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UPDATE

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Tom Foley

A winter scene on the University's West Bank looking toward the river

The New Economics
A Crop Variety Show
Purveying the Arts
Survival in the Cold

Plus *Perspective:*
A Special Report

New School of Economics Gives Public High Marks

by William Hoffman

It is a simple matter to dismiss the public as a fool when you disagree with this or that opinion poll. But in the area of economics, the public is far wiser than the experts have allowed.

That's the view of a new school of economists, including several University faculty members, that is advancing a revolutionary theory about how the economy works. Called "rational expectations," the theory is winning adherents in academic and financial circles and represents perhaps the boldest challenge to contemporary economic thinking.

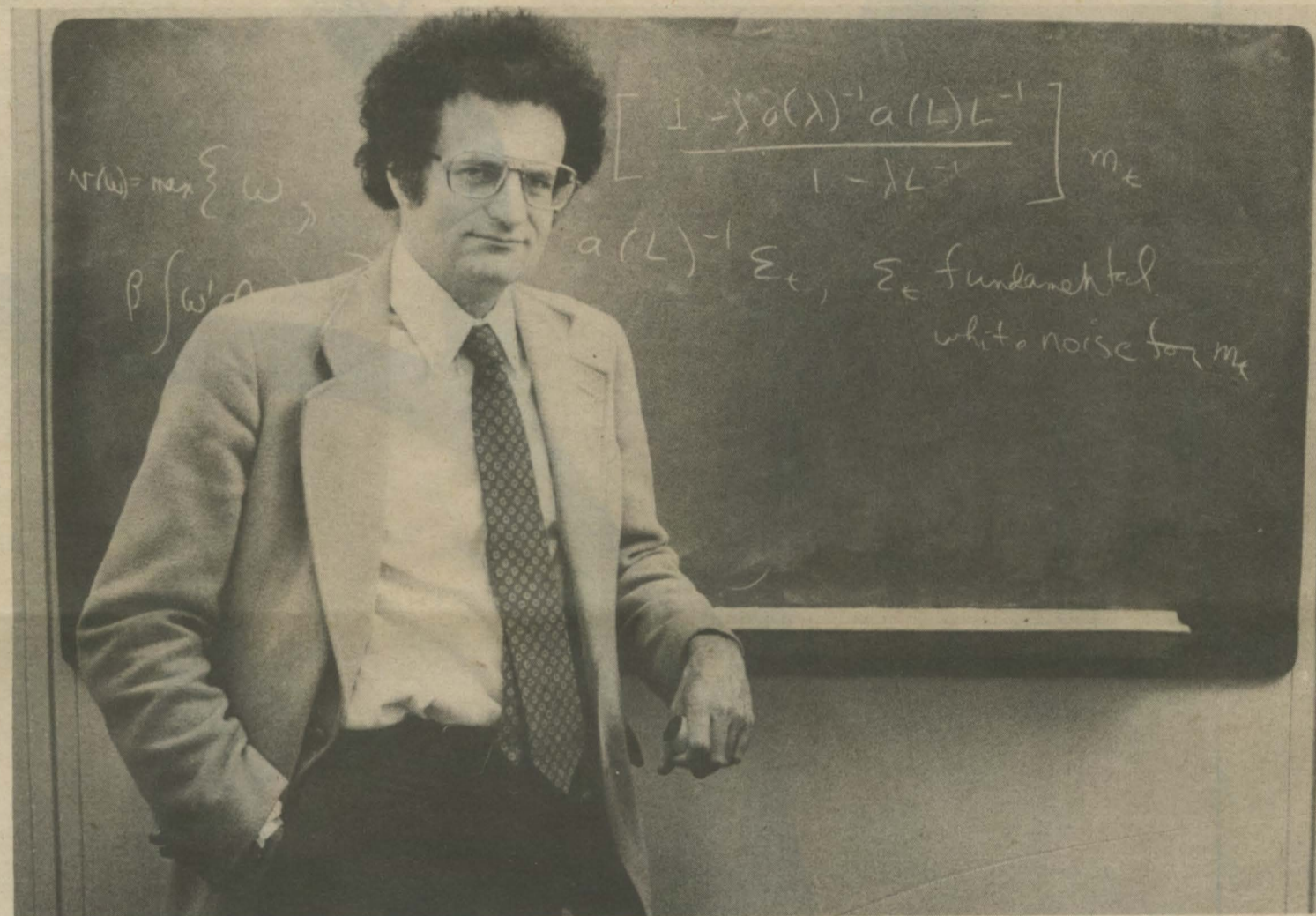
One of those economists is Twin Cities campus professor Thomas Sargent. Sargent and Robert Lucas of the University of Chicago are editors of *Rational Expectations and Econometric Practice* published last fall by the University of Minnesota Press. The book is the first collection of research papers on the subject—a "bandwagon" designed to provide a framework for a theory that is, at bottom, remarkably simple.

Giving people credit

Rational expectations assumes that people behave in their own best interests when they make decisions about how to spend their money. Now there's nothing new or grandiose in that notion. Indeed, it goes all the way back to Adam Smith. Yet through the 1960s and '70s, proponents argue, government economic policy depended on people *failing* to act in their own interests.

Next, rational expectations assumes that people make economic decisions only after having taken into account available forecasts. That is to say, they form their expectations rationally and they do not repeat their mistakes.

Rational expectations economists contend that the recent decade of economic "stagfla-



Thomas Sargent

tion"—high inflation, high unemployment, and low productivity—was a result, in part, of people having learned from their mistakes of the 1960s. Those mistakes included the failure of organized labor to anticipate the consequences of government policies to expand the economy. While consumers and business firms seemed to have more money to spend—because government had either cut taxes or increased the supply of money—labor was locked into long-term wage contracts and suffered a decline in real wages.

Once labor began to shorten contract periods and link wages to the cost-of-living index, government expansionary policies ultimately failed.

Put simply, the idea of rational expectations is that if people see a surge in the money supply or a tax cut coming, they will act in their own best interest: Labor, expecting the demand for consumer goods to rise (people find themselves with more dollars than before),

will press for higher wages. Business firms, perceiving the rise in demand, will be willing to pay them, but will also raise prices.

When the "extra money" arrives, its intended effects of boosting productivity and lowering unemployment will already have been counteracted by higher wages and prices. Instead, the economy becomes increasingly inflationary.

During the early 1960s, when the ideas of British economist John Maynard Keynes were put into practice, government economists were able to stimulate the demand side of the economy and produce growth. By the early 1970s, Keynes's prescription had crossed political boundaries. "We're all Keynesians now," Richard Nixon remarked.

Then business people, labor leaders, workers, investors, and consumers got on to the government's game, and their expectations of an economy that was overspending and overborrowing were not so rosy. Once their expectations changed, so

did the economy—for the worse.

"People recognize the truth and stop making the same mistakes," Sargent said. "When

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the time.**

they do, they eliminate the planned effects of the policy."

Government policies based on deception or "trickery" are likely to be ineffective over the

long run, Sargent said. The government cannot fool most of the people most of the time, to paraphrase Abe Lincoln.

What to do?

If Keynesian policies don't work, what policies do? Rational expectations theorists don't have a precise prescription for our current economic ills, but Sargent believes that "only stable policies, familiar to most of our citizens, are likely to produce stable, beneficial results." The government should be very careful about "untried experiments."

Sargent and Neil Wallace, a University colleague and fellow adviser to the Federal Reserve Bank of Minneapolis, do not think that the world of rational expectations requires a rigid monetary theory, only that the growth of the money supply must reflect some long-term strategy familiar to the public.

In fiscal policy, however, rational expectations theorists see

nothing quite so pleasing as a balanced budget. But Ronald Reagan's preoccupation with the supply side of the economy is bringing to grief his promise of a balanced budget in 1984.

Supply-side economics, which counts on large tax cuts to stimulate investment, which in turn is supposed to boost productivity and lower inflation, "isn't trickery. It's wishful thinking," Sargent said. While it is true that taxes "distort incentives," it doesn't necessarily follow that lowering taxes will

Supply-side economics "isn't trickery. It's wishful thinking."

boost productivity and lower inflation, especially if tax cuts create a deficit.

In a newspaper article, Robert Lucas asked rhetorically: "Is the general principle being advanced that taxes must always be reduced, independent of the effect on the deficit, because all taxes have disincentive effects?"

According to Sargent and Wallace, there is little evidence that taxes have reached such levels that they are undermining investment and fueling inflation. "I don't think most tax rates are at that point," Wallace said. There are all kinds of incentives to invest, he said.

President Reagan's policy announcements "are not internally consistent," Sargent said. "He wants to reduce taxes, increase defense spending, and balance the budget at the same time." These goals are not compatible under the present circumstances, he said.

Gold bugs

Supply-side guru and White House consultant Arthur B. Laffer recently called for a return to the gold standard, citing Sargent's own research findings as evidence that such a move would stop inflation.

In a study of four hyperinflations following World War I, Sargent observed that German, Hungarian, Austrian, and Polish currencies, which were not on the gold standard, "stabilized" only after excessive government borrowing ceased and the budgets were brought into balance. Increases in economic output and employment followed.

Laffer suggested that a return to the gold standard, in which money is wholly or partially backed by gold, would produce

similar results in the United States, which went off the gold standard completely in 1970. But Sargent believes that a sound fiscal policy is the key to a stable currency.

"In order to make a domestic currency freely convertible into gold, or into any foreign money for that matter, it is necessary that the government run a fiscal policy capable of supporting its promise to convert its debt," Sargent wrote in a related article.

"What backs the promise is not only the valuable stocks of gold, physical assets, and private claims that the government holds, but also the intention to set future taxes high enough relative to government expenditures."

In other words, a currency need not be based on gold to be as good as gold. Once it is good as gold, converting it is little more than a formality.

A return to the gold standard now could be chaotic. "This country couldn't go back to gold right now if it wanted to," Sargent said. Without an appropriate fiscal policy—a balanced budget—"our gold supplies would soon be exhausted and there would be a run on the dollar."

According to Sargent, there are two main sources of inflation, a "good" one and a "bad" one. The bad one is "the persistent government deficit." It is possible to eliminate the deficit by either raising revenues

"This country couldn't go back to gold right now if it wanted to."

or cutting expenditures, "and rational expectations theory is neutral as to how it gets done," he said.

The good one, and one the government "doesn't necessarily want to change," is electronic innovation in the financial industry—electronic funds transfer and computerized bookkeeping. These innovations "have resulted in less money needed to carry on a given transaction. This leads to a reduced demand for money, which in effect increases supply," Sargent said. It is a good type of inflation "in that it makes payment mechanisms more efficient."

Models and critics

Macroeconomists, who study

the operations of the nation's economy as a whole, rely on econometric models to forecast economic trends. These models are masses of mathematical equations that seek to portray all the workings of the economy.

Through the 1970s, the models performed dismally. Forecasts based on them sometimes were so wide of the mark that they were worse than useless, according to Lucas.

The kinds of theories used in forecasting "haven't been very good," Wallace said. Lucas and Sargent go further: they say that econometric models, as they are presently constructed, are of no use in guiding policy-makers.

Individuals are constantly changing their expectations in response to a changing economic environment, and the current models fail to take this into account. Lucas and Sargent hope that their book will be useful for economists who are interested in constructing new econometric models.

Rational expectations is not without its critics. One of them is Walter Heller, Regents' Professor of Economics who was head of the Council of Economic Advisers under Presidents Kennedy and Johnson.

Heller engineered the 1964 tax cut that brought years of economic growth and low unemployment and narrowed the gap in the federal budget as rising national income produced more tax revenues. As a result, the prestige of Keynesian doctrine soared.

Rational expectations is a brilliant intellectual exercise by brilliant faculty, Heller said. "The fundamental question is whether people have the economic understanding and information to respond in the way that they [rational expectations theorists] suggest." It imputes a perceptiveness that people have never shown before, he said.

The theory has a long way to go before it can be translated into useful policy that "can stand up on the firing line," he said.

Sargent, Wallace, Lucas, and company might not entirely disagree with the latter remark. Economic theories do not become orthodox overnight, and rational expectations is not 10 years old. Nearly 30 years elapsed between the publication of Keynes's *The General Theory of Employment, Interest, and Money* and the Heller-directed economic boom of the 1960s.

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The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap.

State Owes Bushels to 'U' Plant Breeders

by Maureen Smith

Minnesotans owe more than they know to a handful of plant breeders and other plant scientists at the University.

More than half of the acres of some major crops in the state are planted with varieties developed at the University. Because the new varieties typically produce higher yields than the varieties they replaced, the result has been to add millions and millions of dollars to the income of Minnesota farmers and to the Minnesota economy.

Take some specifics. Era wheat, the most phenomenally successful of all the University plant varieties, has brought an estimated \$337 million in additional income to Minnesota farmers in the decade from 1971 to 1980. Almost three fourths (73 percent) of the acres of wheat in Minnesota are planted with University varieties, and the great majority of those acres are planted with Era.

Morex barley, developed at the University, has become the most widely grown barley in the United States. Barley breeder Donald Rasmusson, taking into account the increased yield over the variety Morex replaced, has calculated the economic benefit at \$10.7 million in Minnesota and \$28.1 million in the nation as a whole in 1981.

Several University soybean varieties account for about 40 percent of the Minnesota acres planted with this important crop. Soybean breeder Jean Lambert said a conservative estimate is that these varieties resulted in \$32 million in additional income for Minnesota farmers in 1981. The whole soybean breeding project cost just \$110,000 last year, he said. "That's a pretty good return on an investment."

"It's difficult for people to grasp the real magnitude of what a new variety means," said Herbert Johnson, head of the Department of Agronomy and Plant Genetics. "The gains are so big that they sort of create questions about their va-



Donald Rasmusson

lidity. But they are real, and our estimates are stringently obtained. We don't put them together lightly."

University plant breeders don't benefit financially from the varieties they develop, Rasmusson said. "Farmers don't pay royalties for our seeds, and our varieties could be grown on millions of acres and we wouldn't benefit." But the scientists take satisfaction in the success of their varieties.

"Today Wall Street is buzzing and the academic journals are buzzing about genetic engineering," Rasmusson said. The hope is that scientists can manipulate genetic material to create an improved crop. Exciting things are happening, Rasmusson said, but "most people in the field recognize that our knowledge is still far too limited to develop new crop varieties through genetic engineering. For important economic traits of plants, the number or the location of the genes hasn't been determined.

"There's just as much excite-

ment in doing plant breeding in the conventional way, creating new crop varieties by crossing parental varieties," he said. If genetic engineering is defined as any activity that results in improved genetic qualities of plants, then "the plant breeder is the ultimate genetic engineer."

The plant breeder might take one variety that is known for its high yield, for example, and cross it with another that is higher in protein. If the cross is a fortunate one, the resulting variety will have the advantages of both parents. But most of the time it doesn't work that way. "We make hundreds of crosses a year that don't give us something better," Rasmusson said.

"In plant breeding, the more science you can apply, the more likely you are to make progress, but there is always an element of chance," he said.

To enlarge their knowledge base and improve their odds,

plant breeders work closely with plant physiologists. "Our department is known nationally and internationally for bringing these two professions together," Johnson said. "The plant breeders run tests to try to find out which varieties will be better, but they really don't

years is maybe a little slow, but probably ten years is an average time from when a cross is made until people are hearing about it."

After a cross has been discovered to be promising, two or three generations are needed

"Probably most agronomists feel that their profession is the most important one to the future of the human race."

know what makes one better, what makes it yield more or resist more.

"The plant physiologist is sort of like the medical diagnostician for humans. If we can figure out what makes a good variety, our plant breeders have a good chance of finding the right combination to produce it."

Developing a new variety takes time. Oat breeder Deon Stuthman cited the example of Moore, one of the leading oat varieties. "The last cross of Moore was made in 1967, and we released it in 1979. Twelve

for the new variety to stabilize and reproduce itself. Repeated tests are run to find the best progeny, and the variety is then evaluated under different environmental conditions. If the variety still looks good, the seed multiplication will begin. "We'd need 3,000 to 5,000 bushels of seed before we'd release an oat variety to seed growers," Stuthman said.

"We have to be forward looking," he said. "We're talking now about the varieties for the 1990s." And it keeps getting

tougher. "The standards are ever escalating. The things we're looking at now have to beat Lyon, Moore, and Benson. Otherwise, forget it." Similarly, wheat breeders are finding Era hard to beat.

"We've made the easy gains," Johnson said. "In our lifetimes, whether we know it or not, yields per acre have increased dramatically. We've made huge gains, but it was sort of the easy stuff to do, the obvious. Every gain we make now is going to be more difficult and more expensive. We're in the big leagues already."

The era of Era

In wheat, a decade after its release, the story is still Era. Back in the early 1960s, Minnesota farmers were growing 800,000 acres of wheat and the yield was 25 bushels an acre. Small gains were made in the second half of the decade, with wheat acreage increasing to 816,000 and yield to 28.8 bushels an acre.

"Two things struck in the early 1970s," said wheat breeder Robert Busch. The University released Era, and the demand for world exports of wheat exploded. In 1981 it is estimated that wheat was grown in Minnesota on 3.4 million or 3.5 million acres, with a yield of 37 bushels an acre.

Wheat is Minnesota's third crop, behind corn and soybeans. The primary wheat raising region is in the northwestern corner of the state. Minnesota is second in the nation in the production of spring wheat and somewhere between fifth and eighth in total wheat production. More than 55 percent of the wheat raised in Minnesota is exported on the world market. "We're very heavily dependent on world supply for prices," Busch said.

The value of a higher yielding variety is measured in more than dollars. In 1975 in Minnesota alone, for example, it was estimated that the higher yield of Era resulted in 810 million additional one-pound loaves of bread.

And Era is grown far beyond the boundaries of Minnesota. Johnson said that Norman Borlaug, the University alumnus who won the Nobel Peace Prize for his work in the "green revolution," once told

him that Era was "if not the best then one of the best spring wheats in the world."

Busch came to the University in 1978, several years after Era was released. The cross for Era was made when the wheat breeding program was headed by Elmer Ausemus, and Era was released by Busch's predecessor, Robert Heiner. "It's a continuum," Busch said. "With any variety that I release next year, obviously Dr. Heiner's work was involved."

Although Busch is on the University faculty, his salary is fully paid by the U.S. Department of Agriculture (USDA). Ten scientists in the plant breeding program are participants in this unique arrangement, which is considered beneficial and economically advantageous to both the University and the USDA.

What will it take to beat Era?

"It's difficult for people to grasp the real magnitude of what a new variety means."

Busch said the goal of the University's wheat breeding program is to develop a variety with a yield equal to or better than Era's with a higher protein level. "It hasn't been easy," he said.

Kitt and Angus, the University's two latest wheat releases, haven't really taken off, he said. "They both have better protein, but neither would yield as well."

Era will one day be beaten, but in the meantime its contribution to the economy and to feeding the world has been vast. Busch suggested that the cost of agricultural research at the University for a number of years could be justified on the basis of Era wheat alone.

A surprise in barley

Morex barley, released in 1978 by Rasmusson and plant pathologist Roy Wilcoxson, became the leading malting variety two years later. The rapid acceptance of the variety is almost unprecedented.

Not all barley is suitable for malting, and farmers grow what sells. At least two thirds of all the barley grown in Minnesota is used for malting and brewing. Most of the rest is fed to livestock.

To calculate what Morex meant in added income to growers, Rasmusson started with the approximately 1.8 million acres in the United States on which his variety was grown in 1981. He

then multiplied by six bushels per acre, the amount of yield by which Morex had been found to exceed Larker, the variety it replaced. And he assumed that Morex sold for \$2.60 per bushel (the price paid to the farmer, not the \$3.45 per bushel on the Minneapolis Grain Exchange). The result was \$28.1 million in the United States in one year.

The success of Morex exemplifies the element of chance in plant breeding. Morex was bred to have better features, which is always the goal of plant breeding, and some of its traits were predicted in advance. "It has a lot of traits that were bred in specifically," Rasmusson said. "We knew what the protein level would be, we knew it would have resistance to stem rust. But then we got a big surprise."

Brewers prefer a barley that yields a high percentage of

extract when malted. The improved malting quality of Morex was an unanticipated advantage. Morex has about 2 percent higher extract than Larker, a fact that is reflected in its name: *Morex* is a contraction of *more extract*.

"The genes combined favor-

ably," Rasmusson said. "It didn't have anything to do with the knowledge of the breeder."

Feeling their oats

Minnesota leads the nation in oat production. The top ten oat-growing counties in the state are seven counties in west central Minnesota and three in the southeastern corner. About 70 percent of the oats that are grown are fed to livestock, about 20 percent are sold as seed, and 10 to 12 percent are used in processing, to make such food products as oatmeal and Cheerios.

One third of the acres in Minnesota on which oats are grown are planted with University varieties. Compared with the 73 percent in wheat and the 70 percent in barley, 33 percent may not sound like much. But four years ago, in 1977, only 2 percent of the acres were planted with University varieties.

"Before I came in 1966, we really had at best only a token breeding program," Stuthman said. Now the University's oat breeding program is coming into its own.

The three popular University varieties are Lyon, released in 1977, and Moore and Benson, both released in 1979. "It's sort of like a pipeline," Stuthman said. "There's a line that will

probably be released this spring, and there are some others that are close. They will require more testing. There's one in the first year that looks promising, but lots of times the second year brings some disappointments."

The popularity of Moore in particular is growing. "I'm sure more would be planted if there were more seed available," Stuthman said. "My colleague in North Dakota says he thinks Moore will soon be the leading variety in North Dakota, and it's one of the leading varieties in South Dakota. The production figures are almost certain to increase."

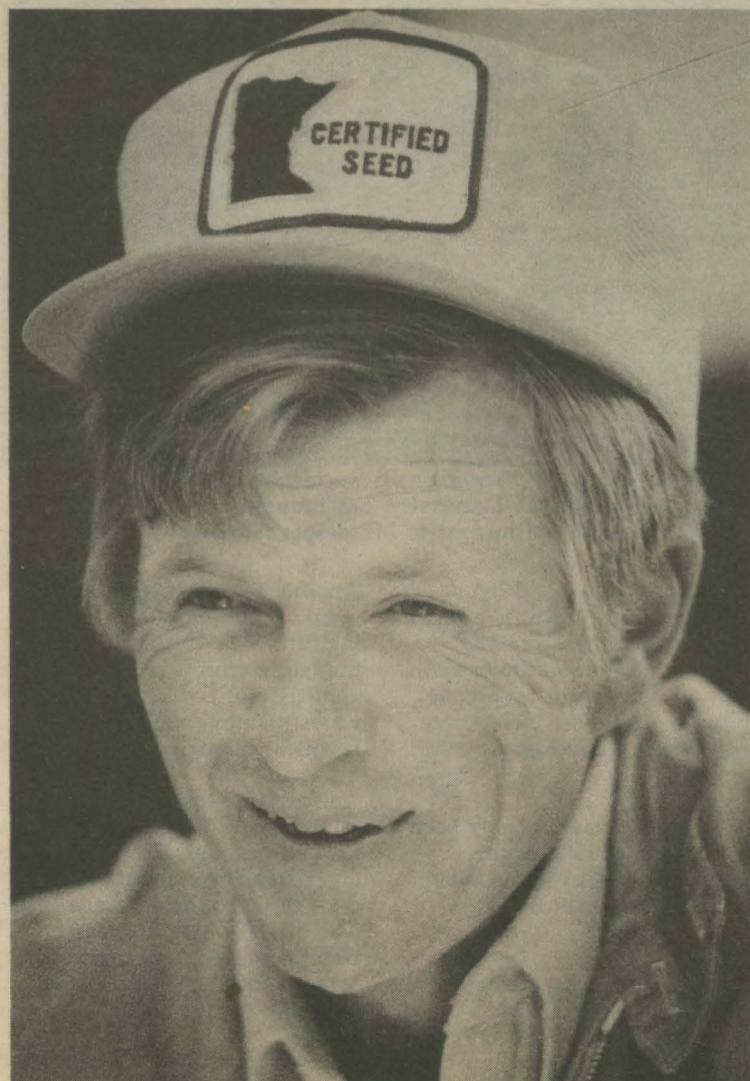
Figuring conservatively that the University varieties yield at least five bushels an acre more than the varieties they replaced, Stuthman estimated the economic benefit to Minnesota farmers at \$5 million, and he said the amount could be almost doubled if the Dakotas and Wisconsin were included. Because most oats are fed to animals, not all of the financial benefit is in cash, but Stuthman said "the crop still produces the added value, whether it's cash value or indirectly through the animals."

The soybean story

Soybeans are Minnesota's second crop, with 4.4 million acres planted in 1981. It has been estimated that about 1.8 million of those acres are planted with University varieties.

The most popular University varieties are Hodgson and Evans, released by Lambert in 1975, and Hodgson 78, released in 1978 as a variant of Hodgson. The original Hodgson turned out not to be resistant to an important soybean disease, Lambert said, and "we then by a process we call back-crossing remade the variety and introduced the resistance." But there is still plenty of the original Hodgson around, and "in areas where the disease is not important the farmers don't really care."

Two other University varieties have specific uses. Swift, an older variety, is "very good with some of the alkaline soils that we have in the state," Lambert said. "Certain farmers in west central Minnesota stay with it." McCall, released in 1978, is "not too big in acreage, but it's



Jon Geadelmann

Tom Foley

very useful in northern Minnesota where they need an early crop."

Except for the beans that are saved for use as seed, the soybean is completely an industrial crop. Industry separates the bean into two parts. The oil is extracted and used for such food products as margarine, salad oils, and shortening and a few other items such as paint. The residue is the soybean meal, which is used in rations for farm animals and is the single most important source of protein for animals.

Lambert's estimate of \$32 million in added income for Minnesota farmers as a result of University varieties was reached by multiplying 1.8 million acres by three bushels an acre (a conservative estimate of the increased yield over the varieties that were replaced) by \$6 a bushel (the price paid for soybeans this year).

"The farmers don't have any more expense when they grow the improved varieties," he said. "They are about \$32 million ahead this year."

Corn is different

Wheat, soybeans, barley, and oats are all bred in a similar way. Corn is different. After the development of inbred lines—comparable to varieties in the cereal grains—two lines are crossed to form hybrids. It is an extra step in the breeding process, and it is done almost exclusively by private industry.

But behind every hybrid is an extensive breeding process, and the inbred lines that go into the hybrids are developed by public universities as well as by the private companies.

"Farmers have the impression that the research is being done by the private companies, because that's where they buy their seed," said corn breeder Jon Gadelmann. The contribution of the public universities is not usually recognized.

A recent study showed that 72 percent of the hybrid varieties grown in 1980 contained at least one line developed at a public institution, and 16 percent of all seed corn that was used included a line developed at the University. Gadelmann estimated the economic benefit from the University lines to be \$28 million annually in the United States.

"There are a few public lines that are very popular, just like there are a few popular soybean varieties," Gadelmann said. "I guess we've been

lucky, or whatever, because our materials are being used." But he said the role of the private companies in developing lines is increasing, and the time may come when "it would be foolish for us to spend public dollars on efforts that are clearly duplicated or not used."

"We've enjoyed success and are enjoying success, but we have to be constantly reevaluating," Gadelmann said.

Give alfalfa credit

One of the University's strong breeding programs is the al-

lalfa program directed by Donald Barnes, but it is impossible to track the economic benefits. Most new alfalfa varieties are developed by private industry, but most incorporate methodology developed at the University.

Another reason that the economic benefit of alfalfa breeding cannot be calculated is that the entire crop is fed to farm animals. But Barnes said he was struck by one Minnesota farmer's comment.

"He told me that he milks the same size of dairy herd that his dad did, and it used to take 150 acres of alfalfa to produce the amount of forage that was needed. Now it takes only about 80 acres. That extra 70 acres of income is due to the more productive alfalfa.

"He said the alfalfa should get credit for the extra income, but it does not. That's a new per-

spective that most of us have never looked at," Barnes said.

Plant breeding's infant

Wild rice breeder Robert Stucker thinks his crop is the most fun of all. "Wheat breeding may have started 3,000 years ago," he said. "Rice breeding began 20 years ago, and our project is 9 years old.

"One of the exciting things is that all of those things that have been done on the other species have yet to be done on rice. We don't have any trouble doing original research, because nobody else has fooled with it yet."

But because of the relative newness of the program, Stucker said, "our success story is going to be a little more limited." Only 14,000 acres in Minnesota are planted with wild rice, and only about 18 percent of those acres are planted with University varieties.

The University's most successful wild rice variety is Netum. "I'd like to tell you Netum is the greatest variety ever released, but it's not," Stucker said. "It's better than some varieties, not as good as the best. A couple of others have higher yield, but some people are doing well with Netum." A big advantage of Netum is that it tends to be the first variety to be ready for harvest.

Much of the work in rice breeding so far has been to develop nonshattering plants. In natural stands, as soon as a kernel of wild rice is ready, it falls off. Because kernels mature at different times, the harvest becomes extremely difficult.

Although the new varieties are called nonshattering, Stucker said, their nonshattering quality still needs improvement. "When the crop is mature, it doesn't take much movement to cause the kernels to fall."

Breeding better plant varieties is not usually a controversial activity, but here again wild rice is different. All the research is aimed at paddy-grown rice, and the paddy growers have cut into the market for lake rice harvested primarily by Indians.

The trouble with the lake crop is that it is so unstable, Stucker said. "Last year Minnesota paddy growers harvested 2.4 million pounds of wild rice, a 9 percent increase over the 1979 crop. The estimates of lake rice from Minnesota and all of Canada were between a million and a million and a half

pounds. This year the lake crop is estimated to be about 300,000 pounds. It bounces around like a yo-yo. Paddy production has stabilized production."

Big rice buyers like Uncle Ben's can't have a dependable supply based on lake rice, Stucker said, but in stabilizing production "what the growers have done is cut into the price an Indian can get from his crop." The growers would like lower prices and a wider market, the Indians want prices to remain high.

The quality of the two kinds of wild rice is also debated. "Many people believe the Indian wild rice is the only kind to buy," Stucker said. "If anybody were given two samples of wild rice, they could not tell the difference. But if you are a believer in organic foods, you will prefer the rice from the natural stands because probably no fertilizer or insecticides were used."

Some Indians are angry with the University because no research is being done on rice in natural stands. "We don't know how to do it," Stucker said. And if University researchers did try to help, they would probably recommend fertilizer or pesticides. "That would mean there wouldn't be a difference between the paddy-grown rice and the Indian rice," he said.

A race against pathogens

Developing varieties with qualities that lead to higher yields is only one reason for plant breeding. Another is that "you need to continually develop new varieties because disease organisms are continually battling," Rasmusson said. "We are not only increasing the yield but also protecting the crop."

Plant breeders and plant pathologists work in partnership. Roy Wilcoxson, a plant pathologist, works on the diseases of barley and some of the diseases of wheat and oats. "My main effort has been to develop the knowledge of the pathogens that cause the disease," he said.

Plant pathologists create artificial epidemics in order to recognize the more resistant plants. "If you have to wait for the proper epidemic to develop in nature, you would have to wait years," Wilcoxson said.

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Era wheat, the most phenomenally successful of all plant varieties developed at the University, has brought an estimated \$337 million in additional income to Minnesota farmers.

alalfa program directed by Donald Barnes, but it is impossible to track the economic benefits. Most new alfalfa varieties are developed by private industry, but most incorporate methodology developed at the University.

"Our impact has probably been as great as in most of the other species, but it has been more indirect than direct," Barnes said.

One University variety still in use is Agate, accounting for 5 percent of the alfalfa acres nationally. Even more important, Agate was released as a

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"He said the alfalfa should get credit for the extra income, but it does not. That's a new per-

Tom Foley

Threat of Fiscal Exigency Looms

by Maureen Smith

Editor's note: Governor Al Quie allowed a compromise budget bill passed by the legislature January 11 to go into law without his signature. The bill provides that the University's state appropriation be cut by \$25.6 million.

Governor Al Quie's veto of a legislative package of budget cuts and tax increases leaves the University's financial future uncertain.

Quie's plan for dealing with the state budget deficit includes a cut of \$63.7 million for the University in the next year and a half. The bill that he vetoed, worked out in a legislative conference committee at the end of a special session in December, called for a cut of \$19.6 million. The regular session of the legislature began January 12.

Neither story would be a happy one—a \$19.6 million cut or a \$63.7 million cut—but University people agreed that the larger cut would be crippling.

One phrase—financial exigency—was heard again and again

in legislative testimony and at campus meetings throughout December. At some point, which Vice President Stanley Kegler said was "just a hair beyond \$20 million," the budget cut would be so deep that a state of financial exigency would have to be declared and tenured faculty members laid off.

A declaration of financial exigency would be "a catastrophe" and would lead to "the virtual blacklisting of the University as an academic marketplace," said Richard Purple, professor of physiology and vice chair of the University Senate. It isn't just that some tenured faculty members would be laid off, but many of the best faculty members would leave the University and promising young scholars would stay away.

Kegler and other University officials have said that painful but possible budget cuts up to \$12 million could be made before an emergency would have to be declared. With some added revenue from tuition, a reduction in state funding of \$20 million could be accommodated.

Because even the most favorable scenarios now include budget cuts of \$12 million, plans are under way to take those cuts. Any cuts that can be made before July 1, 1982, will ease the burden of cuts in the next academic year.

Vice President Kenneth Keller outlined the administration's plans for a \$12 million cut at a joint meeting of the Senate Consultative Committee (SCC) and the Senate Finance Committee December 17. The cuts would be \$5.4 million in administrative and support units, \$1.3 or \$1.5 million at the coordinate campuses, \$1.8 million in state specials, and about \$3.5 million in academic programs on the Twin Cities campus.

The idea was "to hit as hard as we could conceivably hit on administrative and support services," Keller said. "I believe these cuts are going to be very painful. At the level of cuts we're talking in support services, a year from now I think you'll be saying we need to get some of those back."

(At an earlier meeting with the same two committees, Vice

President Frederick Bohlen said that custodial services, which now cost the University \$8.5 million a year, will be cut sharply. He said the goal will be to "protect the cleanliness of laboratories and teaching space," but faculty and administrative offices will be cleaned less frequently. "We may have to empty our own wastebaskets," Bohlen said.

Between 10 and 15 percent of the custodial work is now performed by student employees, and Bohlen said he has directed that no more than 10 or 15 percent of the layoffs be among students.)

Estimates are that the cuts in administrative and support services will result in laying off 500 employees, Keller said.

"I know it's prudent to start making savings," Purple said, "but I'm a little uneasy when I hear talk of 500 people being fired. I am concerned about hasty action. We're sitting comfortably in a nice room. Every time we make a wrong decision we may be costing people their jobs unnecessarily."

