wolverine's first-string center.

As a football center, Ford earned all-state honors in Grand Rapids before coming to Michigan. He was named most valuable player on the 1934 team, based on ability and the respect of his teammates. He was selected to play in the college All-Star game against the Chicago Bears following his senior season.

Compulsory church-going was anti-Catholic, not pro-religion

To the editor:

I read the article entitled "Elizabethans lived their 1984 in the 1500s" with interest. However, I think that a point was missed in relation to compulsory church-going. Its purpose was to catch Roman Catholics who were not allowed to attend the Anglican service by the rules of their faith.

Elizabeth didn't care what people believed as long as it wasn't Catholicism. She executed (hanged, drawn & quartered) 187 priests and collected heavy fines from lay Catholics, and, eventually, drove many into exile. In her "1984," church and state were inextricably united.

Hugh Short, '47

'New' Michigan pictured

To the editor:

I just wanted to tell you that I enjoyed reading *Michigan Today* very, very much. It was so enlightening and covered everything about the University that I wanted to know. Yes, it is a new Michigan.

My husband, who passed away on Nov. 22, 1983, was a graduate of the U-M Law School (1931). We were

married in Ann Arbor in August 1929, while he was a student. I attended the U-M that summer of '29.

He had practiced here in St. Joseph, Mo., since graduation (over 50 years).

Again, many thanks for a wonderful magazine.

Eva Hulse

Creeping punctuation alters author's poetic intentions

To the editor:

I have been reading your article on poets at Michigan, and enjoying the picture of collective activity it sets forth.

Unfortunately, when I came to my poem, "Conceit," at the end, I discovered that the proofreader had allowed a horrible piece of punctuation to creep in where it did not belong. The poem should read:

CONCEIT

What a trophy the sperm raises
When it has won
Shortest of all races
We run.

I thought about it a bit before writing this, on the off chance that the slip might amount to an improvement, as sometimes happens, but it doesn't seem to be so. "We run." as a separate sentence can't be made to connect to the rest.

To pore, or not to pore

To the editor:

Re: Vol. 16, page 2, column 3. More frequently than in prior times I find references to people pouring some invariably unspecified substance through or over books, references, other printed material; and now at U-M, library card catalogues. What is the fluid (if indeed it is a fluid) Librarian Didier decants, and to what purpose?

R. D. Kistler

MIDAC, rare electronic brain, preceded IBM 650 at U-M

To the editor:

I enjoyed your first issue of *Michigan Today*. However, Michigan yesterday suffered a bit. Your lead article on computers left out an important piece of history. You mentioned Dr. Arthur W. Burks and the IBM 650, but completely left out MIDAC, Michigan Digital Automatic Computer, which was designed and constructed at the Willow Run Research Lab. This was the 28th computer built in the world.

MIDAC had 20,000 DIOD tubes and an internal memory consisting of RADAR mercury delay tubes the size of a walk-in closet which held 512 44-bit words. Auxiliary storage consisted of two homemade drums that held 32,000 words each. MIDAC passed away about June of 1956, shortly after the IBM 650 was installed in Hangar 2.

A search of the literature of that period should result in some pictures. "Electronic brains" were new and rare (only three in the Midwest); there should be some news articles about it.

Good luck with the new program.
Ronald D. Klein, Ph.D.



FAIR LANE, the former Ford family mansion, became the first building of the U-M-Dearborn Campus when it was formed 25 years ago. There are now 11 major structures on the campus.

U-M-Dearborn: 25 and still growing

By Richard G. Reynolds

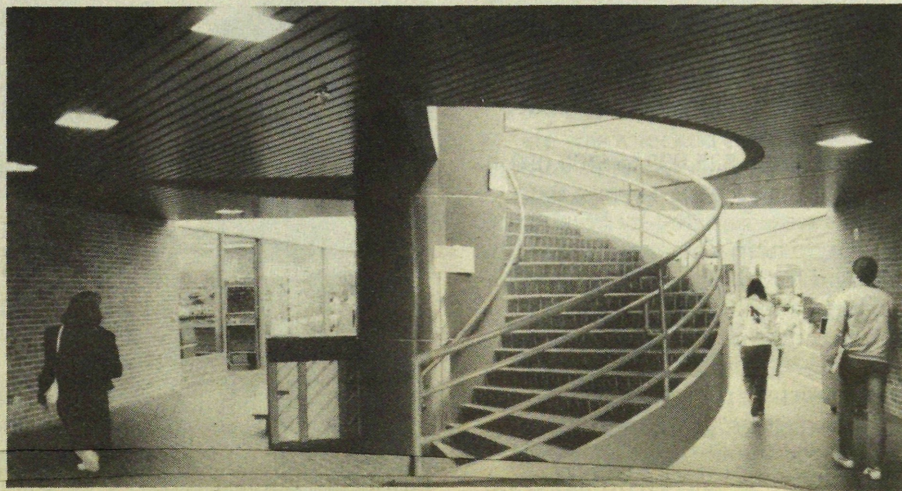
Director, University & Alumni Relations
U-M-Dearborn

The University of Michigan-Dearborn is planning a birthday party to "Celebrate 25 Years of Building for the Future."

Beginning this fall, the campus will be involved in a year-long series of intellectual, cultural, athletic and social activities to designate what U-M-Dearborn Chancellor William A. Jenkins terms "a significant milestone in our institutional history."

"The 25th anniversary celebrates campus with an opportunity to outstanding faculty, students and alumni; it is a tangible example that the U-M-Dearborn Campus is no longer a fledgling member of the higher education community."

When U-M-Dearborn opened its doors in the fall of 1959, only a handful of students and faculty christened the new facility. A gift from the Ford Motor Company of 210 acres of the former Henry Ford Estate, and a \$6.5 million gift from the Ford Motor Company Fund provided the land and resources for the original four campus buildings.



A SPIRAL staircase leads to the shops and concessions area off the central concourse of University Mall, one of the newest buildings at U-M-Dearborn.

Today, the campus enrolls more than 6,000 undergraduate and graduate students. Instructional and research activity is carried on by its 180 full-time faculty in the arts and sciences, engineering, management and education.

In keeping with the U-M's tradition, the success of the upcoming celebration will hinge on the efforts of volunteers. Honorary co-chairpersons of the anniversary are Mr.

and Mrs. Stanley Winkelman, longtime supporters of University programs and activities.

A Steering Committee, composed of faculty, staff, students, alumni and community residents, is planning and coordinating anniversary activities. The committee is co-chaired by Linda Ellis-Brown, U-M-Dearborn registrar, and Dr. Cedric Fricke, U-M-Dearborn professor of business administration.

The department of humanities will sponsor the Sixth Biennial Renaissance Conference (Oct. 19-20, 1984), co-organized by U-M-Dearborn Profs. Ted-Larry Peberworth and Claude Summers. Faculty in the Division of Education will host two annual events — the Conference for Young Authors (April 30, 1985), and a Storytelling Workshop (May 11, 1985).

The Founder's Day program on Sept. 28 will mark the actual date of the first day of classes in 1959, with many of the original class of students and faculty being honored. On Sept. 29, the campus will open and participatory activities for the public.

A series of four art shows is scheduled for the University Library during the anniversary year. The first show, running Sept. 1 through Oct. 19, 1984, will highlight several works of the U-M-Dearborn's permanent collection.

Anniversary year activities will conclude May 4-6, 1985, with an alumni weekend featuring class reunions and school/college activities, an anniversary banquet and the annual spring commencement.

Flint leader, SPH dean start jobs

By Wono Lee

News and Information Services

By early July, the U-M-Flint and two schools on the Ann Arbor Campus will be headed by new leaders.

