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**Samuel C.C. Ting:
Physicist, Nobelist, Fan**

Photo by Laurence W. Jones

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Photo by Carol Varran

"The environment is what we economists call a public good," Varian shouted over the noise of high-pressure air blasters.

An economist's tour of one of Italy's grandest cities

A Foot in Siena

Siena, in the region of Tuscany, thrived in the Middle Ages until the Black Death brought the city low in 1348. Today, Varian says, the plague threatening the city's well-being, and that of all Italy, is the black market.

By Madeline Strong Diehl

In the Middle Ages, when Italy dominated the European economy, it took just seven days to mail a letter from Venice by courier on horseback to Brussels, 500 miles north.

Now, using such modern conveniences as gasoline engines and computers, it can take two weeks or longer by regular mail, and you can't be sure your letter will even reach its destination.

This is one of the many ironies of Italian economic life that fascinated U-M economist Hal Varian during four months as chair of economics at the University of Siena, where he lectured as a Fulbright scholar.

"The mail in Italy has the highest cost in Europe and provides the worst service," Varian said, as he conducted a strolling economist's tour of Siena for *Michigan Today* readers, "and the telephone rates are about three times as high as they are in the United States. The paradox is that the Italian economy has enjoyed a recent boom despite this."

Varian and other economists have endlessly discussed the complex features of this *resurgimento*. "Look at the per capita gross national product in Italy," he said. "When you divide Italy in half at Rome, the north half has a GNP higher than France's, probably very close to West Germany's."



Siena

Continued

Northern Italy is a very rich country, and all of this is in the midst of an incredibly inefficient government bureaucracy."

Not seeking to prove this proposition, but only to make a simple transaction, Varian disappeared into the offices of an Italian bank. He returned 23 minutes later, soothing himself with the recollection that Tuscany, Siena's region, is credited with being the place where modern banking was born.

"In 1400 the Italians had the best banking system in the world," Varian noted, "but now they probably have the worst in Europe." Finance is one of Varian's areas of expertise. He is the author of *Intermediate Microeconomics* (W.W. Norton, 1988), a textbook that has been translated into German, Spanish, Italian and French. (A forthcoming Hungarian edition will be one of the first Western economics textbooks to be published behind the now-parted Iron Curtain.)

The reason Italian banks are successful despite their legendary inefficiency, Varian explained, "is because they have a captive market — the Italians are among the greatest savers in the world, with a personal savings rate of about 20 per cent of their disposable income. Also, the government used to impose a lot of fiscal controls to make it difficult for depositors to move money in and out of the country."

But come European economic integration in 1992, Varian predicted, "Italian banks and other inefficient European industries will face a lot of problems."

Soon we were standing before the world's oldest surviving bank, the Monte di Paschi ("monopoly of the pastures"), founded in the 14th century by a group of shepherds who pooled their cash so that they could help one another out with loans during hard times.

The Monte di Paschi proved so lucrative that as time passed the shepherds accumulated enough extra capital to lend to borrowers outside their group. From this unassuming beginning the bank grew to become one of the most important forces in the Tuscan economy; indeed, the bank is a major reason why the University of Siena is one of few in Europe to have a department of banking and a chair for visiting specialists like Varian.

The banking industry thrived here, Varian continued, because "in the Middle Ages Siena was along one of the main routes for wool and silk — Venice was on the other. It was dangerous then, as it is now, to carry lots of money from one place to another, so merchants, who often needed to borrow money at one end of the trade route to finance their purchases at the other, obtained letters of credit from banks. After a while, the banks that supplied these letters of credit charged interest on the delayed payments. Through such transactions, over time, the major cities on trade routes became financial centers."

Banking regulations in the Middle Ages were even more complicated than they are today. Not only did the government look over the shoulder of a lender, but so did the Catholic Church. The Church could, depending on the view of the reigning pope, condemn the charging of interest for borrowed money as the sin of usury — a ruling that forced medieval bankers to disguise interest in a complex combination of euphemism and clever mathematics.

"Usually they managed to disguise interest in the form of exchange rate conversions," Varian said. "They would change the value of the money of one city in relation to the money of another city, so that if a shipment from one to the other was delivered in three months, there was one exchange rate, in six months another. To the church, that was okay. That's among the ways banks in the Arab world collect interest today to avoid Islamic prohibitions against interest."

Like other medieval financial centers, Siena taxed its prominent merchants and bankers to get

many of the funds required to finance civic services. These taxes often took the form of "forced loans" that the city government "requested" the merchant make — at no interest. Varian cited a letter written by a medieval merchant from nearby Prato as an illustration of how ruinous such levies could be:

"Now the taxes are doubled . . . I shall see torn from me in my old age all that God has lent me, and all I have earned in 50 years with so much toil. I have reached a point that, if a man stabbed me, no blood would issue forth!" (Quoted from *The Merchant of Prato* by Iris Origo.)

Although its stability was constantly threatened by famines and plagues, in addition to the struggle of meeting myriad day-to-day expenses and periodic costs of raising armies to fend off invaders, Siena enjoyed one of the most stable economies in medieval Europe.

Among the documents preserved in tablets stored in Siena's state archives is a 13th-century record of the routine decisions made by the governments of medieval city states. Varian received permission to view the tablets, the covers of which were illustrated by some of the finest painters of the Siennese school. One entry is a receipt dated July 1261 for the payment of 10 *libbre di dinari* to one Guido Bonatti for astrological services to the city. "This is just like Nancy Reagan," Varian said.

Another record showed that in August 1293 the city bought wood for a fire to burn a *rogo* who had been counterfeiting money. Attached was an authorization for a study of the rogue's corpse.

On the whole, however, Varian concluded, the records show Siena's oligarchy of nine "governors and defenders" to have been "an exceptionally responsible and far-sighted government, considering its time."

As it was for many urban communities in the Middle Ages, the Black Death of 1348 was Siena's nemesis. The plague killed more than half the population in that year alone, leaving the city's economy in shambles.

In 1355 a grass-roots revolutionary movement charged the Government of the Nine with practicing favoritism and with misspending funds on such projects as enlarging the Duomo (the main cathedral), and drove them from power.

Today it is not the Black Death that poses a large-scale threat to Italy's economy, but the black market. Consisting mostly of small family firms, Italy's black market comprises an estimated 20 percent to 25 percent of the nation's economy. Like many of his Italian colleagues, Varian attributes part of Italy's economic boom to the fact that many of these firms are flourishing only insofar as they escape the heavy taxes levied by the national government.

"It's almost always the case that the less taxation



The Duomo

Photo by Carol Varian

there is, the more economic activity," Varian commented during lunch with Italian colleague Stefano Vanucci.

"The two biggest sports in Italy are soccer and tax evasion," replied Vanucci, a member of the University of Siena's department of economics and banking. "The problem with Italy's taxation system is that there is no guarantee that taxes will be spent in a proper way. The power of the Mafia also is a factor in the country's political malaise, especially in the south."

Both Varian and Vanucci agreed that the economy also would benefit from a reduction in the number of strikes. Four strikes during Varian's four-month stay stopped work at gas stations, banks and trains for periods ranging from a day to a week. The longest strike hit Varian directly. Last February university students and many scholars struck for nearly two months, protesting a move by the government to allow private corporations to increase direct financial support to university departments now funded almost solely by the federal government.

Many arts and humanities students felt the introduction of private donations would give the government an excuse to reduce its support to the universities, and that they would be unable to recoup the losses from private sources. Initial protests by these groups encouraged other groups of students to publicize more longstanding grievances with the Italian university system.

"I called the university several times before I came, and the person who answered kept saying, 'Occupato, occupato,'" Varian recalled. "I thought they meant the line was occupied, but it turned out the whole university was occupied."

The strikers withdrew in March after the government backed down.

Resuming our walking tour, Varian explained that the work he was doing in Italy was "highly abstract." The sight of the Duomo — the cathedral whose enlargement was cut short by the outraged city folk 650 years ago — provided a concrete manifestation of one of the topics within Varian's abstract models: pollution.