"People are going to be af-

fectured," said chemistry professor Robert Brasted. "We can't sit on our duffs any longer."

On the cuts in academic programs, Keller said it is "not unreasonable that we might be able to save as much as \$3.5 million," although he added that "I consider that to be on the high side." Cuts will be based on programmatic decisions and will not be across the board, he said.

Cuts would average about 10 percent in support services and less than 2 percent in academic programs on the Twin Cities campus, Keller said. The proposed cuts for the coordinate campuses, at about 5 percent, represent a weighted average of their academic and support budgets.

Budget cuts of \$12 million, if put into effect in 1982-83, would represent a reduction of \$6 million in the base and another \$6 million that could be recovered on a one-year basis. "All of our burden is eased to the extent that we have additional savings this year," Keller said.

Fiscal crisis, p. 13

Supporters, Foes Surprised by Union Vote Results

by Paul Dienhart

Supporters and foes alike were surprised at the strong vote against faculty unionization on the Twin Cities campus. Sixty-three percent of the vote was for no bargaining agent when votes were counted December 29.

Unlike a previous collective bargaining election in 1978, there seemed to be no protest that the election was unfair.

The state Bureau of Mediation Services counted 166 votes for representation by the American Association of University Professors (AAUP), 518 votes for representation by the University of Minnesota Education Association (UMEA), and 1,166 votes for no agent. Eighty-five percent of the eligible voters participated.

The election was for all Twin Cities campus faculty members with the exception of those in the Law School and the health sciences units, who voted earlier not to be a part of any collective bargaining system.

"Frankly, I was surprised the vote was as strong as it was," said Phillips Shively, a political science professor who formed an anti-union group, the Faculty Governance Caucus. "Just before the ballots went out [President C. Peter] Magrath announced the possibility of \$57 million in budget cuts because of the state's financial crisis. I think the rational arguments we made against unionization must have won out over the emotionalism."

Shively said a major issue in his group's campaign was its finding that unionized campuses did not pay faculty better than nonunionized campuses. "I think the desire for better salaries was the biggest motivation for joining a union," Shively said.

During the last legislative session, University administrators asked for a 17 percent raise for faculty this year. They argued that faculty salaries lost a great deal of purchasing power in the 1970s, and that the University was beginning to lose its best faculty to industry and to

other universities. Instead, the legislature passed a bill that gave University faculty the average raise approved for unionized faculty at state universities and community colleges. That came to 8 percent for this fiscal year, but the University raised it to 10 percent by reallocating funds internally.

"After the next biennium, when the legislature again leaves the University faculty to last, I think we'll be ready for another collective bargaining election," said Michael Metcalf, a history professor who is spokesman for UMEA. "The UMEA certainly is not going to go away. We were encouraged by the experience, if not the results. Our active membership doubled during the election campaign."

Metcalf also said he was pleased that many faculty now seem to realize they have to become actively involved in the legislative process.

In November, just before the end of the collective bargaining campaign, some faculty mem-

bers formed a legislative lobbying and campaign contribution group with the support of the Faculty Governance Caucus and the AAUP. Metcalf said he does not expect the UMEA to join this group because it already has a legislative committee, but he expects that individual UMEA members will get involved.

The new lobbying group is separate from the University administration, said Bruce Overmier, a psychology professor who is president of AAUP. "We may have overlapping goals, but not necessarily identical goals," he said. "We'll keep the administration informed of our activities, but there will be no formal coordination."

Overmier said that AAUP will support the faculty's choice not to unionize. "I'm just pleased that the faculty finally had an opportunity to express their

feelings on the governance system," he said.

The 1978 Twin Cities campus collective bargaining election was generally regarded as a farce because one of the proposed bargaining agents was virtually defunct. By the time of the election, nearly all the members of the University of Minnesota Federation of Teachers (UMFT) had switched allegiance to the UMEA, but the state said it was too late to change the ballots. There were 1,032 votes for no representation, 617 votes for AAUP, and 86 votes for UMFT.

Faculty members at the Waseca and Duluth campuses are unionized; both campuses belong to the University of Minnesota Duluth Education Association. Faculty members at the Crookston campus voted against unionization, and those at Morris have not yet had a collective bargaining election.

'U' Helps Feed State's Hearty Appetite for Art



by Judith Raunig-Graham

Minnesota has often been lauded for its quality of life, and the Twin Cities area is cited as a cultural mecca of the Midwest. Indeed, corporate recruiters use the area's cultural life as a carrot to lure prospective employees. The arts have always been accepted as an integral part of the area's social fabric.

Most Minnesotans as well as arts buffs around the country know about the Walker Art Center and the Guthrie Theater, even if they haven't visited them. But few people realize that the University of Minnesota is one of the state's largest purveyors of the arts.

Almost any day of the week throughout the year, arts devotees or casual dabblers can take in a film, concert, art exhibit, or play on one of the University's campuses.

But the University's involvement in the arts is also more subtle, more pervasive. Community theater, for example, seems on the face of things not to be connected to the University. Yet any given production on local community stages is likely to include a University artist as playwright, actor, designer, or choreographer.

Culture seekers probably would be surprised to discover that, at each performance at local theaters and concert halls, a major portion of the audience is composed of current or former University students—students who sometimes end up on the stage instead of in the loges.

Museumgoers throughout the Upper Midwest could learn with little difficulty that many of the staff people in the museums studied at the University. And six out of ten art history instructors in the Upper Midwest studied at the University of Minnesota.

The University is a training ground for professionals in drama, music, art history, and the visual arts. It lends its expertise to local community arts organizations. Its faculty members often establish national reputations as professional visual and performing artists. And perhaps most important, through its daily offerings and

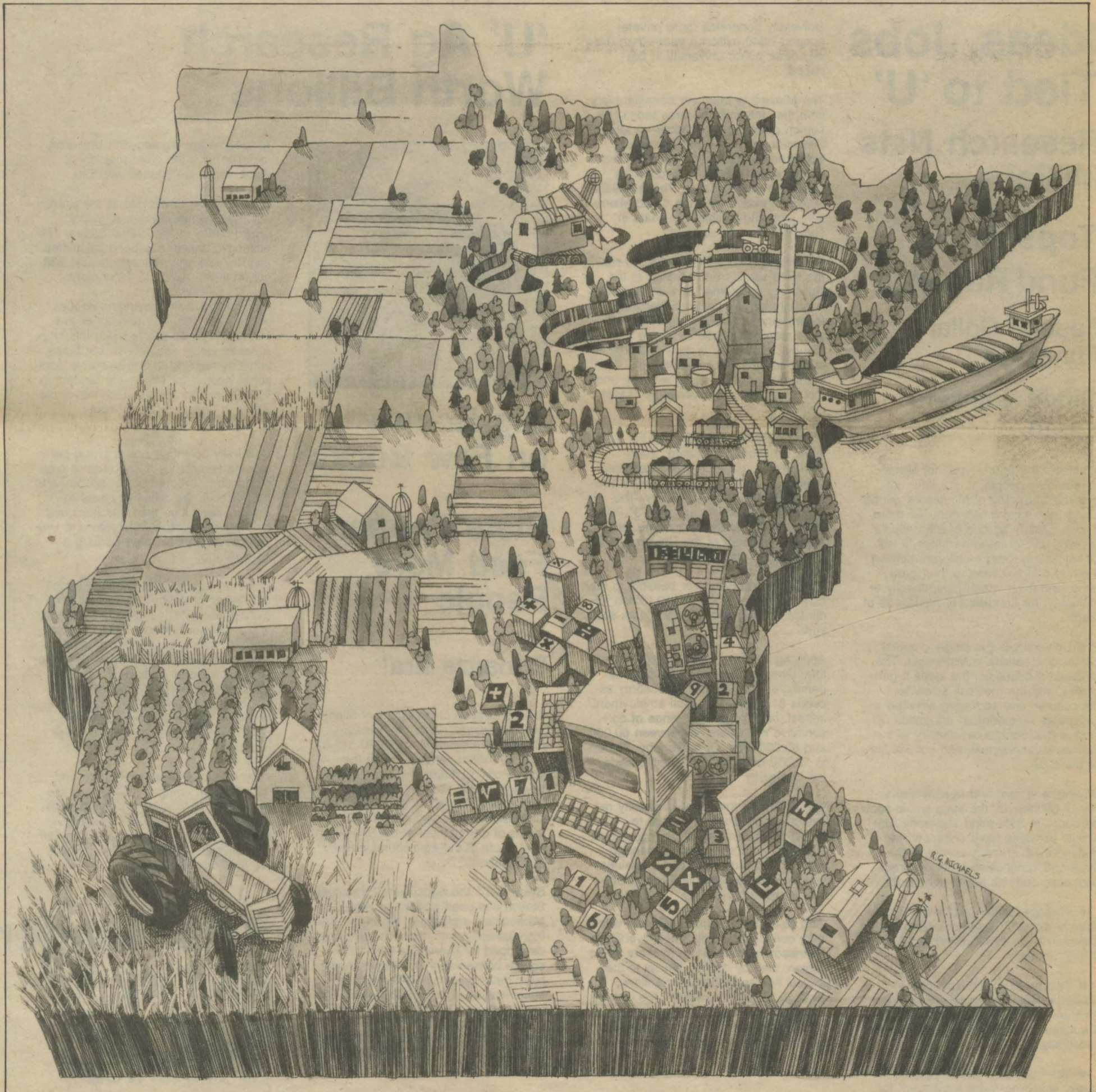
"It is a constant source of surprise to people that I teach at the University," said tenor Vern Sutton, director of the Opera Workshop on the Twin Cities campus and a founding member of the

Minnesota Opera Company. "We have doers here as well as teachers."

Tom Foley

PERSPECTIVE

A Special Report Showing How the University of Minnesota Benefits the State



Ideas, Jobs Tied to 'U' Research Nets Millions

Tops in Fund Raising!

Federal Dollars Funnel In

Gifted Thinkers Lured

Whatever the future holds for Minnesota and its people, it is a safe bet that the University of Minnesota will be doing then what it has done for more than a century as one of the nation's premier land-grant universities. It will be educating today's children, helping them to find solutions to their problems, and it will mean jobs, directly or indirectly, for hundreds of thousands of them.

The University is the single greatest center of creativity in Minnesota. The students it educates, the ideas it generates, and the medical, scientific, agricultural, and economic activities it stimulates represent an enormous resource that contributes directly to the economic, intellectual, and cultural life of the state.

Without a vibrant and healthy University of Minnesota, the state would soon be poor—in both mind and body. University activities have enhanced the quality of life in every corner of the state and continue to produce direct economic benefits for all Minnesotans:

- The application of University agricultural research increases Minnesota productivity by \$700 million to \$800 million annually.
- Two thirds of the scientists involved in Minnesota's \$2 billion high technology industry have come from the classrooms and laboratories of the University.
- The state's \$2 billion taconite industry would not exist were it not for the work of a University faculty member who developed the method for extracting the magnetic iron particles from taconite.

The Minnesota taxpayer benefits every time the University attracts private funding that is spent in the state. The

University generates more private support—\$40 million a year—than does any other public university in the nation.

The Minnesota taxpayer benefits every time the University secures federal research grants and contracts—a total of \$90 million a year. Only two other public universities generate more federal research dollars than does the University of Minnesota. These dollars, in turn, create more than 6,000 Minnesota jobs and millions of dollars in state income and sales tax.

Roughly calculated, the entire amount the state spends on research at the University is returned to the state treasury through tax earnings generated by federal grant money. If one looks at state research grants as "seed money," the return is excellent. The state receives all of its research grant money back, along with the enormous benefits of the products of that research.

The Minnesota taxpayer benefits every time new jobs are created. Every \$100,000 in research grants received creates six to eight jobs—three or four of them outside the University. The University employs more than 31,000 Minnesotans. At the same time, only about 38 percent of the University's income comes from the state.

The Minnesota taxpayer benefits to the economic tune of some 140 million additional federal and private dollars each year.

Applying a conservative multiplier, the total direct and indirect impact of expenditures on the state's economy exceeds \$1 billion. The total employment impact, calculated by a range of conservative multipliers, is between 60,000 and 80,000 jobs. Of these jobs, 30,000 to 50,000 are jobs supported outside the University.

The economic impact of University research on the state is difficult to measure, but enormous savings are realized by the more efficient management of resources and better business practices made possible through University research.

And as a major research institute with high national standing, the University of Minnesota attracts gifted thinkers to the region, thereby adding directly to the state's human resources. Similarly, through its teaching efforts, the University produces people with knowledge and creativity necessary to solve Minnesota's problems and plan for its future.

'U' Ag Research Worth Billions



Big Return on Few Bucks

State Farmers Feed More People

Bonanza Era!

The application of University of Minnesota agricultural research increases Minnesota productivity by \$700 million to \$800 million annually, while the state's cost of supporting the University's agricultural program (including the total cost of operating the Waseca and Crookston campuses) is less than six tenths of one percent of the \$10 billion total return of the agricultural industry in Minnesota.

Since 1887, the Agricultural Experiment Station has been working to improve Minnesota's agriculture. New high-yielding, disease-resistant plants have been developed for Minnesota farmers. Resource conservation techniques have been developed to help farmers preserve irreplaceable soil and water. Fifty years ago, one Minnesota farm worker generated enough food to feed six people; today, one Minnesota farmer generates enough food to feed 100 people.

Era wheat, the most phenomenally successful of all plant varieties developed at the University, has brought an estimated \$337 million in additional income to Minnesota farmers. Almost three fourths of the acres of wheat in

Minnesota are planted with University varieties, and the great majority of those acres are planted with Era.

Morex barley, developed at the University, has become the most widely grown barley in the United States. The economic benefit has been calculated at \$10.7 million in Minnesota and \$28 million in the nation in 1981 alone.

Several University soybean varieties account for about 40 percent of the Minnesota acres planted with this crop. A conservative estimate is that these varieties resulted in \$32 million in additional income for Minnesota farmers in 1981, a period during which the whole soybean breeding project cost \$110,000.

University scientists are applying gene splicing technology in the area of crop production. If recent advances prove to be practical, the result could be a greener revolution than that launched by the work of Nobel laureate and University alumnus Norman Borlaug a decade ago.

Since the early 1970s, an interdisciplinary research team made up of three plant geneticists, a molecular biologist, and a biochemist have been developing a promising crop improvement technique called mutagenesis. Working under a National Science Foundation grant, the team is now devising a standard mutagenic selection scheme to speed development of corn with greater nutritional value and disease resistance.

A Minneapolis genetic research and development company, Molecular Genetics Inc., is working on commercial applications for mutagenic techniques. Local agribusiness firms, including Cargill, Land O' Lakes, and General Mills, are also showing interest.

Arts Hunger Fed by 'U' Folks Flock to Northrop

Music, Theater, Dance

Like any industry, the arts have a major effect on a community. Cultural organizations attract visitors to the community; an out-of-town visitor attending an arts event spends more

than three times the cost of the ticket on such things as food and parking.

A healthy mix of cultural organizations also adds appeal to a community, attracting new business and top-flight employees. Minnesota has been lauded for its quality of life, and the Twin Cities have been cited as the cultural mecca of the Midwest.

The University of Minnesota is one of the state's largest purveyors of the arts. Ticket sales through the Department of Concerts and Lectures totaled more than half a million dollars last year.

When New York's Metropolitan Opera Company goes on tour each year, one of its seven stops is Northrop Auditorium, where it draws spectators from as far away as Oregon and Saskatchewan. People in 27 states have ordered tickets for the group's Twin Cities visit. Last season, some 33,000 people attended.

The University provides the state with its main exposure to professional dance. Each year, about eight major companies are brought to Northrop. During the 1980-81 season, 146,562 people attended dance performances at Northrop.

The University's coordinate campuses offer artistic performances that would not otherwise be available in their communities. The jazz festival each spring on the Morris campus is the one chance for people in the area to hear live jazz. The two-week Summer Festival of the Arts in Duluth was started in 1980 to attract visitors to the city for musical, theater, and dance performances. In the first year, 36,000 people from the Duluth and Superior area attended, along with 14,000 people from other areas.

Developing an audience with a voracious appetite for the arts may be one of the most important and overlooked contributions the University makes. The University acquaints students with the arts and feeds the arts' most critical need—an appreciative audience that ensures their continuation.



Taconite Process Developed by Prof

Worth Billions to State

Copper-Nickel Equals \$100 Billion!

How To Extract? 'U' Finding Out

The state's \$2 billion taconite industry would not exist were it not for University Professor Edward Wilson Davis, who developed the method for extracting the magnetic iron particles from taconite.

Minnesota is the nation's leading non-fuel mineral producer. In 1978, the state exported 50.64 million tons of taconite pellets, accounting for two thirds of the country's iron ore production.

When Davis began his study early this century, no one had shown interest in Minnesota taconite. The University supported expansion of his studies, which resulted in perpetuating indefinitely the production of iron ore in the Lake Superior region.

Both Reserve Mining and Erie Mining were formed as a consequence of his work. Four new cities sprang up along the Mesabi range and others were revitalized.

University investigators at the Mineral Resources Research Center (MRRRC) have been experimenting with copper-nickel ore since 1976, searching for

the most efficient methods of extracting and processing the minerals while preserving the environment.

According to one estimate, the current value of copper-nickel reserves in Minnesota is in excess of \$100 billion. Much of this reserve is in the Duluth gabbro region, northeast of the economically depressed Iron Range, near the Boundary Waters Canoe Area.

The ore body, the largest known copper-nickel resource in the United States, could increase U.S. copper reserves by 30 percent and nickel reserves sevenfold.

Because the ore is low grade, a vast amount of energy is required to extract it by conventional means. Researchers at MRRRC are exploring alternative processing methods that would require less energy, and the feasibility of one such method has already been demonstrated in the laboratory.

MRRRC scientists are also looking at the problem of tailings and how they can be disposed without harming the environment. The potential for recovering mineral byproducts in copper-nickel processing has not been overlooked.

A Few 'U' Firsts

Health Sciences Leads the Way

Crowing a Trifle

Among the most prominent achievements of University faculty members are:

- the first use of an artificial pancreas in a diabetic patient
- development of the taconite process
- the first successful use of a heart-lung machine for open heart surgery
- the first successful implantation of an artificial heart valve
- development of a mobile system for preservation of transplantable human organs
- the world's most successful kidney transplant center
- the first successful bone marrow transplant
- development of the first total body X-ray scanner
- development of laminar flow rooms to minimize hospital infections
- a major contribution to the invention of synthetic rubber
- elimination of wheat rust and other plant diseases
- isolation of uranium isotope U-235, which led to nuclear fission
- invention of the DeWall Oxygenator (heart-lung machine)
- advanced development and miniaturization of the mass spectrometer, an instrument for analyzing the composition of substances
- the design of Mars exploration experiments using the mass spectrometer
- the patent for the first steel-frame skyscraper
- production of a live calf from freeze-dried sperm
- virtual elimination of dozens of poultry and livestock diseases
- work leading to elimination of farm deaths caused by fumes of fermenting corn and alfalfa silage
- new methods for making particle board from forest waste products
- better parching methods for the wild rice industry
- purer cultures for cheese manufacturing
- the first use of artificial blood in a human patient
- hybridization and release of new varieties of corn, wheat, flax, soybeans, bluegrass, potatoes, barley, oats, sunflowers, apples, and ornamental plants and flowers.

IT Trains State's High-Tech Scientists

Grads Start 44 Companies

Free Faculty Advice

MEIS Launched

A key element in the continuing vigor of Minnesota's high technology industry is research conducted at the University of Minnesota Institute of Technology.

Two thirds of the scientists involved in Minnesota's \$2 billion high technology industry have come from the University's classrooms and laboratories. Faculty and recent graduates have been instrumental in developing 44 new Minnesota companies.

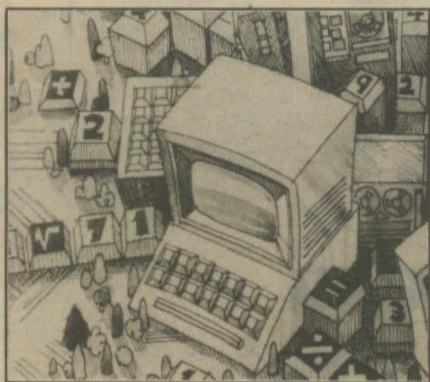
The impact of the University on the high technology industry extends beyond the metropolitan area through all of Minnesota: the 16 largest companies on which the University has had the strongest impact employ some 15,000 workers outside the Twin Cities area, or about 25 percent of the total number of high technology employees in the state.

Virtually every major company and a great many of the smaller companies in Minnesota come to Institute of Technology faculty members for consultation. The IT faculty spends between 200 and 600 hours each week in free consultation over the telephone.

The Institute of Technology offers skilled employees, product ideas, and opportunities for continuing education to the high technology industry. Most industry executives agree that their companies' continued growth depends upon IT's excellence. Studies indicate that as a geographical center of high technology business activity, IT is rivaled only by MIT and UCLA.

Looking ahead, the Microelectronic and Information Science Center (MEIS) promises to be a valuable resource both for the University and for area business.

In recent years, Control Data, Honeywell, Sperry Univac, and 3M have contributed a total of \$6 million to develop the center, which intends to obtain advanced research equipment, hire a staff, acquire technical support, and establish exchange programs to attract leading scientists and engineers from industry and from other universities.



Currently, MEIS is engaged in several major projects, including introduction of five new courses into the IT curriculum, planning the renovation of the microelectronics lab, researching new materials for microelectronics application, and constructing and equipping the VLSI (very large scale integration) laboratory, which should provide the 100 students already registered with hands-on experience in modern design automation.

Last year, CALMA, a California-based company, donated to MEIS a system for integrated circuit design, analysis, and pattern generation. The system brings powerful state-of-the-art capabilities to students, faculty, and researchers, helping MEIS create one of the first educational design centers of its kind in the country.

'U' Aids State in Planning Info Systems Put to Work Faculty Enlisted

The University provides basic information and organizes policy studies to aid Minnesota's policymakers in a number of ways. Government agencies have been helped through planning studies on disease control in shade trees, preservation and use of water, copper-nickel mining, soils surveying, prevention of ground water contamination,

land use, development of peat as an energy source, and use of new energy sources.

The Energy Information System is one such project. Through this system, energy use can be evaluated in each region of the state, supply and demand can be monitored, and shortages can be identified.

Frequent state use is made of the University's Minnesota Land Management Information System, which provides the best computerized inventory, mapping, and planning system for state resources in the world.

More than 100 University faculty members serve on 40-some state government commissions, agencies, and task forces.

The University joined with the state's planning agency to produce a comprehensive source of information on Minnesota's natural resources, production system, and people. The resulting publication, *The Atlas of Minnesota Resources and Settlement*, is a valuable tool decision makers can go to for accurate and exhaustive information.

Energy-Poor State Seeks Fuel Sources

Minnesota is faced with shortages of traditional energy sources and rising energy prices. Unless the state reduces its demand for energy or increases its supplies of alternative energy sources, the state may face severe economic hardship in the future.

Development of peatlands could improve the economic health of portions of the state, particularly the Iron Range. University researchers are studying the possible use of peat—as fuel or as soil for energy crops—and ways the state might develop it. Peatlands could yield an estimated \$1 billion worth of energy annually for more than a century.

Researchers are also studying other possible sources of energy including wood pellets, cattails, synthetic gas, cornstalks, manure, wind generators, and solar collectors. Innovative uses of massive wooden flywheels, limestone cliffs, and underground aquifers are also being studied.

Because of its severe climate, Minnesota's energy costs are high, both for homeowners and for business. The Underground Space Center is an interna-

Perspective

Perspective is published by the Department of University Relations as a supplement to the winter 1982 issue of **Update**, a quarterly publication for friends of the University of Minnesota. William Hoffman, editor; Lynn Marasco, copy editor; Tom Foley, art director.

Peat Looks Promising

Also Wood, Wind, Cattails

Going Underground To Stay on Top

tional center for pioneering work on energy-saving underground construction.

The year-round constant temperature of 55 degrees just 25 feet below the surface could be used to effect substantial energy and cost savings if construction questions can be answered.

Through its research, the center is studying residential, commercial, and industrial uses of underground space, adding information about design, energy use, psychological effects, and policy and financial considerations.

classes, it exposes thousands of students and average citizens to the arts, feeding the growth of sophisticated, appreciative audiences.

Culture comes to campus

Since the Department of Concerts and Lectures opened its doors in regal Northrop Auditorium in 1944, hundreds of thousands of Minnesotans have come to the Twin Cities campus to see and hear performances in the 4,800-seat auditorium.

Through the years, exuberant Northrop audiences have thundered applause for such performers as Yehudi Menuhin, Artur Schnabel, Van Cliburn, Joan Sutherland, Andres Segovia, Leontyne Price, and Marcel Marceau.

When New York's Metropolitan Opera Company goes on tour each year, one of its seven stops is Northrop Auditorium, where it draws spectators from as far away as Oregon and Saskatchewan. People in 27 states have ordered tickets for the opera's Twin Cities visit. Last season, some 33,000 people attended.

Concerts and Lectures provides the state with its main exposure to professional dance. Each year, about eight major companies grace the Northrop stage, which was redesigned for dance according to specifications used by choreographer George Balanchine in New York.

Twyla Tharp, Alvin Ailey, and Pilobolus—in fact, most of the country's best known contemporary dance troupes—have performed at Northrop. Audiences have responded enthusiastically to Mikhail Baryshnikov and the American Ballet Theater, the Peking Opera, and the Senegalese Dance Company. During the 1980-81 season alone, 146,562 people attended dance performances at Northrop.

Dance became an important part of the schedule in the early 1970s when the Minneapolis Symphony moved from Northrop to Orchestra Hall and became the Minnesota Orchestra. With the departure of the orchestra, Concerts and Lectures saw a chance to offer events that were not available

elsewhere in the Twin Cities.

"A university is supposed to be interested in the learning process and be a spreader of knowledge," said Ross Smith, director of Concerts and Lectures. "We give people a chance to participate in something that would otherwise be impossible. We are part of an educational experience that makes a difference to people, and we're not duplicating the Guthrie, the Walker, or the Orchestra."

Smith said that the department brings in only the best. "We couldn't double the number of events each year and keep the quality. It's through quality



Painter John Stuart Ingle is an artist with a national reputation who finds his inspiration in the quiet calm of rural Minnesota.

that we have built up a discerning, sophisticated audience."

Enriching the community

On a smaller scale, the University's coordinate campuses offer artistic performances that would not otherwise be available in their communities. The jazz festival each spring on the Morris campus, for example, is the one chance for people in the area to hear live jazz. "I don't know of anything else like it in 50 miles," said Elizabeth Blake, academic dean at Morris.

A summer theater program was added to the Morris cultural calendar last year. "It was marvelously successful," Blake said. "We were sold out once the word got around. People came from towns all around the re-

gion and not just from the Morris area.

"We are a center for cultural enrichment in this area," Blake said. But in addition to "bringing in the group from the Guthrie or the St. Paul Chamber Orchestra," she said, "we try to enhance and feature the cultural possibilities that already exist in the area."

The other University campus with a strong orientation to the performing arts is Duluth. "We have some programs—the summer repertory theater, the Opera Workshop—that fill voids in the community," said Provost Robert Heller.

And it was essentially the University Theatre's former director Frank ("Doc") Whiting who was responsible for persuading Sir Tyrone Guthrie to establish his regional repertory company here. University Theatre retains a vital influence on local theater, an influence surprisingly strong for a student group.

Through the years, several area premieres have been produced on University Theatre stages, including Robert Penn Warren's *All the King's Men*. Maxwell Anderson's *The Sea Wife* in 1932 and William Gibson's *A Cry of Players* in 1952 both saw their world premieres at the

each year 110,000 people attend musical performances ranging from student and faculty recitals to performances by guest artists to concerts by various ensembles and choruses. The University Symphony also goes on a state tour each year.

Feast your eyes

Five art galleries are located on the Twin Cities campus alone, each changing its exhibitions about once a month. The University Gallery collection, housed in Northrop Auditorium, contains more than 7,000 items, and its value is estimated at \$5 million. Art from the first half of the 20th century is emphasized, and the gallery holds the world's largest collection of Marsden Hartley's work.

"It's fair to say that the gallery acts out the University's mission of serving as broad an audience as possible," said acting director Melvin Waldfoegel. More than 100,000 visitors tour its exhibitions each year, he said.

The gallery averages 20 exhibitions a year, and at any given time seven are on tour throughout Minnesota and surrounding states.

The collection at the Tweed Museum on the Duluth campus is comparable in size and value to the University Gallery collection, according to Tweed director William Boyce. And judging by the beauty of the museum itself and the number of exhibitions that are scheduled, the Tweed is the outstanding museum in the University.

"We had 87 shows last year," Boyce said. "That's sort of unheard of. We typically have five or six exhibitions at one time in six different galleries.

"We aren't just a University museum or gallery. We are a

"Other programs—our regular theater, our University Singers, all of the concerts—supplement the excellent offerings" in the Duluth community, Heller said.

A program that is unique to the Duluth campus is the two-week Summer Festival of the Arts, which was started in 1980 to attract visitors to the city for musical, theater, and dance performances and other attractions. In the festival's first year, 36,000 people from Duluth and Superior and 14,000 others attended at least one of the events.

Purveyor of firsts

Until the Guthrie Theater was born in Minneapolis in 1963, theater in the Twin Cities was available mainly at the Univer-

sity, and during the past season the theater produced Odon von Horvath's *Tales of the Vienna Woods*, which had been produced in this country only once before, in Washington, D.C.

The School of Music on the

The University is a training ground for professionals in drama, music, art history, and the visual arts.

Twin Cities campus has also presented its share of firsts. The 1980-81 season alone saw four American premieres, including three operas by Ernst Krenek, who was in the audience. *Una Cosa Rara*, an 18th-century opera never before produced in this country, was also performed last season.

Lloyd Ultan, chairman of the School of Music, estimates that

community museum. We see ourselves as serving a very large community—all of the northeastern part of Minnesota and up into Canada, northern Wisconsin, upper Michigan.

We're the only major art museum between the Twin Cities and Winnipeg, and that is reflected in the groups that visit us," Boyce said.

Another popular attraction in Duluth is Glensheen, the 39-room mansion on the shore of Lake Superior that was given to the University by the Congdon family and opened to the public in 1979. A growing number of cultural events are held in Glensheen, and many visitors tour the mansion to see

vides Twin Cities audiences with a chance to see films shown nowhere else in the state and, occasionally, nowhere else in the country.

Teacher as artist

Faculty connections with art in the community are numerous. Indeed, some faculty members are better known in national circles for their artistic expression than they are on their

sota Orchestra, and the Minneapolis Civic Orchestra. He also sings about once a month on the nationally broadcast "Prairie Home Companion" aired over Minnesota Public Radio.

"We do have doers here as well as teachers," Sutton said, "which is not always true of academic institutions. The public's view of us is a bit old-fashioned. We're trying more and more to find faculty who can perform as well as teach. It allows students to see in ac-

out North America and in 10 European countries. He sang the first performance of more than 40 works by American composers, and he records on several labels.

Other regular performers include jazz pianist Reginald Buckner, violinist Young-Nam Kim, cellist Tanya Remenikova, trumpeter David Baldwin, and pianist Alexander Braginsky. Pianist Thomas Wegren of the Duluth faculty has performed with symphony orchestras

Stagecoach Theatres. Barbara McIntyre has acted at the Guthrie and the Cricket. Jean Montgomery has done lighting for the Minnesota Opera Company, and Gayle Crellin has designed costumes for Theatre in the Round.

Kent Neely, University Theatre managing director, said this faculty-community link is especially good for the students, who are able to make contacts in the community while they are still in school. "That helps round out their education," he said.

Humanities professor Paul D'Andrea is making his mark in the theater world as a playwright. His play *The Trouble With Europe* was produced Off Broadway in New York last year. *A Full Length Portrait of America* shared first prize for last year's Great American Play Contest.

Members of the studio arts faculty are also heavily involved in the community of art. "We exhibit, act as judges and jurors, consultants, and speakers, and help with workshops," said Herman Rowan, who chaired the studio arts department until last summer.

Faculty members frequently exhibit in the Twin Cities, New York, and other cities around the country. Those who have developed strong reputations as artists include Rowan, Gary Hallman, Tom Rose, Peter Busa, Warren MacKenzie, Guy Baldwin, David Feinberg, Curt Hoard, James Henkel, George Morrison, Malcolm Myers, Susan Lucy, and Victor Caglioti. "I don't think the community is aware of the collective reputation of our staff," Rowan said.

The best known artist on the Duluth faculty is Cheng-Khee Chee. One of the leading watercolorists in the country, he was named to the American Watercolor Society last year.

At Morris, painter John Stuart Ingle is "an artist of clearly national reputation who has suddenly been lionized by the New York art community," Blake said. "Here is a person who has chosen to live in rural Minnesota, prefers it, and finds his inspiration in the quiet calm."

Tapping a gold mine

A desire for more University-community links was expressed by several arts faculty members. "We have so many capable people here who have the ability and energy who aren't asked," Rowan said. "I think we have a gold mine here



University Theatre on the Twin Cities campus usually stages seven or eight major productions each season. *No, No, Nanette* was produced in 1979.

its fine furniture and paintings. "We just had our 250,000th visitor," Heller said. "That's far beyond any expectations that we had."

The studio arts department on the Twin Cities campus organizes exhibitions and brings to campus renowned artists like Elaine De Kooning, Philip Guston, and Jack Tworok. Other recent visitors were the late New York art critic Harold Rosenberg and Marcia Tucker, director of the New Museum in New York.

Films are another campus attraction for students and visitors. Countless avant-garde and foreign films have been brought to Minneapolis by the University Film Society, which pro-

home campuses.

"It is a constant source of surprise to people that I teach at the University," said tenor Vern Sutton, director of the Opera Workshop on the Twin Cities campus and a founding member of the Minnesota Opera Company. "They don't perceive that I am a teacher. That's why I insist it say so in any biographical material printed on me in programs."

Besides his work with the Minnesota Opera Company, Sutton, who has been on the faculty since 1967, has performed with the St. Paul Chamber Orchestra, the Minne-

tion what is talked about in class."

And the list of "doers" is long.

Dominick Argento, one of America's leading composers, won a Pulitzer Prize in 1975 for his song cycle *From the Diary of Virginia Woolf*. Another of his best known works is the opera *The Voyage of Edgar Allan Poe*.

Jeffrey Van, a guitar instructor who studied with Andres Segovia and Julian Bream, has performed in San Francisco and London and Carnegie Hall in New York. His recording with Sutton of Argento's *Letters From Composers* received *Saturday Review* magazine's best of the year designation.

Lawrence Weller, who joined the faculty in 1979, has sung in concert and in operas through-

across the country, and James Carlson at Morris is known as a jazz horn player.