Joining the Flint Campus as its chancellor will be Clinton B. Jones, who has been chief academic officer at the University of Houston-Downtown since 1981.

The School of Public Health will have a new dean: June E. Osborn, who has served as associate dean in the University of Wisconsin-Madison Graduate School since 1975.

An acting dean has been named for U-M's School of Art: Wendel W. Heers, the school's associate dean for the past five years.

Jones, who received a doctorate in government at Claremont Graduate School, has held administrative and teaching posts at several institutions. He taught at the University of Nebraska and California State Col-



Clinton B. Jones

lege, was associate director of the Institute for Urban Affairs and Research at Howard University, served as associate dean in the College of Urban Life at Georgia State University and, most recently, as vice chancellor for academic affairs and professor of political science at the University of Houston-Downtown.

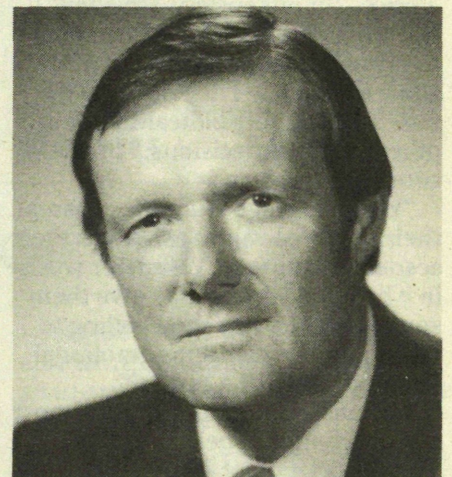
The U-M-Flint has been headed by Acting Chancellor M. Joseph Roberson since the death of Chancellor Conny Nelson in May 1983. Roberson, who earned his Ph.D. at U-M, will have a new assignment as a member of the University's fund-



June E. Osborn

raising management team. As director of corporate relations, he will be responsible for planning and implementing a program that will emphasize increased gift commitments from large, publicly held corporations.

Dr. Osborn, the new public health dean, specializes in virology and infectious diseases, and has been active in the nation's public health field. She was recently named chairwoman of the Ad Hoc Working Group on AIDS and the Nation's Blood Supply, a working group of the National Institutes of Health.



M. Joseph Roberson

The art school's Acting Dean Heers, who has taught here for 23 years, is a well-known sculptor and metalsmith. A member of the National Association of Schools of Art accreditation team, Heers has served as president of the National Art Education Association, the Michigan Art Education Association, and the Ann Arbor Art Association.

Heers succeeds Dean George V. Bayliss, who resigned to accept the deanship at the Tyler School of Art of Temple University.

Pre-meds' acceptance rate grows

By Pat Roessle Materka
News and Information Services

Getting into medical school is tougher than ever, but a U-M education seems to give prospective candidates an edge.

For many years, more U-M graduates have been accepted into U.S. medical schools than have students from any other university, according to Louis C. Rice, head of pre-professional services in U-M's Office of Career Planning and Placement, and Jack R. Tinker, counselor in the program.

"The 1983-84 entering class achieved the highest acceptance rate yet: 303 out of the 508 applicants — 60 percent — were successful in gaining admission," they report.

The ratio of acceptance for pre-medical students at U-M has increased steadily, up from 44 percent a decade ago. This is at least partially due to the volume of services provided by Rice and Tinker, who maintain current catalogues of all medical schools, registration forms for national examinations and applications services, and a full library of other information on medicine and related careers.

For most of the students they counsel, the question is not whether they take any extra-curricular activities are useful?

In short, what does it take to enter the field of medicine these days? Is the profession changing? What does the future hold?

"Basically, students need a strong aptitude in the sciences, combined with a desire to help people," Rice and Tinker report. "Money is certainly an incentive, but every medical student will tell you that you must be motivated by more than the potential for high income. The coursework and pressures are simply too difficult."

Prestige is one of the rewards of becoming a physician, but it carries a price. "In our society, we allow doctors to influence us enormously, to even govern our behavior in some instances. They not only advise us in matters of health, but in other personal decisions," the U-M counselors observe.

"We encourage students to assess their personal values as well as their academic aptitude. Volunteer work in a hospital setting may give them some insights. Are they willing to take on the tremendous emotional demands of such a career?"

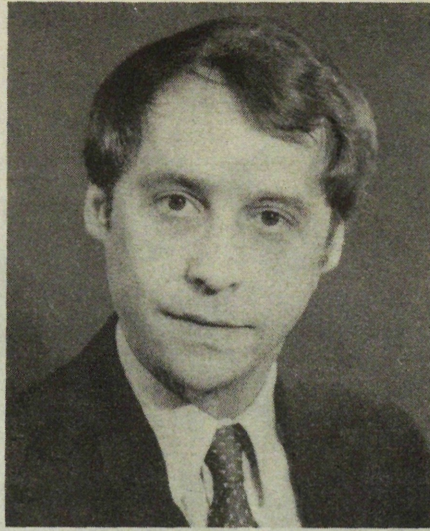
Nationally, students stand almost a 50-50 chance of being admitted. The Association of American Medical Colleges reports 16,480 new entrants to U.S. medical schools last fall — 47 percent of the 35,200 applicants.

At Michigan, the odds of acceptance are stiffer. Last fall, 175 students were accepted out of more than 3,000 applicants.

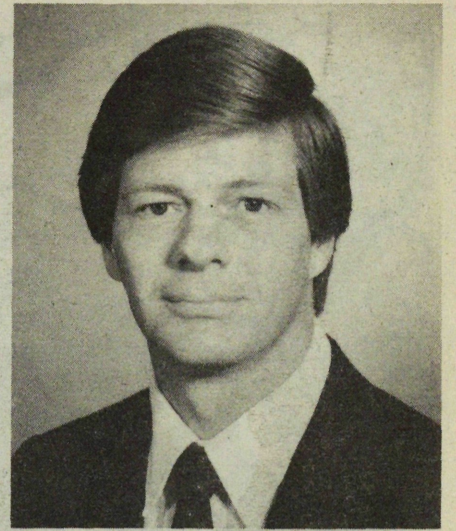
One of the biggest changes taking place is in the number of women entering medical school, Rice and Tinker report. Women now comprise about one-third of the graduating medical students, and their proportion is expected to increase to one-half by 1990.



Janice Jenkins



Ronald Gilgenbach



Jack Lohmann

'Nation's most outstanding' Four receive NSF awards

Four U-M researchers are among 200 of the nation's "most outstanding and promising young science and engineering faculty" to receive Presidential Young Investigator Awards from the National Science Foundation.

Worth from \$25,000 to \$100,000 per year for up to five years, the awards were initiated by President Reagan to help universities meet the demand for highly qualified personnel for academic and industrial research, and for teaching.

The U-M recipients are Larry J. Ruff, assistant professor of geological sciences; and three College of Engineering faculty — Ronald M. Jenkins, assistant professor of electrical and computer engineering; and Jack R. Lohmann, assistant professor of industrial and operations engineering.

Ruff's award is helping to establish a long-term seismology research program to investigate when, where and why earthquakes occur, and to support graduate students and operation of the Seismological Observatory on North Campus.

Ruff, who earned his Ph.D. degree from the California Institute of Technology and came to U-M in 1982, is exploring the rupture processes of giant quakes that have occurred world-wide since 1963 through computer analyses of seismic waves.

Gilgenbach earned his Ph.D. degree from Columbia University and



EARTHQUAKE EXPERT Larry Ruff points out areas of seismic activity along the coast of Asia.

came to Michigan in 1980. He has concentrated his research on microwave and laser interactions with plasma.