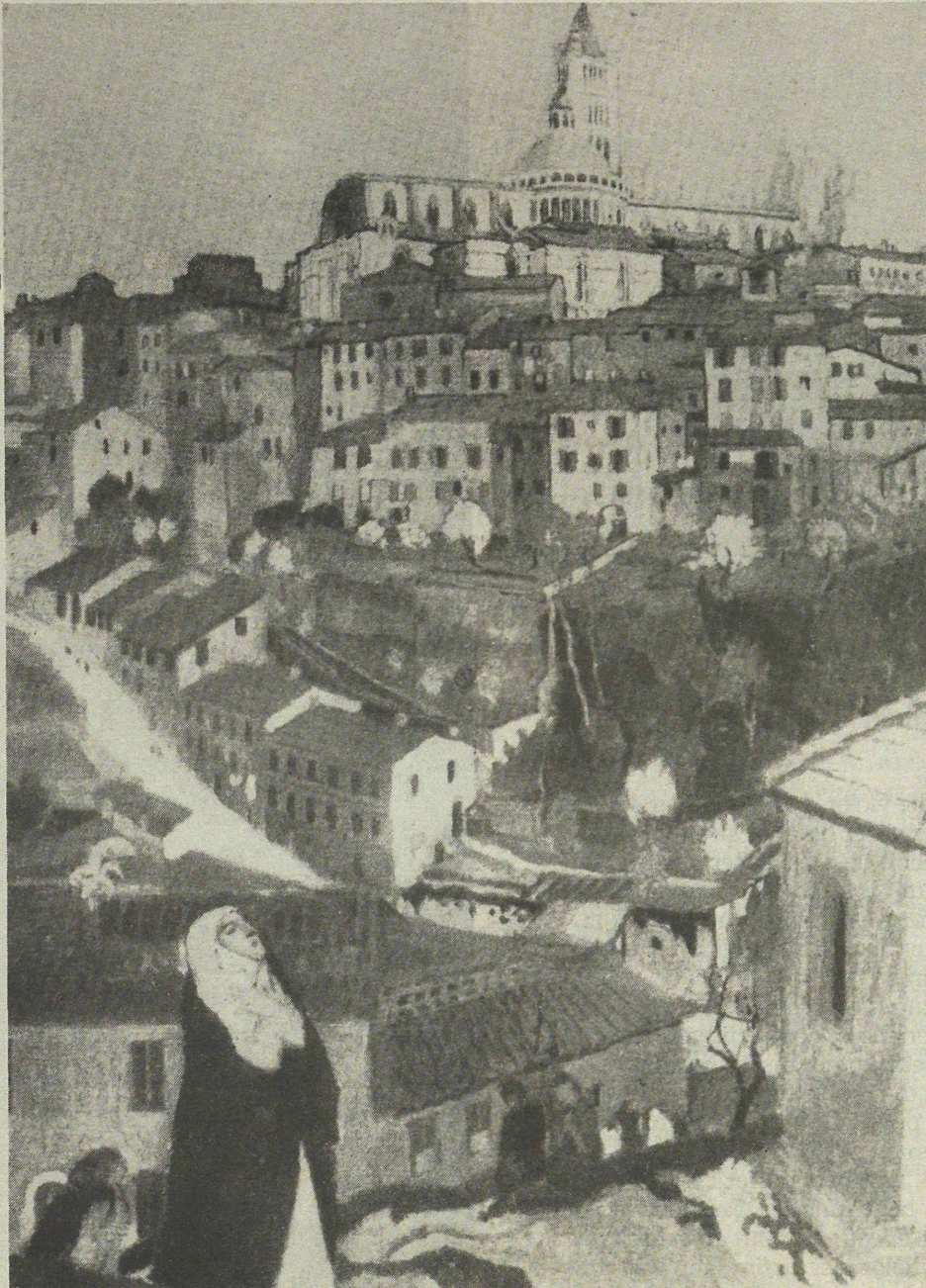
"The environment is what we economists call a 'public good,'" Varian shouted over the noise of high-pressure air blasters being used to remove black carbon encrusting the black-and-white marble of the cathedral.

"Some people are going to place an extremely high value on a clean environment," Varian continued after we had escaped the din. "Some people are going to place a low value on it. So society needs some way to decide how clean it should be."

In Siena, Varian was working on a mathematical model to balance the costs and benefits of a clean environment and of other sorts of public goods. The model must take into account the conflict of interest between industrial polluters, who nonetheless contribute to the health of the economy, and people who want to protect a clean environment as a public good, but who nonetheless demand the cars and other products that do the polluting.

"It's easy to be an environmentalist if you don't have to bear any of the costs," Varian said. "Everybody wants a perfectly clean environment, as long as someone else pays for it."

Consumers, Varian continued, tend to overestimate how much they really value a clean environment, and industrialists tend to overestimate how much it would cost to provide one. He is trying to devise a set of economic incentives that would help people accurately reveal how much they are willing to pay for a clean environment, whether that payment is in the form of higher prices, heavier taxes, less material consumption or a combination of such measures. If his model proves applicable, it might help bring about preventive environmental controls.



'Saint Catherine at Siena,'
by Maurice Denis.

"The 14th century witnesses the zenith of the Gothic spirit. It was a spirit particularly congenial to the hill town of Siena where it was to linger well into the period of the later Renaissance. Foreign ideas and foreign influences were seldom welcome there, nor were the foreign artists. No other school of painters has maintained the purity of its own characteristics so long and so consistently as the Sienese.

"Siena was a city of extremes. No other city-state in Italy could boast of so many local saints: men and women within the city walls or just outside them born in every class, members of the laity, members of the regular clergy, founders of new orders and confraternities. Works of practical charity for the needy and the diseased formed in a special degree a characteristic of Sienese sanctity. On the other hand, Sienese vitality also found expression in a series of political executions and in carefully planned riotousness of the Brigata Spendereccia with its gambling for fantastic stakes.

"... In many ways St. Catherine of Siena remained all her life characteristically Sienese." From *St. Catherine* by George Kaftal, Blackfriars, Oxford 1948.

The Italian government has recently begun to pass laws to protect the environment, although so far many of them are ineffective. "They are phasing in lead-free gas," Varian noted. "Lead-free is cheaper than leaded; that's because it's subsidized as an incentive. On the other hand, cars made here don't have catalytic converters."

To protect Siena's Duomo and other architectural treasures, the city has banned cars from the historic city center. As a result, parking spaces are rare and expensive. Of all the perks Varian received with the academic chair, the parking space near his departmental office was the most envied by his Italian colleagues, for whom "a parking space in Siena is a mythical creature, like Romulus and Remus."

Gazing at the Duomo, as its marble surface slowly emerged beneath the roaring air blasters of a team of renovators, Varian became contemplative. "The Duomo is clearly a public good," he said after a few moments. "In the Middle Ages a community started by building a cathedral, which attracted pilgrims. The city administration would get a little money from them, weasel a little bit more from the bishop and then tax the citizens for upkeep or expansion. A little bit from here, a little from there, and it begins to add up.

"The community had to pay a lot of money to build the Duomo, but then again they got something out of it. It's not just a tourist attraction today, it's been one for 500 or so years. And the community has got more than material gain from it; they've also received spiritual rewards."

Varian recalled an episode from Siena's history. The story of how Siena won the head of Saint Catherine may serve as a parable for the world's metropolises, he noted, for it underlines the importance of compromise among parties seeking to resolve a conflict over any public good. Here is the tale:

"Saint Catherine, the patron saint of Italy, was born in Siena in 1347. There are many relics of saints in Siena — the arm of Saint John the Baptist, the head of Saint Galgano and the heart of Saint Bernardino among them — but none is so revered as the head of Saint Catherine.

"When Catherine of Siena died in Rome in 1380, the Sienese ambassadors wanted to bury her in her home town. But the Pope wanted her buried in Rome because she was important to the Catholic Church. So the religious dignitaries began to haggle over the matter, and as they did so, Catherine's body just stayed there, decomposing. And at some point her head fell off.

"Siena's representatives cried out, 'Oh, it's a miracle! We'll take the head to Siena, and the body can stay in Rome.'

"And with that, the Sienese ambassador put the head in his suitcase and took off for Siena."



By Suzanne Fleming

Set against the violets banked in her southerly window, her silver hair cut sleekly against her head, her blue eyes discerning and attentive, Irene H. Butter is so composed a figure that it is difficult to picture her as a young girl of 12, near starvation and facing death in a German concentration camp.

For 30 years Butter suppressed the horror of her wartime experiences. She dedicated herself to research and teaching in public health, concentrating on the problems of under-served populations and poorly or unjustly planned health-care systems.

Four years ago, however, Butter's will to do something about her memories was reactivated through a chance encounter with an exhibit on Anne Frank, the holocaust victim who was confined with Butter in the same concentration camp. At about the same time, a friend introduced Butter to a person who had been saved by the Swedish diplomat and U-M alumnus Raoul Wallenberg '35, who saved thousands of Jews from the gas chambers.

These encounters resulted in a release of energy in Butter that has created the Wallenberg Endowment as a perpetual memorial to educate people about oppression and to honor those who lead the struggle against it. On September 25, the author Elie Wiesel, winner of the Nobel Peace Prize, became the first recipient of the Wallenberg Award and delivered the inaugural lecture.

As Butter recounts her past, she chooses her slightly Dutch-accented words with such precision that it is hard to associate her with a powerful emotional experience. Born Irene Hasenberg in Berlin in 1930, Butter was 6 years old when her world turned upside down. In 1937 her family, who were Jewish Germans, decided to escape the reaches of increasingly violent Nazi anti-Semitism by leaving their homeland. John Hasenberg, her father, was a banker, and he'd been offered two positions — one in the Dutch island colony of Curacao off South America, the other in Amsterdam. Thinking it best to remain close to the extended family, he chose the latter.

"Very often we have choices we don't understand," Butter says, reflecting on her father's decision. "We think we're making rational choices, but since we don't have all the information at the time, the choices can turn out not to be rational at all."

In 1940 invading Nazi troops followed the Butters into the Netherlands, and for the next three years, Butter and her family lived in fear of air attacks and deportation. "You see your friends and loved ones disappear, and you know that eventually the day will come when you, yourself, will go," she says simply.