Community links among members of the theater department faculty are equally strong. Arthur Ballet is consulting dramaturg at the Guthrie Theater. Robert Moulton has choreographed works for the Minnesota Opera Company, the Guthrie, and other Twin Cities theaters. Lee Adey has directed plays at the Chimera and

Tom Foley

that's not being tapped. Private galleries, for example, could do more with us in the dialogue of art."

Russell Christensen, who coordinated the year-long festival "Germany in the Twenties: The Artist as Social Critic," agrees.

"The University is the single biggest conglomerate of arts intelligence in this area, but the typical perception is that we're a huge city between cities," he said. "We have a pool of experts and resources, so arts organizations could get cheap advice here. The University could be a clearinghouse."

Christensen points to the German festival as an example. For a full year, organizations from the Minneapolis Institute of Arts to the Walker Art Center to the St. Paul Chamber Orchestra and the College of St. Catherine worked together to pull it off.

The new Center for Art in the Environment, headquartered in the Twin Cities studio arts department, is another example with potential. Directed by sculptor Tom Rose, the center's purpose is to work with artists, architects, scholars, public officials, and area residents to produce art in public places.

Training the audience

Developing an audience with a voracious appetite for the arts may be one of the most important—and overlooked—contributions the University makes to the arts community.

"People don't credit the University with acquainting students with culture, but the University feeds the most critical thing for the arts—an appreciative audience that ensures the continuation of the arts," Neely said. "It's an invisible function, but it translates into this being a strong arts community."

"A lot of the quality of life in Minnesota is due to the level of education of its people," he said. "The University plays a very strong role in introducing people to the arts. The students who decide to stay and live here have an interest in the arts and the humanities," he said.

Candido Zanoni, head of arts, communication, and philosophy for General College, considers "nurturing an audience" one of the University's "liberating features."

"General College teaches

classes in art in an integrated way to help students learn what art is and why it is relevant to their lives," he said. "We also try to get the students out into the community,

view. "The creation of an audience is a function of the University that is probably not understood by the community, but culture in the Twin Cities revolves around the audience,"

production of *The Rise and Fall of the City of Mahagonny* at Northrop last spring, University graduate Peggy Sexton Bouveret sang a leading role. Sheila Wolk, Mary Borsgard, and Jan

versity should choose to offer in the future.

"The University is looked up to as a leader in the realm of ideals, pursuing the best," Her-



The Tweed Museum on the Duluth campus is the only major art museum between the Twin Cities and Winnipeg. The Tweed typically offers five or six exhibitions at a time in six galleries.

attending concerts and visiting galleries."

Arthur Ballet sees training as one of the University's first functions, and in theater that works two ways. People are trained to act in or direct plays, and they are trained to attend theater, he said.

"I am willing to bet that the Twin Cities audience is largely composed of former University students who attended artistic offerings at the University," he said. "In theater a student should be able to see a span of work from the Greeks to the avant-garde during four years of college."

Mel Waldfoegel holds a similar

he said.

Bright lights

But if, as Ballet says, the University's first function in arts is training, the proof of the pudding must be in the numbers of students who become successful professionals, and the University can cite many bright lights.

Peter Graves, Linda Kelsey, Robert Vaughn, Loni Anderson, Olivia Cole, and Tovah Feldshuh are all theater alumni. Those who have charted successful careers in the Twin Cities include Jon Cranney, Shirley Dirks, and Children's Theatre Company artistic director John Clark Donahue.

When the curtain rose on the Metropolitan Opera Company's

Perry sing professionally in Germany.

Visual artists don't usually generate the kind of celebrity that surrounds a television star, but several who studied at the University have been well received, including James Rosenquist, Zigmunds Priede, Carl Haas, Stuart Nielsen, Stephen Hartman, Steven Sorman, and Stewart Luckman.

High ideals

Although the contributions made by the University to the arts world are substantial, the critical issue is what the Uni-

man Rowan said. "Many in the community are bogged down with the pedestrian. We have an obligation to keep our ideals set on even beyond what we can do. It's our obligation to try constantly to disseminate the best."

Vern Sutton sees importance in going beyond the commercially acceptable. "We have an important function of nurturing and encouraging arts that are not always commercial," he said. "I see various kinds of avant-garde art being shunned by the commercial sector because they don't sell, but they are completely valid aesthetically. We have a duty and it is our privilege to keep the new going."

Ken Moran

Duluth Lab Tests Survival in the Nation's Icebox

by Paul Dienhart

It's that cold day when everything goes wrong.

You're striding along on cross-country skis, jacket open, breaking into a sweat in spite of the bitter cold. Suddenly, one of your skis hooks under a branch near the surface of the snow. As you somersault through the air you hear the ski crack in half. It's 10 miles back to town, but you grit your teeth and begin wading through the snowdrifts.

They find you toward evening, sitting in the snow a half mile from shelter.

Your tracks indicate that you wandered in circles before you collapsed. They can't find a pulse or detect any breathing. In desperation, a rescuer trained by the American Red Cross gives you external chest massage. Your heart, which had been beating slowly under your rigid muscles, is jolted into a wild, uncontrolled beat that ends in heart failure. "We did everything we could, but I'm afraid we were too late," a loved one is told. "I'm sorry."

"You can't assume people are dead because they're cold. It's amazing how much witchcraft is involved in treating hypothermia victims. Until recently, we didn't know much more about how the body regulates temperature in the cold than those Benedictine monks who strapped brandy flasks on Saint Bernards."

The speaker, Robert Pozos, is a physiologist who came to the School of Medicine on the Duluth campus from southern California. "I was shocked at the temperature changes that Minnesotans take for granted," he said. "Since most of my work has dealt with tremors and shakes, I decided to study the shiver response."

The result was a laboratory that was among the first to show what happens when body temperature is lowered to the point of hypothermia. The lab Pozos runs with physiologist Larry Witmers contains a huge plywood and fiberglass tank filled with 39-degree Lake Superior water. A computer helps monitor the heartbeat, temperature, and shiver reactions of the students who volunteer to jump into the tank.



A drawing by American illustrator F. E. Schoonover of a scene from Jack London's short story "To Build a Fire." The man pays with his life for failing to heed the Yukon Code: "He travels

fastest who travels alone...but not after the frost has dropped below zero fifty degrees or more."

Although University safety rules allow Pozos to lower the body temperature of volunteers by only two degrees centigrade, he can still detect the onset of hypothermia. "I've talked to volunteers two days after the test and they don't remember half the stuff that went on," Pozos said.

"Personality changes are one of the first indications of hypothermia," Pozos said. "People who never swear will suddenly begin to cuss. We've had people in the tank go into profound depressions. When that starts we pull them out right away." The tank volunteers are free to get out at any time, and a physician is always present in case of problems.

After personality change, the next warning is a loss of judgment that causes people to do irrational things. Then, when the body temperature drops to around 90 degrees, the muscles become rigid. At 86 degrees circulation slows enough so that people begin to lose con-

sciousness. Death from heart failure occurs around 71 degrees or lower.

"Shivering, personality change, and stiff muscles are the keys to recognizing someone who is getting hypothermic," Pozos said.

Depending on the situation, these stages can occur very rapidly. But it is also possible to suffer from hypothermia and never get past the early stages. "Cases can range from a vigorous old man who is too tight to turn up his thermostat to a marathon runner racing in a cold breeze," Pozos said. Testing runners at this year's Grandma's Marathon in Duluth he found individuals with body temperatures at the same point at which volunteers are pulled from his tank.

Pozos's work is especially concerned with finding the best survival techniques for wilderness emergencies, far away from professional care.

"In calm water, don't splash," he advises. "The more you

move your limbs, the more you disturb that insulating layer of warmer water next to your skin. Get as much of your body out of the water as possible. Water takes heat from you 20 to 30 times faster than air. If there's a chance of help and you can get part of your body out of the water—wait. You will lose heat much more rapidly by swimming."

In 1980, 85 people died in Minnesota waters, and the state Department of Natural Resources estimates that half the deaths were the result of hypothermia rather than simple drowning.

"More people die of hypothermia on land because they're more scared of the water than they are of air," Pozos said. He has this advice for stranded cross-country skiers: First wipe the perspiration from your body. Then find shelter, insulate yourself from the cold ground, and eat the food you have with you. Then wait.

"We don't recommend heroic measures in the wilderness," Pozos said. "It takes tremendous energy to walk five miles

in deep snow. This assumes you had the sense to bring some food and matches."

"Always think like a Minnesotan! Think pessimistically. Think: what if...?"

In treating hypothermic victims, Pozos disagrees with the current dogma of the American Red Cross. "They recommend chest massage, but they haven't been able to provide me with any data for that procedure. The hypothermic heart is very sensitive to malfunction. The colder the heart gets, the more likely it is to go into fibrillation [uncoordinated twitching]. When that happens you have

to continue the massage or the blood flow to the brain will stop. That isn't practical in the boondocks."

In the wilderness, Pozos advises rescuers to make sure the respiratory passage is clear, to take off the cold clothes and to wrap the person in blankets for natural rewarming. "Watch them closely and give them fluid when they can manage to drink. Don't put them next to

Panic!

A certain fear of death, dull and oppressive, came to him. This fear quickly became poignant as he realized that it was no longer a mere matter of freezing his fingers and toes, or of losing his hands and feet, but that it was a matter of life and death with the chances against him. This threw him into a panic, and he turned and ran up the creek-bed along the old, dim trail. The dog joined in behind and kept up with him. He ran blindly, without intention, in fear such as he had never known in his life. Slowly, as he plowed and floundered through the snow, he began to see things again,—the banks of the creek, the old timber-jams, the leafless aspens, and the sky. The running made him feel better. He did not shiver. Maybe, if he ran on, his feet would thaw out; and, anyway, if he ran far enough he would reach camp and the boys. Without doubt he would lose some fingers and toes and some of his face; but the boys would take care of him, and save the rest of him when he got there. And at the same time there was another thought in his mind that said he would never get to camp and the boys; that it was too many miles away, that the freezing had too great a start on him, and that he would soon be stiff and dead. This thought he kept in the background, and refused to consider. Sometimes it pushed itself forward and demanded to be heard, but he thrust it back and strove to think of other things.

from Jack London's
"To Build a Fire"

bonfires or throw them into hot tubs."

Pozos has found Minnesotans especially curious about the effect of alcohol on the body's reactions to cold. Scientists have long believed that alcohol makes a person colder faster. But Pozos's tests show the opposite.

"Sitting still, a drunk and a sober person lose the same amount of heat," he said. But in an emergency situation the drunk might be more likely to keep still and wait for help.

"Alcohol gives you a feeling of warmth and a false sense of knowing what you're doing," Pozos said. "Alcohol dilates blood vessels near the skin. That's why drunks have red faces. The brain gets the message: 'You're OK, your skin is nice and warm.' And that's why drunks don't shiver."

In cold air or water, a violently shivering person is not likely to sit tight, conserve energy, and wait for help. "Alcohol minimizes the freakiness," Pozos said. "Cold hurts. You get in that tank and you know it hurts, unless you've been drinking. The more you panic and thrash around, the more heat you lose. We also have some evidence that alcohol protects the heart from fibrillation.

"We don't recommend getting drunk in the cold under any circumstances. Alcohol is often the cause of people getting into trouble in the cold. But once you're in trouble, alcohol may not necessarily be harmful to your chances for survival."

"When I first got into this work six years ago, I thought there had to be a lot of answers around," Pozos said. "Getting cold is as old as mankind. But I found out there was a lot more information on reactions to heat because of military operations in hot climates. Of course, if Minnesota, the icebox of the United States, didn't have the answers, who would?"

The hypothermia lab in Duluth is funded by Sea Grant, the Graduate School, Stearns life-vest company, and, recently, the U.S. Navy. Pozos is writing the first book for the layman on hypothermia, to be published this spring. "The biggest contribution we've made is getting this lab going," Pozos said. "It's given us the chance to finally get some facts about the body's reaction to the cold."

Fiscal crisis, from p. 7

The committees talked about freezes on hiring and freezes on travel for the rest of the 1981-82 academic year. Another possibility identified by Keller would be to hold back \$750,000 in equipment replacement money, although he said there is "enormous need" for the new equipment. Also, he said, the administration has not yet distributed the \$350,000 that represents 2.5 percent of the indirect cost money the University receives on research grants.

"These are things we have struggled to get from the legislature, and we would not want to give anyone the sense they are low priority," Keller said. But he said "there's perhaps \$1 million there, soft money but recurring."

Educational Development Program grants, Graduate School research funds, and grants for international programs were also discussed as possible areas for cuts. "These are things that are difficult to talk about," Brasted said. "Losing people's jobs is hard to talk about, too," said history professor John Howe.

Purple passed along a comment from a faculty colleague that "people and their positions are more important than golf courses, and the University has two."

"As you know, we've had no success in selling the land we put up for sale last year," Keller said. And he said the regents have generally felt that land represents the long-term capital of the University and should not be sold to cover operating costs. "Aside from the use to which the land is put, it is a capital asset," Keller said. Selling some land may have made sense last year to cover a one-year cut, he said, but the cuts being proposed would be cuts in the budget base. "I think we should leave land alone," Brasted said.

If the University comes to the point of declaring financial exigency, SCC members made it clear that they intend to be included in the decision. "The SCC would go into constant conversation with the president and would be talking with other committees," said Patricia Swan, professor of food science and nutrition.

Declaring a financial emergency always means examining alternatives, Swan said. When an emergency is declared, officials of the institution are saying

that in their best judgment there is no acceptable solution short of laying off tenured faculty members. But Swan said there are always implicit alternatives. "Do you fire every teaching assistant, do you fire every secretary, do you fire every custodial person, do you sell all your land before you fire tenured faculty?" Howe put it this way: "Do you grind down every other part of the budget to dust?"

Swan and Marcia Eaton, professor of philosophy, urged that a few members of the two committees start working closely with the administrative staff members and looking at the numbers. "Repeatedly the administration has said that if the legislature cuts us by more than \$20 million we'll have to declare a financial emergency," Eaton said. Faculty members need more information to make an independent judgment, she said. Eaton's motion carried.

Swan and Howe recently visited the University of Washington, which also faced cuts in its state funding and which declared a financial emergency and then pulled back from the declaration. In their talks with faculty leaders, Howe said, they kept hearing the same advice. "The people at Washington told us, 'You'd be foolish if you don't get ready for it, even if you never have to use it.' If we sit here and refuse to use those words, we're fooling ourselves a hundred times over."

Agronomy, from p. 6

"All of the varieties then that are released have resistance to the diseases that we think are most important in Minnesota," he said. "The plant breeder and the plant pathologist cooperate in the selection of materials that are considered to be resistant that will be used as parents in the breeding program."

Just a few years ago, in 1975, the Minnesota oat crop was being destroyed by smut, Wilcoxson said. "It was not uncommon to find fields that were 50 or 60 percent smutted." The University's three top varieties—Lyon, Moore, and Benson—were bred in part for their resistance to smut. And years ago, serious thought was given to eliminating wheat in this part of the country because of smut, but then resistant varieties were developed.

Plant breeders may be staying ahead of the pathogens, but they are in another race as well: the race against world hunger. "The next pressure point in the world is expected to be food, not oil," Rasmusson said.

"We have an awful lot of people and a finite mass of land to feed them," Johnson said. "Many people are making huge contributions, but whether they're going to be big enough or fast enough is questionable. We don't want to minimize any other profession, but probably most agronomists feel that their profession is the most important one to the future of the human race."

Support for International Programs Makes Sound Economic Sense

Editor's note: The following is excerpted from a speech delivered by President C. Peter Magrath to the Council on International Exchange. Magrath criticized federal cutbacks in international education and foreign exchange programs and proposed, among other things, that support for international programs be linked to support for national defense.



C. Peter Magrath

I believe in the absolute necessity for this nation to strengthen its understanding of other peoples, cultures, and countries. I also believe that support for international education makes sound domestic as well as foreign policy. Over the past year, I have delivered that message to any number of audiences across the United States and around the world. Before educational groups in Omaha and San Francisco, in Philadelphia and Atlanta, in Peking and Paris, and in Athens and Iceland, my thesis has been the same: as educators, we have a responsibility to provide programs designed to enhance international awareness and understanding; as people, we have a responsibility to fund and support such programs!...

Americans tend to view most world events through national rather than through state or regional glasses. The public looks to Washington, D.C., and not to state capitols or university campuses for definitions of and solutions to most world problems. This is an obvious but nevertheless fundamental premise to understand. It is also one that runs contrary to public sentiments on many issues where Americans clamor for less federal involvement. By tradition, statute, and constitutional mandate, the federal

government is empowered to set foreign policy and to create, fund, and implement programs that join issues of a domestic and international character.

This elementary lesson is not intended to demonstrate my credentials as a one-time professor of political science. Rather, it is designed to establish a realistic context that we cannot afford to overlook. The unavoidable reality is this: higher education's success in developing effective international programs will be determined to a far greater extent by decisions made on the federal level than by actions made in state capitols, college and university trustee meetings, or campus classrooms. This is not only a consequence of the traditional preeminence of the federal government in setting and funding foreign policy initiatives, but it is a consequence of the fact that most states and most colleges and universities have neither the resources nor in many cases the inclination necessary to permit a significant expansion of international education programs. If you doubt this, try to convince your state legislature to increase substantially your resources for international faculty exchange programs. Or announce to your faculty that you intend to shift funds from so-called core programs to support new ventures in international research or foreign student exchanges. Such actions would be considered noble during prosperous times; they are viewed as downright quixotic—if not suicidal—during a period of national recession and tight campus budgets.

We have, then, three prefatory assignments to undertake before we can realistically plan for any expansion of programs that might address international issues.

First, we have to convince the public and its elected officials that support for higher education in general, and more specifically for international programs, makes sound domestic and economic policy.

Second, we must convince that same audience that support for higher education and international programs makes sound foreign and national defense policy.

Third, we have an obligation to design understandable and per-

suasive models that will justify a national commitment aimed at expanding international education programs.

The initial argument—that support for international education makes sound economic policy—reflects the fact that America no longer functions in a restricted national market, but must compete in the global marketplace. We are dependent upon foreign oil, foreign minerals, and foreign products. In turn, our economic health is tied to our exports of agricultural, high technology, and industrial goods. One in every six Americans has a job thanks to international trade. The products from one of every three American farm acres ends up on the international market. And some \$155 billion a year in American products are shipped abroad. Our economic dependence upon foreign trade is obvious; unfortunately, so too is our declining ability to retain, capture, and increase those markets.

There are, to be sure, any number of reasons for our decline, but among the more important of those reasons is the

Americans must be made to understand that support for higher education and international programs represents sound economic policy.

decline in support for various higher educational programs. The message must be conveyed to Americans that we are losing out to Western European countries whose expenditures on research and development are steadily increasing while America's is steadily declining. We are losing out to the Japanese who have 29,000 English-speaking salesmen in New York, while we have only 1,000 American salesmen in Tokyo, few of whom can speak Japanese. And we are risking whatever competitive edge we might enjoy in agricultural exports due to our ever decreasing support for international agricultural programs.

A further erosion in support for the foreign languages, for the training of teachers in in-

ternational affairs, for research and development, and for foreign exchange programs can only perpetuate our present national handicaps. And that can only lead to further economic problems. If for no other reason than sheer Yankee pragmatism and fiscal common sense, Americans must be made to understand that support for higher education and international programs represents sound economic policy.

Equally, if not more, compelling is the national security case for supporting international education programs. That case emerges from the inherent limitations of our present defense posture. A security policy that is restricted to the purchase of new weapons suffers a setback with every technological armament advance of our adversaries. If the history of the arms race has proven anything, it is that the Russians will attempt to counter, and more often than not succeed in countering, every new American weapon with one of their own. In fact, many of our military systems are outmoded by the time they even emerge from the production line.

This is not to say that defense spending should be curbed or that we should engage in unilateral disarmament. Quite to the contrary, I am saying that expenditures for national security should be broadened to include international education programs and that the recent cutbacks suffered in those programs are tantamount to unilateral disarmament. Both of these points merit further explanation.

Without the slightest bit of hesitation, I submit that the United States is guilty of unilaterally disarming its nonmilitary security defenses. I also submit that national security is

ill served by such a surrender. Consider, if you will, a 1979 survey of international communication, cultural, and educational programs taken by the General Accounting Office. That report concluded: "By comparison with allies and adversaries, the U.S. government investment in this field is low. In absolute terms, the United States is outspent by France and the Soviet Union and is nearly equalled by West Germany. In proportion to the GNP, the comparison becomes even more striking."

How striking, you might ask?

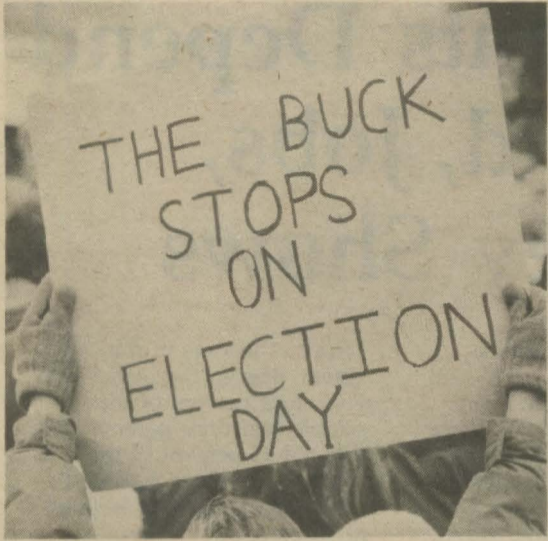
Well, France and West Germany commit 1 percent of their national budgets to international educational, cultural, and informational activities; the United States commitment is less than a tenth of a percent.

The Soviet Union's commitment to international informational and cultural expenditures is estimated to total some \$2 billion annually. The U.S. commitment is less than a quarter of Russia's.

In 1977, U.S.-sponsored programs supported the studies of some 1,800 Africans. The Soviets provided support for 24,000 Africans.

Similar Soviet-sponsored programs with Latin American countries supported some 4,650 students. The U.S. sponsorship level was one tenth of that.

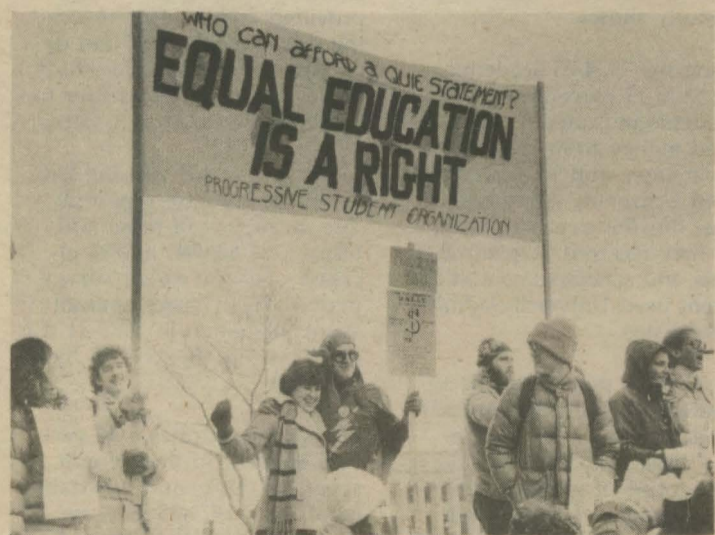
In light of such comparisons, it is not surprising that the House Committee on International Relations concluded: "In Third World cultural relations, the Soviet leadership appears to have placed its greatest hopes for ultimate success in academic exchange programs." Unfortunately, Americans cannot boast the same claim. Instead, at a time when other countries, both friend and foe alike, are bolstering their arsenal of ideas, we have taken a different course. That course, my friends, is a gross disservice to both our national security interests and the interests of global peace and understanding.



Capitol Rally

Nearly a thousand University students gathered at the state Capitol early in December to protest proposed cuts in the University's state appropriation. The rally, organized by campus student government leaders, was an attempt to show legislators that students fear a rise in tuition. The University administration recommended a 13 percent tuition hike at the January meeting of the Board of Regents.

Photos by Tom Foley



Letters

A donor's decision

The fall issue covering organ transplants was the finest issue I have read. Not only was it extremely informative, but it was equally thrilling and inspiring.

Having signed many years ago to be an organ donor, I nevertheless have been rather passive about my commitment. Now, having read *Update*, I am tremendously more informed about the marvelous work that is and will be done. I'm even more convinced of the immeasurable worth of the donor program and my decision.

Arthur J. Sauter
Minneapolis

A brief reference

Reading the fall issue was terribly exciting and hit me at a personal level, for I formerly worked on the transplant station of University Hospitals. All articles were extremely well written and informative. The only comment I wish to make regarding transplantation is an oversight on your part. You should have, in my opinion, included a brief reference to the fact that any adult can have a "donor" driver's license and can sign a "living will." These help during crises by quickening the decision-making by the family. Most Minnesotans should know of the "donor" driver's license. However, other states don't offer such service. Information published on this could, perhaps, provoke some legislative action.

I was also pleased to see the memorial of Dr. [Richard] Lillehei, my mentor. A devoted physician, wise teacher, and true friend to his patients, he will be missed by all.

Georgia Birkett
Kotzebue, Alaska

Editor's note: A number of readers asked where to get information about organ donation, and the answer is your area kidney foundation. For the Upper Midwest, the address is: The Kidney Foundation of the Upper Midwest, Inc., 1821 University Ave., St. Paul, Minnesota 55104.

A matter of pride

As a graduate of the University of Minnesota School of Journalism, I read each issue of *Update* with pride and enthusiasm.

The fall 1981 issue was especially interesting to me professionally. As a director of donor resources (recruitment of blood donors) for the American Red Cross Blood Services, Central Ohio Region, I am always looking for medical information that is written for lay people

to help us communicate how blood is used. You may not realize that we are very involved in HLA typing (white cells), support of organ transplant, kidney dialysis patients, bone marrow transplant patients, coronary bypass, hip replacement, etc. It is easier to recruit donors when you better understand the need for blood and blood products.

In short, your *Update* issue was read by our donor resources and the nursing/medical staffs and we are eager to use this fine educational resource in our training.

Fran Compton
Columbus, Ohio

A gratified volunteer

Your article on organ transplants in the fall issue was most interesting to me. I was particularly interested in hearing of Deanna Smalley, the young lady who received the bone marrow transplant in 1977, and was gratified to learn that she has made a good recovery.

Although I never met Deanna Smalley, I was certainly indirectly involved in the transplant, as I was one of the persons who donated platelets when she was at University Hospitals in November 1977.

Her father belonged to a Masonic lodge in Pennsylvania. When she came to Minnesota for the procedures, it was necessary to locate a number of persons who would donate platelets to tide her over the period immediately following the transplant. This need was announced in a number of Masonic lodges and I happened to hear of it in mine. I volunteered and subsequently received a very nice letter of thanks from her, as well as from a number of the members of her father's lodge.

I am very happy to know that she has, apparently, made a complete recovery.

Charles L. Horn
Minneapolis

Fools rush in...

Fools rush in.... One of the main problems of the "debate over death" (as described by you) is that it is *misdescribed*. It is silly to suppose the debate is over the "concept of death." (That is *still* quite unproblematic!) The question of *definition* is really one of *delineation*. The problem is not one of the definition of "death" but the definition (in the archaic sense of *delineation*) of death. That is not a question of "concepts" (save abusively).

Your view leads to your totally nonsensical statement that the "higher functions...define a person." There is no debate where the issue

has not been *intelligibly* stated. The worst part of the "brain-death concept" (as some call it) is that it is not a *concept* at all—and to call it such obscures the issues. For them, a "new concept" is as wonderful as a "new model car." Ain't progress wonderful now that we can redefine death. If we were simply to *redefine death* as a "vacation in Acapulco," all our problems would be solved! *But*, of course, it is not a matter of the *definition* of "death" at all....

D. L. Ouren
Sedan, Minnesota

Complaining of Keillor

I am writing in regards to the article about Garrison Keillor in the fall issue. If there is anyone who does not love Mr. Keillor I have not met him. Indeed, my guess is that if I knew him I would feel the same. Therefore, before I do, and in the spirit of the emperor's clothing, let me be the first to complain that his morning radio program is a bore.

At the end of my FM day my radio is on the same station that Mr. Keillor serves. Then the next morning, half awake, I turn on the radio and am treated to more inane trivia and inconsequential music (ancient "tunes" as he calls them that were nothing even when first released) than I knew existed. Fortunately I soon find that other station and the cleansing effects of Bartok and Beethoven take over. My greatest recent embarrassment was that *Wall Street Journal* article about Mr. Keillor. Being asked when traveling if you know Mr. Keillor is quite different than being asked if you know where Ms. [Mary Tyler] Moore lives.

What is my gripe? It is not that there is a Garrison Keillor and that many enjoy him. It is what his program shows about public electronics media. Without the balancing effect of the marketplace, their ivory tower managers become elitists. There is no doubt in their minds that they know what is best for us, and at what time of the day. I would not mind this too much except for one fact. That is exactly what they profess to be against during their interminable fund raising. If there was a bottom line to be considered Mr. Keillor's daily program might be at some other time. Probably far more of his following would be able to enjoy it and the rest of us would have more appropriate choices in the morning.

T. N. Busch
Minneapolis

Editor's note: There is a rich paradox here. Bartok and Beethoven fare much better over public radio stations coast to coast than in the commercial broadcast marketplace.

Students Depend on Aid, Jobs, Survey Shows

by Judith Raunig-Graham

Ninety percent of the Twin Cities campus undergraduates surveyed last year said they work to pay college expenses, and 25 percent said they would be forced to withdraw without financial aid.

Continued inflation coupled with proposed reductions in financial aid "will undoubtedly create problems for some students," said Glenn Hendricks, head of Student Life Studies and Planning, which conducted this survey and a similar one in 1975.

"There doesn't seem to be room for many students to rely on more work or for students to get more money from their parents," Hendricks said.

The study was initiated by the Minnesota Student Association to find out how much it costs to go to school and where students get their money. Questionnaires were mailed to 567 randomly selected undergraduates registered in winter quarter 1981; 406 students responded.

The respondents estimated that they would spend an average of \$4,286 for the 1980-81 academic year, \$1,596 more than the average student surveyed spent in 1974-75. The increased costs of attending school have been met partially by a higher percentage of students receiving loans, grants, and scholarships, the study shows.

During the 1974-75 academic year only 19 percent of the respondents indicated they received money from grants and scholarships, and 14 percent received University-administered loans. But this year 33 percent said they received help through grants and scholarships and 27 percent used University-administered loans.

A total of 58 percent of the respondents in the current study said that nearly half their income came from financial aid in the forms of grants, scholarships, loans, or GI or Social Security benefits. Ninety percent of the respondents said slightly more than half their income was derived from employment or savings. Four percent fewer respondents listed their parents as their chief

source of income in the 1981 survey than in the earlier one. Forty-four percent of the sample said their parents contributed 41 percent of their income, while about half said their parents provide little or no money.

Since the first study six years ago, the Consumer Price Index has climbed 66 percent, Hendricks said. During the same period, the amount of student aid available through loans, grants, and work programs has increased 160 percent, and eligibility requirements for federal loans were relaxed during the Carter administration.

Students' expenses varied considerably depending on their age and on whether they lived at home. The average expenditure of students not living with parents or relatives totaled \$4,884, while those living at home spent only \$2,924.

The average expenditure of students 24 years or older was \$5,253, while those under 24 spent only \$4,087. Seniors spent an average of \$4,532 while the average freshman spent \$3,787.

There was no significant difference in the amount spent by men and women.

Tuition, books, entertainment, transportation, personal items, and family support contributed to students' expenses. The amount spent by those who provided family support was the only expense that had decreased since the earlier study, while the amount spent for tuition had increased 68 percent.

Room and board was the largest single expense reported. The mean cost of room and board was \$2,094, a \$794 increase over the earlier survey period. The average amount spent for tuition in 1980-81 was \$1,310, while the 1974-75 figure was \$780.

The study indicates a 44 percent increase in the amount spent for books and entertainment since 1974-75. The respondents said they spent \$230 for books last year and \$345 for entertainment.

Transportation costs have increased by 32 percent since the earlier survey, and the amount spent on personal items jumped 40 percent.

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Tom Foley

A common memory aid. See story on the mystery of memory, next page.

Wolves
Mulford Q. Sibley
Mural America
Max Kampelman
Chlamydia

Memory: Toward an Understanding of Things Past

by Jeanne Hanson

We are made of our memories, both the evocative—curtains swinging at a sunny window in a childhood room, the date 1066 written on a blackboard, death on the face of a parent or grandparent—and the prosaic—how to drive a car or ride a bike, the names of hundreds of friends, family members, co-workers.

We are also what we have forgotten—maybe the name of a childhood friend, textbook tables learned for exams, the relentless pain of childbirth, even where the scissors went.

Memory is still mysterious, though much has been learned about it. It is a resilient system with an almost infinite number of access points to a many-layered map. It is an amazing electrochemical maze involving the brain's frontal lobes, temporal lobes, and hippocampus, with billions of neurons in between working on registration, retention, and retrieval.

We know what it is not better than we know what it is. Memory is not one corner of the brain. It is not a computer-like on-off system. It is not RNA, as the now-discredited flatworm experiments—in which ground-up trained worms were fed to untrained worms—seemed to show. Its special agility may be correlated with intelligence, but, taken as a human function, it is more like a sense of a self.

Psychiatrists, neuropsychologists, experimental psychologists, developmental psychologists, and others on the Twin Cities campus are probing memory's many layers.

Memory problems

Testing for memory problems is part of every initial psychiatric examination in University Hospitals, said Thomas MacKenzie, associate professor of psychiatry. Loss of memory, and especially loss of the ability to lay down new memories—even the memory of a few new words—is usually the first sign of an

organic mental disorder or underlying neurological disease, he said. Dementia and Alzheimer's disease, a severe form of senility now being researched by Leonard Heston, professor of psychiatry, and others, are examples.

On the other hand, patients with functional mental disorders such as schizophrenia and depression usually don't have significant new-memory problems. The neurological evidence now points to various brain peptides (amino acid chemical strings) as transmitters and fix-

strokes, infectious viruses, industrial pollutants, degenerative diseases such as Alzheimer's disease, toxic drug reactions, vitamin deficiencies, seizures, and Korsakoff's syndrome. The latter, which Meier has studied with former graduate student Jim Haxby, is a serious memory disorder found in long-term alcoholics. It involves, curiously, no damage to immediate memory but drastic impairment both of processing skills and of recall of older memories.

Knowledge accumulated from these cases points to areas

grow, even in these young patients, but malfunctioning cells may still be able to grow new links to the electrochemical memory network. Other areas of the brain can take over functions of the injured areas, again mostly in young people. Individuals of all ages who have a larger than average blood supply to the brain can also make considerable recovery, according to Robert Thomas, assistant professor of health care psychology and a neuropsychologist in Meier's lab.