The nuclear engineer performed the first definitive microwave plasma heating experiment on a Tokamak, a doughnut-shaped toroidal plasma confinement device and one of two main candidate devices for magnetic confinement fusion. It was the first time such an experiment was performed outside the Soviet Union.

Jenkins, who earned her Ph.D. from the University of Illinois in

Chicago, is using computers to detect complex heart rhythms. In applying computer technology to cardiology, particularly to digital signal processing of electrocardiograms (ECGs), she is coupling ECG analysis to the "nuclear camera."

Lohmann's research focuses on engineering economics — helping firms make equipment replacement decisions crucial to their long-term financial performance.

Lohmann came to the University after receiving his Ph.D. degree from Stanford University in 1979.

Alumnus Charles Correa strives for enlightenment in architecture

"In the Western world, people are likely to assume that enlightenment can be achieved while sitting in a room.

"But in Far Eastern tradition, Buddha achieved enlightenment while sitting under a tree, and people from that region are likely to associate enlightenment with open spaces."

This sums up Charles Correa's attitude, not only to spiritual enlightenment, but to architecture as well.

In designing buildings for the warm climates of the Far East, architects must emphasize "sensible" buildings with a blend of open and closed spaces, maintains Correa, a University of Michigan architecture alumnus. These include spaces, such as verandas or roofed corridors, which serve as buffer zones

against the torrid sun, monsoon rains and other harsh elements.

Correa's "sensible" buildings — particularly housing for the poor in India and Peru — earned him the Royal Gold Medal for 1984, conferred by the Queen of England on the recommendation of the Royal Institute of British Architects. The award is considered the world's most prestigious architecture honor. Correa has practiced architecture in Bombay, India, since the early 1950s.

This use of his professional expertise to better the lives of India's poor led to his being selected as this year's Raoul Wallenberg Lecturer by the U-M College of Architecture and Urban Planning. He delivered the lecture in Ann Arbor April 24.



Charles Correa



Micki King Hogue

Bouncy aluminum boards permit flashy, high dives

By Pat Roessle Materka
News and Information Services

Divers competing in the 1984 summer Olympics will be able to perform feats that were impossible even a dozen years ago, according to 1972 Gold Medalist Micki King Hogue.

"The diving boards are now made of flexible aluminum, and the simple addition of holes at the tip of the board gives it lightness and bounce, like a tennis racket. The kids can get higher into the air and do twists and turns that we could never have attempted," says Hogue, a U-M graduate who is now a lieutenant colonel and assistant director of athletics at the U.S. Air Force Academy in Colorado.

Other changes have evolved in the Olympic games and in athletics in general, she told students at the U-M, where she recently was honored as Alumna-in-Residence, a program conducted by the Alumnae Council of the Alumni Association.

"When I was a student in 1962-66, there was no athletic program for women. I practiced with the men's

team, but I could only compete twice a year on the national level since there were no statewide collegiate competitions for women," Hogue says.

Now, U-M actively recruits top women athletes and provides facilities, equipment and scholarships that were not available to women 22 years ago.

While many women athletes seek a low profile as they move beyond the Olympic spotlight, Hogue, who holds 10 U.S. national championships, continues to play a strong advocacy role in women's athletics and athletes' rights.

"Until 1973, the athletes had no input into major decisions related to the Olympic competition, even though they were the primary persons affected."

As a member of the board of directors of the U.S. Olympic Committee, she helped enact rules that ensure 20 percent of the participants on each Olympic committee are athletes. She serves on the boards of the Women's Sports Foundation and the U.S. Association for Blind Athletes.

Athletic yarns spun by 'legendary' Wally Weber will be missed

By Tom Hemingway
WUOM Sports Director

"It's large as life and twice as lively."

—Through The Looking Glass

No, Lewis Carroll didn't have Wally Weber in mind when he penned his famous quote, but no one fills the bill better than Walter J. Weber, who was 81 when he died in April.

The erudite spinner of countless Michigan athletic yarns spread the Gospel according to Wally throughout the land, piling up more than 1,000 banquet appearances before he gave up the rubber chicken circuit.

Those fortunate enough to have been in attendance at such gatherings invariably left chuckling over one or more of those famed Weberisms:

"My fellow taxpayers..."

"He was knocked colder than a mother-in-law's osculation."

"Ask me anything, I have a complete list of names, numbers, weights and salaries of all players."

"We all make mistakes. That's why we have a civilian separation center in Reno."

Weber was born Feb. 27, 1903, in Mount Clemens, Mich. He enrolled at Detroit City College (now Wayne State University) after excelling on his hometown gridiron. It was in college, Wally later explained, that his love of the written and spoken word was kindled and nurtured. It would eventually provide him with an exceptional command of the English language.

From Detroit, he moved on to Ann Arbor, where he joined the 1925 and '26 powerhouse squads of Fielding H. Yost. The teams, studied with no less than five All-Americans, included the famed passing combination of Benny Friedman and Bennie Oosterbaan.

During this period, he developed a friendship with Oosterbaan that would endure through 60 years.

"He was a man with a great sense of humor who lived life completely," says Bennie.

Following a brief sojourn in Benton Harbor as head football coach,



Walter J. "Wally" Weber

Wally returned to Michigan in 1931, joining the staff of Harry Kipke. He remained as freshman coach throughout the reigns of Fritz Crisler and Oosterbaan until he left coaching in 1958.

Weber's love of athletics and athletes was not confined to the football field. Following his retirement from the athletic department in the early '70s, Wally became a regular on the basketball traveling roster, seldom missing a road trip. During the spring, he gravitated to the baseball stadium, often in the company of its namesake, Ray Fisher.

No one knows if Wally actually knew anybody's name, since he greeted everybody by their hometown.

"How are ya, Flint?"

"Greetings, Lansing!"

"Here's my friend from Kalamazoo!"

His booming voice, 10-gallon hat and wide grin were as much a trademark of Ann Arbor as Burton Tower or the Diag, and just as well known. He indeed was one of the most legendary and unique individuals in U-M lore.

To paraphrase Voltaire: "If Wally hadn't been born, he would have had to be invented."

Goodbye, Mount Clemens, we'll all miss you.

Financial aid forecast: clear in '84, cloudy for '85

By Kate Kellogg
News and Information Services

U-M students need not worry about the availability of federal financial aid for the upcoming academic year, say University financial aid administrators.

However, federal student aid funds and requirements for 1985-86 are still a question mark. If Congress goes along with the Administration's proposals, middle-income U-M students would suffer significant aid cuts for that academic year.

But unlike 1981-82, U-M educators are not preparing for a predicted financial aid crisis. Congress has not approved any of President Reagan's previous budget proposals which called for even more drastic cuts in student aid than those in the 1985-86 budget request.

"I don't believe we are likely to see any more support from Congress for President Reagan's fiscal 1985 budget request for education this year than we have in previous years," said Thomas Butts, assistant to the vice president for academic affairs and the University's representative in Washington.

As for academic 1984-85, financial aid is so stable that none of U-M's approximately 20,000 aid recipients should lose eligibility for federal grants or loans next year, according to Harvey Grotrian, director of the Office of Financial Aid. That prediction assumes no changes in the family incomes of those students, since financial need is the major eligibility factor in most federal student aid programs.

Federal funds processed by the U-M financial aid office have total-

led between nearly \$40 million and \$45 million per year for the past three years on the Ann Arbor Campus.

Approximately 12,000 of the 35,000 students on the Ann Arbor Campus receive federal financial aid through the financial aid office. Overall, however, more than two-thirds of the student body receives nearly \$100 million a year in financial aid from all sources (including U-M funds and private scholarships).