That day did come; it was a hot June day in 1943 when the Nazis gave the Hasenbergs and their two children 10 minutes to leave their home, hurrying and pushing them, "and yelling at us to get going." They boarded a cattle car to Westerbork, a transit camp in the Netherlands; six months later, they were moved to the Bergen-Belsen concentration camp in Germany.

For 18 months Butter and the others lived under "torturous circumstances — all of us suffered from hunger, illness and the fear of being shot or gassed. We lived on a two-inch slice of bread and

the unfrivolous life of irene butter

Top left. 1933. Irene and her brother, Werner, in Berlin. They were 3 and 5 at the time. It was the year Hitler came to power. On April 1, the German government directed a boycott against all Jewish businesspersons, professionals and academics.

▲ 1934 or 1935. With her father, John Hasenberg, a banker. On Sept. 15, 1935, the Nazis stripped Jews of rights to citizenship and subjected them to apartheid laws affecting all social, political and economic activity.

a small bowl of turnip soup each day. As conditions became more crowded, two people had to share a bed. The hygienic conditions were terrible; there were no bathrooms."

Butter responds matter-of-factly in accounting for her survival, saying only that "there is a lot of resilience in people. When your life is threatened, you mobilize energy and strength that in normal life you never draw on."

Bergen-Belsen was not an extermination camp (where only 5 percent of captives survived), nonetheless the survival rate there was low. The Hasenbergs were released in January 1945 following an agreement in which Americans held in Germany and persons with foreign passports were exchanged for Germans trapped in the United States. Using falsified Ecuadorean passports provided by an unidentified Swede, the Hasenbergs were allowed to leave the camp for Switzerland. But John Hasenberg was so weakened that he died on the train. Irene's brother, Werner, and her mother, Gertrude, who was near death, were hospitalized.

In retrospect, Butter says, what happened next was one of the cruelest things she endured: Hitler had stripped citizenship from Jews, and the family hadn't been in Holland long enough to become Dutch citizens, so Butter was separated from her mother and brother while they recuper-

ated in Switzerland and sent alone to a displaced persons camp in Algiers.

For many months she did not know if her mother had survived, although at the time her anxiety was counterbalanced by the fact that she was getting food.

It was like a "rebirth" to feel her health and strength slowly returning even though she "wasn't capable of thinking about a normal life. I didn't know what one would look like. I couldn't conceive of what the next step would be."



1945. At a displaced-persons camp in Algeria, where 14-year-old Irene was sent alone while her mother and brother recuperated in a Swiss hospital. Her father did not survive the train ride from the concentration camp to freedom.

That step was being prepared for her by an uncle and aunt in New York, Hugo and Rose Kaplan, who'd been poring over lists of concentration camp survivors and found the Hasenbergs' names. The Kaplans obtained visas for the family and, feeling great excitement at "starting a new life," 15-year-old Irene arrived at Christmas in 1945 and moved in with her aunt, uncle and cousin. The following summer her mother and brother were healthy enough to join her.

"Life was not simple for us after the war," Butter says. The Kaplans, who were middle-aged when they emigrated from Germany, had a small income and lived in a one-bedroom apartment with their daughter; nevertheless, they took in the family until Butter's mother, who had never worked before, found enough menial jobs to afford her own apartment after a year.

Learning a new language, making up for three years of lost schooling and working part time kept Butter busy during those years of adjusting to a new country. She's still not quite sure why, but somehow she decided to apply to college. Nobody in her family in America had gone to college, and her relatives criticized her plan: Why wasn't she helping to support the family? Why should she and not Werner, who was two years older, go? (Later, Werner did go on to college and graduate school; he retired as a U.S. Department of Commerce economist.)

Despite the opposition Butter enrolled in New York City's Queen's College in 1949 on a scholarship from the Education Foundation for Jewish Girls. She planned to become a social worker, because it was social workers who had helped her contact her family and complete the paperwork necessary to journey to America. "I thought they were my saviors," she remembers, "and I wanted to help other people as I had been helped."

But in college it was economics courses that most stimulated her. She took her master's and doctoral degrees in economics at Duke University, where she also met her husband, Charles Butter. They came to Michigan in 1966, she with the Department of Public Health Policy and Administration in the School of Public Health and he with the Department of Psychology. They have two adult children and a granddaughter.

Absorbed in her research and teaching, Butter didn't look back at her wartime confinement for more than 30 years, although her academic interests began to dovetail with the aims of social work.

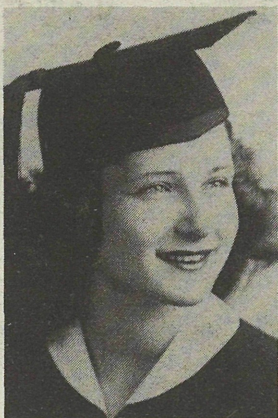
"I don't think I could have done what I did had I allowed myself to relive those wartime experiences," Butter says. Besides, her relatives sternly advised her when she came to America that "since I was starting a new life now, I should never think about what preceded it or talk about it."

Butter concedes that it was probably helpful to bury the past for a while. "It would have been too demanding and draining to think about it," she says. Then, four years ago, an exhibit about Anne Frank came to Detroit and Butter accepted an invitation to participate in a panel discussion.

Anne Frank, the Jewish Dutch girl whose diary chronicles her experiences in hiding from the Nazis, was a prisoner at Bergen-Belsen when Butter was there. After the Soviets entered Poland, the Nazis evacuated Auschwitz, where the Franks had been confined and Anne's mother had died. Anne and her sister were sent to Bergen-Belsen. The Soviets freed Frank's father from a hospital.

In Bergen-Belsen, Auschwitz survivors were even worse off than the other captives, and the Nazis placed them in a separate block where they could be gassed as their health failed.

Like the Hasenbergs, the Franks had emigrated to Holland from Germany. They had moved to the same Amsterdam neighborhood, but Butter had not known Anne well.



1949. High school graduation in New York City, where Irene moved in with relatives in 1945; her mother and brother joined her in 1946.

"A friend of mine knew Anne better," Butter recalls, "and at night we tried to contact her through the fence. Once we threw some clothing over the fence to her. All she had to wear was a gown. We never saw her again." As a result of prison conditions, first Anne's sister and then Anne died of typhus.

With the revealing of some of her past through talking about Frank at the exhibit and to local students in subsequent programs came a determination "to help other people understand what happened and to assure it won't be forgotten."

Though Butter says with a faint smile that she's "still trying to figure out" the reasons for the Nazis' crimes, what is clear to her is that she must fight oppression. The type of oppression that led to her persecution, Butter notes, was based on nothing she had done but on the single fact that "I was born a Jew."

But it was not just bigotry and hatred that fueled the Nazi genocide, Butter is quick to point out. "In some sense it was indifference that allowed the holocaust to happen," she observes. Among the persons who were not indifferent was Raoul Wallenberg. Using his room to maneuver as



1980. Butter returns to the Netherlands to collaborate with Dutch physician Corrie Herman on research on midwifery, a health practice with a long tradition in the Netherlands.

a diplomat for neutral Sweden, Wallenberg saved as many as 100,000 Jewish Hungarians during World War II before disappearing in 1945. He was imprisoned in the Soviet Union, and Soviet officials claim that he died not long afterward, although their account is disputed and is the subject of an ongoing inquiry.

Wallenberg is Butter's paragon of compassion and bravery. Near the time of the Anne Frank exhibit, a friend introduced Butter to a person saved by Wallenberg. The three decided to honor him by starting an endowment that would allow the University to award an outstanding humanitarian annually in his name.

After four years of hard work headed by Butter, the \$250,000 fund from nearly 500 donors is complete; a University committee selected Wiesel as the first recipient.

Judith Lax '65, '66 MA, a Wallenberg endowment committee member and director of development for the U-M Center for the Education of Women, says, "It was Irene's enthusiasm and determination for the project that brought me on board. Irene is a soft-spoken but very strong woman, and she is determined to see that the story of Wallenberg is told, a story that shows that one person can make a difference."

Butter describes the difference that she has tried to make in her typically understated way. "The fact that I survived assigned me a certain responsibility," she says. "I could not live a frivolous life; I had to live in a meaningful way." She pauses and turns open the palm of her hand in a questioning gesture: "Otherwise, what difference does it make that I survived?" **M**

Suzanne Fleming is an Ann Arbor free-lance writer.



Irene Butter

Photo by Bob Kaimbach

Everything must go! No price too low!

The fire sale of East Germany

By Patricia Anne Simpson

A Russian general's cap? A piece of the Berlin Wall that comes with a guarantee of authenticity? A polyester flag from the German Democratic Republic — while it lasts? These are among the offerings along both sides of the Brandenburg Gate. Capitalism has always been at home in West Berlin, but now, after the so-called bloodless revolution of November 1989 and, just as important, the currency reform of July 1990, almost everything is for sale in this rapidly reuniting city.