On another level, psychiatrists are realizing that Freudian notions of repression make some sense, MacKenzie said. People can't remember pain vividly, he said, and the closer a memory is to a conflict concerning aggression, sex, or dependence and independence, the more likely it is not to be a coincidence if it is forgotten.

Forgetting the intensity of pain may even be a form of evolutionary adaptation, said Marion Perlmutter, associate professor in the Institute of Child Development. Experimental psychologist Jim Jenkins, a professor in the Center for Research in Human Learning, has found that if people are asked to list pleasant and unpleasant words and memories, they are able to come up with 2 to 14 times as many pleasant ones. Forming pleasant associations is an excellent way of remembering even lists of nonsense words, Jenkins has found.

The digit man

Experimentalists like Jenkins, Perlmutter, and Bill Fox, professor of psychology, study memory through laboratory learning tests. Fox has studied perhaps the most amazing subject of all.

Rajan Srinivasen Mahadevan is a slight, somewhat shy, Indian-born 25-year-old with a quick smile—and just as quick a memory. He will be in the next edition of the *Guinness Book of World Records* for mem-

orizing 50,000 digits of pi, known to most of us simply as 3.14.

"Rajan's memory for numbers is a challenge to existing memory theory and knowledge," Fox said. "It suggests the limits of human memory."

Here are some of Mahadevan's other feats:

retrieving from his memory diagonal lines of digits through the block, or matrix, of the 50,000 digits (even though he learns the digits in horizontal lines);

learning 28 matrices of 256 digits each over a week in Fox's lab, and repeating them all months and even years later;

producing strings of 15 or 16 digits, backwards, without any time for study;

never "losing" numbers between his short-term and long-term memories, as most people do after 20 or 30 seconds, unless they rehearse the numbers persistently;

finishing any row from within a digit matrix when Fox reads him any sequence of four digits from it; and

memorizing printed numbers while a tape recorder is playing another series of numbers.

Studying this ability—the first of its kind to have been analyzed carefully—suggested to Fox that it is possible to memorize a massive amount of information without trying to find a pattern in it. He has also concluded that it is possible to remember things better rather than less well the second time around and that it is



Reliable memories can be traced back to age 2.

ers of memory, MacKenzie said.

Memory problems are indications of other diseases of the brain, too, according to Manfred Meier, director of the Neuropsychology Laboratory in the Department of Neurosurgery. Memory, particularly the laying down of new memories, is one of the first functions to decline in diffuse brain diseases, he said.

Meier's laboratories assess about 800 cases a year of memory and other problems resulting from head injuries,

deep in the brain and up to the temporal lobes especially important to memory, Meier said. Surface brain areas have been found to be most important for processing information, while the deeper areas seem to handle long-term storage and retrieval of memory.

But so little is known yet about memory that most recovery from memory problems must be spontaneous if it is to occur at all, and it can take up to two years. Meier has seen patients with closed head injuries serious enough to cause three-week comas recover quickly and completely—if they are under 20 years old.

New brain neurons do not



Rajan Srinivasen Mahadevan

not necessary to say things over to oneself in order to memorize.

Mahadevan does use time and place cues to help him remember. He will start his recitation of a block of numbers by say-

ing, for example, "matrix 15, from June 16."

Since there are no standard tests or criteria for measurement of memory, Fox is collecting data on normal subjects for comparison to Mahadevan's skills.

Chemical keys

Explaining an exceptional and specialized memory like Mahadevan's in physiological terms is impossible, but so is explaining ordinary memory. Around the country, several neurotransmitters are being researched as keys to memory; most are peptide hormones secreted by the pituitary and hypothalamus glands.

Fragments of one, adrenocorticotrophic hormone (ACTH), seem to facilitate memory retrieval and improve long-term memory by improving attention. Persons with Alzheimer's disease have been shown to be severely deficient in another, acetylcholine, MacKenzie said. Melanocyte-stimulating hormone and thyrotropin-releasing hormone are two others now considered important. And the hormone vasopressin is being used in memory experiments with laboratory animals. There are no dramatic results with people yet, Meier said, and the target neurons in the brain still are not understood.

Surgery on epileptics and brain-damaged patients has revealed some physical features of memory, according to Fox and Meier. When the corpus callosum, the structure that connects the left and right hemispheres of the brain, is severed, patients can no longer connect spatial with verbal memories (faces with names, for example). Temporal lobe surgery to quell severe seizures must affect important structures too, since it causes loss of memories for several years back.

A recent article in *Science* magazine cited a role for the mesencephalon, within the brain stem, in long-term memory. Surgery following severe injury to this area saved the life of a patient, but placed him 20 years back in his memory stream: a 36-year-old, he gave as his address the one he had had when he was 16.

Facts and myths

Where research has not led the way, common conceptions about memory abound. Some are correct, the experts say, but some are drastically in error.

People *do* remember best what

is truly important to them, mostly because it is learned best to begin with. What people remember may even be a good sign of what is important to them, Perlmutter said.

The "photographic memory" is

are worse than they really are, possibly because of the distractions of the depression. But, on lab tests, only older depressed people actually perform worse. Sex can cause some temporary memory loss, called transient global amnesia. Smok-

with rote memorization, and educational deficits, but these problems can occur at any age.

Memorable tips

The experts have suggestions for improving memory at any age.

First, if you want to remember something, learn it well to begin with, using various kinds of associations. Imagining it as part of a pleasant scene, or creating a metaphor around it, is especially useful, Jenkins's lab studies have shown. Thomas has found that making up images, stories, and metaphors works especially well even for victims of serious memory disorders.

Sound, spelling, and grammar associations work much less well, Jenkins said, but they can help find a word "on the tip of the tongue." Tension, distraction, and fatigue are among memory's worst enemies.

Making use of cues is extremely useful too, according to Perlmutter. If you want to remember something, place yourself as close as possible to the same external context and internal state you were in when you encountered or learned it. Looking out the same window at the same time of day can help jolt the memory, as can recovering the same mood, or even experiencing the same state of drunkenness.

Another variant is the use of sensory cues. Proust's famous madeleine cake, whose taste and smell evoked so much, is an example of this (see box).

Proust Remembers

Marcel Proust is one of the great literary figures of the modern age. What follows is perhaps the most famous incident in his masterpiece *Remembrance of Things Past*. In the novel, the taste of a madeleine cake takes the hero back to his childhood, which he then recalls in vivid detail.

And suddenly the memory returns. The taste was that of the little crumb of madeleine which on Sunday mornings at Combray (because on those mornings I did not go out before churchtime), when I went to say good day to her in her bedroom my aunt Leonie used to give me, dipping it first in her own cup of real or of lime-flower tea. The sight of the little madeleine had recalled nothing to my mind before I tasted it; perhaps because I had so often seen such things in the interval, without tasting them, on trays in pastry-cooks' windows, that their image had dissociated itself from those Combray days to take its place among others more recent; perhaps because of those memories, so long abandoned and put out of mind, nothing now survived, everything was scattered;.... But when from a long-distant past nothing subsists, after the people are dead, after the things are broken and scattered, still, alone, more fragile, but with more vitality, more unsubstantial, more persistent, more faithful, the smell and taste of things remain poised a long time, like souls, ready to remind us, waiting and hoping for their moment, amid the ruins of all the rest; and bear unfaltering, in the tiny and almost impalpable drop of their essence, the vast structure of recollection.

more myth than fact. Only one person is on record as passing the "unfakable" psychological test for photographic memory, Fox said. More people seem to be able to remember a visual scene quite precisely. Many others have generally very good memories, though not the kind that enables them to recall anything with photographic accuracy.

Some people are better at remembering names than faces—and others vice versa—because spatial and verbal memories tend to be stored in separate brain hemispheres, which are developed to different degrees in different people.

Women don't have better memories than men, except in their sixties and seventies, according to Perlmutter. In this age range, men are closer to death and so are more likely to be experiencing the terminal drop of memory and intellect that occurs reliably three to five years before death.

Sex and smoking can interfere with memory, though depres-

ing seems to interfere with the ability to associate names and faces.

Memory decline with age has been vastly exaggerated, Perlmutter said, and older people become anxious over memory lapses that did not concern them 20 years earlier. In studies of subjects of all ages, she has found that if older people take a bit more time and use good memory strategies they can remember virtually as well as younger people. Older chess players, drawing on lifetime stores of learning, perform fully

as well as younger ones, for example. The short-term memories and recognition abilities of older people are nearly the same too.

Older people perform less well in tasks that demand speed, reproducing spatial organiza-

*When to the sessions of sweet silent thought
I summon up remembrance of things past,
I sigh the lack of many a thing I sought,
And with old woes new wail my dear
time's waste.*

Sonnet 30, William Shakespeare

sion seldom does. Depressed people think their memories

tions, and learning lists, and in spontaneously using good memory strategies. There is a small decline in total processing capacity due to factors such as illness, stress, poor nutrition, drugs, lack of recent practice

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'Wolf Man' Learns Secrets



they'll munch the bones and even peel the stomach from the woody vegetation it contains; all that will be left is some bone fragments and tufts of fur.

The kill was discovered earlier in the day by Mech's assistant, Mike Nelson of the U.S. Fish and Wildlife Service. Sitting in the passenger seat of the Super Cub, Nelson sets his receiver to the frequency of a particular radio-collared wolf. The territories of each pack are well known by now, but each territory is at least 60 square miles. Nelson switches back and forth between the two directional antennas until the chirp of the collar's signal comes over his headset. It takes him an average of 12 minutes from the time the plane is in the air to home in on the frequency of the wolf he's trying to find.

When Nelson spotted the moose kill he had the ski plane land and snowshoed the half mile to the carcass. As always, the wolf pack ran away when they saw a human approaching. He inspected the skull to determine the sex of the moose and the lower jaw for its age, checked the bones for arthritis and deformities, and collected some bloody snow for nutrient analysis. Finally, he cracked the upper leg bone to see if the last storage place for fat had been depleted. If there's no fat here it means the animal was close to starvation when it was killed.

Tom Foley

of State's Wild Wolves

by Paul Dienhart

Winter returns Superior National Forest to a wilder state. The fishermen, hunters, boaters, campers, and many of the resort residents depart for the season. The ancient order of the forest is restored for a time, and wolves ascend to the ruling class in the hierarchy of animals.

Free of the dominance of man, the wolf is king carnivore of the Northern Hemisphere. Wolves once prowled all the lower 48 states. Now, outside of Alaska, Minnesota is the last major refuge of wolves in the United States. Some 1,200 timber wolves range across the northern regions of the state.

Nobody knows more about wolves than L. David Mech. As a graduate student in the late 1950s he worked on a pioneering study of wolves and their moose prey on Michigan's Isle Royale. For the past 16 years he's studied wolf packs in Superior National Forest in northeastern Minnesota. Such a collection of continuous data on the movements and behavior of wolves is not likely to be gath-

ered again. The wolf is difficult and expensive to study in the wild.

The best time to study wolves is in the winter, when they hunt in packs and it is possible to see them through the trees.

Tracking packs

The Piper Super Cub bounces along the air currents, sounding like an enraged eggbeater. My knees are jammed against the back of the pilot's seat, and for a while I content myself with staring at the solid image of his shoulders spanning the width of the cockpit, the tip of his stocking cap swaying to the rhythm of the airplane. Each wingstrut carries an antenna, looking much like the homemade contraptions suburbanites use for better television reception. In this case, they are for tuning in wolves.

The ground below is white with five feet of snow, crosshatched with the gray and green of spruce and balsam. The water of streams and lakes glistens blackly, set off by the sharp edges of the retreating March ice. The pattern is the same for 360 degrees. No movement, no animals, no wolves, no

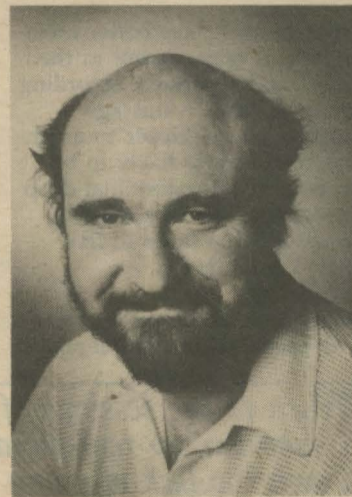
matter how hard I concentrate on the white areas among the trees.

The pilot pushes in the throttle, and the racket diminishes a bit. "That's the lake up ahead," he yells over his shoulder, and the trees grow larger as we slowly descend. If approached politely, wolves here virtually ignore planes. In the late 1940s they learned to hide from airplanes that often carried hunters who found sport in killing wolves from the air. But Mech has been radio-tracking wolves by airplane since 1968, and the sound of the plane is familiar and benign.

The plane banks sharply and makes a tight circle over the lake-shore. The pilot points and yells, "Can you see them? There's one on the ice." All I can see is the same pattern of snow and trees I've seen for 20 miles. The plane makes another circle and the pilot says, "We're going 55 miles an hour, any slower and we might stall." Inspired to concentrate, I spot some snow stained red and nearby the speck of a sitting wolf. The rest of the pack and the carcass of the moose they've killed are under the aspen trees.

It's possible for a single 100-pound

wolf to kill a running bull moose, tearing open its rump through four inches of finely packed hair and a thick hide. This pack, one of the eight Mech is tracking in the forest, feeds exclusively on moose. Wolves prefer to hunt deer, but the deer population is down



L. David Mech

this year and the only prey in this part of the forest is moose.

A wolf can eat 20 pounds of meat, digest it quickly, and be ready to eat again the same day. The pack below is resting between meals. Before they abandon the kill

The wolf man

For someone who is often introduced as "Dave Mech, the wolf man," Mech (pronounced meech) has an exceedingly friendly disposition. Even when he is responding to a question about wolves for somewhere between the hundredth and the thousandth time, his answers are animated, full of the fascination this creature has for him.

Mech is a biologist with the U.S. Fish and Wildlife Service and an adjunct professor on the University's Twin Cities campus. His classic book *The Wolf* was recently published in paperback by the University of Minnesota Press. He has studied wolves in Minnesota, Alaska, Canada, and Italy.

Dave Mech grew up in a family that loved the outdoors. As a boy he trapped muskrat and raccoon, hunted, fished, and picked wild nuts and berries. When counselors at a Boy Scout conservation camp told him there were careers in wildlife management, he knew what he wanted to be. "I thought maybe if I was lucky I could study coyotes. When I was offered the chance to work on the Isle Royale study of wolves and moose, I jumped at it," Mech recalled. "I hadn't

Tom Foley

dreamed of getting anyplace where I could even see a wolf track. There's a certain mystique about carnivores. They seem sleeker, prettier, and warier than other animals."

Wolves are so wary and so fleet that fitting them with radio collars and tracking them by plane is the best way to keep up with them. Over the years Mech has put radio collars on about 250 wolves belonging to some 30 packs in the Superior National Forest. To help determine the wolves' interaction with their favorite prey, he and Nelson have ra-

packs begin to wander their territories in an almost constant search for prey. The summer denning season is over and the winter hunt is on. Weather permitting, Mech and his crew fly once a day in the winter to watch the packs. The information they gather tells them about the range of the packs, the wolves' social behavior, and their pursuit of prey. If a signal doesn't change position they snowshoe to the spot to determine how the animal died.

"The development of the radio collar in the early 1960s was a

pack is directed by the dominant male and female wolves. Mech calls them the alpha pair. This pair stake out the pack's territory in the same way a dog claims trees in a city neighborhood: they urinate an average of once every 400 yards around the border of their territory. A foreign wolf who dares trespass these borders risks being torn apart.

Only the alpha pair breed. The mature subordinate males and females in the pack seem to find each other behaviorally unattractive. The subordinate members follow one of two strategies to achieve Charles Darwin's criterion for biological success: passing their genes to another generation. Some wolves are what Mech calls bidders. They wait until one of the alpha pair dies or can be deposed. Wolves following the other strategy are dispersers, who leave the pack to find a partner and establish their own packs and territories. If prey is plentiful, wolf packs will contract their territories to make room for new packs.

The timber wolf, *Canis lupus*, is in the same family as the dog, and wolves have as close a bond to fellow pack members as dogs have to their masters. Pups are cared for by all members of the pack, who regurgitate food for the pups to eat. There's even babysitting by foster mothers while the mother wolf goes on a hunt.

Wolves have a social language

and advertises that the wolves are owners of territory. Mech learned to interpret these wolf expressions partly from raising a pair of wolf pups born in a zoo. The young wolves played with Mech's four children, aged four to eight, giving them wolf kisses and generally behaving like family dogs. When one of the pups was about 11 months old it got away from the house, and Mech found it running with a pack of dogs. He brought it home, and as he watched it straining at its chain he realized how wrong it was to try to tame a creature with a heritage of millions of years in the wild.

Mech has seen a pack of wolves huddle around their leader, touch noses, then set off single file toward a deer. Wolves try to stalk as closely as possible to their prey, then

less efficiency. An adult wolf will eat an average of 15 deer a year, Mech estimates. Under normal conditions the wolves take mainly fawns, the oldest deer, and deer suffering from abnormalities. The prime reproducing members of the deer herd survive.

But between 1968 and 1974 the deer population in the eastern half of Superior National Forest crashed. Ironically, wolves were granted total protection in the forest in 1970. Mech expected some decline in deer. There had been a series of severe winters and the forest was maturing faster than it was being cut or burned. Young aspen, the favorite food of deer, do not grow in mature forests. But deer not only showed a decline, they were virtually eliminated from the interior of the forest.

The same heavy snowfalls of 1968 and '69 that hindered the movement of deer and buried their food initially helped the wolves. The weakened deer were vulnerable in the deep snow. The wolf population increased, even while the deer population was declining. The imbalance could not last for long. Wolf pups began to starve and the wolf population dropped by half in the course of four years.

But the deer decline did not continue—the population stabilized at a very low level. Although the decline stopped earlier in Minnesota and Wisconsin forests without wolves, deer were not totally eliminated from Superior. There must be some natural device to provide an equilibrium, no matter how factors like weather and habitat may throw the deer and wolf populations off balance. In 1974 Mech began to put radio collars on deer.

He found that the behavior of deer had largely evolved as a defense against wolves. Many of the radio-collared deer managed to survive in spite of starving wolves on the prowl.

The surviving deer lived in buffer zones between the wolf pack territories. In winter, deer group in small areas called yards. There is less area for wolves to find deer, and any individual has a better chance of surviving if a wolf pack attacks the group. In spring the deer migrate to their summer ranges where the does live alone with their fawns, minimizing the predation. If the range and yard are both in buffer areas, the deer have a good chance of survival against wolves. The average life span for a radio-collared deer in a

Wolves are among the wildest and shyest animals in the northern wilderness.

dio collared more than 160 deer.

The batteries in radio collars last between one and three years. Even if Mech didn't want more wolves for the study, he'd have to re-trap collared wolves to replace the batteries. Mech's first professional job in college was trapping bears. He has lectured around the world on trapping with rocket nets and dart guns. He has trapped warthogs, lions, and elephants in India. But perhaps his greatest challenge as a trapper is the wolves of Minnesota.

"These are the most trap-shy wolves in the world," he said. "Our star wolf has been on the air for more than 10 years and has been caught eight times. Each time she's harder to catch. It took us five months the last time, and we know everything about her."

Mech boils his traps in a solution of alderbark, which darkens the metal and gives the trap a natural smell. He wears gloves when he handles the traps and kneels on a blanket when he sets them. "It's impossible to overstate these animals' ability to smell," he said. "In all the hundreds of square miles a wolf roams we have to get it to step on a pan a few inches wide."

The leg traps have a drag anchor that allows a trapped wolf to run off its initial fear. Mech subdues the animal with a syringe on a jabstick, takes a blood sample, tags the wolf, and puts on a fresh radio collar. Then the real research begins.

A constant search

An old Russian proverb says that the wolf is kept fed by his feet. In late September wolf

genuine revolution," Mech said. "We used to ear-tag animals and hope we'd get them back one day. Now locating an animal a hundred times a year is commonplace."

Any recapture is particularly valuable in understanding the long-term behavior of wolves. In his office Mech has a wall covered with numbers followed by red bars that represent the years these wolves have been on the air. The star wolf, number 2407, has an unbroken line spanning more than 10 years. "No matter what problems I have with the study, I can always think 2407 is still on the air," Mech said.



Wolves once prowled all the lower 48 states.

Mech knows what direction to fly to find his numbered wolves because each pack has a well-defined territory. A wolf

made of tail postures and facial positions that are often apparent even from an airplane. Howling helps assemble the

the wolves.

After abandoning a consumed kill, the wolves' immediate goal is to make another kill. In this pursuit they operate with ruth-

Wolves, p. 15

Trade Barriers Seen As Bane of Third World

by William Hoffman

Crack international economists need plenty of room to maneuver. That's why Anne Krueger is just right for her new job as vice president of the World Bank, where she'll direct research on the economies of its 142 member nations beginning this fall.

Krueger, a professor of economics on the Twin Cities campus, will be the first female vice president in the 36-year history of the international development institution. More than 20 years of teaching and research at the University have won her a solid reputation in international trade and development economics. She'll be on leave of absence from the University for at least three years.

The World Bank, headquartered in Washington, D.C., loans money on terms favorable to borrowers—Third World countries that are seeking to develop their economies. Its president, A. W. Clausen, is a graduate of the University of Minnesota Law School.

Krueger's expertise has been in great demand over the years. She's been a consultant to the Agency for International Development, the U.S. Information Agency, the U.S. Treasury, and the National Science Foundation. She's been a project director for the National Bureau of Economic Research several times, and she has studied the economies of Turkey, Brazil, South Korea, India, and the Upper Midwest.

Indeed, Krueger is something of an economics troubleshooter. More than once she's been called overseas to help figure out why a country's economy is in a mess. More than once she's found that restrictions on trade are at least partly to blame.

Most developing nations have become "enmeshed" in complex trade and payments regulations, according to Krueger. Earnings from foreign exchange "have been regarded as a central concern for purposes of economic growth" in developing nations.

There's no simple answer to why these nations have built up a regulatory apparatus while developed nations are gradually reducing restrictions on trade, "but there's no ques-

tion that trade regulations are hindering development. It's well documented," Krueger said in an interview.

Part of the problem is undoubtedly political. Economic growth can come about through new industries whose goods are sold on the domestic market, replacing imports, or



Anne Krueger

through new industries whose output is sold on the international market.

High tariffs and trade regulations are imposed primarily to protect domestic industry against "cheaper" imports, but Krueger argues that "export promotion," the second alternative, goes much farther toward promoting economic growth in developing countries.

Recently, Krueger directed a study of 10 countries—Brazil, Chile, Colombia, Indonesia, the Ivory Coast, Pakistan, South Korea, Thailand, Tunisia, and Uruguay. The results showed that policies of promoting export industries (as opposed to limiting imports) tended to pro-

duce economic growth and reduce unemployment.

But protectionism is also a phenomenon of the most advanced industrial nations. Although President Reagan campaigned as a "free trader," his record so far is mixed, Krueger said.

The Reagan administration

ended the quotas on shoes from Taiwan, but it has imposed quotas on imported sugar and maintained restrictions on imported peanuts, mushrooms, beef, clothespins, and countless other items. It got Japanese officials to agree to "voluntary" quotas on automobiles and is threatening to impose special duties on imported steel.

Krueger believes that policies designed to protect certain industries from foreign competition "are harmful and ill-advised. It's been fairly well shown that the amount of protection is much higher than necessary," she said.

In "Protectionist Pressures, Imports and Employment in the United States," a study she conducted several years ago, Krueger concluded that it is extremely difficult to identify job losses due to import competition.

"While there are hardships involved with any job termination and necessity to relocate either occupationally or geographically, it is not evident that these hardships are most intense when layoffs are 'caused' by one factor, such as import competition, rather than by any other (such as regional relocation, a declining industry, or a poorly managed firm)," Krueger wrote.

In her new job, Krueger said she will guide the World Bank's research efforts in a way that will make clear the economic advantages of less restrictive trade and marketplace incentives.

She will be joined at the bank by her husband, Jim Hender-

son, also a University economics professor. Henderson will serve as a visiting professor on the bank's economic development team.

Construction To Begin on Part of U Hospitals

Construction of one floor of a new University Hospitals building will begin in October as the result of action taken by the Board of Regents in July.

This portion of the proposed \$125 million building will house the therapeutic radiology department, which hospital officials say badly needs upgraded facilities.

"We have very serious operating problems in the department because the equipment for the treatment of patients is very old, and some is no longer manufactured," said David Preston, associate vice president for health sciences. New equipment cannot be installed in the facilities currently occupied by the department because of space limitations and the need to shut down old equipment while the new is being installed, Preston said.

As a result, hospital officials asked the board to approve construction of new space for the department so that it could continue to operate in the old space while the new is being readied.

The therapeutic radiology department is an important part of the cancer programs at University Hospitals, and this past year served 702 patients with more than 14,200 radiation therapy treatments. The volume of treatments is expected to increase.

Space for the department will cost \$3.9 million. Hospital officials are currently exploring methods of financing the total building, but say they expect full financing to be available by November. First payments on the initial segment of the building would not be due until late November.

Scaled-down plans for a new University Hospitals building 37 percent smaller than first proposed were presented to the board at its June meeting. The revised plans for the building include eight floors, 264,000 net square feet and 432 beds. Earlier plans called for ten floors, 420,420 net square feet and 520 beds.

Plans were adjusted downward after a report by Robert Derzon, a Washington, D.C. health care consultant, questioned the financial feasibility of the project because of current economic conditions. Total cost of the project had been estimated at \$154 million.

Merlin Olson, a consultant from Robert Douglas Associates, told the board that even if the rest of the building project is delayed, the space for the therapeutic radiology department could stand alone. Occupancy of the new department space is scheduled for January 1984, about two years earlier than scheduled completion of the total building.

"There's no question that trade regulations are hindering development."

by William Hoffman

At the height of the Great Depression, a painter sat down to write a letter to President Franklin D. Roosevelt. He seized upon their passing acquaintance to propose a novel idea. What followed is one of the most remarkable chapters in the history of American art.

The painter was George Biddle, and he proposed that the government put artists to work painting murals in government buildings that would express "in living monuments the social ideals that you are struggling to achieve" and that would result in "a vital national expression."

Roosevelt was duly skeptical at first. Biddle's inspiration stemmed from the social ideals of the political left. Moreover, what place did "official art" have in a country founded on the principle of individual freedom and limited government?

But Roosevelt was overhauling the notion of limited government. He told Biddle that he was interested in patronage and referred his letter to the Procurement Division of the Treasury Department, which supervised construction and embellishment of public buildings.

Between 1934 and the outbreak of World War II, mural artists trekked to more than a thousand post offices throughout the country, to places as remote as Kellogg, Idaho; Corning, Iowa; Paris, Arkansas; Safford, Arizona; and Kennebunkport, Maine. In short, they ventured into the heart of small-town America.

They painted murals in local post offices. What they painted—and what they experienced in the process—is told in *Wall-To-Wall America: A Cultural History of Post Office Murals in the Great Depression*, which is being published this fall by University of Minnesota Press.

The book's author is Karal Marling, an associate professor of art history and American studies on the Twin Cities campus. What Marling calls "Mural America" has interested her for a long time. Her father, a staunch supporter of FDR, took her through New Deal buildings in upstate New York where she grew up. Her mother was an art historian.

As a student of Marshall McLuhan in college, she learned that there is no art in isolation, that all art occurs in a social context. Traveling cross country by bus to view post office murals, she came to the conclusion that "art exerts influence in the 20th century in

Post Office Was Home for 'Mural America'



A detail from *Procurement Division Activities in the Procurement Division of the U.S. Treasury Department, Washington, D.C.*

ways that art historians have ignored." The social art of Mural America is a case in point.

"In Mural America, people peered into pictures in post offices earnestly and purposefully and anxiously, looking for the courage to dream," she writes in her book.

"And as they watched, that

resonant picture of home began to sparkle with the promise of a serene and bountiful tomorrow. You couldn't see it clear and plain, but you knew it was there, at the corner of the window, at the edge of the mirror. The picture of Mural America showed the mighty dream that always came true."

Of course, the "dream" was

not always portrayed in ways the community could appreciate or even understand. Most of the artists came from cities in the East and not all of them tested the community waters before picking up the brush, as their government patron expected them to do. Indeed, aesthetic criteria were supposed to be secondary to community

and social considerations, according to Marling. Mural art was to be situated between stylistic extremes.

In Kellogg, Idaho, the government muralist depicted a mining scene in which a pair of miners cart an injured companion out of the shaft. The mural, *Mine Rescue*, did not sit well with community residents because they thought it "cast aspersions on the saga of industry" in the world's most industrialized nation, Marling writes.

In Paris, Arkansas, a mural sketch was altered by the intervention of townspeople because it showed a sharecropper in front of his crumbling shack, a "negative stereotype" that the local business community was eager to shed.

In Kennebunkport, Maine, the muralist set about painting a bathing beach scene. The mural was denounced as an invasion of modernism foreign to local standards of beauty. To some, it was "a sure sign of a Red conspiracy." Moreover, there was no beach in Kennebunkport. The beach resort was in nearby Kennebunk. The mural was removed.

But in Corning, Iowa, the result was more satisfactory. *Band Concert* portrays "an assemblage of neighborly farmers and townsfolk, drawn together under the nighttime sky by the radiance emanating like music from the bandstand...."

It is important to emphasize that the government envisioned not an art program, but a social program that employed artists, Marling said. Its stated purpose was to embellish government buildings, but it was seen by some in government, including governmental relief czar Harry Hopkins, as a way of providing federal relief for starving artists. Indeed, "the majority of American painters were so badly off in the 1920s that the Great Depression scarcely reduced their meagre incomes," Marling writes.

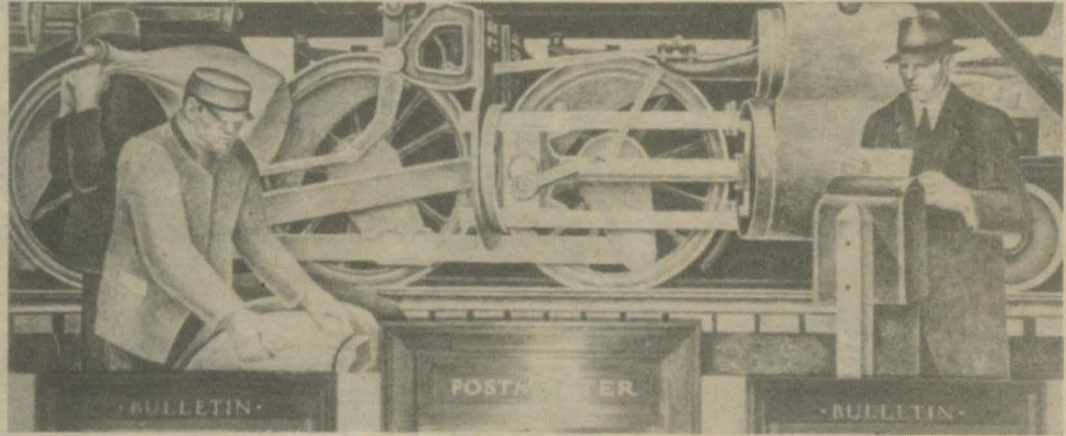
At the same time government-funded muralists were painting "realistic" scenes in post offices throughout the United States, government art was on the rise in Nazi Germany, Fascist Italy, and Soviet Russia. But Marling insists that there is a vast difference between government-sponsored and government-mandated art.

There's little evidence that ideology played a major role in the program, she said. "Very little of it is narrowly political."

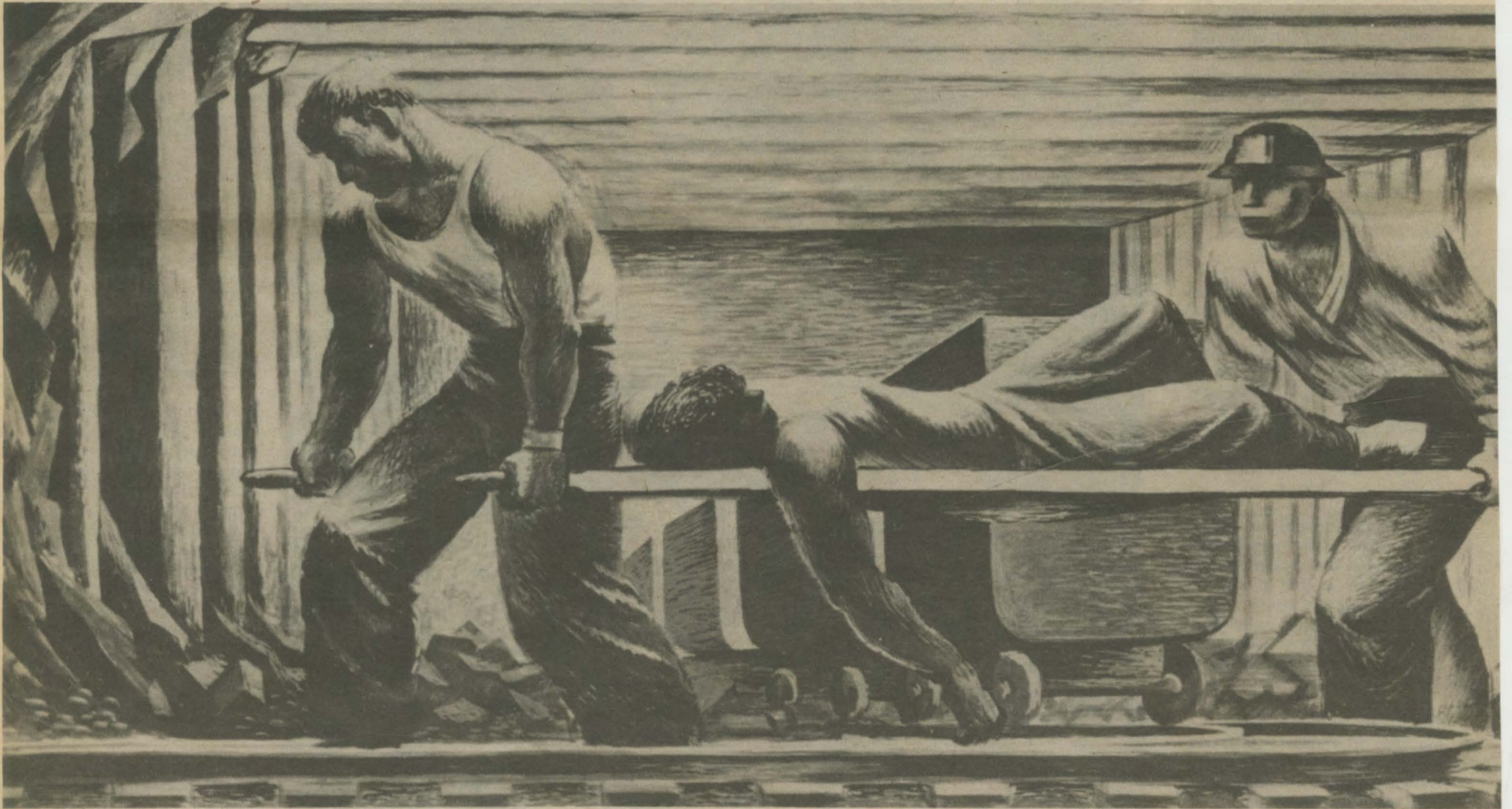
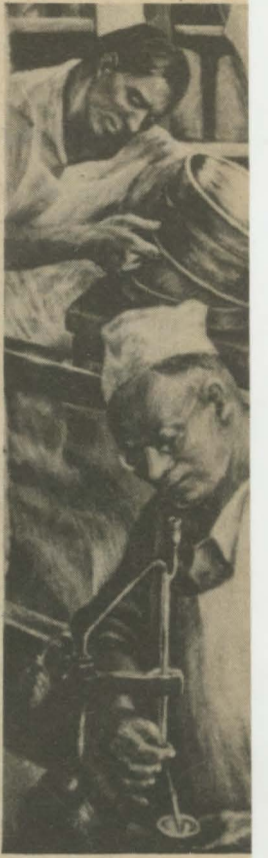
Muralists were directed by officials to draw from the his-

Murals, p. 16

Mural America



Courtesy National Archives





Courtesy National Archives



Courtesy University of Maryland



Courtesy National Archives



Courtesy National Archives

Communication by Mail (top left) in the Marion, Iowa, post office. The sleek locomotive that "hurtles the mail from country to city" symbolizes faith in the machine, a mural theme endorsed by the government.