While the financial aid office is not announcing any surpluses in available aid money, some good news from that office for 1984-85 includes:

— Increased University-funded gift aid based on merit, rather than need. By combining merit-based aid

with federal aid, the U-M is now able to meet the financial needs of all in-state students admitted for the upcoming academic year.

— A \$1,000 increase in the Michigan Achievement Award for out-of-state underrepresented minorities, which brings the award up to \$2,500. In addition, new nomination criteria have raised the number of Achievement Award offers from last year's total of 17 to 98 this year.

— New eligibility standards for University Grants which make all non-resident merit award recipients eligible for grants of up to \$4,400.

— A slight increase in Pell Grants, federal need-based awards for lowest-income students. Two hundred more Pell Grants have been awarded to U-M students for 1984-85 than were awarded last year.

Dean foresees new approaches

Dentistry shifts to prevention

By Margaret Sharemet

Health Sciences Relations

"The future is in prevention," says Richard L. Christiansen, dean of the School of Dentistry since July 1982. "Whether we are dentists, physicians, nurses, pharmacists or researchers, our futures point in the same direction — to improved diagnosis and treatment, health promotion and prevention."

During a career that has spanned research, clinical practice, teaching and administration, Dr. Christiansen has become a champion of the preventive approach.

"In all areas of society, including health care, the people of the world are demanding new approaches from the professions to analyze the present and plan for the future," he says firmly. "In health care, the savings to the public through prevention of disease is many times greater than the funds invested to make the discoveries."

Dr. Christiansen began to apply his philosophy near the end of his first year as dental dean. "The School has a superb record of leadership in dentistry," he asserts. "The faculty and staff have maintained the highest standards of dental education. I view my role, therefore, as redirecting, building on new opportunities, guiding and refocusing the institution to address societal needs and the changing patterns of oral disease."

The dean sees a period of rapid change ahead for dental professionals. Most dentists, he says, realize that conventional treatment of caries will become a smaller portion of their practices, and they want to be ready to handle the practice of the future.

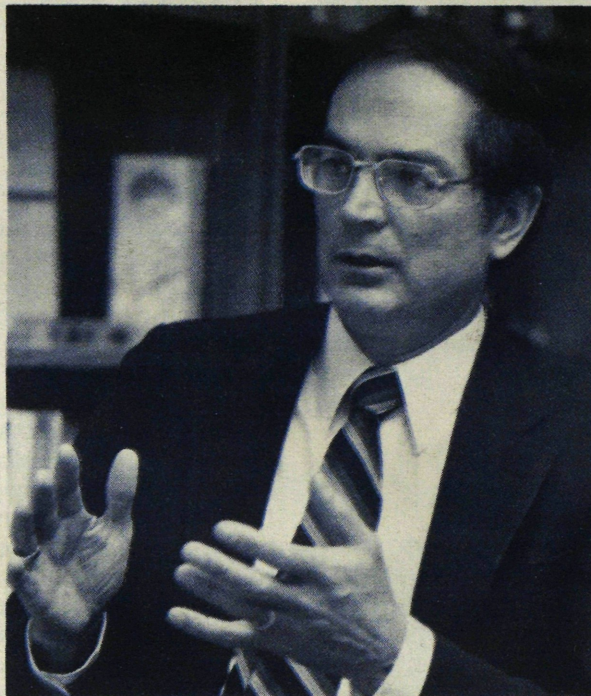
Dr. Christiansen feels strongly that dentistry has to be expansive, that it "must continue to apply information being generated by physical chemistry, molecular biology, immunology and nutrition to such areas as oral ulcerations and growth abnormalities."

Other areas Dean Christiansen feels should be examined through clinical and basic research at U-M include geriatric dentistry, facial pain, craniofacial abnormalities, salivary gland disorders and other soft tissue diseases, biocompatibility of materials and wound healing.

During his first year on the job, the new dean met with faculty and students and set both short-term and long-term objectives. These include:

Providing timely and comprehensive care for patients at the School's clinics.

"Practicing dentists are concerned about the total health status of the patient," Dr. Chris-



Richard L. Christiansen

tiansen explains. "Then they diagnose the disorders, design a treatment plan, and proceed with therapy in a logical sequence. As we intercept diseases at an earlier stage, diagnostics becomes increasingly critical.

"We educate our students in all these areas, but the nature of the curriculum in this and other

Health professions enthused dental dean

When Richard L. Christiansen reached his teens in Denison, Iowa, he knew what he wanted. "I wanted a college education and to extend my horizons, to become part of a profession," recalls the dean of the School of Dentistry, who was one of 10 children.

After reading about several occupations and developing great respect for his family dentist and physician, Christiansen focused on the health care field. The young man visited every kind of health care practitioner in the community and began to narrow his choices.

"I liked biology and I liked working with my hands," he says. "Also, my wife, whom I met in high school, was a dental hygiene student, and that helped influence my decision. Dentistry was it." Dentistry, and a continued fascination and appreciation for science and education—has

dental schools generally doesn't allow students to follow individual patients from the beginning to end of treatment. We're examining ways to develop comprehensive care, with special concern for the prompt care and individual needs of the patient."

Expanding continuing education and faculty development programs.

"There has been an information explosion in oral health, as in other health areas. Community dentists are hungry for new knowledge and input from disciplines on the growing edge of dentistry."

Establishing a new continuing education facility which will include an international center for oral health.

"Our faculty, alumni and foreign colleagues have expressed their interest in this development. I'm talking about new programs in a new physical structure — one that would be used for state-of-the-art continuing education and information exchange."

Emphasizing research.

"The clinical curriculum and our active research programs must be more fully integrated so that treatment of patients incorporates new findings and reflects our research discoveries," says Dr. Christiansen. The U-M faculty recently completed development of a clinical research unit which will integrate curriculum and research.

remained "it" for Dr. Christiansen since.

The first of his 10 brothers and sisters to go to college, Dean Christiansen holds a D.D.S. from the University of Iowa, an M.S.D. in orthodontics from Indiana University, and a Ph.D. in cardiovascular physiology from the University of Minnesota.

His education punctuated a career that has included clinical orthodontics, craniofacial research and academic administration. In the 12 years before he came to Michigan in July 1982, Dr. Christiansen held various positions at the National Institute of Dental Research at the National Institutes of Health, including associate director for extramural programs and chief, craniofacial anomalies program branch. During that period he also taught at the University of Maryland and Georgetown University.

Hopwood winner's poetry is real, with affectionate absurdity

"My mother told me a few years ago that she and my father thought I should never have lived in the attic, that that must have been where my problems started," quips Laynie Tzena Deutsch, a 1984 winner in the major poetry division of the Jule and Avery Hopwood Awards in Creative Writing at U-M.

Addressing her birthplace in the poem "Plainfield," she writes: "It's taken fifteen years / to see you as I do now, from a good / distance, dotting your landmarks on a map / for some stranger to walk in and feel at home."

Deutsch, 28, received \$2,200 for her first collection of poetry "Silver Line," which effectively connects the colorful dots of her reminiscences about growing up as an "outsider" in New Jersey.

Now, with those reflections intact, Deutsch says she recognizes her childhood feelings of estrangement — of living on different levels, physically and metaphysically, than other of her family and community members — as a more universal, rather than solitary, experience.

"Once I allowed myself my own world—which my mother had always insisted I lived in anyway—I was free to allow them theirs, and even to speculate on what we might — imagine — share," she says.