Things have changed since the Wall opened last November 9. People now push baby carriages on the *todesstreifen*, or "death strips," where once the East German border police patrolled with German shepherds. In the shade of watch towers once occupied by armed guards, families stroll leisurely and picnic on Sunday afternoons. A few enterprising souvenir hunters still chip away at the colorful graffiti now scrawled on both sides of the Wall. Before the *Wende*, or "turn," graffiti were, like so many other things, forbidden in the East. Now that formerly blank side of the Wall is a graffiti artist's dream come true.

Although remnants of the Wall remain standing, most of it has been bulldozed — or chipped away for souvenirs. East German police now walk their dogs along the former border, and occasionally wave at passing streetcars. Tourists trod the dirt strip that still separates the two sides of the city, eating peanuts and wurst as they head for the river. Along the river a fence with crosses marks the deaths of those who died attempting to reach the West. The last cross is dated February 6, 1989. On August 13, for the first time, both East and West German officials commemorated the lives lost crossing that Wall.

With currency reform came the least attractive aspects of the free market. On a corner of the East German capital's main boulevard, Unter den Linden, people trade in drugs and prostitution in addition to currency. While some workers rejoice roads connecting the two halves of Berlin, others are learning to make a fast West German mark.

Right beside the newly reopened Brandenburg Gate, covered in scaffolding and swung wide recently so that Ronald and Nancy Reagan could walk through its historic arches, merchants are selling pieces of the Wall for two marks (a bit more than a dollar) and up. The price depends on the size and color of the chunk, which comes with a certificate of authenticity. The symbols of socialism can also be had: Soviet military apparel, East German police uniforms, medals for outstanding service from the Free German Youth (the East German youth organization) to the tractor brigade, and flags.

"The Russians can come over and sell whatever they have," said one provisional merchant. "This cap," he said, holding up a general's cap, "once cost at least 500 deutsche marks" (about \$275). Capitalist ingenuity and socialist remnants make strange bedfellows.

After the July 1 currency reform, the long lines that once characterized shopping in East Germany formed in front of newly opened bank branches. Everyone was waiting to exchange East German marks, virtually worthless on the world market and of limited buying power within the failing East German economy, for West German currency, the standard of German economic strength and stability.

For many East Germans, the item highest on the list of things to buy is a car, preferably from the West. Suddenly the East German Trabant could be had for a mere 500 marks. A new "Trabi" once cost up to 12,000 marks, and a potential buyer usually had to wait years for one.

Bookstores, too, have been given a face-lift. East German books used to sell for a few marks. Recently, just before the currency reform, bookstores were giving them away. Now the bookstores in East Berlin carry all the latest from the West, including a new series of self-help books for East Germans eager to know more about the Western



Soviets uniforms for sale. The clothes make the man.

market. Books on taxes, how to start your own firm and West German law sell like hotcakes.

In the main supermarket, nondescriptly called "Kaufhalle," or "buying place," Western goods — everything from soap to cocoa — filled the shelves. People stood waiting in a long line just to get a shopping cart.

I overheard several shoppers grumbling about the high prices, which seemed to me comparable to those in the West. I began to ask questions. "Is it more expensive?" I asked a woman examining a bottle of Italian table wine. "What did this cost before?" I'd heard that many stores in the East were demanding unreasonably high prices for newly available consumer goods. Up until currency reform, prices were regulated nationwide, so no one had to think about shopping for the best buys.

"I don't know," she said with a shrug, putting the bottle in her shopping cart. "We didn't have it before."

After two months of currency reform, the initial euphoria of approaching German unity passed, and the real problems — social, economic and political — of a reuniting Germany began to emerge. I was in a cab on the way back from an East Berlin train station. The cabbie, an East Berliner, drove a Mercedes cab. We began talking about the problems of cars and currency. After a month of economic "unity," it was becoming clear that East German industry and working mentality were in a catastrophic state. I asked the cabbie if he thought things were better or worse.

"I think they're better," he replied, "but it's going to take a long time before we learn how to work and not to rely on the government for everything. I drive sometimes 14 hours a day when I can. It's hard, too. Drivers from the East can't pick up fares in the West, but drivers from the West can pick up fares here. I know drivers here who give up after a few hours because they're not used to working long hours like in the West. Generally things are better, but it's going to take a long time before East Germans have the same standard of living as you do in the West."

The instability of the current East German government and the chaotic state of the economy contribute to the general feeling of impending collapse. While politicians decide how to handle long-term issues, perishable products from East Germany are doing just that. Produce and milk spoil in warehouses because "distribution," the anonymous culprit, has stopped distributing.

The waste doesn't stop there. In mid-August a Berlin newspaper ran a back-page article under the headline: "One Hundred Thousand Roses

Thrown Away in Werder." Werder, a region near East Berlin known for the quality of its produce, could no longer sell its roses to the capital. The demand for Western goods is so strong that while two pounds of American cherries were selling for approximately \$7, farmers from the East were desperately trying to unload 10 pounds of luscious local produce for about a dollar. Three thousand pigs were overdue for slaughter; 6,000 pounds of cheese rotted in a warehouse.

Economic problems are not the only revolutionary headaches. An alarming number of East German "skinheads," with support from radical right-wing fringe groups in the West, have banded together to terrorize the population. Skinheads buy guns from impoverished Soviet soldiers waiting to be transported home. Romanians, Afro-Germans, Mozambiquans, Vietnamese and other foreigners have been assaulted and murdered. An increase in anti-Semitic vandalism is particularly chilling because it occurs at a time when official East German policy toward Israel has shifted from one of disclaiming any responsibility for the genocide of World War II to accepting a role in the mass crimes.

The Stasi (secret police) continue to poison the East German atmosphere. Mouths dropped in East and West when the news broke that 1,000 former Stasi members had been hired as teachers. Meanwhile, university professors critical of the government were dismayed to discover in previously secret Stasi documents the names of former students who reported regularly to the Stasi about the content of lectures. Stories and rumors about the extent of systematic surveillance by networks of informers abound and heighten the fears of a population already deeply suspicious.

Now everyone has a story to tell. Librarians and museum curators reveal that one way the economy's failure was concealed for so long is that funds for routine operations were acquired through secret sales of valuable manuscripts, rare books and works of art to the West.

Today, however, everywhere you go, you can find remnants of the German Democratic Republic for sale at bargain-basement prices. At the moment, the GDR, both politically and economically, is being sold out. The two Germanys are growing back together. The question remains: Do the pieces still fit? **M**

Patricia Anne Simpson is assistant professor of Germanic languages and literature. Photographer Siggi Schefke is a co-founder of the Environmental Library, an East German ecological group that met illegally in a church basement before the November 1989 revolution.

Material

Witnesses

By Madeline Strong Diehl

Hundreds of feet beneath the Franco-Swiss countryside by the Jura Mountains, as cattle graze near the village of St. Genis, U-M physicists are engaged in a quest to unlock the Universe's most tightly held secrets.

The site is the Large Electron-Positron collider/accelerator (LEP), a \$1 billion facility of the European Laboratory for Particle Physics, operated by the Geneva-based Conseil European pour la Recherche Nucleaire (CERN).

The world of the LEP collider looks like a subterranean machine-city strung along a 17-mile-round tunnel 360 feet underground. LEP contains 431,640 cubic yards of concrete, 60,000 tons of hardware and 4,000 miles of electrical cables; it is crossed by "streets" for pedestrians, a monorail and motorized carts.

Within the tunnel circling LEP runs a 4-inch by 2-inch tube with two channels. Near the tube two types of particles — electrons and positrons — are produced and accelerated in smaller accelerators; the particle beams are then injected into the tube, one beam running clockwise in its channel and the other in the opposite direction in the second channel. Along the tube are 5,000 electromagnets that bend the beams of the electrons and positrons as they are sped up by the LEP accelerator.

Each beam, about the size of a toothpick and containing quadrillions of particles, reaches an energy of 50 billion electron volts. At almost the speed of light, the beams are aimed at one another and smashed head-on inside one of LEP's four huge detectors, each one designed for a specific experiment. The collision produces an energy density rarely obtainable since the Big Bang, the explosion many scientists consider to have been the origin of the Universe.

Within the detectors, generations of particles that "live" only trillionths of a second shower out of the blast and split into other short-lived particles. Many of these particles may be exotic throwbacks that ceased to exist seconds after the Big Bang. The jets of particles leave traces of their hectic and spiraling courses in the detectors, which contain gigantic electromagnets that affect the direction of the particles and permit measurement of their momentum. Physicists image the miniscule jet tracks on video displays, record characteristics of the particle showers and analyze the data on an array of powerful computers.

One of the four detectors at LEP is L3, which denotes the \$200 million experiment it serves. L3 (the designation refers merely to the third Letter of Intent to the CERN planning committee) is the world's largest scientific investigation to date in both human and material terms. Approximately 500 scientists from 143 countries are collaborating on the project. The electromagnet that sits within the four-story L3 particle detector alone weighs 7,810 tons and contains as much iron as the Eiffel Tower.

U-M scientists have been working on L3 since 1983. They and other researchers are exploring such fundamental questions of physics as:

- What is the nature of the forces that hold together the matter in the atomic nucleus?
- What is the source of the mass of atomic particles?
- Are there new, undiscovered elementary particles?
- Are the particles identified as elementary (having no internal structure) truly indivisible, or do some or all have an internal structure?