Mine Rescue (middle left) in the Kellogg, Idaho, post office. Residents opposed the mural because they thought it "cast aspersions on the saga of industry" in the world's most industrialized nation.

Bathers (bottom left) in the Kennebunkport, Maine, post office. The mural was denounced as a "repulsive mural abstract" and a sure sign of a Red conspiracy. It was eventually removed.

A cheddar factory (top right) was the mural subject in the post office in Plymouth, Wisconsin, the *Cheese Center of the World*. The government patron noted that it was "a very nice relief" to see workers with "such pleasant expressions."

Discovery of Ore (bottom right) in the Chisholm, Minnesota, post office. John McCaskell's discovery of iron ore in 1891 helped to establish the Mesabi Range. Local history was a typical theme for muralists.

by Maureen Smith

Ask a few people to name the University faculty member who has been the most controversial in the past 20 or 30 years, the one who has most often been mentioned as an example of a campus radical. Then ask them to name the faculty member who has been most admired and loved by students.

Don't be surprised if you hear the same answer: Mulford Q. Sibley, professor of political science and American studies on the Twin Cities campus.

When Sibley retired this spring after 34 years on the faculty, an olive tree was planted in his honor—an olive tree “for a man of peace, who has taught us about peace,” one student said.

Sibley's values—his pacifism, his socialism, his Quaker faith—are deeply held. His respect for people with other views, and for students with questions, is equally deep.

“I don't think I have ever knowingly said to a student that a question is silly, even if it is,” Sibley said at his last seminar, in an interview conducted by his colleague Gayle Graham Yates. “You can always rephrase a question so that it reflects a serious concern.”

Sibley's students agree. “I've never known anyone who has been so learned, with such an incredible grasp of the material, who at the same time has treated students so seriously,” John Plomondon said. “That's the thing that has impressed me most.”

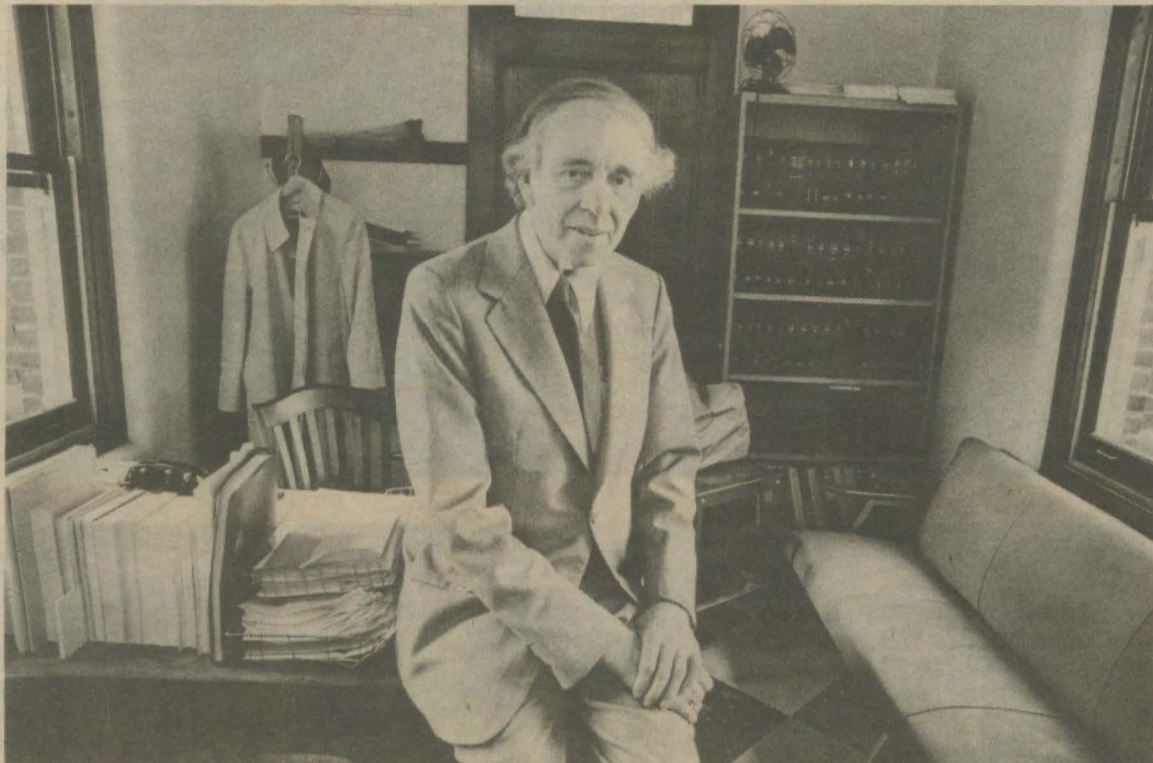
“He really cares about all his students, and it shows,” said Annette Van Dyke. “I have appreciated his humanitarianism, and the way he encourages intellectual curiosity. It's true that he never belittles students.”

A question of values

Nobody who is as gentle and courteous as Mulford Sibley would stir up controversy by his manner. The controversy has come because of his views. But he has never tried to push those views on his students.

“My idea would be not that they would take my values but that they would consider all value systems and consciously select those values that they deem to be right,” Sibley said in an interview for *Update*. “Some of the values might be traditional, some might be against tradition. Tradition is not all wrong, but a custom is not to be accepted simply be-

Sibley Points Students to 'Vision of the Whole'



Mulford Q. Sibley

cause it's a custom. I don't think we ought to make custom sacred. It ought to be subjected to rational criticism.”

People might wonder how Mulford Sibley, who grew up in Oklahoma in a Republican and Methodist family, came to his radical views. It's something he sometimes puzzles over himself. “I don't know why I resisted some values and accepted others. I grew up in a state with strict segregation laws. Nobody ever criticized segregation as far as I knew. Yet from the very beginning I recall criticizing it. That's just one example.

“Family values play a role, but they may not be exemplified in the same way. All my relatives were Republicans except one who stuck out like a sore thumb—he was a Democrat. Why I became a socialist, I don't know.”

Sibley consistently refuses to force his values on others. For example: “I think abortion is an outrage. As a pacifist I find it obnoxious and repugnant. But that does not mean I favor a law prohibiting abortion under all circumstances.” Americans with their puritan heritage have too often held that “what is morally wrong must be made legally punishable,” he said.

In his personal life, Sibley is something of a puritan himself. “I often seem to have a conscience about petty matters, a certain rigidity,” he said. “My

wife says that I don't know how to relax.”

Sibley and his wife Marjorie celebrated their 40th anniversary this spring, and the marriage has been one of the joys of his life. “I don't know if it's been perfect, but it has seemed that way to me,” he said. “I don't know how I deserve it. It's probably just the grace of God. I don't know what I'd do without my wife. I'd probably just collapse.”

A utopian thinker

When he isn't being called a dangerous radical, Sibley might be accused of being a naive idealist, a utopian thinker. The utopian label is not one that he would object to.

“We cannot be rational as human beings unless we have a utopia, explicit or implicit, which may never be realized,” he said. “I literally believe the biblical statement: ‘Where there is no vision, the people perish.’”

“Give us a vision of the whole. Without that vision, we have no guidance as to where we think we should go or what we think we should do. A utopia is indispensable. Far from being a luxury, it is a necessity.”

Sibley's own utopia would include a socialist economy. “I'm

a democratic socialist,” he said. “I think socialism rightly interpreted is essential if we're going to have democracy in an industrial age. By socialism I mean a system in which the productive elements are directed and controlled by the community for the benefit of the whole population and not for the benefit of the few.

“There are all sorts of problems you have to wrestle with—the problem of bureaucracy for one—but I don't see how you can do without social planning. Instead of abandoning planning we should expand it. Instead of abandoning the notion of a welfare society we should expand it.”

Sibley said his turn toward socialism may have been influ-

seen the end of it either.”

As bad as things are, Sibley said, “there may be hope even in this terrible economic situation. It may shock people out of their accustomed complacency.”

A greater source of hope for Sibley has been people's readiness to sign petitions for a nuclear freeze. “I find this remarkable. It wouldn't have happened a few years ago. It may lead to other more hopeful things.”

A man of peace

Sibley's pacifism has been one of the primary commitments of his life. He became aware of the peace issue in childhood, when he was about 10, and became a pacifist in college. It was the peace issue that drew Mulford and Marjorie Sibley together in 1941, after Pearl Harbor, when both of them were opposed to the war and all their friends were for it. It was the peace issue that first attracted him to the Quaker religion.

World War II was a real test for a pacifist. During the Vietnam war Sibley's students often told him that they would have fought against Hitler. His answer was that evil means are never justified, no matter what: the end does not justify the means.

Another reason Sibley opposes militarism is that the military swallows up such a huge chunk of the nation's resources. “We'd be just as safe if we cut the military budget by 50 percent, maybe safer,” he said.

“I've sometimes wondered how to spend \$100 billion, which would be half of the military budget. It's amazing how far it will go for education, health, and welfare. It goes very, very far for these other things. We have to decide where our priorities are.”

“I literally believe the biblical statement: ‘Where there is no vision, the people perish.’”

enced by his experience in the Depression. “My personal experience was not horrible, but I saw so much that was horrible around me. That left a deep impression on my mind. I increasingly believed that mere liberalism was not adequate.

“I would call what we're going through now only a little less bad than the Great Depression of the '30s. I don't think we've

In a ceremony June 2, students and colleagues planted a tree as a memorial to Sibley. “It seemed to us wonderfully symbolic that it be an olive tree for a man of peace, a man who has taught us about peace,” said Ralph Neubeck, Jr. “Then it seemed ironic that the kind of tree that survives in this climate is a Russian olive.”

The Sibley tree is by the Mississippi River, behind the Sci-

ence Classroom Building and north of the Washington Avenue bridge. "We wanted it to be by the river, and we wanted to see it when we come to campus," Neubeck said.

Another tribute to Sibley in June was the presentation of the Outstanding Achievement Award, the highest honor the University gives to distinguished alumni. Sibley earned a Ph.D. from the University in 1938.

A Quaker saint

It would be impossible to separate Sibley's teaching style or his political views from his deep spirituality. "I see politics and religion as very closely related," he said. "The objects of our ultimate concern and our devotion to them are obviously going to affect our actions in the political domain."

All people are religious, he said, "if you take a broad definition such as Tillich's, that religion is one's ultimate concern. In these terms religiousness is ubiquitous in human beings. We're always seeking an object of ultimate concern. We may never find it."

"It would be as easy to get rid of religion, the search for an ultimate concern, as to imagine a human being without a nose."

Sibley avoids creeds and doctrines—"even to talk about God seems to limit Her," he said—but he sees in religious faith "an aspiration for integration, for wholeness, so that lesser things are subordinated to important things." And he said that "one of the core elements in a religion is a sense of awe at the mystery of things."

Sibley has been called a Quaker saint, but he would surely deny it. He hesitated for years to become a Quaker because "so much is demanded of a Quaker," and he said that "in any religious faith, one of the problems is hypocrisy. One purports to be something one never is, completely. This leads to a sense of guilt."

At the same time, he said, religious faith "enables us to bear the sense of guilt and reach a conviction that we are ab-

solved. At least we have an opportunity for new starts."

A crowd of people

Not many faculty members, when they retire, have such a crowd of people turn up for their last seminar. The crowd at Sibley's included President C. Peter Magrath, Dean Fred Lukermann, political activist Marv Davidov, faculty colleagues, students and former students, people wearing "Mulford" buttons. Not often are television cameras on hand for such an occasion.

If you knew Sibley only by his controversial reputation, you wouldn't understand it. Or if you wandered into one of his classrooms and stayed only long enough to observe his diffident manner and never got caught up in the substance, you would be mystified. Why have students chosen this professor to cherish, why has he touched so many lives, why is this man so famous?

Sibley, who never sought publicity, might ask the same question. He appreciated all the tributes that were paid him at the end of his career at Minnesota, but he kept saying he didn't deserve them.

"To think that you would sit here for an hour or an hour and a half and listen to this," he said to the surprise visitors at his last seminar. "I can't get over it."

Editor's note: Quotes from two interviews were interspersed in this article—the interview conducted by Gayle Graham Yates at Sibley's last seminar, and an interview by the writer.

Former CO Kampelman Still Fighting for Peace

by Judith Raunig-Graham

Thirty-eight years ago Max Kampelman spent six months living below Memorial Stadium for the benefit of mankind. As a conscientious objector during World War II, he felt obligated to engage in alternative service, so he signed up for the "Minnesota starvation project."

For six months, Kampelman and 35 other volunteers were "semi-starved" for science. The results of the experiment, initiated by University physiologist and nutritionist Ancel Keys, were used to help malnour-



Karl Gehring

Max Kampelman ished prisoners of war and concentration camp survivors.

The starvation experience prompted Kampelman to study—an activity he says helped him psychologically during the roughest time. He earned a master's degree in political science from the University in 1946 and a doctoral degree in 1951. Between 1949 and 1955 he served as the late Hubert Humphrey's legislative counsel in the U.S. Senate.

Today, as the only Carter-appointed diplomat retained by the Reagan administration, Kampelman shows few signs of starvation, but he is still determined to help bring peace to the world.

Last spring Kampelman returned to the University as a guest of the Hubert H. Humphrey Institute of Public Affairs to discuss his role as chief U.S. diplomat at the Madrid Conference for Security and Cooperation in Europe. The Madrid Conference was convened three years ago to review and implement the Helsinki Accords, signed in 1975 by 35 countries, including the United States and the Soviet Union.

Kampelman said his task in Madrid is both to reflect and to influence public opinion, which is also the dual task of a government in a democratic society. The main purpose of the conference is to develop a process toward peace. Though that process suffers setbacks regularly, he remains optimistic.

"There is no detente today and East-West tensions have heightened," Kampelman told his audience on campus. "The continued presence of 100,000 Russian troops in Afghanistan cannot reflect detente. Immigration from the Soviet Union has been declining, and Soviet repression of human rights continues on a massive scale."

All 50 of the persons who were monitoring the Helsinki Accords for the Soviet Union have been imprisoned, and there were 269 new political arrests in the Soviet Union last year, he said.

"We don't walk out of Madrid because we appreciate an environment of dialogue," Kampelman explained. "Understanding doesn't always bring agreement, but dialogue is an avenue for providing information to our public, and public policy depends on public support in a democracy."

Kampelman doesn't despair because he went to Madrid without any illusions about the Soviet system, he said in an interview. The East and West have irreconcilable systems, but they are the systems we must live with during the nuclear age. We must base a network of relationships on order, cooperation, and law, he said.

Asked whether there are differences between the Carter and Reagan administrations' human rights policies, Kampelman said he has acted in precisely the same manner at Madrid under both. He said, however, that President Reagan's policy of "quiet diplomacy" is a more effective means of protecting human rights, an issue that Kampelman believes is crucial

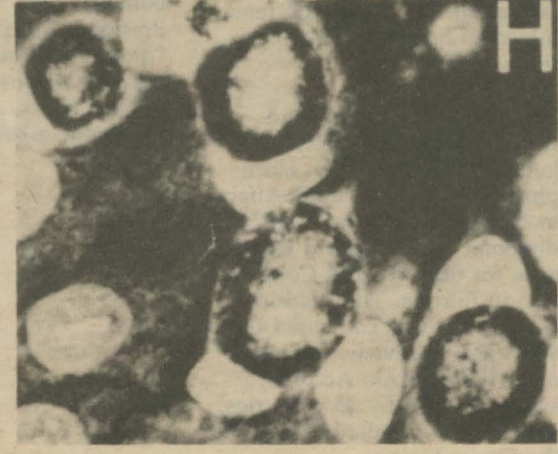
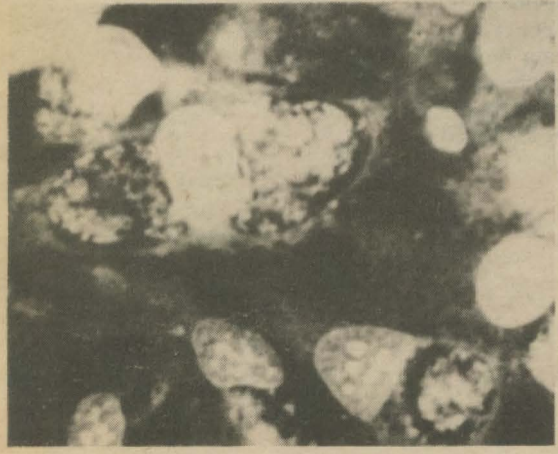
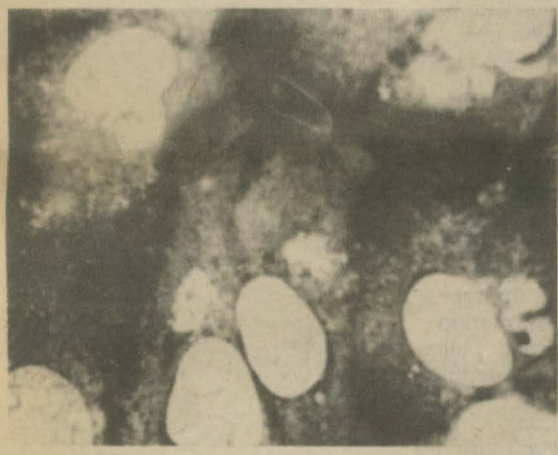
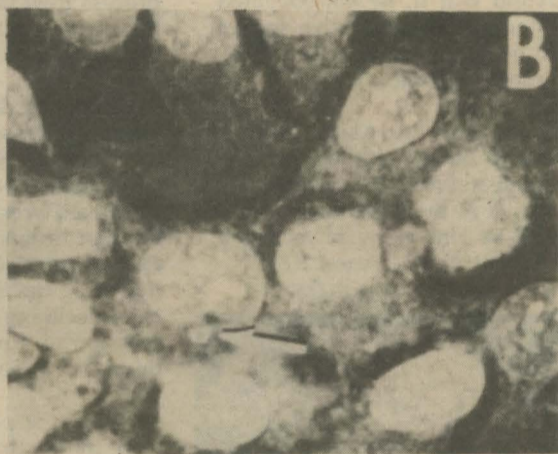
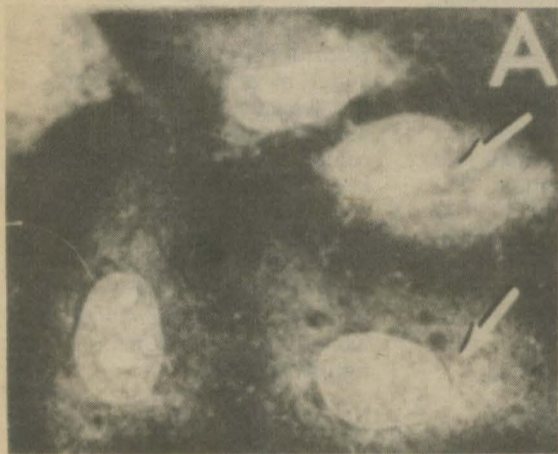
in dealing with other countries. And Kampelman is encouraged by the President's willingness to negotiate on the limitation of strategic nuclear weapons and on the deployment of nuclear forces in Europe.

There is no timetable for the Madrid Conference: it will be ended by a unanimous vote of the delegates. Kampelman believes a good deal has been accomplished so far from the United States' point of view.

"We have achieved Western unity and we have delivered a strong message to the Soviets that we will not tolerate gross violations against human rights," he said.

Costly Chlamydia Nation's Leading Venereal Disease

Diagnosis Difficult, but 'U' Making Strides



A losing battle in eight frames. *Chlamydia trachomatis*, one of humanity's oldest and most skillful pathogens, infects cells next to the nucleus (see arrows) and begins to grow rapidly. After 72 hours (see H) it has reproduced into a dark-haloed mass that tries to shove the nucleus aside.

by Judith Gunn Bronson

Judith Gunn Bronson is senior editor in the Department of Urologic Surgery and managing editor of World Urology Update.

Every year 3 million Americans contract a venereal disease with no such familiar name as gonorrhea or herpes. This disease has left several thousand of its victims sterile and caused eye infections in many newborn babies. The cost to American health consumers: \$1 billion annually.

The creature responsible for this epidemic is *Chlamydia trachomatis* (klay-MID-ee-ah trah-KOH-mah-tis), one of humanity's oldest and most skillful pathogens. Once of interest principally to specialists in tropical diseases—some types of it cause the blinding eye infection trachoma that is prevalent in Third World countries—it now is of interest to those who treat diseases of the genitourinary tract, lungs, inner ear, heart valves, and nervous system. Long considered a threat to the very poor in areas where hygienic standards are low, *C. trachomatis* is now flourishing in wealthy communities with sophisticated health care systems.

Chlamydia onslaught

During the late 1960s and the 1970s, while U.S. public health officials were struggling with an epidemic of gonorrhea, their British colleagues were also worrying and writing about a disease that had similar symptoms—urethral discharge and painful urination—but was not cured by the standard penicillin treatment. This disease is known as nongonococcal urethritis (NGU), and, although it had first been recognized decades earlier, it had never been viewed as such a problem. By 1978, NGU was twice as common as gonorrhea in Great Britain and three times as common in the United States. Half or more of NGU is caused by *C. trachomatis*.

"Our success against gonorrhea was our downfall against *Chlamydia*," explains Leon D. Sabath, professor of medicine on the Twin Cities campus and an expert on infectious diseases.

"We were treating all these patients who had urethritis with penicillin, which usually cures gonorrhea but doesn't kill chlamydiae. Sometimes the symptoms went away, however, so the man didn't realize he still had an infection, and that infection spread."

One place it spreads is to the cervix of the female sexual partners of men with NGU. (Most NGU patients showing symptoms are men.) Infection is especially likely if the woman is taking oral contraceptives, and she seldom has symptoms that would tell her she has an infection. Thus she can reinfect her sexual partner after he is treated or pass the chlamydiae into the eyes of a child at birth. That results in a chronic, although nonblinding, eye infection that is usually not prevented by the silver nitrate eyedrops routinely used in nurseries against gonorrhea. Adults are also susceptible to chlamydial eye infections, which have become so common that Sabath suggests that young patients being fitted for contact lenses be examined for the symptoms.

These infections are only the beginning, however. From the eye, chlamydiae may pass to the inner ear and the lungs. *Chlamydia trachomatis* appears to be the most common cause of pneumonia in infants, and, as a team at the University discovered in 1978, it can also cause pneumonia in adults. From the man's urethra, the organism can travel upward to infect the tubes above the testicles where sperm are stored. It is now estimated that 250,000 American men a year suffer from this painful condition, called epididymitis, which can lead to sterility.

From the cervix, *C. trachomatis* can spread to the Fallopian tubes, causing pelvic inflammatory disease, formerly almost always caused by gonorrhea. The pelvic inflammation can also lead to sterility. Recent medical articles have linked chlamydial infections with severe, even life-threatening, infections after abortions or cesarian sections and with premature births, still births, and perinatal deaths. In other words, it has become clear that *C. trachomatis* strains other than those that cause trachoma are

significant human pathogens.

A diagnostic pest

The radical change in our perception of *C. trachomatis* is traceable to recent developments, but its recorded history goes back almost 50 centuries. Ancient Chinese physicians wrote about patients whose eyelids were distorted, turned under so that the eyelashes scraped across the surface of the eye—the cornea—with every blink. Some of these people had milky white, opaque corneas and were blind, which the physicians correctly attributed to the damage done by the eyelashes. The Chinese physicians operated on the eyelids, a procedure not too different from the one in use today. In a scroll that is one of the oldest extant medical texts, modern physicians can easily recognize a description of the chlamydial disease trachoma.

An estimated 500 million people around the world now suffer from this disease, which is a heavy drain on the scarce health care resources of the Third World. According to the World Health Organization, approximately 1 percent of the world's people are victims of preventable blindness, and trachoma is one of the most common causes.

Diseases caused by other



Tom Foley

Howard Jenkin

strains of *C. trachomatis* are more difficult to diagnose because they seldom cause distinctive symptoms and signs, and it is these strains that are now a problem in the United States.

Another barrier to diagnosis is the fact that until recently *C. trachomatis* could not be grown in most laboratories. The problem stems from an unusual characteristic of the organism: unlike most bacteria, *C. trachomatis* is not free-living. Because

it cannot produce its own energy, it must live inside a cell that can. It chooses as hosts either the tall, slender cells known as columnar epithelium or the slightly flatter ones called transitional epithelium. Wherever such cells are present in the human body, *C. trachomatis* can grow. The urethra is lined with transitional epithelium, for example, and the hormones in oral contraceptives expose more columnar cells on the cervix, increasing susceptibility to *C. trachomatis* infections.

The difficulty this parasitic nature creates for the diagnostic laboratory can be illustrated by contrasting the cultivation of *C. trachomatis* with that of another common disease-producing bacterium, *E. coli*, a free-living organism capable of synthesizing almost everything it needs from simple chemicals or extracting what it wants from a variety of complex biochemicals. One diagnostic microbiologist liked to tell students that you can grow *E. coli* on extract of old door-knob. On many commercially available growth media, this bacterium can be identified within a few hours by specific reactions such as color change.

In contrast, growth of *C. trachomatis* is not an easy task; it requires the cultivation of human or animal cells with complex growth media and incubators that control the atmosphere, humidity, and temperature. Many diagnostic laboratories are not able to do cell culture for chlamydial diagnosis. One place that can is the Microbiology Department at the Mayo Clinic in Rochester.

Cultures and colors

At the Mayo Clinic, chlamydial infections are diagnosed both by culture methods and by serum-antibody testing. According to Thomas F. Smith, director of the microbiology laboratory, it is a center for research and training in chlamydial diagnosis as well as a diagnostic center.

"I'm a virologist, so of course I was experienced in cell culture," Smith said. (Growing viruses also requires living cells.) "These people came to me one day and said they needed someone who could do cell culture to help them grow *Chlamydia*. I thought, 'Hmm, that sounds interesting.'"

Smith and his colleagues have since spent many months refining culture methods, comparing the effects of glass and plastic vials on cell growth, testing to see how many vials must be inoculated with each sample

and how long they must be incubated before the results can be read. They have trained more than 50 other laboratories in the method, and they recently published their findings in the journal *Laboratory Medicine*.

Inside the laboratory's walk-in incubator are racks of small vials, each containing a teaspoonful of cell culture medium that looks like rosé wine. At the bottom of each vial is a thin piece of glass called a cover slip on which cells are growing. When a specimen comes in for diagnosis, two vials of cells are inoculated with it and treated with a drug that slows the growth of the cells and thus gives any chlamydiae in the specimen a better chance to infect. After 40 hours or longer in the incubator, the cover slips are stained with iodine and examined microscopically for the brown blobs against a golden background that represent intracellular masses of *C. trachomatis*.

The second method by which chlamydial infections are now diagnosed searches the patient's serum for antibodies against the organism. Antibodies are proteins that the body makes in response to foreign substances (antigens) such as bacterial cell walls.

A series of dilutions of the patient's serum is added to cell cultures infected with *C. trachomatis* along with a fluorescent dye. If the serum contains antichlamydial antibodies, they react with the infected cells and the fluorescent dye. Under the fluorescence microscope and ultraviolet light, a positive reaction glows a surreal green-yellow against a black background. Unfortunately, many people have had chlamydial infections and therefore have antichlamydial antibodies even if they are no longer infected, so this test usually requires two serum specimens taken several days apart to demonstrate a rise in the concentration of antibody, a sign of recent infection.

A better test

Neither method is practical in the place where diagnosis of chlamydial infections is needed most—in clinics that diagnose and treat sexually transmitted disease. At the University's Hormel Institute in Austin, Minnesota, scientists are working on a better test.

The Hormel Institute is dedicated to the study of lipids (fats), and its Microbiology Department, under the direction of Howard M. Jenkin, has been working with a genetic engineering firm and clinicians around the country on a quick diagnostic method for chlamydial infections that is now starting clinical trials. The test, called an ELISA (enzyme-linked immunosorbent assay), incorporates monoclonal antibodies—a preparation of antibodies against a single antigen, one of the creations of the "new biotechnology."

When Jenkin was in graduate school trying to analyze chlamydial cell walls chemically, he put the organisms in a press to break them open. "At 100,000 pounds [of pressure] per square inch," Jenkin recalls, "the press broke. The chlamydiae didn't." He discovered that he could break the organisms if they were treated to remove the lipid that made them so elastic, and after further processing he obtained purified cell walls that under the electron microscope looked like grapes with the pulp sucked out. In those walls, Jenkin found a chlamydial antigen that has been used in the preparation of the monoclonal antibodies for the ELISA.

Monoclonal antibody production takes advantage of a property of B lymphocytes, the body's antibody producers: each makes antibodies to only one antigen. If a mouse is immunized with an antigen and its spleen (which houses the B lymphocytes) is removed, the lymphocytes can be fused with mouse myeloma tumor cells so that they can be grown indefinitely in the laboratory. With some immensely tedious work, one can isolate a fused cell, call a hybridoma, that is a nonstop factory for the antibody in question.

With these antibodies, it is possible to create a highly specific assay, and Jenkin and his group hope that their ELISA will be able to detect fewer than 1,000 chlamydiae in a clinical specimen within two minutes to four hours. Such an assay would be particularly valuable in the diagnosis of NGU and chlamydial cervicitis. Several months of testing will be needed before the assay is available commercially, and at least four other chlamydial research groups are working with

genetic engineering companies on rapid diagnostic methods.

Unlike genital herpes, another prevalent sexually transmitted disease of the 1980s, chlamydial infections are easily cured with antibiotics. They could go the way of gonorrhea, which seemed hopelessly out of control in the early 1970s: intensive educational efforts among both health care workers and the public and easier and faster diagnostic methods have reduced the incidence of gonorrhea dramatically. Now it's the turn of *Chlamydia trachomatis*.

Regents Approve Budget Plan, New South Africa Policy

An \$818 million University budget for 1982-83, a 5.3 percent increase over last year, was approved by the Board of Regents at its June meeting.

The budget represents all resources and expenditures, including the \$329 million state funds portion approved by the board in May. That portion included \$15.4 million in cuts.

The total budget includes a 5 percent pay increase for non-bargaining unit civil service employees, negotiated increases for unionized employees, a delayed 6.5 percent pay increase for faculty members, and an average 21.7 percent tuition increase.

The projected 5.3 percent increase is just under the current rate of inflation and, according to University officials, will be almost totally absorbed by sal-

ary increases.

Under the new tuition plan, individual students will pay from 2.9 percent to 25 percent more next year. All lower division day students will pay the same amount, regardless of college. Conversely, upper level students will pay according to what it costs to educate students in different units.

Over the past several years, the University has been trying to shift tuition gradually toward students' paying the same percentage of their instructional costs. The new plan helps to achieve that goal, said Kenneth Keller, vice president for academic affairs.

The University receives money from several sources: 33 percent of its income is from the state, 13.8 percent from the federal government, 11.5 per-

cent from tuition and fees, 6.1 percent from private sources, 1.9 percent from general income, and 33.7 percent from sales and services, including University Hospitals, dormitories, parking, and athletics.

South Africa

A resolution was passed by the regents 11-0 in June to prohibit future investment in corporations doing business in South Africa unless "equivalent returns are not likely from alternative investments."

Regent David Lebedoff, sponsor of the resolution, said the new policy will allow the board to remain fiscally responsible while strongly opposing South Africa's apartheid policies.

In 1979, the board adopted a

policy of urging corporations in which it has investments to sign the Sullivan Principles, a voluntary code calling for equal treatment of races.

In March, a resolution introduced by Lebedoff that would have prohibited investments unless the effect "would be to significantly reduce the portfolio return...or would increase the portfolio risk ...to unacceptable levels" failed in committee.

The dome

After many months of discussion and negotiation, the University has agreed to move its football Gophers to the Hubert H. Humphrey Metrodome.

A contract to move the Gophers for their next season was approved in a 10-1 vote by the regents in April, with the stipulation that the new arrangement be reviewed carefully at the end of each of the next three years.

"The contract is a good deal, fair to both sides, and has the

right sorts of protection for both sides," President C. Peter Magrath told the board.

Board chair Wenda Moore said she and other regents had received many phone calls and letters from people who feel the Gophers should stay at Memorial Stadium and that a move to the dome would rob football games of their collegiate atmosphere.

"We know Gopher football is different and special," she said. "We think we can transport that specialness to the dome. We hope the fans will give us a chance."

Memorial Stadium, on the University's Minneapolis campus, would need extensive and expensive renovation within 5 to 10 years if it were to remain in use for football games, Magrath said.

"I don't think that's a good investment for us to be considering in light of other University needs," he told the regents.

'U' Top Public University in Voluntary Support

by William Hoffman

For the eighth year in a row, the University of Minnesota ranked among the top 10 American universities in the amount of voluntary support it receives.

For the year 1980-81, the University received \$49,828,866 from corporations, foundations, and alumni and other individuals. It ranked sixth nationally and was the only public institution ranked in the top 10, according to a report by the Council for Financial Aid to Education (CFAE).