"Laynie's work has a rare quality of evoking a very real sense of growing up in such a drab place as Plainfield, N.J., and at the same time giving it a touch of the affectionate absurd," observes poet Richard Tillinghast, incoming director of the MFA program.

The Hopwood program has awarded more than \$600,000 in literary prizes since its creation more than a half-century ago. Endowed by a bequest by Jule Hopwood, U-M alumnus and Broadway playwright, the Jule and Avery Hopwood Awards in Creative Writing constitutes one of the most lucrative contests of its kind in the country.

LANDING

By Laynie Tzena Deutsch

When I walk out of sleep and pull the skin back from the pillow, shepherds lead flocks home to blue. Inside, light feeds itself color, chicken following egg. Above the car seat, a boy and girl tight as new shoes, damp and warm as a pair of dimes in summer, call each other names. They uncover curves,



Laynie Tzena Deutsch

corners of the road holding still. Yes floats over the vinyl, a picnic cloth, white as a lie. Whiter than milk in the bowl her breast resembles, whiter than the seam of the road, east-bound to morning. This car must come apart then: ankle, elbow, rib. I scan the sheet one final time, prepare my bones for landing, twist the pear-shaped bulb down in the socket. Bad springs wake the floor. Rain soothes the sidewalk, heals it, gives it pause. *Landing* © Laynie Tzena Deutsch 1984.

U geneticist breeds corn: 'Amaizin' Pop'

By Max Gates

Ann Arbor News Science & Medicine Writer

At work he is one of a dozen members of the small but highly-respected department of human genetics at the U-M.

Here, he applies his knowledge of genetics and mathematics to complex statistical analyses, sorting out the way heredity and environment interact to determine diseases such as sickle cell anemia, hypertension and coronary heart disease.

In addition to his work at the U-M, he has collaborated on projects at the University of Montreal, the University of Iowa and the Mayo Clinic in Rochester, Minn., where he is involved in an on-going study of cardiovascular health.

But lately he has been gaining notoriety away from the office where he applies his skill as a geneticist to a different task: breeding the best-tasting popcorn in Ann Arbor.

"You know, people often don't feel comfortable talking to me about these terrible diseases that I work on. All they want to talk about is my popcorn," says Prof. Charles Sing. "But that doesn't bother me. I love to talk popcorn."

Sing's popcorn, bred and grown on a small plot near Ann Arbor and sold under the brand name "Amaizin' Pop," is available at Hertler's and the Garden Patch in the South Main Market in Ann Arbor.

"If you understand the tomato problem, you understand popcorn," Sing says.

The problem with tomatoes is that they are bred not for taste, but for easy handling so they don't get damaged on the way to market, and for appearance to attract shoppers, Sing said.

Popcorn has the same kind of problem.

Popcorn breeders are looking for high yield, resistance to disease, stalk strength so that the corn plants stand up to combines and thick hulls so kernels don't get damaged in harvesting, Sing explains.

To accomplish that, commercial breeders cross their popcorn strains with sturdier field corn.

Sing's fascination with popcorn evolved naturally.

He grew up on a farm in central Illinois. "I was always going to be a farmer," he said, "but when I got out of the Army, my brother was already working the family farm.

"So I went to college," first to Iowa State, then to Kansas State University for a master's degree in plant genetics, and finally to North Carolina State for his Ph.D. degree in corn genetics.

It was at KSU that Sing first met and worked with a wheat breeder named Elmer Heyne.

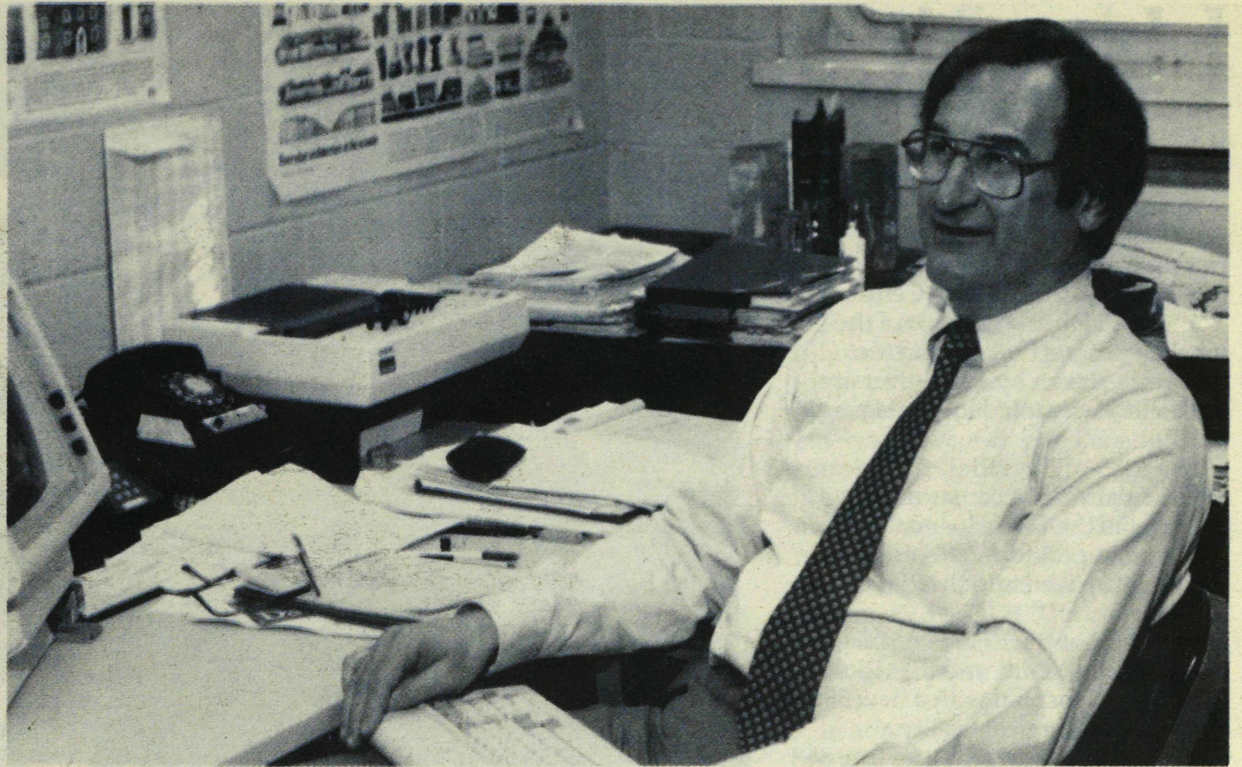
Heyne had an important job. For more than 30 years, he produced the varieties of wheat used to make bread in this country. His job was to create a new strain of bread wheat every few years to keep U.S. farmers ahead of the wheat diseases.

But in his spare time, Heyne bred popcorn — "Special Popcorn for Particular People," he called it — with good taste and thin kernels for tender popping.

Although Sing left Kansas State more than 20 years ago, he kept in touch with his old colleague and on a visit about five years ago, they sat in Heyne's living room in Manhattan eating popcorn.

"It was awful good popcorn," Sing remarks.

Heyne, it turned out, had not only bred good-tasting corn, he had produced a mixed bag — half purple, half white — the school colors of Kansas State.



Charles Sing

"You know the light bulb that went on in my head," Sing recalls — maize and blue popcorn bred and grown in Ann Arbor.

In 1980, he convinced Heyne to share some of his seed, and Sing began his own breeding program. Heyne's seed, bred for Kansas' 130-day growing season, had to be adapted to Michigan's 100-day season.

"Michigan is not a good place to grow popcorn, because of the wet falls. It's unlikely that I can improve on the popping ability and taste of Elmer's

corn. It will be a big job to get it to grow well here in Michigan," Sing says.