Headed by U-M graduate and Nobel Laureate Samuel C.C. Ting (see accompanying profile), L3 is also a quest for an elusive subnuclear particle called the Higgs boson, a particle that now exists only in a theory postulated in the 1970s by Peter Higgs, a Scottish physicist.

The Michigan crew on the team is led by Profs. Lawrence W. Jones and Byron P. Roe.



Photo by Ruth Jones

In a stainless steel tube that is part of the support for the L3 experimental complex in Switzerland are (standing l-r) the U-M's Profs. Lawrence W. Jones and Byron P. Roe and Research Scientist Geoffrey B. Mills; (front l-r) Research Scientist Tofigh Azemoon and Research Investigator Michael H. Capell.

"The Higgs particle is believed to exist, because such a particle provides the only logically consistent and theoretically developed means of imparting the known fundamental particles with mass or, in effect, weight," says U-M physicist Lawrence W. Jones, who with Prof. Byron P. Roe heads a Michigan crew that has worked on L3 since 1983.

"Without the Higgs," Professor Jones continues, "we know of no reason why, say, a muon is 210 times as heavy as an electron, or why all of the particles, and the matter made of them — people, the Earth, stars and so on — should have any mass at all."

In data from the experiment collected over the past year, the L3 team had hoped that one of the ephemeral jet trails detected at LEP would be the "footprint" of the Higgs boson, but by fall there was still no tell-tale sign and finding the Higgs at LEP is now considered a long shot by most experts.

The key variable, Jones says, "is whether nature has made the Higgs mass small enough to be created by the energies now available at LEP — 100 billion electron volts. If the Higgs mass at rest is equivalent to several hundred billion electron volts, it will take the SSC to discover it." An electron volt is a negligible amount of kinetic energy in ordinary matter; a billion electron volts is only a thousandth of that of a mosquito in flight. But

Michigan physicists at CERN work on world's biggest scientific investigation

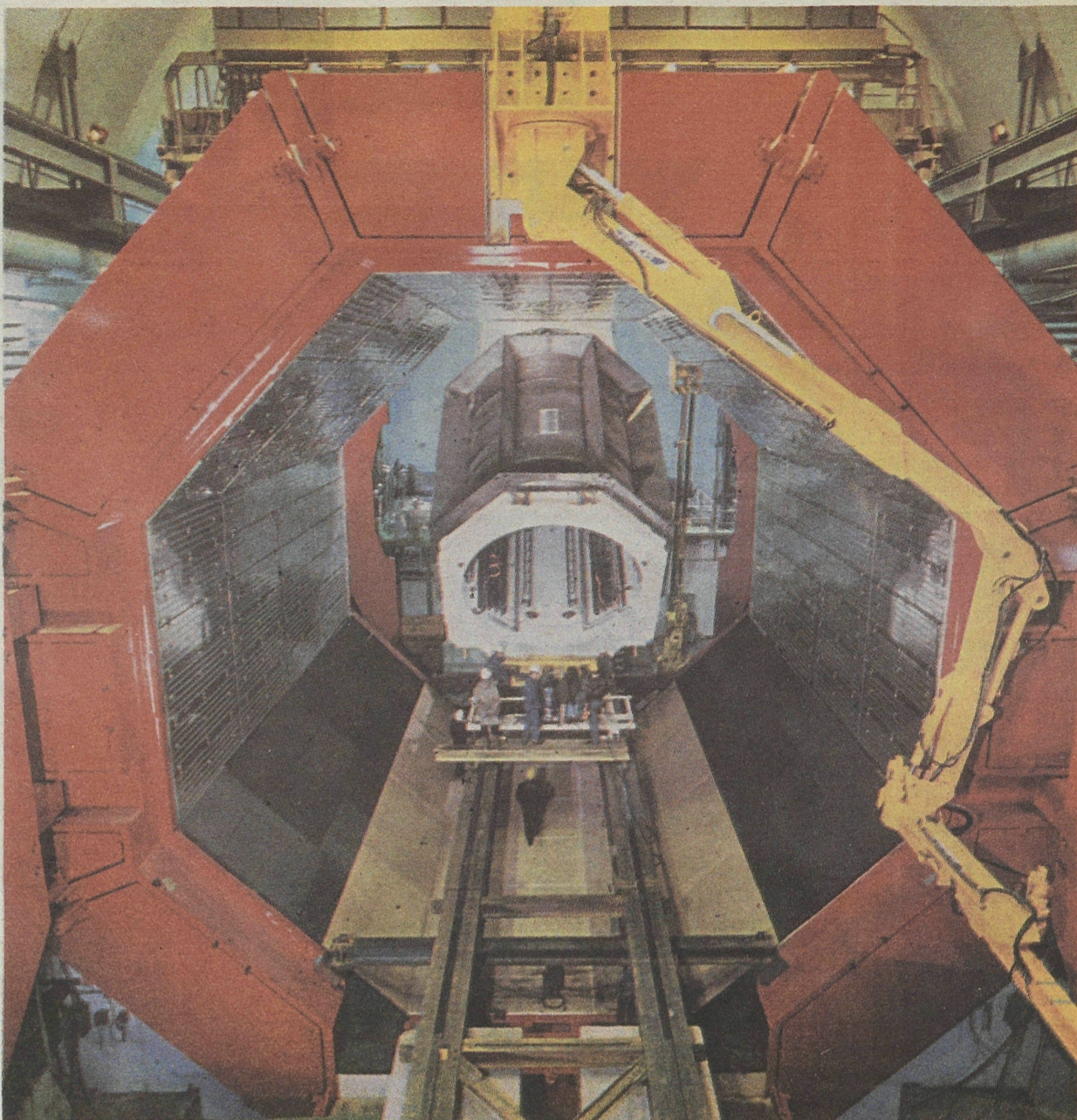
concentrated into a space as tiny as a subnuclear particle, billions of electron volts are powerful enough to transform energy into matter.

The SSC Jones refers to is the \$7 billion American Superconducting Super Collider to be constructed near Dallas, and scheduled to begin operation in 1998. The SSC will have a circumference of 54 miles — more than three times that of LEP's — with 10,000 magnets (twice LEP's) driving beams of protons into each other. The energy at collision will be 40 trillion electron volts versus the 100 billion of LEP.

Even if the Higgs shows neither head nor tail of itself at L3, Jones notes, "Other very important

Material Witnesses

Continued



Workmen install a support tube within the orange-rimmed 7,810-ton L3 magnet within the L3 detector. It is the largest magnet yet built for particle physics research, and is used to observe the particles produced in the electron-positron collisions.

studies and searches will continue at LEP." Two of several such studies Jones cites as examples are investigations of:

— Compositeness: "At one time atoms were thought to be indivisible; later it was discovered they were composed of electrons, protons and neutrons, which were in turn assumed to be the 'elementary' particles of matter. More recently, physicists have identified two classes of elementary particles — quarks and leptons — as the elementary constituents of electrons, protons and neutrons. But now some physicists think quarks and leptons are not truly elementary, but in turn are composed of yet smaller, more fundamental constituents.

— Supersymmetric Particles: "Nature may be symmetric on a higher level than we now know. For every quark and lepton physicists have found there may be another, more massive supersymmetric partner, with analogous but slightly different properties — such as spin — from quarks and leptons."

Ting's familiarity with the U-M physics department is a major reason why the University was invited to be a key participant in the L3 experiment. With the exception of the Massachusetts Institute of Technology and possibly Princeton University, Michigan has the largest presence of the 13 American universities involved. Indeed, ever since it opened a summer school in theoretical physics in the 1920s, Michigan has been considered a center for that branch of the science that gave birth to particle physics.

The National Science Foundation (NSF) has funneled about \$7 million through the Michigan group in support of L3 since 1984, making Michigan the largest recipient of NSF funds of the five NSF-supported U.S. universities involved in L3.

The L3 experiment is also the first large-scale and intimate collaboration between the Soviet Union, China and the United States. Other scientists working on L3 come from universities and research institutes in Belgium, Bulgaria, France, East and West Germany, Hungary, India, Italy, the Netherlands, Spain and Switzerland.