Voluntary support of the University jumped more than \$9 million from the year before and has steadily increased from \$14.8 million 10 years ago. Only Harvard, Stanford, Yale, Southern California, and Cornell received more money than the University, the CFAE report shows.

President C. Peter Magrath said that although voluntary support amounts to only a fraction of

the University's expenditures, it is the margin of excellence for some programs.

The Twin Cities corporate community has earned a national reputation for its support of education. That along with a strong philanthropic tradition, the size of the institution, "entrepreneurial deans," and a strong faculty help to explain why the University generates so much support, said Robert Odegard, executive director of the University of Minnesota Foundation and associate vice president for development and alumni relations.

The key is having enough people to make face-to-face contacts, Odegard said, adding that "the whole development effort costs less than 10 cents for each dollar raised."

So far, the recession hasn't seemed to affect levels of support. "We think it will hold up," Odegard said. If it does, the University has an excellent shot at being the first public academic institution to raise \$50 million in a year.

In general, gifts are no more

likely to have strings attached than in the past and probably are less likely to have restrictions, Odegard said. Development officers try to persuade potential givers that unrestricted dollars are "more valuable," and donors themselves are more willing to give unconditionally "as they become more sophisticated," he said.

Listed below are some of the most significant gifts of 1981.

\$2 million from the estate of Marshall Alworth to benefit the Duluth campus.

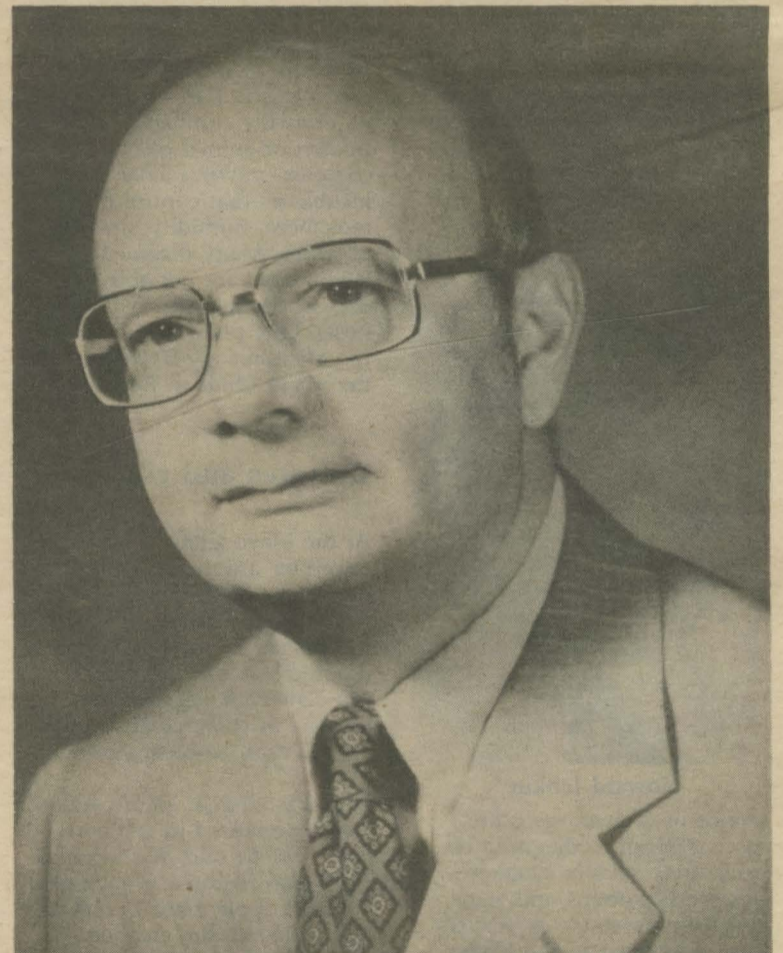
\$1 million from Gordon Bailey to establish the Gordon and Margaret Bailey Chair in Environmental Horticulture.

\$1 million from the Pillsbury Company for the Gerot/Pillsbury Chair in Marketing.

\$1 million from Eldon Siehl to establish the Cora Meidl Siehl Chair in Nursing Research for Improved Patient Care.

\$1 million from Sperry Univac to support the Microelectronic Center in the Institute of Technology.

\$500,000 from the Cargill Corporation in support of the School of Management undergraduate curriculum.



Neal A. Vanselow, chancellor of the University of Nebraska Medical Center, Omaha, has been named vice president for health sciences. His appointment was approved in May by the Board of Regents.

Vanselow succeeds Lyle A. French, who has held the position since it was created in 1970. His appointment is effective September 1.

President C. Peter Magrath called Vanselow "a first-class educator and leader with proven credentials. He comes to Minnesota at a time of transition and opportunity, as we face the need to improve our University Hospitals while simultaneously responding to the changing health care trends of the 1980s."

Wolves, from p. 5

buffer zone is at least 10 years, Mech found.

"Starving wolves will seek deer on the edges of their territories, or even trespass into the territories of other packs," Mech said. "That's like speeding, you can't get away with it all the time. The result is wolves killing wolves and packs breaking up.

"The only way of increasing the deer population in the long run is to improve the habitat," Mech said. Controlled burning or cutting would provide openings for the young aspen trees that deer like to eat as much as wolves like to eat deer. Other ways to manage the recovery of the deer population include feeding deer during severe winters, closing the hunting season, or cutting the wolf population.

Mech was the first to document the fact that when a deer population is in trouble, wolves put it in worse trouble and slow down its recovery. To the people who hate wolves, this is something so obvious it hardly bears stating: "Wolves are killing our deer, our cattle, our dogs...." Whatever the variation, this is a commonly expressed sentiment in cafes, lodges, and taverns of northern Minnesota.

The big bad wolf

Maybe it's childhood tales of Little Red Riding Hood, the three pigs, or Peter and the wolf: The big bad wolf has long held the threat of evil. The ultimate threat is being thrown to the wolves.

Such images linger in the mind, and may help account for the time Mech lost some great movie footage of running wolves. At the time, they were running straight at him. Mech had spent 45 minutes photographing the carcass of a deer killed by wolves when he turned and saw two large wolves bounding toward him over a ridge. He drew his revolver instead of his movie camera, but the wolves fled as soon as they saw him. These days Mech would choose the movie camera with no hesitation, and he no longer bothers to carry a gun.

Wolves are among the wildest and shyest animals in the northern wilderness. Depending on one's viewpoint, that can make them more endearing or more fearsome. Mech has noticed that emotionalism is something wolf haters and wolf protectors have in common. In

fact, a prominent environmentalist and an anti-wolf zealot have both suggested the same solution to wolf management in Minnesota: build a huge fence around the wolf preserves.

Mech is primarily interested in the biology of wolves, but it's difficult for someone known as "the wolf man" to stay clear of management decisions. He is a member of a national committee that recommends wolf management policy for the federal government. This role wins him abuse from both sides.

"The other night I got a call at 11 o'clock from Alaska," Mech said. "The fellow argued with me for half an hour because I came out in support of limited management killing of wolves in Alaska. He finally said that as a biologist he respected me 100 percent, but as a person 10 percent. I said I was sorry he felt that way.

"Maybe getting it from both sides means I'm not too far off the mark. I don't mind it. You get a pretty thick skin, working with wolves and all."

Many people in northern Minnesota seem to feel that the best way to help the deer population is to kill wolves. "Their attitude toward wolves is 'kill 'em when you can,'" Mech said. "They feel that the wolf competes with them for deer—which is true under some conditions. But there are other ways of managing deer, and killing wolves would only be useful at certain times.

"There's also a question of rights—for people, not wolves. Superior National Forest is federal land. The way democracy works, the little old lady in New York City who likes to know that wolves are able to run free somewhere has the same voice as the deer hunter in Ely."

Another argument anti-wolf groups often use is that wolves kill livestock. Mech does not consider this a major problem. In a study in Minnesota's Beltrami State Forest, an area bounded on three sides by farmland, Mech and a graduate student found that deer accounted for 94 percent of the wolves' diet. In 1981 it was confirmed that wolves killed 6 cows, 24 calves, and 110 sheep. That compares to the 90,000 sheep and the more than 200,000 cattle in wolf areas.

But it is not a subject that invites rational argument from either side. Mech has seen the disappearance of a good dog inspire a wolf hysteria—reports of wolves attacking dogs and cattle everywhere in the area. After the Duluth *News-Tribune* ran an article supporting

wolves a bloody wolf's head was found on the office doorstep.

"The wolf has been surrounded by a profusion of politics, myths, and misunderstandings that have made rational wolf management and conservation impossible," the state's Department of Natural Resources (DNR) admits in its latest plan to manage Minnesota's wolves.

It would help to have a scorecard to keep track of the changes in wolf regulations in the past 15 years. As recently as 1965 the state paid a bounty for dead wolves, but by 1970 wolves were protected on federal land. The DNR lost management of wolves on state land in 1973 when wolves were included in the federal Endangered Species Act. An endan-

"There's a certain mystique about carnivores."

gered animal is completely protected; even wildlife agents are not allowed to kill it. Mech is a member of the Wolf Recovery Team, the federally appointed committee that changed the wolf classification to "threatened" in 1978. The change allows wolves to be trapped and killed by federal agents working within a quarter mile of a farm where there has been a "significant" killing of livestock.

Poachers can be fined up to \$20,000 for killing a wolf, but first they have to be caught. They've learned not to leave radio collars on the wolves they've shot. It is not unusual for Mech to home in on a signal coming from the bottom of a lake. The truly sophisticated poacher deposits the collar in a taconite grinder. Some people claim that many state game wardens provide little help in catching wolf poachers because they are not inclined to enforce a federal law they consider stupid. Probably more than a hundred wolves a year are killed illegally in Minnesota, Mech said.

The federal perspective that classifies wolves as endangered or threatened does not make sense to many Minnesotans—particularly to those who live in the north country with 1,200 wolves. It does not impress these people that wolves occupy only 1 percent of the area they once roamed south of Alaska.

Under pressure from angry constituents, Minnesota twice appealed to regain state management of wolves and lost

both times. Then late last year the state was invited to try again. This time, it was indicated, state management would get a more sympathetic hearing.

The new state plan calls for trapping up to 50 wolves in the north central part of the state where forests are bordered by farms. Private citizens would be allowed to do some of the trapping. The Boundary Waters Canoe Area would be the only complete sanctuary for wolves.

Mech said he supports the plan. It has enough safeguards that the wolf population cannot be significantly hurt, he said. It may even help the wolf population by encouraging state game wardens to enforce the law and by venting the frustrations of some of the wolf haters. The plan has many similarities to a proposal he and the Wolf Recovery Team made in the mid-1970s. The state plan is still being reviewed in Washington, but is expected to be approved.

Not that this will end the controversy on wolf regulation. Wildlife protection groups will almost certainly sue to prevent state control. If the plan goes ahead it will be a financial drain on a state that already has budget problems. Minnesota would have to take over the pest management program that presently has five federal biologists trapping wolves that kill livestock. The state would continue to have sole responsibility for payments to compensate farmers for loss of livestock. If those payments were cut there would certainly be enraged farmers calling their legislators.

Perhaps wolves best deserve their fearsome mystique for the havoc they inflict on bureaucracy. Ultimately, the only way to quiet the controversy may be to provide people with a better understanding of the animal, the wolf.

Dave Mech comes down the steps of the U.S. Fish and Wildlife station near Ely and opens the trunk of his Plymouth Valiant. The odometer is almost ready to turn to 150,000 miles from his trips across northern Minnesota. He fits a slide projector next to the movie screen, snowshoes, and ax in the trunk. In a couple of hours he's due to give his wolf talk to a trappers' club in Chisholm.

Mike Nelson opens the door of the log cabin and says a deer carcass has been spotted, a likely wolf kill. Mech checks his watch. Snow clouds are moving in. He slams the lid of his trunk and hikes down the path to look at some bones and fur that will tell him more about wolves.

The Case of the Missing Traps

Something happened last year that could have jeopardized the record of continuous wolf research in the Superior National Forest. Somebody was stealing wolf traps.

At \$40 each, traps aren't particularly cheap, but the big problem was that someone smart enough to find these hidden traps could continue to steal the traps as long as he liked. Dave Mech traps wolves to attach radio collars that allow researchers to follow the animals by airplane. The batteries in the collars have to be replaced every two years, so the animals have to be re-trapped.

Mech solved the problem by tracking traps the way he tracks wolves. He had a transmitter made that was tiny enough to be hidden in a wolf trap, then placed the trap where the thief would be likely to find it. Four weeks later the trap was gone, along with five others.

Mech's assistant, Mike Nelson, located the trap's signal from the airplane, but in the process flew too close to the thief's house. The wife of the man who stole the traps got suspicious of the plane buzzing the house and warned her husband to hide the traps.

The bust was the next day. Law enforcement officials searched the house and failed to find a trap. Just when the operation looked hopeless, an officer found a trap with a government stamp lying in the yard. Confronted with the evidence, the trapper confessed and led the game wardens and federal agents to the place in the forest where he had hidden 20 other traps, some with government identifications already filed off.

Apparently, while they were hauling the traps to the woods in the night, the trapper and his son failed to notice that they had dropped one.

The trapper had one question: "How did you know it was me?" When he was told that one of the traps was bugged he refused to believe it.

Mech's transmitters are made at the University's Cedar Creek field biology station. The technology has come a long way since radio tracking was introduced in 1963. Mech has hopes for a transmitter in a sterile package that could be placed surgically in a wolf's abdominal

cavity. This would provide a way to track wolf cubs—they can't be fitted with collars because they will outgrow them. It would also tend to prevent poachers' destroying the transmitters on the wolves they shoot.

On the drawing board is a dart collar that will respond to a special radio signal by injecting the wolf with a drug to make it unconscious. This would eliminate the need for trapping. Mech could simply knock out the wolf when it's time to change the batteries in the collar. Unfortunately, prototype models sometimes respond to the odd radio wave by shooting off unexpectedly. But if Mech can work the bugs out of the dart collar, he'll no longer have to bug traps.

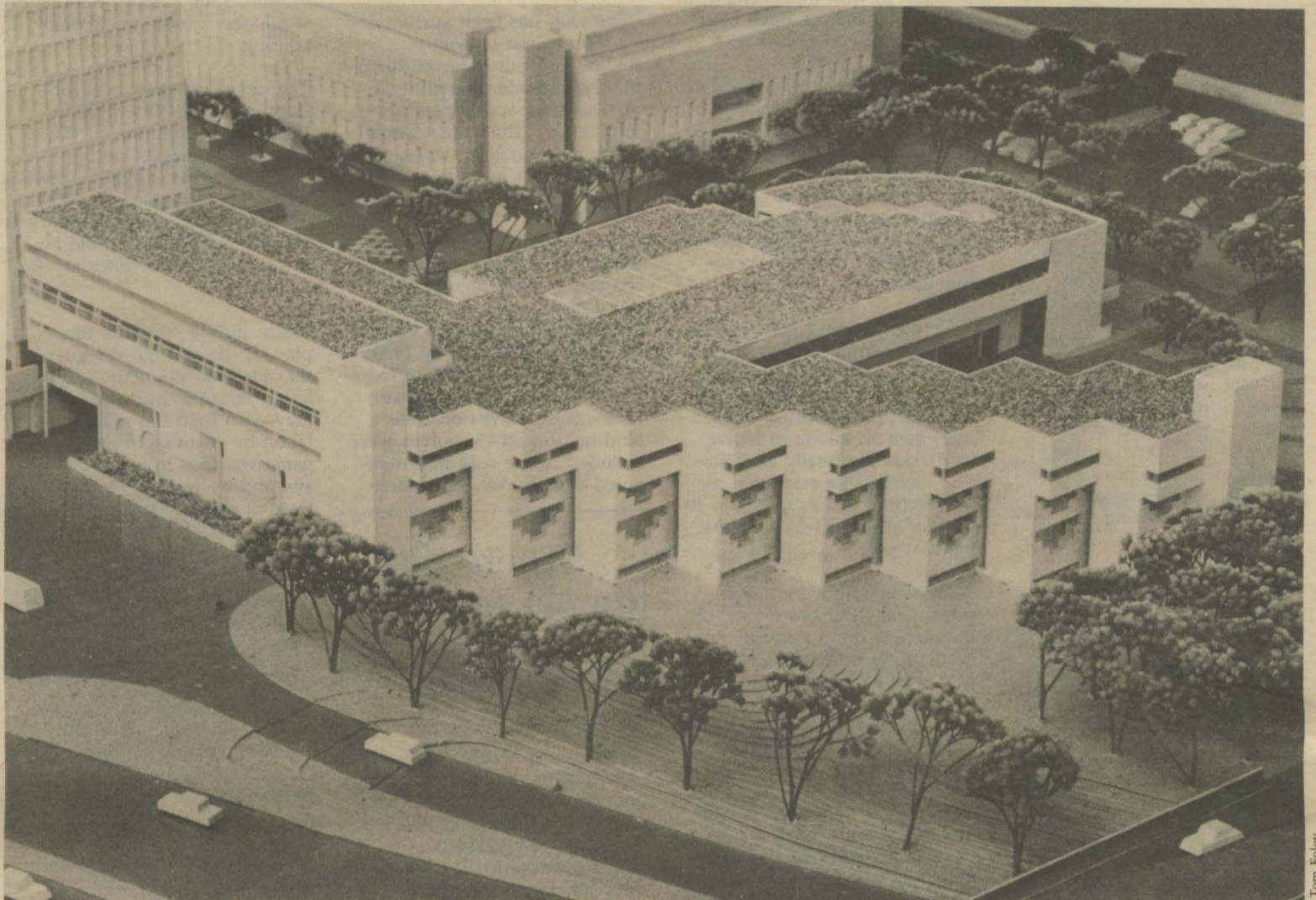
Murals, from p. 7

torical experience of the community or to symbolize the onward march of progress in their works. As a result, there is a "missing center...the calamitous present," Marling writes in her book.

That's one of the reasons that history "has brought in a negative verdict on the post-office pictures of the '30s." But she thinks that verdict is a bit harsh. Showing the past in an idyllic manner was an inspiration in hard times, and showing a "highly edited" version of the present that emphasized happy and productive work reminded people that work "was the fiber of the past and the key to the future."

The "humane pluralism" that characterized the New Deal also characterized the manner in which the government commissioned murals and dealt with community reaction to them.

"Most people and most artists occupied the social center, the gathering place of an embattled democracy," Marling writes. "The federal patron watched over the painter and the public as they met there to dream and hope and reminisce together. That place, of course, was the post office, in the heart of Mural America."



Tom Foley

A model of the Hubert H. Humphrey Building that will be built on the West Bank of the University's Twin Cities campus. The building will house the Humphrey Institute of Public Affairs, portions of the School of Management, and the Center for Urban and Regional Affairs (CURA). Shared facilities will in-

clude a commons, meeting and conference rooms, and a food service. The \$16.5 million structure is being designed by Leonard S. Parker Associates. The legislature has appropriated funds but bonds have not yet been issued for construction.

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Looking ahead to the 21st century at the University's
Cloquet Forestry Center. See story page 6.

Thoreau Quarterly
Diana Murphy
Segmented Worlds
Bush Sabbatical
Scandinavia Today

'The Thoreau Quarterly' Follows Philosopher West

by William Hoffman

The morning of June 11, 1861, Henry David Thoreau walked out of Mrs. Hamilton's boarding house on the shore of Lake Calhoun in search of the wild crabapple tree that she said was growing nearby. The tree was one of the particular objects of his journey west.

"Her husband 1st saw it on a ridge by the lake shore," Thoreau wrote in his journal. "They had dug up several & set them out, but all died. So I went & searched in that very unlikely place, but could find nothing like it, though [Mrs.] Hamilton said there was one there 3 feet higher than the lake."

Thoreau returned to the boarding house to receive "more particular instructions" from Mrs. Hamilton, but again for naught. He began to doubt that the species existed in Minnesota.

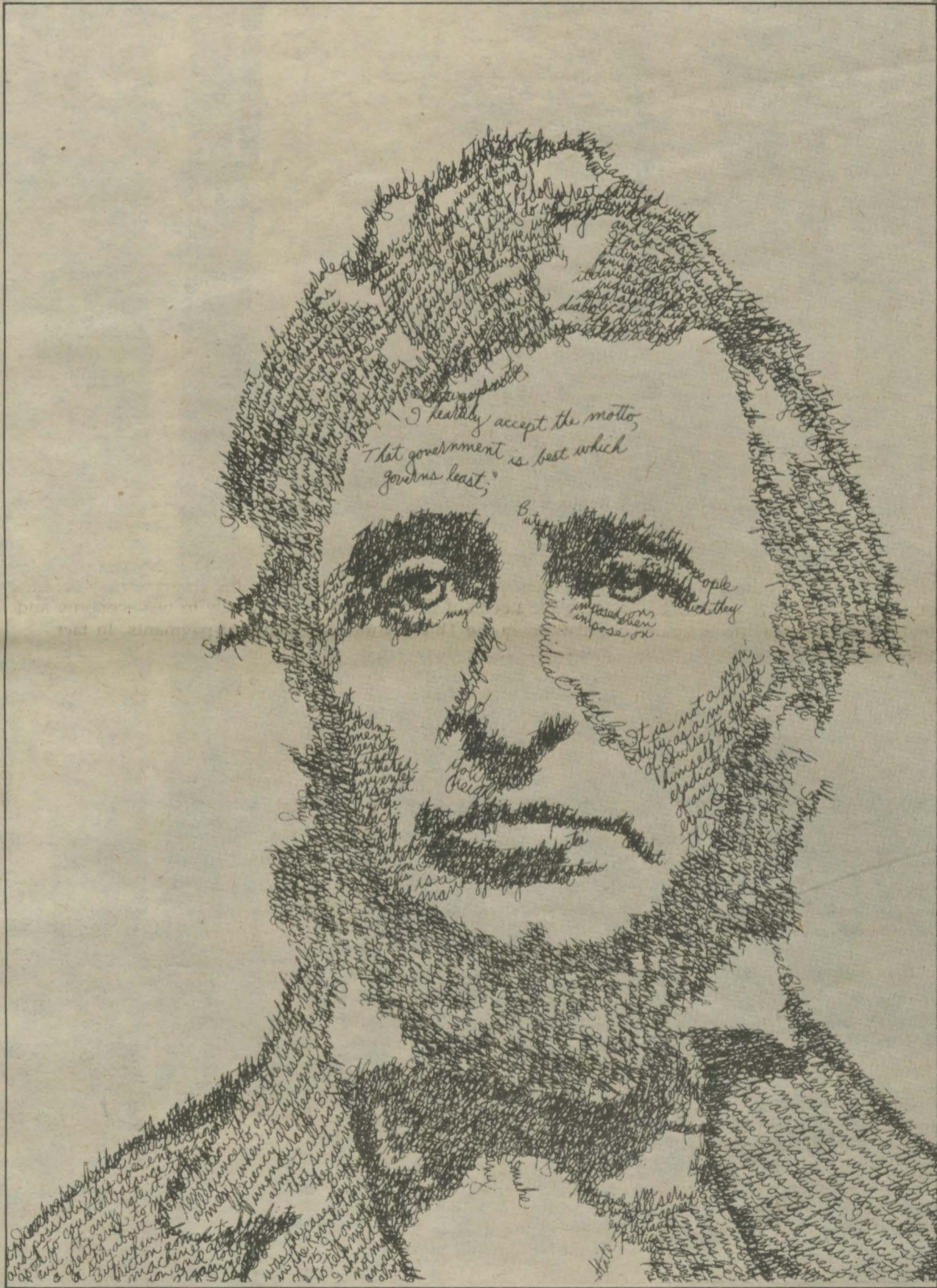
Someone sent him to a Mr. Grimes. The man's son "showed me some of the trees he had set out this spring. But they had all died, having a long tap root and being taken up too late. But then I was convinced by the sight of the just expanding though withered flower bud to analyze."

Thoreau's suspicions bore fruit. When the boy's father returned, they went in search of the tree in Grimes's pasture. The naturalist and philosopher was the first to spot one. They found "quite a cluster of them." It was a memorable day.

Thoreau and his companion, Horace Mann, Jr., the 17-year-old son of the American educator, spent only a month in Minnesota—in the Twin Cities, Redwood Falls, and Red Wing.

Thoreau traveled here to recover his health, botanizing all along the way. But by the time he returned to Concord, Massachusetts, he was in a steady decline, and the creator of *Walden* died before finding time to write up his "Notes on the Journey West."

Thoreau believed fate could be conquered by thought and that reflection "enables one to get



Henry David Thoreau as Civil Disobedience, a portrait of Thoreau by John Sokol, appeared in the winter 1982 issue of *The Thoreau Quarterly*. Sokol

arranged the words of Thoreau's *Resistance to Civil Government* to form an image of the author's face.

things right," according to John Dolan, associate professor of philosophy on the Twin Cities campus and co-editor of *The Thoreau Quarterly: A Journal of Literary and Philosophical Studies*.

Thoreau was "right about slavery, right about our invasion of Mexico, right about the 'quiet

desperation' of his neighbors," Dolan writes in the spring issue. "He was, even more impressively, right about the need to curb our heedless destruction of wilderness."

Dolan and Wendell Glick, professor of English on the Duluth campus and the journal's other co-editor, have been teaching

and writing about Thoreau for a long time. Several years ago they were offered editorship of the journal, then being published in Maine.

When the University's College of Liberal Arts and Graduate School agreed to provide financial support, Dolan and Glick agreed to edit the journal and set out to change it from the "fan maga-

zine" it had become. They are now working on their third issue.

The journal is "not exclusively Thoreauvian," Dolan said in an interview. In its statement of purpose, the journal welcomes studies of topics concerning the American Renaissance, the New England Transcendentalists, and American philosophy.

"The key is whether the article is interesting and well written," Dolan said. Articles need not "break new scholarly ground," though at least one per issue will be devoted to Thoreau's life and work.

"We don't want committee literature or what I call printed matter, but rather something with a personal touch," he said. "Themes can range from the meaning of life to the nature of a just society—the themes that concerned Thoreau himself."

In the first two issues, contributors have included Thoreau authorities like John C. Broderick of the Library of Congress ("A Lifetime of Waldens") and gifted essayists like Minnesota Regents' Professor of Chemical Engineering Rutherford Aris ("The Intangible Tints of Dawn").

"Moral reform was of the essence to Thoreau's religion," writes Aris, who first encountered Thoreau in a footnote of a book by English poet Robert Bridges while Aris was on a Saturday outing in the Yorkshire moors. "It was the effort to throw off sleep in which 'we must learn to reawaken and keep ourselves awake, not by mechanical aids, but by an infinite expectation of the dawn, which does not forsake us in our soundest sleep.'"

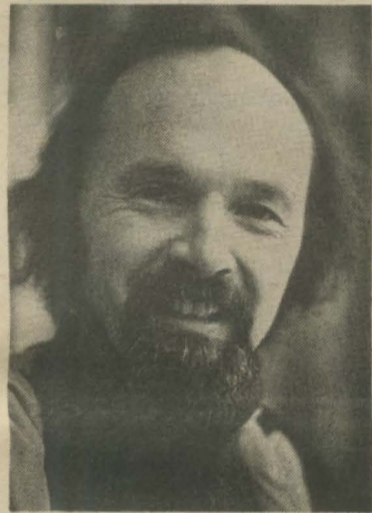
Aris is a member of the journal's editorial board. Dolan and Glick are extremely pleased with their success at recruiting board members; others are G.E.M. Anscombe of Cambridge University, Stanley Cavell and Robert Nozick of Harvard, and noted linguist and philosopher Noam Chomsky of MIT.

But those primarily responsible for the *Quarterly* are Minnesotan: "Diverse in our backgrounds and interests, we share a deep respect for Thoreau's work," the editors write in the introduction to their first issue. They pay

special homage to Harold Kittle-son, who is the principal donor to the Minneapolis Public Library's New England Collection.

Dolan said he thinks he and Glick can make *The Thoreau Quarterly* a viable journal. Subscribers now total 420. He figures between 1,500 and 2,000 subscriptions, a number they hope to reach in a few years, will be necessary for the journal to be self supporting. Meanwhile, the editors intend to approach foundations and other funding sources.

When the secretary of the Harvard class of 1837 sent a questionnaire to all surviving members 10 years after graduation, Thoreau "answered grudgingly," Glick writes.



John Dolan

In a postscript Thoreau wrote: "I beg that the Class will not consider me an object of charity, and if any of them are in want of pecuniary assistance, and will make known their case to me, I will engage to give them some advice of more worth than money."

That advice has inspired the British Labour movement, Mohandas Gandhi, Martin Luther King, Jr., and countless thinkers, naturalists, and ordinary folk. The *Thoreau Quarterly* is further evidence of its endurance.

Annual subscription rate for *The Thoreau Quarterly* is \$12, for students \$8. Inquiries should be directed to *The Thoreau Quarterly*, 355 Ford Hall, 224 Church St. S.E., University of Minnesota, Minneapolis, Minnesota 55455.

President's Summer Reading Confirms Deepest Values

President C. Peter Magrath told the regents in September that his summer sabbatical leave was refreshing and stimulating—and that he was "as glad to be back" as he was "to have been briefly gone."

In his reading and reflecting over the summer, Magrath said, he found that "there are no 'bolts from the blue,' yet there are renewed understandings, new information, new perspectives, and certainly insights that have reconfirmed and strengthened some of my most fundamental convictions."

Most of the president's reading was on international education, food and development issues in the Third World, and trends and issues in higher education. Following are some excerpts from his report to the regents.

...I would like to state my renewed conviction that a major priority for the United States must be a much stronger, renewed commitment to economic development overseas, to a concern with food and nutrition, in short, to an effort to eradicate the unspeakable poverty and hunger that affect more than a quarter of this world's population, breeding hunger, social discontent, and instability that has a direct impact—and will even more if not corrected—on our country.

Development assistance, and I am not referring to the handing out of largesse or what used to be called "foreign aid" in the sense of commodity transfers, is an issue that has honorably involved America's leading universities, including this one. The arena of development assistance is one of the strategies that can provide global stability, address the real problems of hunger and poverty, and at the same time open up export markets for the United States in a very legitimate economic sense.

We have not articulated effectively in this country the fact that our own national security interests are served by a vigorous, pragmatic policy of development assistance and international educational exchange. Moreover, I am now persuaded that the food and agricultural policies and market in-

centives are fundamentally wrong in most low-income countries.

For example, despite their severe malnutrition, most African, South Asian, and Latin American nations apply their scarce agricultural productivity to promoting export crops for the richer countries, such items as coffee, cocoa, sugar, jute, or bananas. But if, instead, these countries engaged primarily in cereal production, this would eliminate the need for all cereal imports in Africa and Latin America!

Naturally, the rationale behind these export cash crops is to earn foreign exchange, itself a superficially logical strategy. Unfortunately, the foreign exchange is rarely used in a substantial way for rural and agricultural development. Instead it is allocated to fancy nonagricultural development projects and to serving the needs of urban-based populations in the Third World countries, because these are the political groups that can make the political elites in their nations respond to their short-term interest.

In short, much of the foreign exchange earned through the export of cash crops goes to serve urban interests at the expense of the food and income needs of the rural poor. It is much easier to state what should be done than to bring it about, but clearly understanding ought to begin with the proposition that development strategies should be fostered, collaboratively with the host countries that would promote public investment, incentives, and trade focused on agriculture and not biased toward promoting urban growth. Surely this is compelling logic when one realizes that two thirds of all citizens in poor countries, including about 80 percent of the truly destitute, depend on agriculture for their livelihood.

Americans are not mean-spirited. Indeed, on a case-by-case basis we often respond generously to national disasters both in our own country and elsewhere. With dialogue, more education, and vigorous assertion by leaders and spokespersons in government, in civic life, and in universities, we must try to get the United States to address the problems of the Third World imaginatively and boldly if we wish for global stability and a fulfillment of legitimate American interests.

Today we are investing only an

infinitesimal fragment, about 0.27 percent, of our gross national product in development assistance, far less than we did as recently as 1967 and less than virtually every economically developed country in the world with the exception of Italy....

Similarly, international education in its broadest sense must be a high priority for our colleges and universities. This is not a wishful, "nice" ornament for universities such as ours to be engaged in: it is a reality that is already here. The number of international students in the United States has increased dramatically to more than 300,000 in recent years and is projected to grow significantly, perhaps as high as one million by the early 1990s.

We learn from students from other lands, just as they learn from us, and myth and prejudice to the contrary they contribute usefully to our economy and balance of payments. In fact, very little United States subsidy

is invested in international students, but we must address carefully and thoughtfully how we wish to maximize benefits all around from international education. It is no exaggeration to suggest that one of the great challenges and tasks for America's colleges and universities between now and the end of the century will be to make available our space, our laboratories, and our classrooms to students from other lands....

Our universities must be concerned with raising moral questions and moral issues and providing alternatives and choices for our society and its decision makers.

This is a difficult and complex subject, which I am trying to address in an essay I have drafted. Although I do not believe it either possible or desirable for governing boards and universities as corporate entities

Magrath, p. 15



"Travels With the President," an exhibition of photographs by Diane Skomars Magrath, is making its way to all University campuses. It will be shown on the Waseca campus January 19 to February 15, on the Twin Cities campus March 1 to April 1, on the Crookston campus April 4 to 29, and on the Morris campus September 20 to October 16. Above is Peter in Peking, September 1981.

Diana Murphy: From Advocate to Judge



Diana Murphy

by William Hoffman

One day in May 1972, tear gas wafted over Northrop mall and into Fraser Hall, where Diana Murphy was studying law. Murphy had returned to her alma mater after 13 years of political activity and community involvement, hoping that a law degree would enable her to work more effectively for her many social concerns.

"Students wore battle clothes to school then," Murphy—now Judge Diana Murphy—said in an interview in her judicial chambers at the federal courthouse in Minneapolis. "I was different. I wore a skirt. But I shared some of their concerns and interests. I had been involved with black and Native American causes and the antiwar movement."

The previous fall, Murphy was uncomfortable during her first week of law school on the Twin Cities campus because, at 37, she was one of only three older

people, and she was made to feel it. "I felt isolated at first. Some people thought that I shouldn't be there—that I was taking the place of a man. Then I started making friends. Not many people have the opportunity to make friends with a different generation."

Extracurricular activity marked Murphy's law school experience: she was editor of the *Minnesota Law Review*, a member of the Minneapolis Charter Commission, on the board of directors of the Minnesota Civil Liberties Union and the Urban Coalition—and she still found time to crack casebooks and attend to family responsibilities.