Sing says he isn't certain of his long-term goals. "I haven't decided what I'm going to do next. Should I just keep it as a hobby? Should I sell the seed to gardeners? Or should I go commercial? I haven't made up my mind yet."

But the immediate goal is clear: "Each year we plan to improve it a little more with the goal of producing the best locally-grown popping corn possible."

Insanity defense will stay: expresses humanity, prevents 'nullification' of law

By Harley Schwadron

News and Information Services

John W. Hinckley's successful plea of insanity, following his 1981 presidential assassination attempt, has brought widespread criticism of the insanity defense in criminal trials.

Yet, a U-M authority insists that concepts contained in the insanity defense are here to stay because the defense gives juries the option of expressing their "humanitarian" concerns and avoiding unduly harsh sentences.

Without insanity as a sentencing alternative, juries would be more likely to "bypass" the system, choosing the "not guilty" verdict in cases where they felt the defendant was mentally impaired, maintains Andrew Watson, M.D.

In these cases, the defendant ends up immediately "on the street" without any supervision or societal control over his actions.

A psychiatrist who teaches at the U-M Law School, Watson has extensively studied the insanity defense and has been an expert witness in many trials.

The insanity option—and other intermediate sentences such as second and third degree homicide or manslaughter—are important because they permit juries to gauge the degree of a defendant's guilt, says Watson.

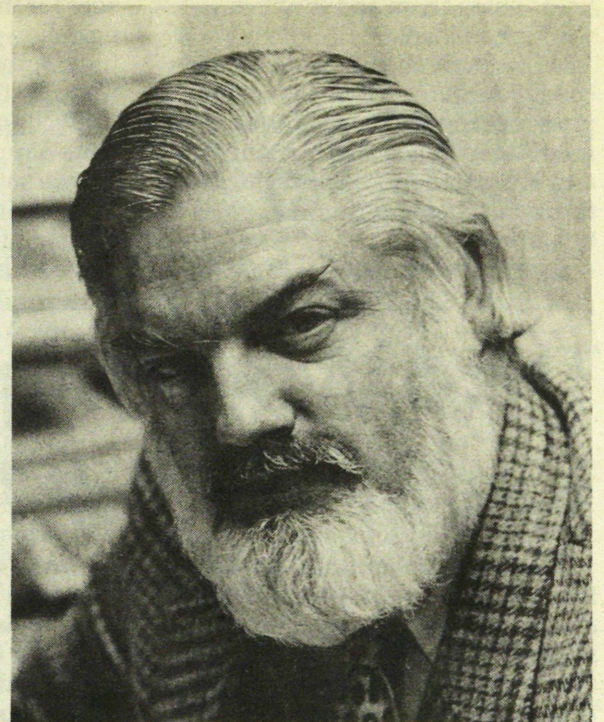
Without these alternatives, he says, criminal justice would be reduced to a rather bleak system of guilty-not guilty verdicts, and juries would be hard pressed to make these difficult choices.

"This would involve a very simplistic 'an eye for an eye' thinking, without other choices for jurors who felt an allotted punishment for a crime was too severe, or that there were other mitigating circumstances, such as a defendant's lack of ability to control his behavior in a lawful way," says Watson.

"What would likely result," according to the professor, "is a process which legal scholars refer to as 'nullification,' meaning that the intent of the law would be undermined by jury decision-making."

Watson believes that one reason for widespread criticism of the insanity defense is that, when people feel threatened, primitive "flight or fight" instincts often are provoked.

"Many facets of our criminal justice system



Andrew Watson

stem from such basic impulses, which often are in conflict," observes Watson.

"Retribution—a desire to get back at criminals—counters our humanitarian feelings which stem from basic needs to form a cohesive social unit and to help one another.

"When prescribed punishments exceed the severity of a crime, or fail to reflect other mitigating circumstances, jurors would likely choose the 'not guilty' verdict rather than subject the defendant to an unduly harsh punishment.

"This has been the experience in Western legal systems over centuries," he says. The nullification process is likely to become a problem, for example, in times when capital punishment is widely used.

"The net effect is that criminals who should be incarcerated, or held in a treatment facility, are let out onto the street. And this subverts the deterrent and protective goals of our criminal justice system."

SOLD OUT!

Popcorn lovers will have to wait until late fall if they want to sample "Amaizin' Pop." Less than 36 hours after Gates' article appeared in the Ann Arbor News, Sing and his retail outlets were sold out. He assures *Michigan Today* that his next harvest will be ready for the poppers on Nov. 1.

Hospital readied for new century

By Jane R. Elgass

News and Information Services

Rising 11 stories above the Huron River valley, the new University Hospital provides a bold punctuation mark on the Medical Center skyline. It is the focal point of the most ambitious building project ever undertaken by the University — the Replacement Hospital Project (RHP).

The \$285-million RHP, now nearing its final year of construction, will enable the U-M Hospitals to continue to provide state-of-the-art medical care well into the 21st century.

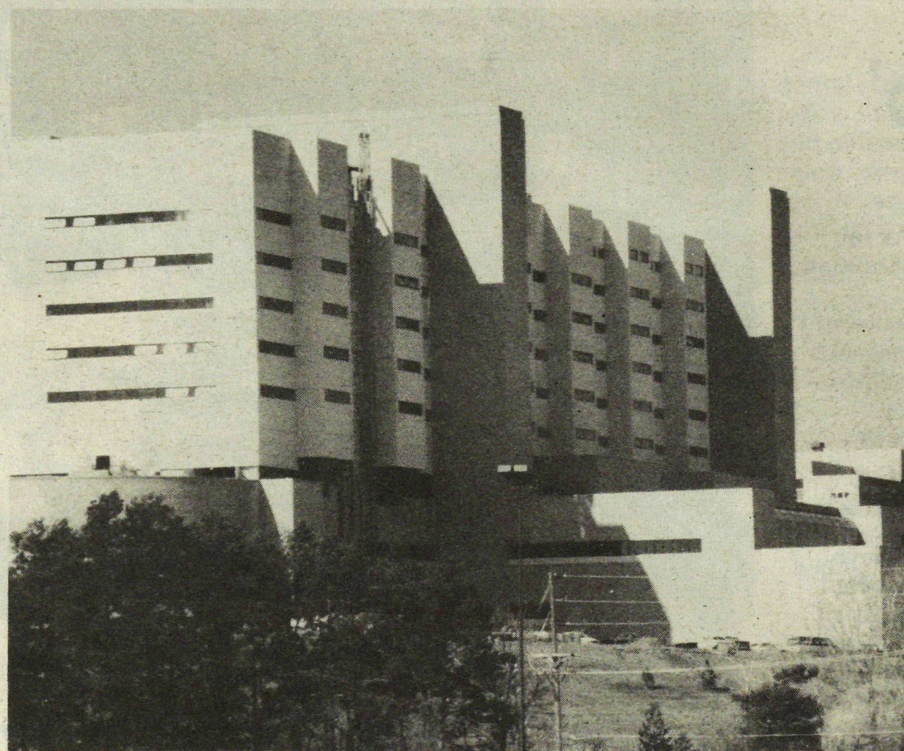
The heart of the RHP is replacement of "Old Main" and the Adult Psychiatric Hospital with a new 586-bed medical/surgical facility.

A second, major new structure attached to the new hospital, will be the A. Alfred Taubman Health Care Center. It will function as the focal point for the Hospitals' many special clinics and out-patient services. The project also includes construction of a new parking structure and renovation of Mott Children's Hospital and Women's Hospital, Children's Psychiatric Hospital and the present Outpatient Building.