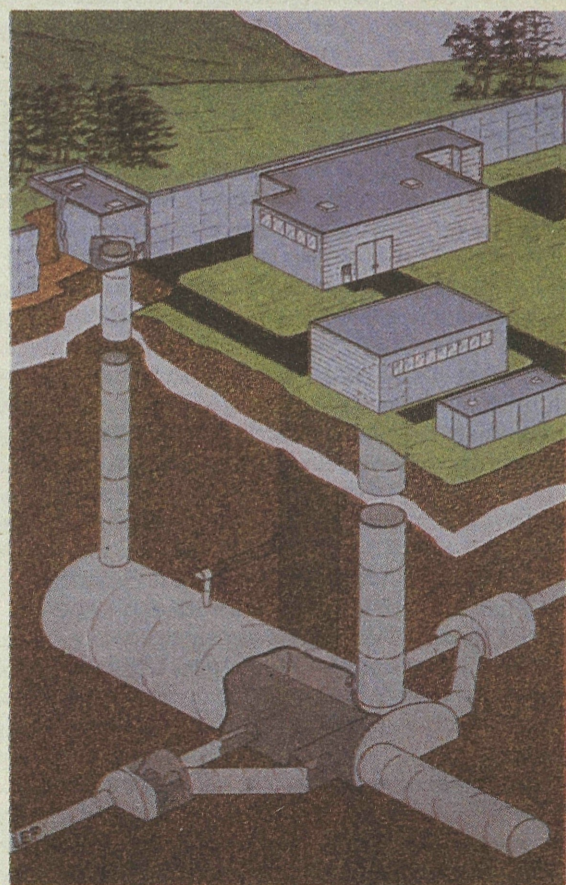
U.S. involvement in LEP experiments, and especially L3, will continue to be crucial to American particle physics research until experiments begin at the SSC laboratory in 1998, according to Professor Roe, who has been pursuing the Higgs boson and other new subnuclear phenomena for almost a decade. "It's clear," he says, "that Europe has taken the lead in particle physics. The Europeans have outspent us by a very large factor, and it's shown in the results. But much of what American scientists are learning on L3 can later be applied to the SSC."

As Jones, Roe and other Michigan physicists chatted on the CERN cafeteria balcony overlooking vineyards spilling down the slopes of the snow-capped Juras, it was obvious that a job at CERN comes with certain advantages, such as hiking and skiing in the nearby Alps.

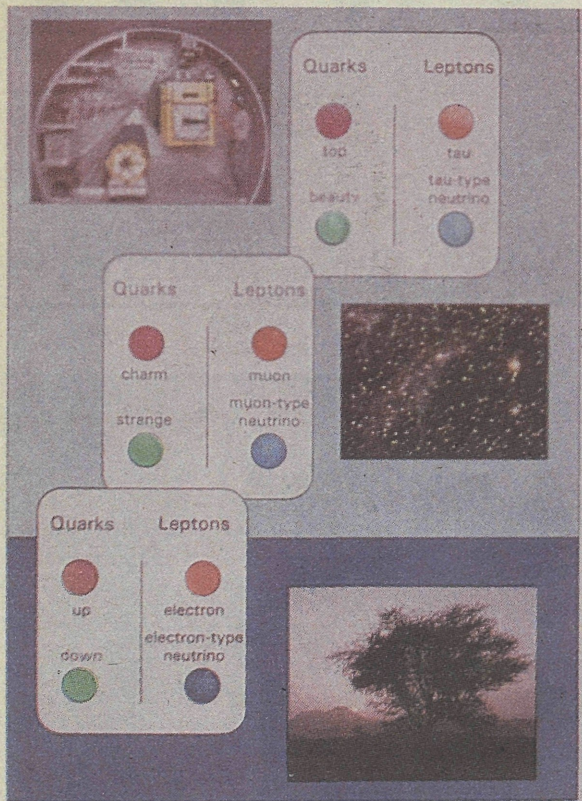
But it is a rare opportunity for the physicists to enjoy the mountain view, let alone hike or ski. They spend most of their time in the cavernous tunnel of LEP, which, despite its lighting and ventilation, smells like a huge damp basement. And added to these discomforts and the difficulties of moving one's family and adjusting to a foreign culture, a position at CERN also means doing without certain past-times.

"I realize now how important college football and basketball are in my life," confessed graduate student Steven Goldfarb, whose efforts to tune into Armed Forces Radio during the Wolverines' 1989 Rose Bowl victory were frustrated by Arabic and German broadcasts.

Because of the marathon working hours below ground, "you have to have an understanding spouse," said Roe, who sets aside time for mountain vacations with his wife.



Below the surface buildings at the LEP collider in CERN, Switzerland, are large detectors arranged around the electron-positron collisions points. The particle beams — accelerated in opposite directions through 4,000 electromagnets — travel in the tube marked 'LEP'. In the experiment halls, physicists detect the particles showering out of the collision, measure their energies, chart their tracks and perform other precise calculations.



These are the elementary particles of matter in what is now known as the Standard Model. Only the four particles in the bottom of the three families can be found in ordinary matter. The second family of particles can be found in space and are routinely produced in labs. The top family of particles existed briefly only in the aftermath of the Big Bang, but can be created in high-energy collisions. They were not known to exist before Ting's discovery of the J-particle in 1976.

Tofigh Azemoun, who has lived here with his wife and three children since 1984, belongs to an art group at CERN that sponsors regular life drawing sessions and exhibitions. He keeps a box of his pastel drawings in his office.

Goldfarb is captain of a softball team, the Leptons, that fields players from the United States, Sweden, France, Japan, China and Italy. They regularly compete against the other CERN team, predictably known as the Quarks, as well as against teams from other international organizations in Geneva.

Goldfarb and the other U-M physicists say they enjoy the CERN'S multinational society. "The in-

put is fantastic," he says. "Whenever you have a problem, you always get lots of different solutions — maybe too many solutions."

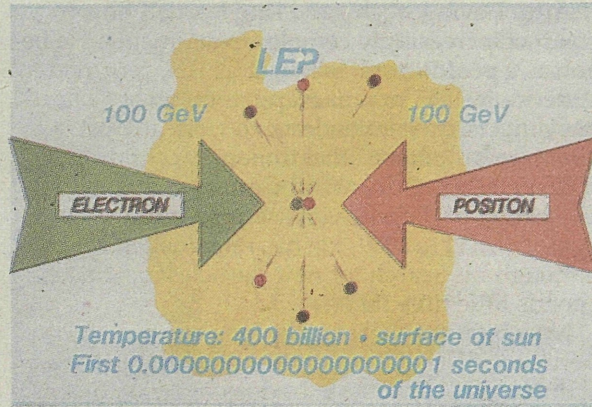
Isn't it hard to communicate in this under-ground country with people of so many different nationalities? No, Goldfarb replies. "Everyone here understands one main language."

And that is?

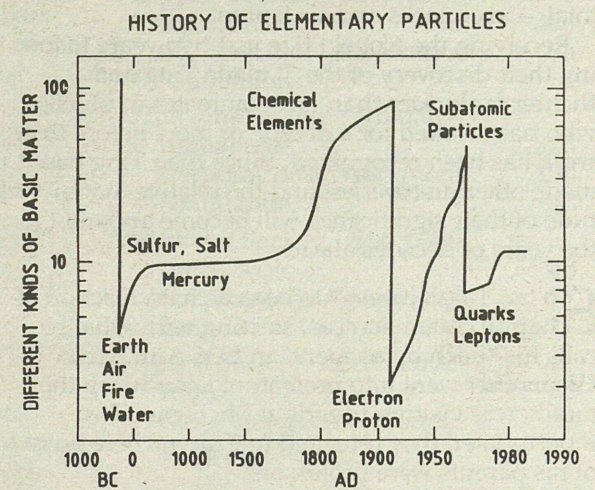
"Physics."

MI

Free-lance writer Madeline Strong Diehl is living in Italy while her husband, Edward, works on a U-M physics project at Assergi. We also thank Prof. Larry Jones for his major assistance on this article — Ed.

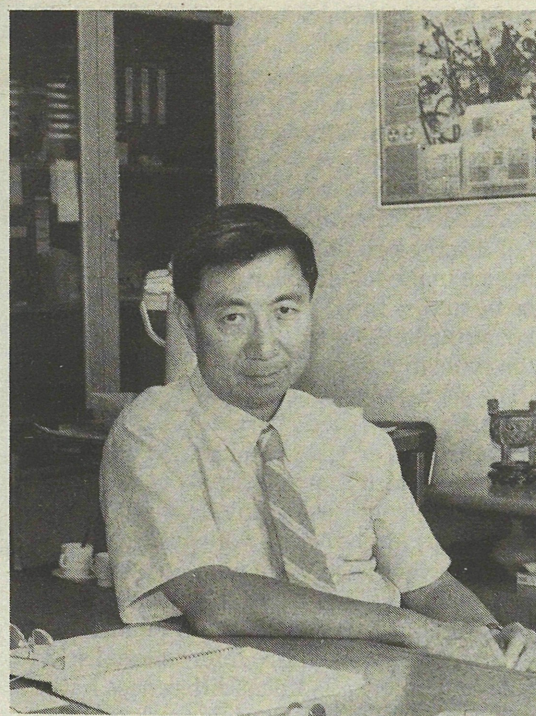


The energies produced in the collisions of electrons and positrons at LEP create a microcosmic Big Bang. The temperatures at collision are 4 billion times that of the Sun and occur in less than a second.



Samuel C.C. Ting: Physicist, Nobelist, Fan

He arrived in Ann Arbor speaking little English and carrying less than \$100 in cash; 20 years later he won the Nobel Prize for physics.



Ting

Photo by Madeline Diehl

By Madeline Strong Diehl

The list of a typical experimental physicist's career fantasies might look something like this:

1. Discover some of the most closely held secrets of the universe.
2. Win a Nobel Prize.
3. Design and coordinate the largest international collaboration in the history of science.

By the age of 45, Samuel Chao Chung Ting '59 B.S.E., '63 Ph.D., '78 Hon. Doc., had already done all this. Next he would like to see the results of item three — an experiment now operating after seven years' construction — blow the socks off the world of physics, confides the 54-year-old-physicist in his Geneva office at the European Organization for Nuclear Research (known as CERN from its French designation).