"It was a difficult time, a big change," she said. "Ideally, I would not have been as involved as I was. I could have turned them down, but I felt that many of these activities—the Constitutional Study Commission and the Law Forum—went along with the study of law."

Murphy graduated magna cum laude in 1974. After working

briefly for a Minneapolis law firm, she was appointed to the municipal bench by then governor Wendell Anderson, whom she had met when they were University undergraduates in the early 1950s.

Two years later, Governor Rudy Perpich appointed her district judge, and in February 1980, she became one of the 41 women appointed to federal judgeships by Jimmy Carter during his presidency, one of Carter's most remarkable feats. Her position is for lifetime.

Not an advocate

"I am in a different position now. I am not an advocate. It is important to approach each case with an open mind and to examine the facts, which are the most important elements," Murphy said.

She concedes that each judge

"brings his or her own background to the bench and that does make a difference in how a case comes out sometimes, but I've taken an oath to uphold the Constitution and to seek equal justice."

The Constitution is a special document to any judge, but especially to Murphy, with her longstanding interest in constitutional rights and civil liberties. There is "no dearth of opportunity to deal with civil liberties cases, and I have a natural interest in them, but that doesn't affect the way I rule," she said.

Murphy admires the Bill of

There's too little information about the adversary system and what it means.

Rights, but it's the constitutional provision for the separation of powers that she finds ingenious. "There's nothing quite like it anywhere else," she said. "The more I think about it, the more

I realize why this job must be for a life term."

President Reagan's proposed anticrime legislation, which some experts fear would erode constitutional safeguards, is not entirely novel. "Some of the same legislation has been kicking around in the omnibus crime bill for some time," Murphy said.

One element of Reagan's proposals that particularly troubles Murphy concerns the insanity defense. "The numbers [of defendants pleading insanity] are so minuscule. I'd hate to see us lose sight of the proportion."

Besides its anticrime efforts, the Reagan administration is characterized by its retreat from Carter's policy of appointing women and minorities to federal judgeships.

The appointment of Sandra Day O'Connor to the U.S. Supreme Court is "very important and significant," Murphy said. "I don't consider it a token one. You have to remember that the President committed himself to appointing a qualified woman to the Supreme Court during the campaign, but he didn't promise to seek women for other judgeships."

The matter of appointments to the federal bench is genuinely political, she said. "I don't think that's bad. You learn the give and take you need to be effective through political experience."

Lawyers and ethics

A Gallup Poll last year showed that lawyers rank last among professionals when it comes to public trust—well behind pharmacists, dentists, doctors, and police officers.

Murphy thinks the dismal public perception of lawyers' honesty and ethical standards is related to the adversary system. People get "impatient and frustrated" with legal process and procedures. "There's too little information about the adversary system and what it means. People end up saying that it just costs money," Murphy said, alluding to the recent retrial of Juan Corona, in which—at a re-

ported cost of \$5 million to California taxpayers—he was again convicted of murdering migrant workers.

The innocent person accused of a crime "comes to appreciate the

Tom Foley

adversary system—the procedural rights and constitutional protections.” Those critics, once they are directly involved in the system, often change their minds, Murphy said.

Murphy is currently a member of the judges’ advisory committee on ethics and responsibility of the American Bar Association (ABA). The ABA is looking at ways to improve the public image of the profession. One proposal being considered would strike a balance between a client’s right of privacy and the public’s need for protection. The profession has been criticized for placing too high a value on protecting client confidentiality, even when a client tells his lawyer he intends to commit a crime.

Also, bar and lawyers associations should offer more public services, Murphy said. The public “doesn’t seem to be aware” that many lawyers are already volunteering for such services to people who can’t afford standard fees.

A challenging career

Being a federal judge is “a fascinating and challenging job” for Diana Murphy. “All the world is brought to your doorstep. It’s like some of the people you deal with were ordered up from central casting.”

Murphy prides herself on her management skills, which she said she acquired as a community activist. “There are 300 cases pending at any one time, and about 50 new ones each month. That means we have to dispose of 50 just to stay even,” she said. “You begin to think of ways to move the calendar along.”

Murphy reads all U.S. Supreme

Court cases and those of the Eighth Circuit Court of Appeals. She reads Minnesota Supreme Court cases that have a bearing on state law, and there is a pile of letters from prisoners on a shelf next to her law books.

“The job does have a tendency to eat up your whole life,” she said. Sometimes she finds that she either has to stay late at the office or take work home. “It’s tempting to take work home, but there has to be a life outside of work or you will burn out.” But with experience and an excellent staff, she said she is “spending less time doing more.”

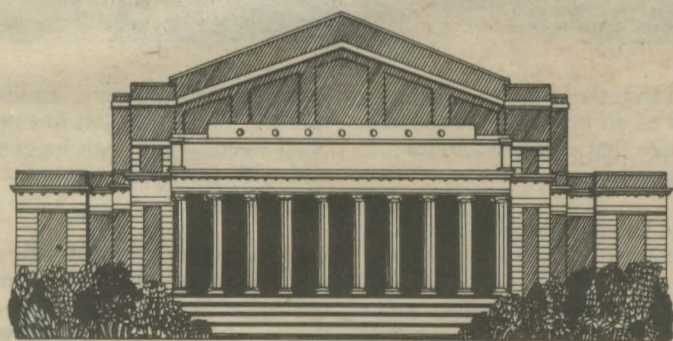
Although she still maintains various community activities, she hasn’t had as much time to spend with friends as she’d like. That’s her biggest regret, she said.

A past president of the University of Minnesota Alumni Association, Murphy credits the University a great deal for her professional success. “The Uni-

I realize why this job must be for a life term.

versity taught me and paid my way,” she said. As an undergraduate, Murphy was a member of the Student Project for Amity Among Nations, which sent her abroad one summer to study student housing in Germany. Later she won a Fulbright award to study history at the University of Mainz.

Then law school “opened up new opportunities for me.” It is belaboring the obvious to say that she has made the most of them.



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Regents Approve Budget Request

by Elizabeth Petrangelo

A “modest and restrained” University request for a \$49 million increase in its biennial appropriation from the state was approved by the Board of Regents in October.

Under the current guidelines from the state finance department, more than half of the increase requested for 1983-85 is regarded as “same level” of activity, said Stanley Kegler, vice president for institutional relations.

Kegler called the request “the most sparse request we have put forward in the last two decades. This is clearly not a laundry list. It’s not a political list. It is a hard-nosed, hard-hitting educational document that is quite tight.”

The \$49 million increase would come on top of the University’s current \$757.9 million biennial base of state money. The total University budget for this year is \$818 million. Some 33 percent of that amount comes from the state; the rest comes from the federal government (13.8 percent), private sources (6.1 percent), sales and services (33.7 percent), tuition and fees (11.5 percent), and general income (1.9 percent).

The \$49 million represents a 6.47 percent increase, Kegler said. Since roughly half that amount is required to cover the costs of inflation, the actual increase is only 2.8 percent, he said.

Money for faculty and staff salary increases is not included in this request. That amount will be brought to the regents in November or December. Salaries absorb about 60 percent of the University’s state money.

Because of a \$762 million revenue shortage at the state level, the University was forced to make budget reductions in the current biennium of close to \$27 million. Further internal budget cuts were made to raise money that was used to supplement faculty salary increases and some of the highest priority activities identified in the planning process.

Kegler told the board that this biennial request was put together differently than past requests. In previous years, the University has gone through what Kegler called a “blue sky” process, where planning did not necessarily determine the scope of the budget request.

“This is the first time that we have totally closed the loop,” he

said. The request results directly from two years of rigorous planning. Instead of being asked for their needs and wishes, deans were informed that, based on priorities set up during the planning process, they either were or were not to receive increases during this go-round. “We did not have to raise aspirations and then dash them,” Kegler said.



Stan Kegler

The biennial budget request includes \$11.3 million for fuel and utilities, \$1.4 million for solid and hazardous waste disposal, and \$1.7 million for skilled trades salary increases. None of these is avoidable, Kegler said.

Other items included in the request are:

\$12.9 million to cover inflationary increases in supply, expense, and equipment budgets;

\$2.5 million to buy books and other publications for the general library and the Law Library;

\$400,000 to increase funding for the internal legal staff, thus reducing the amount of work contracted to outside law firms;

\$1.2 million to continue computerization for student financial aid;

\$4 million for general instruction equipment;

\$1 million for remodeling academic facilities;

\$1.1 million for computer education;

\$335,000 for international activities;

\$2 million in faculty and staff improvements for the Institute of Technology, the College of Vet-

erinary Medicine, and the School of Public Health;

\$1.5 million to restore the Micro-Electronics and Information Sciences Center and to establish a special literacy project in the College of Liberal Arts.

A request for \$89.7 million in capital improvements is broken down into a set of critical needs and a set of other pressing needs. The critical needs list includes a \$6 million supplement for those building projects currently on hold because the state has not sold the bonds to pay for projects already approved by the legislature. At the University, that bond problem has affected several projects, including buildings proposed to house the agronomy department, the School of Management, and the Humphrey Institute of Public Affairs.

UPDATE

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Patience Pays Off at Cloquet Forestry Center



Tom Foley

by Nicole Simmons

Nobody puts more stock in the future than Al Hallgren and his colleagues at the University's Cloquet Forestry Center. These scientists consider the forest their laboratory, and many of the experiments they design will still be producing results in the 21st century.

"It is difficult for most of us to

look ahead even four or five years, much less twenty," said Hallgren, who has directed the center for the past seven years. The setting—a cluster of buildings in a serene pine forest southwest of Duluth—seems to invite such philosophical reflection.

The center was established in 1910 by Samuel Green, the first head of the program that evolved into the College of Forestry on the Twin Cities campus. Administration of the center and management of the original 2,215 acres and later additions have been under the college's

direction ever since.

"Most people don't know what forestry is all about," Hallgren said. "They think of planting trees, fighting fires, sitting in the [fire] towers, and that's about it."

Forest management has grown sophisticated since the days when loggers used to cut down trees indiscriminately, and wood-

based industries are treating wood as an important renewable resource that requires careful management.

At the Cloquet Forestry Center, scientists experiment with management procedures that affect timber, wildlife, recreation, and water. The forest's most conspicuous asset is its trees, and several of the experts on the center staff are silviculturalists—specialists in the development and care of forests. Geneticist Bob Stine works on crop improvement,

Professor Bruce Brown studies the soil, and extension forester Scott Reed works with loggers and with private owners of timberland.

Al Alm, professor of forestry, points out the most important quality for a tree grower: patience. The fundamental difference between growing trees and growing food crops is that "in agriculture you get a new crop and see the results every year.

In silviculture you have to wait many years," he said.

The length of the wait does not discourage planning at the forestry center. Its administrators collaborate with College of Forestry faculty members to plan use of the land for research projects, testing of measurement systems, and demonstrations of techniques and equipment for the four steps in tree growing: harvesting, site preparation, planting, and thinning.

To plant young trees, the foresters first have to cut down or "harvest" the old trees growing on the lot. The center usually hires one of Minnesota's 8,000 small logging companies for the job, but it is the foresters who decide how the harvesting will be done. They decide on the season, the equipment to be used, which parts of the trees the loggers should haul away to sell to the paper mill in Cloquet, and which parts they should leave to decompose on the site to provide nutrients for the next generation of trees.

Harvesting has shifted from labor-intensive manual methods to capital-intensive mechanized processes ranging from the familiar chain saw to sophisticated hydraulic systems. "It's a different world out there now," Hallgren said. "We have lost the romance of the old-time logger with his cross cut saw and axe. The woods used to be quiet even during harvesting except for an occasional logger yelling 'Timber!'"

Site preparation "is comparable to a farmer plowing a field before planting the crop," Hallgren said. One way to prepare the site is with rakes and studded drums drawn by tractors. Although a site that is prepared in this manner doesn't have the orderly look of a plowed field—in fact it looks to the layperson as if it may have been hit by a bomb—within one growing season it is thickly covered with undergrowth.

Controlling the undergrowth is a continuous struggle. One of the purposes of site preparation is to knock down or burn away ground vegetation that would compete with tiny seedlings. Chemical herbicides are fairly successful in controlling broad-leaved plants while leaving conifers intact, but use of herbicides in the forest is opposed by environmentalists. Hallgren finds the opposition ironic since only 2 percent of herbicides used commercially are used on forests; the rest are used in agriculture and in horticulture—to keep crabgrass off city dwellers' lawns, among other things.

Foresters often don't plant seeds; instead they plant seedlings grown either outside in a nursery or inside in a greenhouse. Seedlings in a greenhouse at first look like a sea of grass ranging in color from lime to forest green. A closer look reveals thousands of tiny red pine, white pine, and spruce trees packaged neatly in containers—trees known to the professionals as containerized seedlings.

The packaged trees grow in soil-filled cavities in the containers. They were introduced to Minnesota by Alm and others to make tree planting faster and easier during a short planting season.

wood production is an art, said Alm, who teaches forestry students to make these decisions. And removing the correct trees without damaging their neighbors requires skillful work on the part of the logger.

A three-wheeled tractor called a feller-buncher is ideal for thinning closely planted stands of trees. In June the center allowed an equipment manufacturer to demonstrate its newest feller-buncher in a stand of 30-year-old red pine planted about five feet apart.

The tractor maneuvered deftly between the rows. To remove a

measured for the "continuous forest inventory," one of several systems that are being tested at the center.

For the inventory, the number of each type of tree on a plot and the diameter of each tree four feet off the ground are recorded. Only through effective forest inventories can we know how our country is doing in meeting present and future timber needs, say the foresters.

Studies at the center focus not only on red pine and spruce, Minnesota's traditional lumber and paper trees, but also on other species hardy enough to

plished by aspen management, and he has persuaded three Minnesota counties to use their aspen forests to supply both wood for industry and a habitat for grouse.

"One of the intriguing things is that ruffed grouse are one of the last species to benefit from ruffed grouse management," Gullion said. His complex aspen cutting scheme reduces the habitat for the grouse's predator—the goshawk—and for squirrels, but improves it for 17 species of songbird.

Research, whether on trees or animals, is by no means the only mission of the forestry center. Among its most important functions is the fall-quarter forestry session required of forest resources students in their senior year. Courses are oriented toward the practical work of a forester. Alm, for instance, gives his silviculture students a "compartment exam" in which they inventory the trees on a block of land and devise a management plan.

"The field station is a strength of our [undergraduate] program," Alm said. "That's kind of unusual in the college environment—to be with your peers for 10 weeks living and eating together." Hallgren believes that the field session gives Minnesota forestry graduates an advantage in the job market over those with less field training.

Though the forestry center's emphasis is on practical experience and practical solutions, Hallgren tends to wax philosophical about its mission. He is dedicated to preserving both the beauty and the utility of Minnesota's forest land.

Contradictory goals? Not really. If forests are managed properly, Hallgren said, the same land that provides us with paper and lumber can retain natural beauty.

Minnesota's forest research center is proceeding toward the 21st century with that ideal in view.



The greenhouse seedlings mature to planting size in six months, six times as fast as "bare-root" nursery trees, and can be planted with a tool that requires less bending on the part of the planter.

And while bare-root seedlings often go into shock after being planted, the packaged plants can be plucked right out of their containers—soil, roots, and all—and adjust readily to their new surroundings. They can even be planted during the growing season; bare-root seedlings have to be planted during a dormant period.

Sophisticated machinery can be used for the delicate process of thinning, a procedure that is often necessary if the stand is to produce much wood. The more trees there are per acre, the skinnier they are. Even though there might be the same total amount of wood in a greater number of thin trees as in fewer but heftier specimens, it is not as valuable and is more costly to harvest.

Deciding which of the trees in a stand to remove to get the best

particular tree, it grasped the trunk vertically with a claw attached to the front of the tractor and simultaneously cut the trunk with a blade on the bottom of the claw, then lifted the tree away from the stump. The tractor could pluck up three or four more trees before it needed to lay down its bundle.

These trees, 30 feet tall and seven inches in diameter, were planted by forestry students as part of a Christmas tree project, Alm said, but the project fell through and the trees had been left to grow at their original close spacing.

Some areas of the center like the Christmas tree stand are designated for experiments in commercial production. Others are used for experiments in forest measurement—assessment of what is in the forest and how well it is being managed. Every five to eight years, 440 plots are

withstand the Minnesota climate.

Aspen, the state's most common tree, was underutilized until it was accepted by the paper industry and also began to be used widely in board made from bonded wood chips and flakes. "Now they are talking about aspen shortages, when not long ago aspen was considered a weed tree," said Marsha Samways, a former graduate student at Cloquet.

Gordon Gullion, professor of wildlife and leader of the wildlife project at the forestry center, is even more interested in aspen trees than the wood products industries are. Recently dubbed the "guru of grouse" by the Duluth *News-Tribune*, Gullion has spent the past 25 years studying the ruffed grouse, the most widely distributed game bird in North America.

Grouse eat aspen buds, shelter in aspen groves, and defend their breeding territories from headquarters on fallen aspen logs. Gullion believes grouse management can best be accom-

'Mystery' of Art a Challenge to Myers

by Judith Raunig-Graham

Fans of Alfred Hitchcock's films enjoy watching for the portly fellow to make a brief appearance. Art viewers might be equally delighted trying to pick out artist Malcolm Myers in his paintings and prints. He's usually there and so is his dog.

At 65, Myers is an established artist with a national reputation. He was included in *American Prints and Printmakers* by Una Johnson, published in 1980. He has works in collections throughout the country, from the Walker Art Center in Minneapolis to the Museum of Modern Art in New York and the National Gallery of Art and Library of Congress in Washington.

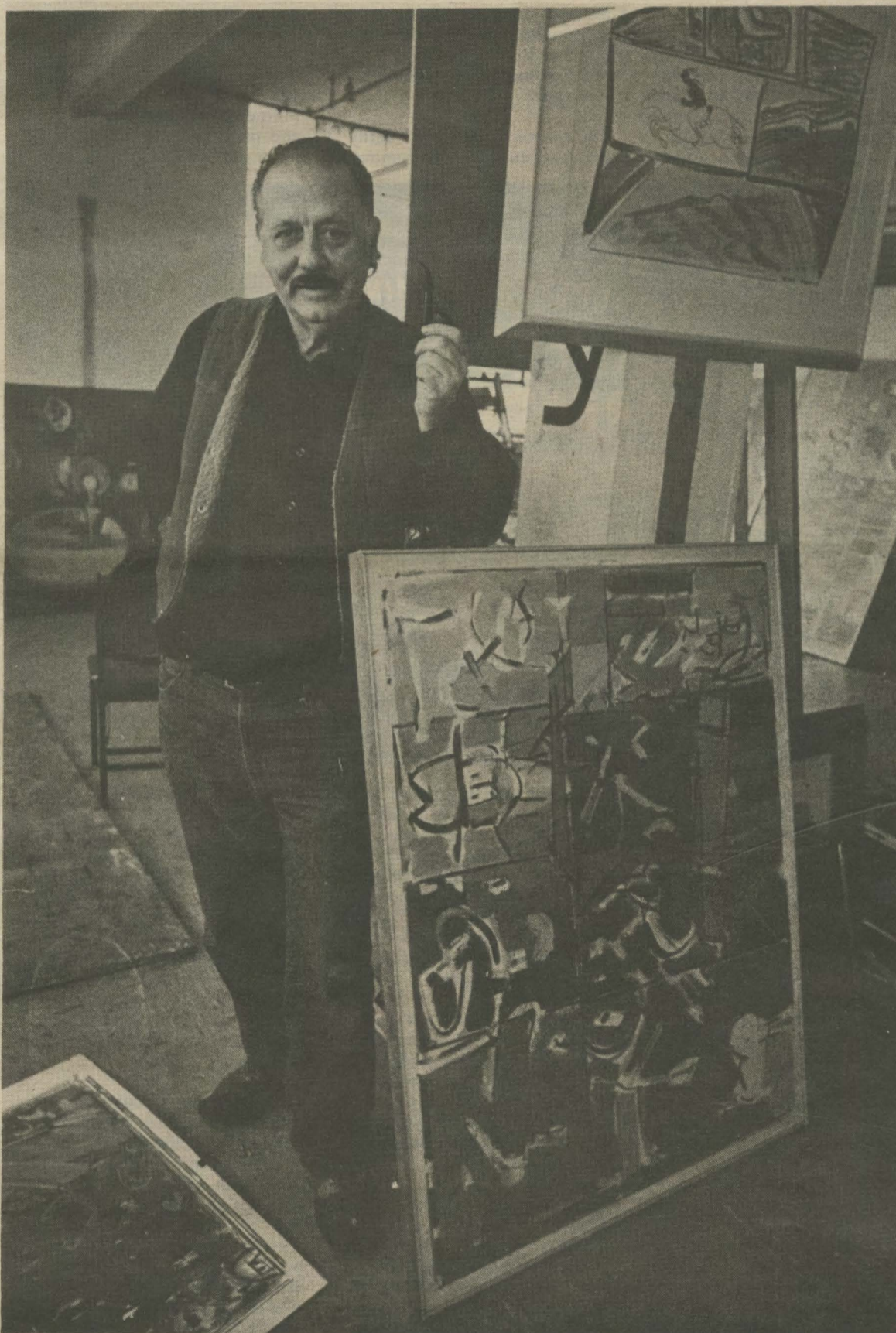
Yet Myers describes himself as a simple man who, after a lifetime as an artist, still believes art is a mystery. "I've been in it all my life and I still don't know what I'm going to do when I start out," Myers said recently in his loft near the Twin Cities campus, where he has taught in the studio arts department since 1949.

"I still just work and try to learn more all the time," he added, dabbing a bit more color onto one of the large canvases propped against the wall. "It's always a challenge. I find it very interesting because of the endless possibilities."

Subject matter in Myers's work runs from animals to jazz to religion. He has painted cowboys and Indians, farm silos and toys. Titles range from the whimsical *Mr. Possum* and *Minnesota Rabbit* to the serious *Crucifixion* and *The Last Supper*.

"The subject isn't important," Myers said. "If you've got talent and you're a good artist anything you paint is going to be good. I like to paint the things I like in life."

Myers believes that many elements in his work, like the animals he often depicts, reflect the interests of his childhood in Missouri and Texas. "I've always loved animals, even as a child. I was just intrigued with the animal world and birds. I don't know why everybody isn't, because they are the only other things alive on earth.



Malcolm Myers

They're all part of the whole picture. I suppose in some way, maybe subconsciously, by doing a lot of these animal things I'm trying to show their importance."

Early in his career, Myers studied with two renowned artists who have had an influence on contemporary printmaking, Mauricio Lasansky and William Hayter. He studied with Lasansky as a graduate student at the University of Iowa in 1945 and with Hayter when he won a Guggenheim Fellowship to study in Paris in 1950. He visited museums and castles in Europe that later inspired him to use medieval pageantry as the focus of several paintings.

In 1954 he received a second Guggenheim Fellowship and spent the year in Mexico City. There he developed an interest in ancient civilizations and began a collection of pre-Columbian sculpture. Collecting sculpture is still a favorite pastime.

Myers said he likes to approach his art like a jazz musician plays music: he likes to improvise. "I work intuitively and I like to approach it off the cuff. I find out what I'm trying to do after I get into the painting, which is like the abstract expressionists and their philosophy: to find the painting in the painting.

"That's not to say that the intellect and the mind don't enter into it. I study it over and I analyze it, but I have to have that freedom in approach," he said.

Eventually, Myers said, he would like to live on Long Island because New York is where the "real action is in art." But he's not planning to retire soon.

"I'm still trying to make a stronger statement and a better painting. I'm trying to fuse some content and emotion and how I feel about life and the world."

Tom Foley



Fox in Costume, 1962 (top left). *Two Knights*, 1951 (top right).
Knight, Death, and the Devil, 1961 (bottom left). *Mr. Possum*,
 1962 (bottom right). The University Gallery is featuring "Mr.
 Possum and Friends: Prints by Malcolm Myers" through January
 16.

Bush Sabbatical Frees Time To Replenish Resources

by Maureen Smith

The way Sam Krislov sees it at the beginning of his sabbatical year, receiving a Bush sabbatical is "a big and beautiful thing."

The Bush Foundation gave \$900,000 to the University a year ago to support sabbatical leaves for 25 to 30 midcareer tenured faculty members for each of the next four years. Krislov, a professor of political science on the Twin Cities campus, is one of the first 25 recipients. With the Bush money, they will receive up to 40 percent of their annual salary in addition to the normal sabbatical half salary.

Half a salary doesn't go very far, Krislov said, and in recent years not many faculty members have taken sabbaticals. When they have, they have needed to find another source of income—typically, an opportunity to teach abroad—and the experiences have been interesting but not always as productive or renewing as they might have been.

With the Bush money, Krislov said, he will be free to spend his time in a way that will enrich his scholarship and add to his skill as a teacher. "It's a form of replenishment of intellectual capital," he said. "Most people try to live off the ideas and training they got in graduate school many years ago. You have to invest in new things, and yet it's very risky to do."

Another grant 15 years ago—from the Russell Sage Foundation—gave Krislov a chance to develop a new area of research, on the use of social science evidence in the courts. He expects that his year on a Bush sabbatical will enable him to expand his knowledge of comparative law, a subject of growing interest for him as both a scholar and a teacher.

Even when money is available to support a new research interest, Krislov said, it is risky to venture in a new area. "The more you've done, the less likely you are to do it." A faculty member who has won respect and achieved distinction in one area of research may feel shaky about going into something new. But Krislov believes such ventures

are essential for a faculty member's intellectual vitality.

For the past three years Krislov has been working on a project out of Florence, examining the European Economic Community (the EEC, or the Common Market) in the light of the American experience. He recently wrote a paper about it, and the experi-

be spending the first half of his sabbatical developing course materials on comparative law.

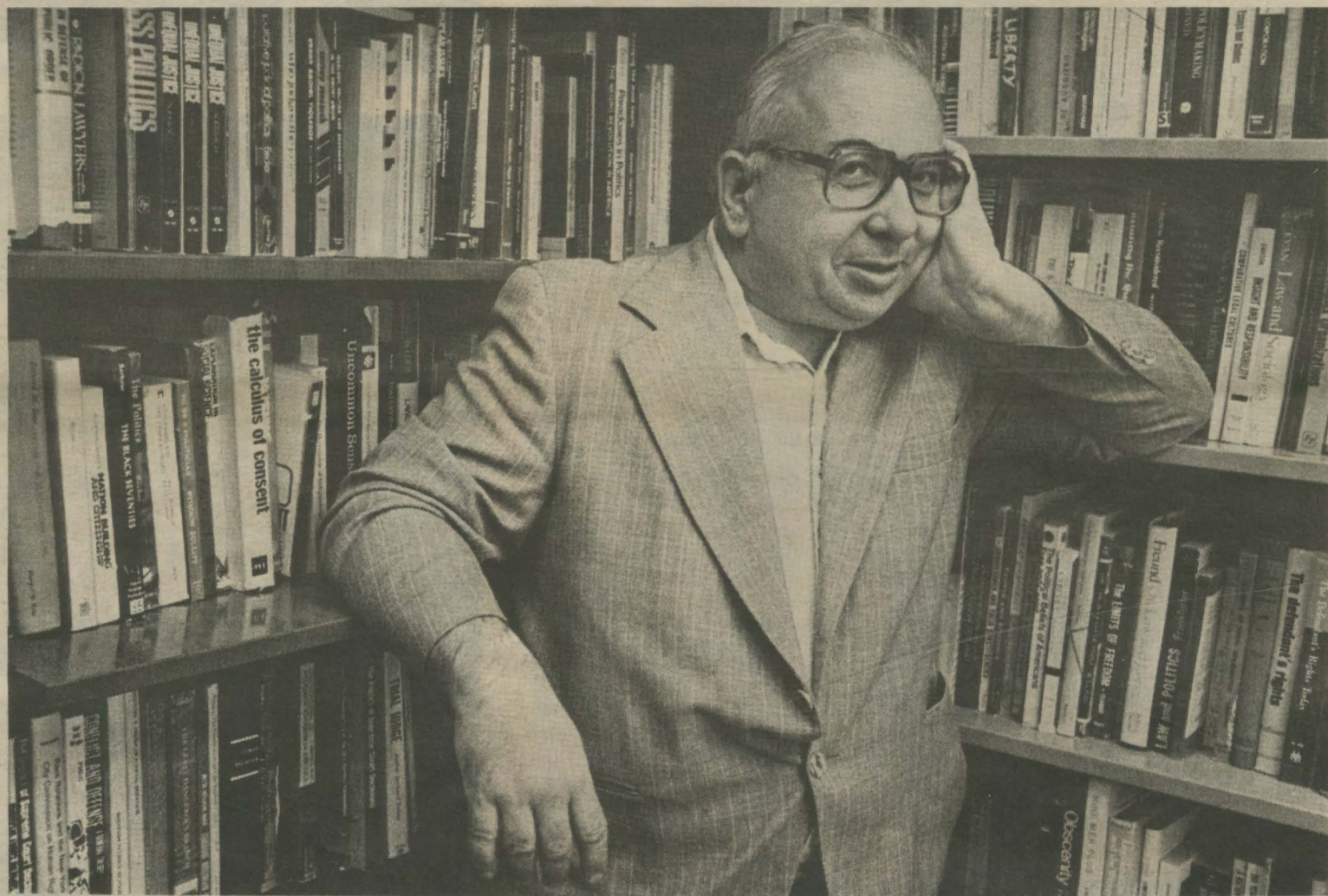
The timing is perfect, he said, because the political science faculty had been changing their courses around and wanting to make them more comparative. "That happened to mesh" with the Bush award, he said.

cing cases are found in precedents provided by past decisions. "Surprisingly little has been written for students about common law," Krislov said.

Civil law, a modern legal system based upon Roman law, is the prevailing system of law in the countries on the continent of Europe and the countries that

to incorporate into more of their teaching. "A third of the world is living under religious law, mostly Islamic," Krislov said. "We find it such a different way of looking at the world, but if we go back 700 years our ancestors were living under religious law."

African law is not one system at



Samuel Krislov

ence was a reminder to him of how unnerving—and how rewarding—it can be to publish in a new field.

"It was the hardest paper I ever wrote in my life. As I wrote every line, I felt insecure." After he mailed it off to his colleagues—"with some trepidation"—one of them called him from Florence and told him it was brilliant. For Krislov, the call was not only gratifying but truly reassuring.

All kinds of law

One requirement for receiving Bush sabbatical money is that the work plans must show a definite contribution to undergraduate education. Krislov will

find materials on comparative law for teaching purposes is "not as easy as it sounds," Krislov said. "A lot has been written, but very little has been written for students."

Common law is the system of law that prevails in England and

were once their colonies (such as the Latin American countries). In contrast to common law, civil law is based on written codes and statutes. "That's been relatively well written up," Krislov said.

A variation of civil law in the

You have to invest in new things, and yet it's very risky to do.

in countries once colonized by England, including the United States. Its unique feature is that it represents the law of the courts as expressed in judicial decisions. The grounds for de-

Eastern European countries is usually called socialist law.

In the United States, Louisiana is at least nominally a civil law state. Canada is a common law country, but Quebec is a civil law province.

Islamic law is a system that Krislov and his colleagues want

all, Krislov said. "It is very individualized. Fine works have been written on individual countries, but there isn't much that has been generalized." For teaching purposes, he said, it may be necessary to choose one or two countries as examples.

Chinese and Japanese law are also "distinctively different," he said, and there are "not too many Westerners who have mastered those systems."

As a child Krislov witnessed another kind of law as people came to his father, a rabbi. "He was often a mediator. To a large extent this was a law that could not be enforced anywhere, and yet people brought their disputes to the rabbi." The experience

gave Krislov insight into what it is that people are seeking from the law. But he said his brother, a labor mediator, is often explicitly instructed not to split the difference in a dispute. "People are often happier if they think they got justice than if they think each got half a loaf."

Students who learn something about comparative law will see that "there are a lot of different ways of organizing legal systems," Krislov said. Some things are consistent from system to system. For example, he said, there must be something intrinsic in the business of drawing up a contract that has made contracts pretty much the same across time and across cultures. It is instructive to learn "what things are the same and what are the things that people do differently."

Human rights and nations

For the second half of his sabbatical, Krislov will be trying to test the hypothesis that nations benefit from giving rights to their citizens.

"There is an assumption in liberal writing that the tradition of human rights is not just good for people but good for the government, good for society. I want to test that as much as possible."

In two places in the world, Krislov said, systems that have had trouble gaining loyalty have turned to human rights. One is Canada. Along with changing the flag and the national anthem, he said, Prime Minister Pierre Trudeau has looked to human rights as a way of "making people feel better about Canada."

The other is the EEC. "Economically the EEC has succeeded beyond anyone's wildest dreams," Krislov said. "But if you ask people on the street, they don't care very much." In an attempt to gain loyalty, the EEC has focused on human rights. "They have protected migratory workers in a way that's phenomenal. They just ruled that Great Britain was not doing enough for women's rights."

For his research, Krislov will be going to Holland, to an institute in The Hague that has EEC data that looks as if it should be useful.

"A number of people have pushed for human rights as a way to get popular support. The question I'm asking—and I'm an agnostic on it, I don't have an

opinion—is 'Does it really work?'

"I think there are many costs to human rights. I'm not sure it's a plus for a regime. I don't know what it means if it isn't, but that's the kind of question political scientists ask."

An interest in Israel

As a side interest, Krislov recently wrote a paper on the mutual involvement of Israel and the United States in each other's politics.

His interest in Israel over the years has been more personal than professional, he said. "My parents were strong Zionists and went to Palestine from Cleveland in 1936. My father didn't find work and came back. I spent parts of two school years there. My mother's family are all there."

He is not a Middle East expert,

There are many costs to human rights.

he said, and his recent paper was "the first thing I felt competent to write" on the subject.

Israel and the United States have intervened in each other's politics in quite different ways, he said. Israel, because of its dependence on the United States and because American Jews are an interest group in this country, "intervenes regularly on trivial as well as important matters," he said.

"The United States, I think quite correctly, intervenes seldom and tries to make its intervention decisive.

"I would argue in the light of what's going on right now that Begin has misunderstood the nature of the relationship," Krislov said, going beyond what he wrote in his paper. "If we have a long-range policy that makes sense, Israel ultimately has to come to grips with it.

"Camp David is an illustration. It was not quite what Israel wanted, but two administrations at least—Nixon and Carter—pointed in this direction. We've been pretty consistent for a democratic society with changes of party. You could take many of Carter's speeches and give them to Reagan.

"I think Israel has to be realistic. I don't think we should be ashamed of saying, 'If we give you most of the tank production in the United States, and leave

our own army weak in tanks, we expect something in return.' We are not altruists only.

"I had no difficulty supporting Israel's position up until about three or four years ago. But it is fairly clear now that they are more the refusers than the other side. I'm not sure the other side is willing to make peace either, but they are at least willing to explore it.