Planning for the RHP has been going on for 20 years, but two things have been clear to planners from the very beginning. Although the facilities would represent state-of-the-art when completed in 1985, they had to be readily adaptable to future needs and demands placed by advances in medical technology. And, they would have to comfortably and efficiently serve the patients using them and the staff working in them.

While more than 25 professional consultants are engaged in various phases of the RHP, one of the most innovative approaches to planning and designing the facilities has been the involvement of the staff, patients and visitors.

Early in the design stages, 28 in-



SIX-STORY PATIENT tower atop the new University Hospital punctuates the Medical Campus skyline. On target for completion in 1985, the hospital is one of two facilities under construction as part of the Replacement Hospital Project.

terdisciplinary staff workgroups were assembled to review, provide input, and make recommendations to the Planning, Research and Development Office of U-M Hospitals. Staff members at all levels were asked for ideas on topics ranging from materials management, to education in a clinical setting, cafeteria seating and the flow of medical information.

The task of gathering patient and visitor recommendations fell to Jan Reizenstein Carpman, project manager for the Patient and Visitor Participation program, and colleague Judy Bernhardt, nursing coordinator for the RHP.

"Technology determines a lot of what happens in hospital design — but we soften the space," says Bernhardt. While function is a top priority at any hospital, Carpman and Bernhardt have spent almost

four years making sure human comfort is a top priority of the new University Hospital and Taubman Health Care Center.

"We've interviewed more than 2,000 patients and visitors in patient rooms, waiting areas and by distributing special mail-in postcards," says Carpman. "We've learned what kinds of beds and chairs they like; what style gowns they prefer; how they respond to various room arrangements; what they advise about carpeting, smoking/non-smoking policies, cafeteria service, parking, handicapped accessibility, noise and odor control, temperature and humidity, and signs outside and inside the building."

Planners also have worked hard to delay obsolescence of the new facilities. Each of the four diagnostic and treatment floors at the base of the new hospital is separated by an

extra seven-foot space, enough room for any re-wiring or re-plumbing that might be needed for future developments in medical technology. The entire third floor of the hospital structure is 28 feet of vertical space, filled with huge fans, ducts, air conditioners and electrical power stations.

In addition to addressing possible future demands, the new facilities make available the latest and best in hospital design, for both staff and patients.

Full-scale mock-ups of private, semi-private and intensive care rooms, constructed in the U-M's Architectural Research Lab, were tested by nurses, physicians and former patients. Videotapes were reviewed by hospital staff, designers and architects, resulting in several design changes.

The patient rooms are along the perimeter of the six-floor patient tower and feature low windows so patients can enjoy the view from their beds.

All patient rooms will be private or semi-private, increasing flexibility in the placement of patients where specialty services can meet their needs. Small, "satellite" nursing stations will promote close observation of patients and easy access to them by nurses.

The adjacent A. Alfred Taubman Health Care Center will be the site for outpatient services in surgery, internal medicine, dermatology, pediatrics, neurology and others. All examining rooms are pre-wired to accommodate an anticipated extensive computer information system.

The Center includes a rooftop heliport for Survival Flight, the state's only hospital-based air ambulance service. The lowest level houses a central computer and medical records storage for the Hospitals.

The new 1,000-space visitor and patient parking structure is adjacent to the Taubman Center.

Third World population control: tough management necessary

The Third World needs a Lee Iacocca as much as it needs money, doctors or sociopolitical upheaval to better control population, according to Jason L. Finkle, director of the U-M Center for Population Planning in the School of Public Health.

The "tough and lean" organizational techniques that helped save Chrysler Corporation would improve most family planning programs in developing countries more than would new pills or other advances in birth control technology, Finkle believes. Adequate methods of birth control are available, but not used widely enough.

The professor of population planning has received a two-year, \$243,360 federal grant from the U.S. Agency for International Development (AID) to improve management of family planning programs based on field research in six to nine countries.

"Poor administration is one of the major impediments," says Finkle, who has extensive field experience throughout Southeast Asia and India.

"There's a clear indication that the decline in fertility is leveling off on a worldwide basis," says Gayl Ness, a professor of sociology and population planning and another researcher on the AID project. "In poor Third World countries, the average number of children born per woman is still between six and eight. In more affluent countries, that average is one to three children per woman."

While Finkle and his associates, Ruth Simmons and Ness, will not prescribe major changes for existing family planning programs, they will look closely at the pros and cons of policies that may strengthen those programs.

For example, the dynamics of incentives systems.

"Some areas — such as Singapore — offer apartments, free tuition and hospitalization to citizens who have no more than the nationally allotted number of children," says Finkle.

"By denying large families access to those things, the system effectively punishes them. Thus we see a very close connection between incentives

and disincentives."

Such systems are usually most effective in countries with extremely strong central authorities, according to Martin Whyte, U-M professor of sociology. Whyte, who has studied family planning in the People's Republic of China, notes that birth control efforts in that country are working because "the society already was tightly organized and highly regimented."

The government has efficiently mobilized the entire population to enforce the two-children-per-family rule. Run by the State Commission of Family Planning, China's program offers financial incentives to women who comply, Whyte explains.

China's family planning program is mainstreamed into its manufacturing and farming sectors.

Women who have more than two children are subject to a number of penalties, including docked pay and discrimination in housing and child care.

"Village 'grandmothers' and 'menstrual monitors' in the factories



Jason Finkle

keep track of Chinese women's menstrual cycles to determine when one is pregnant," Whyte says. "The system is quite intrusive but it works because its penalty/reward system is backed by a tight, grassroots effort."

Finkle's project will look at programs in countries with less government control.

His team will visit at least six selected areas included in the study group: India, Indonesia, Sri Lanka, Turkey, Kenya, Mauritius, Morocco, Tunisia, Colombia, Costa Rica, Jamaica and Mexico.



HOSPITALS' EMPLOYEES scored an entry in the Guinness Book of World Records in April with a 332-foot submarine sandwich. The effort was part of a day-long celebration kicking off the staff fund-raising drive for the Replacement Hospital Project. About 4,200 persons were served from the monster sandwich.

Corps of RHP 'ambassadors' seek community, staff support

By Jane R. Elgass
News and Information Services

In size and complexity, the million-square-foot Replacement Hospital Project (RHP) at the U-M is difficult to comprehend. Site preparation for the new Adult General Hospital and adjacent Taubman Health Care Center required excavation of 330,000 cubic yards of earth.

The foundations contain enough concrete to pave a 5.5 mile road, and more than 120 ranch-style homes could be constructed from the more than one million bricks in the RHP. Ten thousand tons of structural steel — the equivalent of 6,060 mid-size cars — support the buildings. Four miles of public corridors traverse the facilities, which also contain 12 elevators, two escalators, 586 patient beds and 17 operating rooms.

Most of the projected \$285 million cost for the two new structures and improvements to three others is being underwritten by the sale of state of Michigan building authority bonds and U-M Hospitals revenue bonds. Successful completion of the project, however, requires raising \$20 million from private sources.

Michigan businessman and philanthropist A. Alfred Taubman is volunteer national chairman of the RHP fund-raising campaign, a major component of The Campaign for Michigan. He shares leadership of the effort with co-chairman Herbert Sloan, M.D., chief of clinical affairs at U-M Hospitals.

Taubman is leading the effort to raise \$15 million of the \$20 million goal through major gifts from corporations, foundations and individuals. Sloan chairs the 30-member Committee on Resources, which guides and directs the efforts of more than 500 volunteers working to raise the remaining \$5 million.