Here at CERN Ting heads a team of approximately 500 physicists from 33 universities and research institutes around the world, collaborating on what is called the L3 experiment (see accompanying article). If all goes as Ting hopes, the experiment will find a particle called the Higgs boson and lead to an explanation of how matter

acquires mass (weight), or it will yield something else "really surprising that would explode the standard theory" of how matter is composed.

When protons or electrons collide at very high energies, a shower of other particles may be produced; a new discovery at the subnuclear level requires sophisticated analysis of these produced particles. The energy density required approaches that of the Big Bang fireball that is assumed to have given birth to matter 15 billion years ago. Ting is heading the search for the Higgs boson at CERN's LEP collider/accelerator (see accompanying article), which many physicists think is not yet powerful enough to dislodge the Higgs particle that exists now only in theory. Other efforts to detect the Higgs are under way at other high-energy laboratories.

Some have compared the efforts of a high-energy experimenter like Ting to the tasks of being both producer and director of a *Gone With the Wind*-scale movie. A big difference between the endeavors, Ting has pointed out as a way of describing what he does, is that the elementary-particle physicist's objective is to find and confirm the existence of something as elusive as the lone raindrop of a different color among the 10 billion drops that might fall in one second on a city the size of Boston.

Ting's earlier experiments have provided critical contributions to the body of knowledge undergirding what physicists call the Standard Model of the subnuclear particles. These particles are now believed to be the elementary building blocks of the Universe (see chart). Most notable was his three-year effort at the Brookhaven (N.Y.) National Laboratory that resulted in the surprising discovery of the 'J' particle in 1974. This experiment brought him the 1976 Nobel Prize for physics, which he shared with Prof. Burton Richter of Stanford University, who simultaneously and independently discovered the same particle.

By the 1950s, our understanding of matter had progressed over the centuries from knowledge of crystals, molecules, atoms and atomic nuclei down the scale to such subatomic particles as the electron, proton, neutron and others. Subsequently, as a result of theory and experimentation, physicists postulated that there are just two families of indivisible particles of matter — the quarks and the leptons. In the early '70s, it was thought that there were three types of quarks and two families of leptons.

As more advances in theory were made, however, it seemed that the Standard Model required

Samuel C.C. Ting

Continued

the existence of an additional quark, called the charmed quark, and another symmetrical partner among the leptons. But until a theory is confirmed by observation and measurement, it remains an unsubstantiated bit of fancy. The discovery of the 'J' particle not only confirmed the existence of the charmed quark but also led to the expansion of the Standard Model to its present total — six quarks and six leptons.

Receiving the Nobel Prize just two years following their discovery of the 'J' made Ting and Richter far luckier than most laureates in physics, who have waited for a decade or more before their work has been recognized. Since then Ting has made other discoveries, and the relative magnitude of their significance will become apparent in the years or decades ahead.

So far, Ting's career has been a chain reaction of happy circumstances, starting with what he calls his "birth by accident" in 1936 Ann Arbor. His mother went into premature labor when the family was visiting friends at Michigan. Two months later, they returned to China where both of his parents were professors.

Ting's soothing voice retains a Chinese accent from his youth. As a refugee he fled with his parents from the Japanese throughout the 1937-44 war between China and Japan. After the Communists came to power in 1948, the family moved to Taiwan, where he started school at age 9.

Ting's birth in the United States gave him U.S. citizenship, which eased his return to Ann Arbor as a 20-year-old in 1956 with \$100 in cash and a desire to get a better education than he could get in Taiwan. George G. Brown, then dean of the College of Engineering, was a friend of his parents and invited Ting to live with him and his family, which Ting did throughout his undergraduate and graduate studies.

Adjusting to America was hard. "My first semester, I could barely speak any English," he recalls, "and that means nobody wants to work with you in the labs; people always try to avoid you."

Ting planned to study engineering and claims he switched his major to physics and mathematics to avoid flunking out of the College of Engineering. "I just could not understand engineering drawings," he says in a dead-pan manner. In any event, it took him only six years to sweep through both his undergraduate and graduate studies at Michigan.

Notwithstanding this speediness, Ting stood out in graduate school more for his drive than anything else, according to Prof. Larry Jones of the Department of Physics, an adviser on Ting's thesis and member of Ting's L3 experimental team at CERN. "He was a very hard worker, very brash, and always in a hurry — he wanted to finish and go on to new experiments," Jones recalls.



Jones

"Sam came from a background in China where he didn't have the kind of hardware experience growing up that many children find," Jones continues. "He hadn't crawled around under cars or made radios and tinkered as a child with mechanical things. So as a graduate student he had to learn about machining and electronics and so on from scratch. But he had very good physics insight and intuition."

After leaving Michigan, Ting learned how to conduct increasingly complex experiments. He began as a postdoctoral fellow at CERN, returned to America in 1965 to junior appointment at Columbia University, went on leave to work at West Germany's Deutsches Elektronen-Synchrotron (DESY) in Hamburg, West Germany, and joined the faculty of the Massachusetts Institute of Technology (MIT) in 1969. He has remained at MIT, although his search for new particles means he spends little time there.

Now back at CERN for the long-running L3 experiment, Ting still commutes regularly between Cambridge and Geneva, as does his wife, Susan Marks Ting, an MIT administrator. He begins the day at 6 a.m. to spend an hour or two with his 4-year-old son, Christopher. Then he goes to his office, seldom emerging before 11 p.m.

"When I first saw Ting, he was giving a seminar here at CERN on the work for which he later received the Nobel Prize, and I didn't like his attitude. I found it aggressive," recalls Yuri Galaktionov of Moscow's Institute of Theoretical and Experimental Physics, who heads the Soviet group in L3. "But when I started to work with him years later, I realized that one should have a person who decides. Before he makes a decision, he gathers everyone together and asks everyone for an opinion. He will force you to say something, while saying nothing himself. Often the opinions expressed are 100 percent different from each other. He listens very carefully, and if he sees the divergence is very big, he may have another round of discussion. Only after listening to everyone does he make his decision."

Once he makes them, Ting defends his decisions tenaciously. As he bluntly puts it: "It is rare for a person's work to change everybody's concepts. The advances of people like Newton and Einstein have overturned everybody's prior beliefs. To do that in experimental physics, it's extremely important that you do not go with the trend. You have your own opinions, your own judgment. You cannot have a vote in physics."

Ting's decisiveness coexists with considerable diplomatic skills, however, and they have been tested throughout the L3 project, for he has had to coordinate the most extensive international scientific collaboration ever. Political differences have never interfered with the scientific work on L3, Ting says, because the respective governments "always supported us since all want their scientists to do first-rate work." Ting knows how to appeal to this unifying motive.

Ting currently has a proposal for an international experiment even more colossal than L3. He's made the proposal to the Superconducting Super Collider (SSC) planned for completion in Waxahatchie, Texas, in 1998. The SSC will be three times larger than the collider Ting is using at the LEP facility at CERN. Ting's L* ("L Star") experiment would involve 850 physicists as collaborators. The U.S. contribution alone to L* would be \$300 million, almost twice the sum of L3.

Like L3, the L* experiment would have no known military applications; indeed, if approved, L* will place side by side scientists from arch-rival nuclear weapons institutes — Moscow's Kurchatov Atomic Institute and New Mexico's Los Alamos Scientific Laboratory — working together to glimpse and explain the mystery and beauty of a common universe.

"Certainly it's better," Ting says in his usual brisk style, "for physicists to argue with each other on technical things about their common experiment than to try to design weapons to destroy each other. No question about that. There's no need to hate each other. The world is large enough."



ABOUT OUR COVER

Most of the time, says Prof. Larry Jones, who took our cover photo outside Michigan Stadium in 1983, the behavior of his former student, Samuel C.C. Ting, is characterized by "an intensity, a drive, a real inner motivation to move and to not waste time."

Indeed, Jones says, a number of colleagues have reflected that Ting's prodigious driving energy and his taut organizational style occasionally make him quite difficult to work with.

Jones, who with Prof. Martin Perl (now at Stanford) served as Ting's doctoral thesis co-chair, also notes, "There have been times that I could hardly stand him, and yet I have a genuine affection for him. I believe that the relationship which develops between a thesis adviser and his or her doctoral student resembles in some ways a parent-child relationship. You follow the student's subsequent career and professional accomplishments with considerable interest and even a certain pride."

One of the activities Jones enjoys most with Ting is attending Wolverine football games. Ting became a fan during his six years at Michigan and still tries to take in a game a year.

"Several years ago, Sam brought one of his two grown daughters with him to a Michigan game," Jones remembers. "She said afterwards that she'd never seen her father so relaxed and unwound. As a matter of fact he's a very uninhibited fan. He'll cheer, jump up and down, slap you on the back and so forth. He can be very pleasant company."

Ting's Memories of Michigan

"When I was a student at Michigan, I think I was the only student who never missed a single football game in six years. There were times when it would be raining and snowing, and there were only 5,000 students at the game, and I would be one of them out of a 100,000-seat stadium. So still, even if it's only once a year, if I can I try to go there.