"Israel is hawkish right now. It's a combination of old insecurities and new-found dominance. But I think this is changing. The latest poll shows that more people are willing to be conciliatory. They have more room to be conciliatory. They can take more risks for peace."

(Krislov was interviewed before the massacre of Palestinian refugees in Israeli-occupied west Beirut and the subsequent protest demonstrations in Israel.)

An old hand

Krislov usually has several things going at once. In his sabbatical year he will also begin work as cochair of a National Academy of Sciences panel that will be looking at the problems of the courts in assimilating statistical and social science evidence.

An earlier study for the academy gave him the chance to appear before Congress. He was pleased to learn that he was "the first to testify before the House Judiciary Committee in a turtleneck shirt. I told my kids. They thought I was an old fuddy duddy, but I was a revolutionary."

Krislov has also been active in University governance. He chaired the Senate Consultative Committee from 1972 to 1974 and the Senate Judicial Committee from 1976 to 1978. "I'm an old hand here," he said.

Back when he was on the Consultative Committee, he was interviewed about the structure of the senate and said "the governance of this university is infinitely more complex than the United States government. It's more like the Vatican."

A decade later, he said he has seen some improvements. "There is much more cooperation between the administration and the faculty. I'm not active, but I know from talking to people. President Magrath and especially now [academic affairs vice president] Ken Keller are very anx-

ious to have good relationships with the faculty.

"But the senate is still a labyrinthian structure. It still needs simplifying before it amounts to anything. If we ever get financial exigency, I think we'll find that this stalemated structure will cost us. Either the administration will whipsaw us or we will do it to ourselves.

"Academics don't like to be governed anyway. We're a bunch of anarchists by nature."

The freedom of the academic life is still a strong part of its appeal for Krislov. "Hal Chase used to say we academics were the last free people in the world," he said, quoting his political science colleague who died last January. "We're not that free, but we can dictate 60 to 75 percent of what we do.

"If you want to be lazy, you can do that, too, but there are more consequences than people think—not just in salary increases, but in the way people look at you. Judgments are severe."

In his years at the University Krislov has focused sometimes mostly on administration (he chaired the political science department for six years), sometimes on teaching, sometimes on scholarship. "What I like about academic life is shifting back and forth."

Whatever he is concentrating on at any one time, he is pretty sure to have a couple of other things going. "I usually juggle three or four things. It has its costs, but I find that life's more interesting that way."

Two Named Regents' Professors



Bryce L. Crawford, Jr.

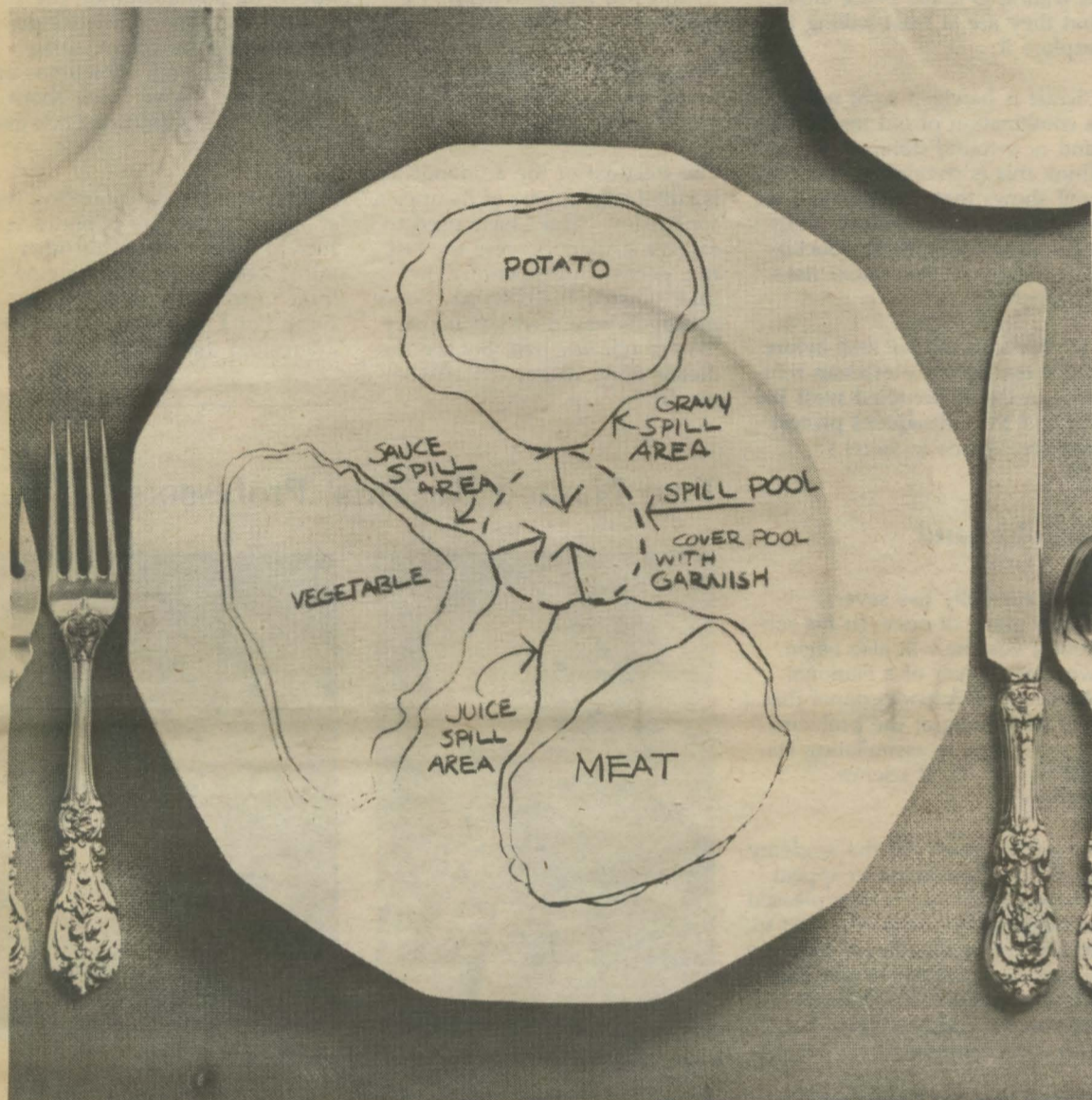


Margaret B. Davis

Two University faculty members were named to Regents' Professorships by the Board of Regents in November. The honor is the highest the University can give members of its faculty.

Bryce L. Crawford, Jr., Regents' Professor of Chemistry, and Margaret B. Davis, Regents' Professor of Ecology and Behavioral Biology, were selected on the basis of their distinguished professional careers and contributions to the academic life of the University.

Refined Table Manners Reflect Lonely Society



At a dinner party these days, each dish is likely to be served on an individual plate. If more than one item is placed on a plate, care is taken to ensure that different foods will not touch each other.

by Paul Dienhart

You are what you eat, the saying goes.

Consider what strange things that meant for a guest at a banquet given by a 13th-century king. In a huge dining hall all classes of society, from nobleman to beggarman, would be served great platters of roast fowl with feathers reattached to imitate life—everything that had wings from bustard to sparrow, with a few rabbits thrown in for good measure. The guests would pass bones around for mutual munching.

At a dinner party these days we're likely to find a carefully selected group of people enjoying separate courses of food, each dish served on individual plates. The steak or chicken Kiev bears little resemblance to the creature it came from. The

guests eat with a decorum approved by Amy Vanderbilt.

If this means we're somehow homogeneous yet separate, then medieval people were a strange mix that nevertheless formed a whole.

The changes in table manners over the centuries is one example Yi-Fu Tuan uses in his new book to examine how we have gained individuality at the expense of being a secure part of a richly mixed community. *Segmented Worlds and Self* was published this summer by the University of Minnesota Press.

"We tend to regard the sense of self—the ability to be a unique individual—as good," Tuan, a geography professor on the Twin Cities campus, said in an interview. "But that ability also creates all kinds of problems. How do we go about combining this unique self with the comforting feeling of belonging to a com-

munity?"

Rather than advocate a return to societies of the past, where a sense of community came at the expense of "hierarchical order, economic inequality, and tolerance imbued with condescension," Tuan's book explores ways of creating a community of free individuals. "We want community and we want freedom, but they are actually opposing forces," Tuan writes.

In the Middle Ages the sense of community was such that people shared eating utensils and drank soup from a communal bowl. The meals themselves showed a weird intermingling of ingredients. "In a hare stew one might find cabbage, beets, violets, parsley, leeks, and the tops of young nettles," Tuan reports. As time passed, the trend was toward separation: chairs replaced benches at the dining table, utensils and bowls multiplied, and people began to appreciate the flavor of individual meats.

"Table manners promoted self-consciousness," Tuan writes. One of the first etiquette books, *Courtly Manners*, contained such maxims as "A number of people gnaw a bone and then put it back in the dish—this is a serious offense" and "A man who blows his nose on the tablecloth is ill-bred, I assure you." Another etiquette book from the 15th century advocated spitting on the floor rather than on the table during meals.

Etiquette books were very popular by the 16th and 17th centuries, when it was becoming possible to move up the social ladder. People were being recognized for their individual talents. This replaced the medieval view that everybody and everything had a preordained niche.

Medieval peasants knew they were born to be peasants and had no aspirations to be anything but peasants. "Community springs from necessity," Tuan writes. If peasants were exploited by their liege, it confirmed their place in the community.

The security of feeling all were in their place created a strange mix in medieval society. The lord's house—a huge barnlike structure—was a meeting place for all classes of society. One nobleman went to the extreme of rerouting the kingdom's highway to run through his manor hall so that no traveler could

avoid his hospitality.

The desire for privacy was considered odd. Henry VIII had to issue a special proclamation to explain why he occasionally retreated to an inner chamber. For peasants, privacy wasn't even an option: one-room cottages often housed 20 people.

The few rooms in a lord's house had multiple uses. In 17th-century France, four-poster beds gave their occupants some privacy while other users of the room ate or conducted business.

The constant intermingling of people may have led to the view in the 14th and 15th centuries that even the lowest servant had a place in the master's family. Louis XIV, the Sun King, gallantly doffed his hat to any charwoman he encountered in the corridors of Versailles. By the 19th century, English houses had back stairs to keep the servants as invisible as possible.

The United States was born with the idea of free individuals. Thomas Jefferson pictured the self-sufficient farmer as the ideal American. The immigrants who settled in the new nation had few common beliefs or traditions.

Yet America also was born with the ideal of democratic togetherness, Tuan points out. All these free individuals were expected to mesh somehow and live in harmony.

Tuan sees these contradictory ideals at work in shaping the American house. By the last quarter of the 19th century, houses contained many rooms. Each room had a specific use. At the same time, some architects began to experiment with larger rooms, sliding doors, and removable screens to give rooms many uses.

Neighborhoods show similar contradictions. In recent years there have been attempts to create inner city neighborhoods where different kinds of people live and work in the same community. Then there is the suburb, "the ultimate in homogeneity," fulfilling "the old desire to live with people who share one's beliefs," Tuan writes.

Physical settings, by themselves, can never reveal an individual's

place in the complex world, Tuan cautions. That is a problem people must solve for themselves.

Tuan sees great rewards for those who work at finding the solution. Western culture's emphasis on the value of the individual gives us freedom to explore, to question, to be rational and personally responsible. True friendship, a profound sharing of selves, becomes possible. "Deep personal relationships presuppose the existence of persons, that is, complex and self-aware individuals; but such individuals can emerge only as the cohesive and unreflective nature of community begins to break down," Tuan writes.

"Given the freedom and opportunity to explore self and the world, few individuals in fact do so," Tuan writes. Instead, we tend to be bored and discontented. A common way to escape this feeling is by consumption. We buy things to amuse ourselves, or to help define who we are.

"Much of experience passes us by," Tuan said in the interview. "What impresses us is only the best and the worst. We 'fall' in love and get ideas like bolts from the blue because we don't understand the process. The external world seems to exist apart from us, and we have the uneasy feeling of being unable to control our lives."

In medieval times people accepted the idea of being controlled by an external reality. However limited their lives, they had a secure place in the world. Today we're much more likely to feel lonely and isolated, Tuan writes.

It may be impossible to realize the medieval feeling of being part of a whole while developing as a free individual, Tuan cautions. "Being a whole is not being aware of the parts," he said. "By definition, a whole is something one can lose oneself in. That doesn't fit with being conscious of our individual identities."

With success never assured, perhaps the bravest response is to continue the search for both self and community.

"I think it comes down to the question of what life is about," Tuan said. "That's the question that occurred to me as an adolescent and has remained with me ever since. Writing *Segmented Worlds and Self* was one attempt to look for some answers."

Yi-Fu Tuan: A Geographer Who Maps the Mind of Man

by Paul Dienhart

Undoubtedly the most distinctive newsletter at the University comes on two mimeographed pages and is called "Anecdota." There is some reference to its originating in the Department of Geography, but it contains no notices of staff meetings, exam schedules, or grant awards. Instead, there are insightful and witty paragraphs on topics ranging from Freud to the movie *ET* to thoughts while eating Sunday breakfast at Bridgeman's.

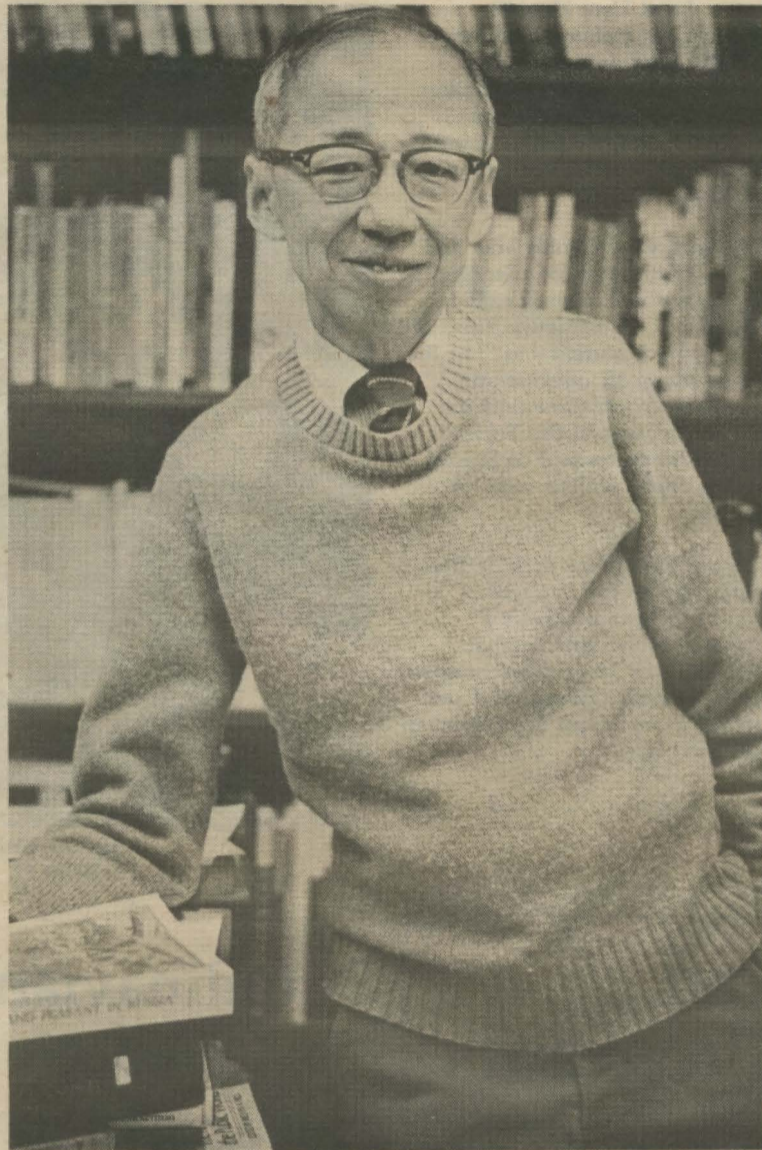
The editor of "Anecdota" and its major reporter is Professor Yi-Fu Tuan, who studies the geography of human experience. He is the author of four books that appeal to people interested in philosophy, anthropology, American studies—and even geography. He teaches a course called *Space and Place* that requires students to keep a personal journal for the quarter and draws students from a wide range of fields.

Tuan began his career with a thesis on the geomorphology of the desert, followed by a fellowship in statistics. In a recent book called *Conversations With Geographers* Tuan traces his unusual career in an interview with Clyde Browning of the University of North Carolina.

The son of a Chinese diplomat, Tuan grew up in many Chinese cities as his family moved to escape the invading Japanese army. In 1940, at the age of 10, he moved with his family to Australia. In 1946 they went to the Philippines, and a short time later his father was transferred to the Chinese embassy in London.

That traveling was one source of Tuan's interest in geography. He also wondered about some big questions concerning man and nature. "I decided to look for answers with my feet planted firmly on the ground," he said. "You can't get much more attached to the earth than by studying geography." He entered Oxford with that intention.

Studying for his doctorate at Berkeley, he fell in love with the deserts of the Southwest. "I've always longed for clarity—this career in the academic world is an opportunity for me



Yi-Fu Tuan

to seek some kind of clarity in life, some pattern." The desert offered a kind of clarity: its lack of vegetation made the landforms obvious.

Tuan's work in statistics made it clear to him that the big questions that concerned him could never be answered with numbers. He drew attention with an early monograph called "The Hydrologic Cycle and the Wisdom of God."

It was the start of a body of work that included an eclectic mixture of literature, history, anthropology, and philosophy structured around natural, scientifically observable phenomena. The hydrologic cycle was considered in the 17th and 18th centuries to display the kind of harmony and balance humans might imitate. "I found the story interesting and

ideas on ideas in the way I found so satisfying in physical geography."

In recent years Tuan has written the books *Topophilia*, *Space and Place*, *Landscapes of Fear*, and *Segmented Worlds and Self*. It took him years to collect the thoughts that formed the books.

"I've been reading widely since I was a freshman at Oxford. I made voluminous notes that just piled up; they didn't connect and very little could be done with them. But somehow, about 15 years ago, I found it relatively easy to make connections."

Tuan believes his intellectual storehouse contains at least one more book, one about the strange relationship of dominance and affection that people have with their pets.

useful because it allowed me to integrate my knowledge of physical geography with my new interests," Tuan said.

Tuan's interest shifted from pure landscape to man's role in transforming the landscape to conform to the structure of human thoughts and feeling. In his field of human geography he methodically tests a conceptual framework by fitting it with examples of human attitudes from different times and different parts of the world. He uses the examples to explore the general statement, not to prove it.

It's the kind of questioning he hopes to pass on to his students. "Disciplined wonder," he calls it. "In classes I try to present themes in human geography systematically—building

The Scandinavian Connection

"Scandinavia Today," a festival celebrating contemporary Scandinavia, opened in the Twin Cities in September at a ceremony attended by Prince Henrik of Denmark, Pär Stenbäck, Finland's minister of foreign affairs, President Vigdís Finnbogadóttir of Iceland, Crown Prince Harald and Crown Princess Sonja of Norway, Prince Bertil and Princess Lilian of Sweden, and George Bush, vice president of the United States.

The University's own Scandinavian connection is a strong one: its foundations are a hundred-year-old academic department and myriad exchange programs (see box). In 1980, some 75 students from Scandinavia were studying at the University, more than double the 1970 enrollment of 36.

In addition to the permanent, ongoing programs, several symposia will be held on campus during the year. In October, one entitled "Policy and Planning in Scandinavia and the United

States: Land Use, Housing, Health Care Delivery, Energy, and the Environment" was sponsored jointly by the University's Center for Northwest European Language and Area Studies and Center for Urban and Regional Affairs.

The Northwest Center and the journalism school are planning a conference in February called "Images of Scandinavia: The Politics of International Aid." In the spring the sixth international Strindberg conference and the annual meeting of the Society for the Advancement of Scandinavian Study will be held on campus.

Cultural attractions include performances by the University Theatre of several works by Swedish playwright August Strindberg in May, exhibitions at the University Gallery, and performances by major Scandinavian dance troupes.



Uppsala University. From *Sweden: The Nation's History* by Franklin D. Scott, published by the University of Minnesota Press.

Scandinavian Exchange Programs

Law faculty and student exchange with Uppsala (Sweden) University.

Exchange of geologists between the Minnesota Geological Survey and the Finnish Geological Survey.

Student exchange with the University of Trondheim, Norway, through the International Reciprocal Student Exchange Program.

Minnesota Agriculture Student-Trainee Program: students from Denmark, Finland, Norway, Sweden, and nine other countries study agriculture in Minnesota for eight months.

Exchange between Minnesota and Norway of 4-H members, who live with a family for a month.

Political science faculty exchange with the Institute of Political Science at the University of Oslo.

Forestry seminar in Scandinavia: a three-week Continuing Education and Extension study tour of Norway, Sweden, and Finland that took place in July 1982.

Scandinavian Urban Studies Term: study of urban development and planning at the University of Oslo, with field trips to Helsinki, Copenhagen, and Stockholm.

Exchange of undergraduate dental students with the Royal Dental College in Aarhus, Denmark.

Research on Norwegian emigration by Duluth campus geography faculty in collaboration with colleagues in Oslo.

Swedish in Växjö: study of Swedish language and culture to be offered spring quarter 1983 by Extension Classes.

Exchange between the Ministry of Education of Finland and the College of Liberal Arts.

Exchange and cooperation in international academic activities between the University of Minnesota and the University of Iceland.

Scandinavian Studies To Celebrate Centennial

For almost a century, the University of Minnesota has offered a program of Scandinavian studies. The first professorship in Scandinavian languages and literature was established in 1883.

The program, now the strongest in the United States, is offered through the Department of Scandinavian and the Center for Northwest European Language and Area Studies. The faculty is considered the best in the country, and the library holdings are the most extensive. The curriculum is matched only in universities in the Scandinavian countries themselves.

Degree programs are offered at the bachelor's, master's, and doctoral levels. Courses are given in four Scandinavian languages—Norwegian, Swedish,

Danish, and Icelandic—and in Finnish, which is linguistically unrelated to the others. The University is the only school in the country with a faculty member specializing exclusively in Finnish.

In addition to the five languages, courses are offered in literature, mythology, folklore, and culture. Both in the languages and in literature, a balance is maintained between ancient and modern fields of study. The department has strong cross-disciplinary ties with such departments as linguistics, anthropology, art history, theater, comparative literature, English, German, history, and political science.

The quality and importance of the research published and in

progress by faculty members continues to justify the department's nationwide recognition.

When the Scandinavian program was established a century ago, the primary purpose was to serve the sizable ethnic population in the state. The mission of the department today is in no way limited to serving an ethnic clientele, but the faculty still has a commitment to the Scandinavian and Finnish communities in Minnesota. Public lectures are announced in the ethnic press, faculty members serve in leading roles in the ethnic organizations, and courses are offered and research conducted on the Scandinavian immigrant experience.

Iceland Forms Alumni Chapter

University of Minnesota alumni in Reykjavik, Iceland, gathered in May to form an alumni chapter, the first established in the Scandinavian countries.

More than 70 local alumni were invited to the gathering, and many came with spouses to the meeting hosted by University representatives. Sigurbjorn Thorbjornsson, director of inter-

national revenue for Iceland, who holds bachelor's and master's degrees in political science from Minnesota, was named chair of the new group.

President Gudmundur Magnusson of the University of Iceland described the new student and faculty exchange program with

the University of Minnesota and asked for support in encouraging the exchanges.

An Icelandic community advisory committee is working with the exchange program in Minneapolis.

Magrath, from p. 3

to endorse specific political and social solutions to major problems, our universities cannot be comfortably isolated and antiseptically value-free....

I hope to pursue these thoughts further in the months ahead, but am convinced that those of us who are fortunate and privileged make a fundamental moral—and educational—mistake if we relax and ignore the implications of the devastating comment made by the French novelist and diplomat Jean Giraudoux that “the privilege of the great is to watch catastrophe from a terrace.”

In his elegant and powerful essay written over 50 years ago, *Mission of the University*, the great Spanish philosopher, writer, and republican Jose Ortega y Gasset urged that the university “must intervene, as the university in current affairs, treating the great themes of the day from its own point of view: cultural, professional, and scientific.” He stated, bluntly and forcefully: “In the thick of life’s urgencies and its passions, the university must assert itself as a major ‘spiritual power’ ... standing for serenity in the midst of frenzy, for seriousness, and the grasp of intellect in the face of frivolity and unashamed stupidity.”...

These are complicated and difficult times for all of higher education and certainly for the University of Minnesota.... But there is one variable we can control: it is our faith in higher education and in this University of Minnesota as a vital, in fact essential, force for good in our state and larger society. If we here do not vigorously and boldly assert the value of what we are and what we do, and insist that our state and federal governments, and our society, provide the investments necessary so that we can continue to make our even greater contributions in the future, then we will slide to a passive posture that assures our mediocrity—and that of our society.

In my reading I ran across this quip: The future isn’t what it used to be. I wonder if the future ever was? I am convinced that the future will not fulfill our hopes if we do not confront it imaginatively and boldly and with faith in ourselves and our work. In my reading and contemplation, I am forced back—or is it, perhaps, forward—to the insistent conclusion that the value of higher education cannot

be scientifically demonstrated and proven. As with questions of basic value and morality, an act of faith is required. I am not speaking of blind faith, which is as wrong as blind ambition, but intelligent faith based on practical common sense observation....

During one of the dark moments of World War II, when England’s fate hung in the balance, its great wartime leader, Winston Churchill, was asked by someone, “Why are we fighting this war?” He answered brusquely: “If we were to stop, you would know why.” And so it is, too, with American higher education: if we stop our commitment to higher education, we would all too soon know what the real costs were—costs in terms of losses in individual productivity, in individual personal growth and development, and in social improvement and productivity. The faith in higher education, and the great cause it represents, are fully justified.

Ladies and gentlemen, I am glad to be back here as I was to have been briefly gone. I have enormous confidence in this remarkable University of Minnesota and its superb faculty, staff, and intelligent and concerned students. I feel privileged to be associated with an outstanding team of University vice presidents—undoubtedly one of the best in the nation—and equally committed and outstanding academic deans and central administrators working together with a sensitive but tough and dedicated Board of Regents.

This is not a time for timidity and defeatism even as we talk about retrenchments, priorities, and difficult budget-balancing acts. It is a time for boldness and leadership by us all in fulfillment of our faith on behalf of the University of Minnesota and the higher education cause it so effectively serves....

Letters

Anonymous Muralists

William Hoffman’s article (summer 1982) about “Mural America” was very interesting to me and I am looking forward to the publication of Karal Marling’s new book.

However, it was sadly revealing of our attitudes toward artists that although six reproductions of post office murals accompanied Mr. Hoffman’s article, not one artist’s name was mentioned. Those significant and often very fine paintings did not spring full-blown from some government W.P.A. office. They were painted by artists of often outstanding talent and reputation who poured their creative energies into each project.

Your fall issue should contain some sort of correction of these unfortunate omissions.

Herman Rowan
Professor of Studio Arts
Twin Cities campus

Editor’s note: My decision to omit the muralists’ names came after carefully considering whether they would be important to our audience. I concluded they would not. None of the artists has the name recognition of some popular artists of the period, such as Thomas Hart Benton or Grant Wood.

Second, I wanted to concentrate on the mural enterprise as a whole, not on the accomplishments of individuals. As Marling writes, the Treasury Section was a social program that employed artists: “The artist was an instrument in the creation of a social dialectic; in that respect, his or her relative unimportance to the mural renaissance approximated the marginal significance of the work as art.”

You write that the omissions are “sadly revealing of our attitudes toward artists.” I would answer by saying that the mural enterprise was characterized by precisely that attitude.



Tom Foley

Absorbing wolves

That’s a fine piece by Paul Dienhart on Minnesota wolves in your summer issue. Congratulations to him

for handling a complicated subject so well; he seems to have said most of what there is to say about wolves and Mr. Mech in a very absorbing way.

Simon Bourgin
Washington, D.C.

Scientifically sound

My colleagues and I read with interest the article on chlamydia in your summer issue. The scientific material was sound and I am familiar with the research of Dr. Jenkins, who is a noted long time worker in this field. In addition I am also familiar with the excellent work performed by Dr. Smith’s section at the Mayo Clinic. They are always willing to share knowledge and expertise with other laboratories.

My colleagues and I were, however, disappointed to note that your reporter’s investigation did not go far enough to reveal that chlamydia cultures have been performed for some time now in the Clinical Microbiology Laboratory at the University of Minnesota Hospitals. We also receive specimens from many other Twin City health care organizations such as: Methodist, Mercy, Minneapolis and St. Paul Childrens’, Abbott-Northwestern, and Unity Hospitals; Group Health Clinics; and the St. Louis Park Medical Center.

I would think that your readership would have been pleased to know that the University Hospitals has this capability also.

Marcia Weber
Principal Medical Technologist
Clinical Microbiology Laboratory
Supervisor
University of Minnesota Hospitals

Author Judith Gunn Bronson replies: I was well aware that the University’s Clinical Microbiology Laboratory is doing chlamydial cultures. However, my article was focusing on research (of which Dr. Smith’s group has done a great deal) and on the variety of laboratories that are working on the problem around the state. It was not intended to be a comprehensive review of everything being done on the subject in the entire state, nor was it designed for a medical audience that would need to know all the resources.

In Vitro Fertilization Program Announced

by Ralph Heussner

Doctors on the Twin Cities campus announced recently that they will launch a new program early in 1983 to treat infertility through in vitro fertilization.

In the program, scientists will fertilize the human egg with the father's sperm outside the mother's body, then return the egg to the mother's womb for normal development of the fetus.

Announcement of the program was made by George Tagatz, director of the division of reproduction endocrinology in the Department of Obstetrics and Gynecology. The program staff also includes Theodore C. Nagel, Hugh C. Hensleigh, and Shaila Phansy.

The program will be called Minnesota VIP, for vital initiation of pregnancy, and will be patterned after pioneering work done by scientists in Great Britain and at the Eastern Virginia Medical School in Norfolk.

"Because of the cumulative expertise at the University of Minnesota, and the familiarity of physicians with the in vitro process, VIP Minnesota is ready to help hundreds of infertile couples in the Midwest region," Tagatz said.

Although 10 percent of couples have infertility problems such as abnormal Fallopian tubes and low sperm concentrations, only married couples who have explored alternative therapies will be accepted in the University program.

The first successful case of in vitro fertilization came in Britain in August 1978 when Louise Brown was born to Lesley and Gilbert John Brown. The birth capped a decade of concentrated efforts by gynecologist Patrick Steptoe and Cambridge Univer-

sity physiologist Robert Edwards. The first child conceived in vitro in the United States was Elizabeth Jordan Carr of Westminister, Massachusetts, who was born at Norfolk Virginia General Hospital in December 1981.

Approximately 20 such births have been recorded worldwide, according to Tagatz. Programs are now under way at four or five medical centers in the United States. VIP Minnesota will be the first in the Upper



George Tagatz

Midwest.

Tagatz emphasized that the procedure is no longer considered experimental by the medical community and that it has been approved by a federal commission on ethics that included representatives from all major religious faiths. He said the University decided to initiate the program because of a "remarkable increase in the effectiveness" of the procedure, particularly in the past six months.

Although its development required years of intense research, the procedure may be stated simply. In vitro fertilization is accomplished through the following steps.

—The woman is treated with hormones to stimulate maturation of eggs in the ovary.

—An optical system called a laparoscope is inserted through an incision in the abdominal wall to help doctors locate a mature egg, which is drawn from the ovary with a needle.

—The egg is placed in a dish containing blood serum and nutrients, and sperm are added for

fertilization.

—Once the egg is fertilized by one of the many spermatozoa, it is transferred to another dish of blood serum and sustaining nutrients. For the next three to six days, the fertilized egg divides.

—The dividing cells are placed in the uterus, where they attach to the uterine lining, and normal embryo development proceeds as it would from natural conception.

Tagatz estimated that 30 to 40 couples will be involved in the first year of the Minnesota program. He said he expects the University clinic to be accepting patients from its usual referral area of Minnesota, the Dakotas, northwestern Wisconsin, and southern Canada.

Because health care insurance companies have not yet included in vitro fertilization in their coverage plans, patients will probably have to pay for the procedure—the estimated cost is \$3,000—themselves.

"Our goal is not to experiment on people, but to assist couples in their goal of having children," Tagatz said.

Revenue Bond Sale Gets Go-Ahead for U of M Hospitals

by Elizabeth Petrangelo

The new \$125 million University Hospitals replacement building will be paid for through University-issued tax-exempt revenue bonds if financial arrangements fall into place.

The Board of Regents voted in November to give finance vice president Fred Bohen and a special committee of regents authority to prepare for the December sale of \$157 million in 30-year University revenue bonds.

The package must be approved at the board's December meeting before the bonds are issued. Financing of the entire project through the sale of long-term bonds would be acceptable to the board only if the long-term debt burden can be kept below \$92 per patient day. The bonds would be secured by hospital revenue and paid off through costs to patients.

The vote specified that if long-term financing under current market conditions were to push the cost per patient day above \$92 or if it cannot be arranged during December, or at the very latest the first quarter of 1983, Bohen is to explore options for short-term financing. The board stipulated that short-term financing would be acceptable only if it would not push the debt burden above \$95 per patient.

Bohen said he is hoping that bonds could be sold during the middle two weeks in December.

Bohen told the board that a recent feasibility study by Touche Ross and Co. indicates the long-term bond plan to be a reasonable alternative. The study was based on the assumption that:

—Patient days will decline from 196,335 in 1982 to 184,342 and will then level off;

—Charges per patient day will rise from \$649 in 1983 to \$1,119 in 1987 (60 percent of the increase will be the result of inflation, 23 percent will be costs of financing the project, and 17 percent will result from revenue losses caused by changes in federal reimbursement for Medicare and Medicaid); and

—At a long-term interest rate of 10.9 percent for 30-year bonds, the University would incur an annual debt burden of \$16 million.

Bohen said all indications show that University Hospitals will increasingly become a regional referral center for patients with serious medical problems.

Neal Vanselow, vice president for health sciences, told the board he has appointed a special committee to study costs of patient care at the hospitals and to recommend cost-cutting methods.

Vanselow said he and his health sciences colleagues are extremely concerned about the projected increase in cost per patient day to \$1,119 by 1987. "If we're going to make the care at University Hospitals available to patients who need it, we need to launch a major effort to control costs," he said.

Work began in early November on the first floor of what eventually will be an eight-story hospital. The first floor, financed through short-term borrowing, will house the therapeutic radiology department, which is scheduled for completion early in 1984. The rest of the building is expected to be ready for occupancy in 1986.

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