Under Sloan's leadership, a fall campaign among Medical School

faculty members exceeded its \$1 million goal by more than \$200,000. A national network of alumni volunteers, some 400 strong and representing 40 geographic areas with high concentrations of Medical School alumni, has so far raised \$800,000 toward its goal of \$2 million.

Back home, two groups of RHP "ambassadors" round out the volunteer corps, seeking the remaining \$2 million under the guidance of the Committee on Resources. The Regional Campaign Council, 25 prominent community and civic leaders appointed this spring, is focusing its efforts on individuals and businesses within the state, particularly in southeastern Michigan.

Alta Gaines, R.N., an administrative associate in medical nursing, is typical of the more than 100 employee ambassadors. They are not seeking a set financial goal, but one of participation by everyone.

"I became an employee ambassador partly because of my experi-

ence as a patient here," she says. "I was severely injured in an auto accident last year and received excellent treatment."

The employee ambassadors, representing the staffs of the Hospitals, Medical School and School of Nursing, kicked off their campaign in late April.

Rallying around a slogan of "Let's put it all together," their day-long celebration included consumption of the world's largest submarine sandwich, entertainment, information displays, and hard-hat tours of the construction sites.

Taubman is impressed by the enthusiasm of his volunteers. "They all seem to share in the vitality of this project. All of our volunteers are contributing to the promise of the new facilities, and that promise holds very high potential. The facilities and the support services the RHP provides," Taubman adds, "will keep the University in the forefront of biomedical and health care research."

Top mathematics researcher is Alumnae Athena recipient

Internationally known mathematician Karen Uhlenbeck received the University's 1984 Alumnae Athena Award.

Uhlenbeck, professor of mathematics at the University of Chicago, was honored at the Annual Alumnae Luncheon for her "outstanding professional achievement, humanitarianism and public and community service."

"She is quite possibly the best woman mathematician in the world at this time," according to Prof. Frederick W. Gehring, chairman of the U-M mathematics department.

"She has done deep and powerful research in differential geometry and nonlinear partial differential equations. This work has already found applications in the foundations of high energy theoretical physics."

Uhlenbeck is a 1964 graduate of U-M, and received her M.A. and Ph.D. degrees in mathematics from Brandeis University. She has been a faculty member at the University of California at Berkeley and the University of Illinois, as well as a visiting professor at Princeton, Harvard and Northwestern universities.

Ford Fund gift boosts campaign

Ford Motor Company will contribute \$3 million to the University to support programs in business administration, health care and engineering, according to President Harold T. Shapiro.

Of that total, \$1.2 million is earmarked for the School of Business Administration, \$1 million for the University's Replacement Hospital Project, and \$800,000 for a computer-aided engineering laboratory at the University's Dearborn Campus.

In announcing the gift, President Shapiro cited the "longstanding friendship" between the University and Ford Motor Company. "In the areas of education, research and training of professionals, we share many important goals," he added.

Ford Chairman Philip Caldwell said that the U-M is "a vital educational resource for the state of Michigan as well as for the nation," and he added: "We are pleased that the Ford Motor Company Fund is able to make a significant contribution to the University's continued growth." Caldwell is also president of Ford Motor Company Fund, which is funded by Ford Motor Company.

The gift is one of the largest to The Campaign for Michigan, a five-year program to raise \$160 million in private funds for facilities and endowment at the University.

As part of this Campaign, the School of Business Administration plans to construct three educational facilities on the Ann Arbor Campus at a cost of \$15 million: a library, a combination computing and executive education center and a residential facility for executives attending Division of Management Education programs.

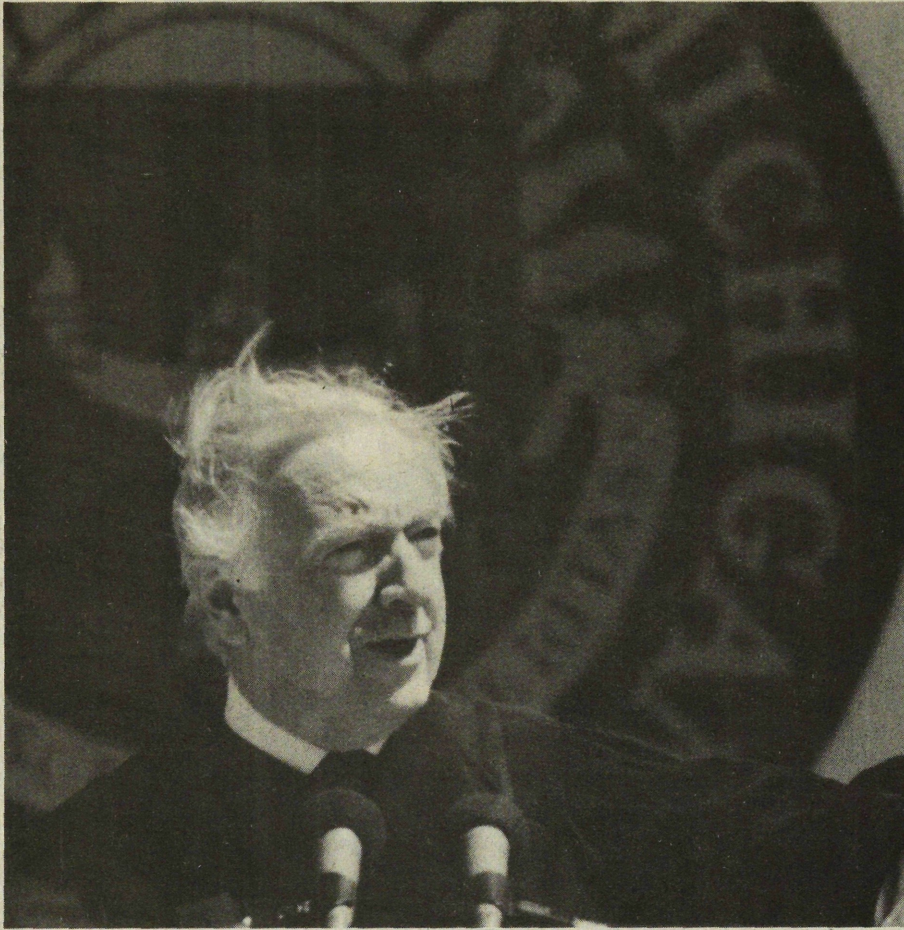
The gift of \$800,000 to the School of Engineering at U-M-Dearborn extends historically close ties between Ford and the Dearborn Campus, which evolved from a gift of 203 acres of land from Ford Motor Company and a grant from the Ford Motor Company Fund in 1959.

"The School of Engineering at Dearborn has been an enthusiastic, productive partner of industry," pointed out Dearborn Chancellor William A. Jenkins. "It was founded to assure a supply of resourceful, 'practical-oriented' engineers for the Detroit metropolitan area — and two-thirds of its graduates have remained in southeastern Michigan. Adequate facilities and up-to-date programs, as represented by our plans for the computer-aided engineering laboratory and Ford's generous support of that project, will help make the program the best it can be."

The Campaign for Michigan is one of the most ambitious fund-raising projects ever undertaken by a public university. As President Shapiro explained: "In the past, public universities such as Michigan were able to rely on state and federal governments for their financial support. That is no longer true. We are increasingly dependent on support from the private sector — individuals, corporations, foundations and others — to maintain our role as a leading research institution."

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Michigan Today



SPRING COMMENCEMENT speaker Walter Cronkite reported four world "mega-problems" to his audience: population explosion, pollution, dwindling natural resources and nuclear proliferation. The veteran newsman, who retired in 1981 from "The CBS Evening News with Walter Cronkite," received an honorary doctor of laws degree from the U-M.

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