"I must say, though, Michigan did give me a very good education. They were very nice to me at Michigan; they always gave me scholarships. For me, Michigan has been a good experience. I learned a lot of things at Michigan, especially about a way of life, and how to get along with people."

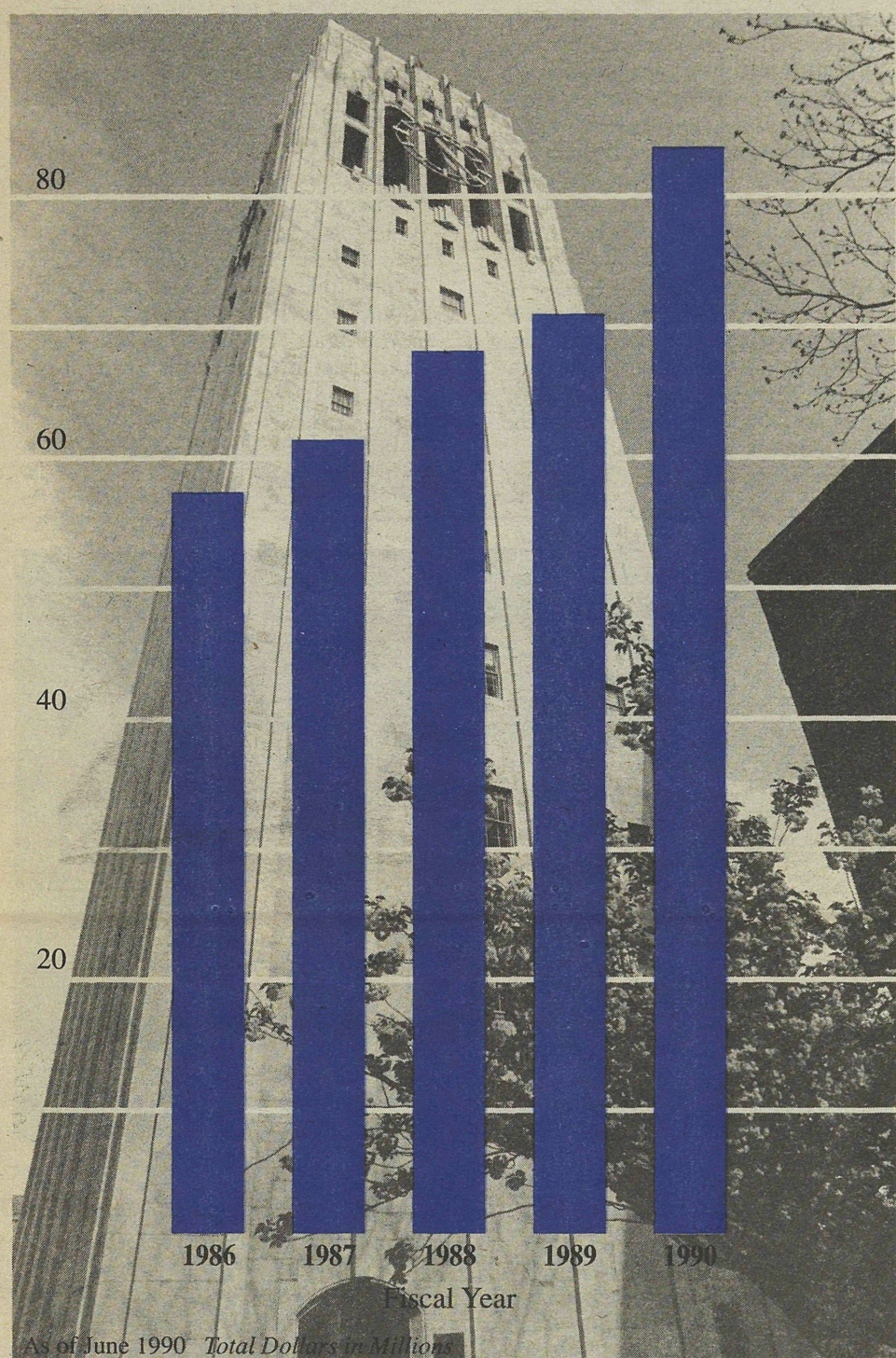
And has the Nobel Prize made his life much different? "No, I've felt the same. Life is slightly easier because it's easier to get support from government agencies. And if you go to a Michigan game, maybe you can get a better seat, hmmm?"

MT

PRIVATE GIVING

A Report on Private Giving 1989-1990

The University of Michigan



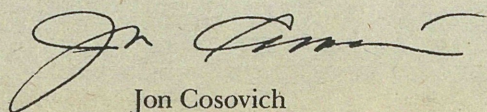
Growth of Private Giving

In the past year, we have reached an important milestone in private support for the University of Michigan. For the first time in the University's history, gift activity exceeded \$100 million. The grand total of \$110,265,020 includes \$83,608,567 in gifts and \$26,656,453 in net new pledges. These figures are impressive and gratifying, but as we confront the challenges of this next decade, it is clear that we must look at this new level of support not as an achievement on which we can rest, but rather as a foundation on which we will continue to build for the future.

Private support has become an essential element in the University's fiscal structure and, in the 1990s, will play an ever greater role in funding the University. This is clearly illustrated by another "first" of the past year: revenue from tuition and fees exceeded the appropriations from the state. This shift in funding shows both the limits of the state's resources and the approaching limits of tuition growth.

Private support represents the revenue source with the greatest potential for the new revenue needed to sustain the University's traditional quality leadership and impact in higher education. To achieve a new level of support, we are preparing for a major new fundraising effort. This effort will have important dollar goals, but it will not be solely concerned with securing gifts. It will also focus on encouraging our alumni and friends to become more involved in and to assume more responsibility for maintaining the University's position of leadership in higher education.

In undertaking this effort, we are encouraged by the hundreds of volunteers and thousands of donors who have already made a commitment to Michigan. A few of them are profiled here. As you read about their contributions of time and resources, we ask that you consider joining them in working for Michigan in the years ahead.



Jon Cosovich
Vice President for Development

Gifts at Work

The graphs in this report show a gratifying increase in the level of private support for Michigan. But in looking at the numbers and the bars it is important to remember that they represent thousands of individual gifts. A few of these gifts are described here. They may differ in size, motivation, and designation, but they all have one thing in common: they all have made a difference in the quality of the University.

Growth in Presidential Societies

The marked increase in private support for Michigan is reflected in the growth of the Presidential Societies, a University donor recognition program. The Societies now boasts almost 6,500 supporters, making it one of the largest groups of its kind in the country. It all began in 1962 when a group of dedicated alumni, to encourage significant gifts to the University, formed the Presidents Club. This donor organization has evolved into the Presidential Societies, five tiers of giving named for former University of Michigan presidents. The Societies includes individuals, corporations, foundations, and various associations, who, through their generosity, have helped make the University of Michigan the outstanding educational institution it is today.

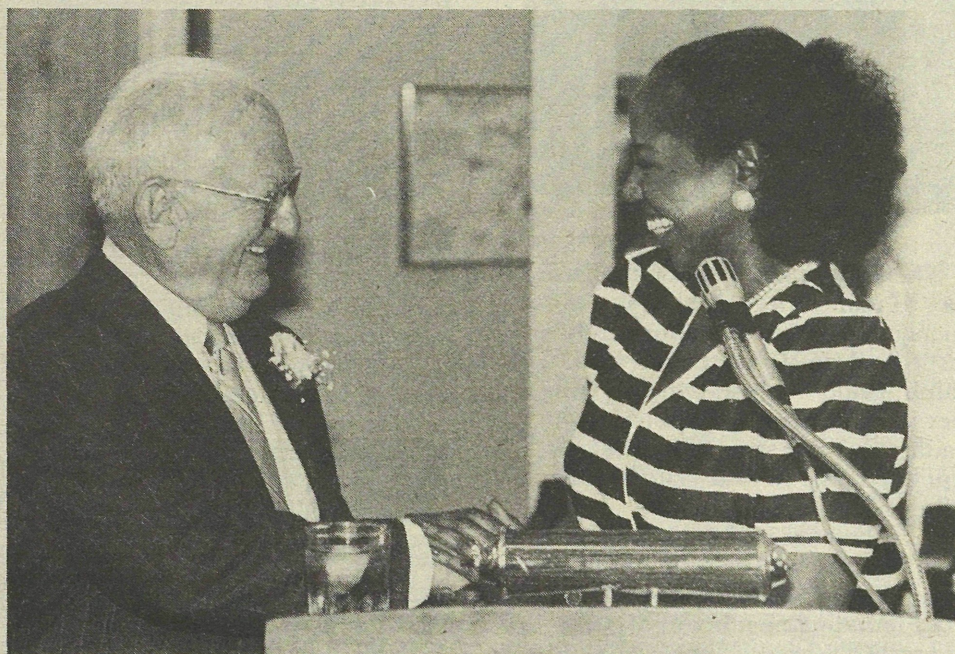
Presidential Societies

Presidents Club	\$15,000	
Individuals only		4,963
Tappan Society	\$50,000	
Individuals		363
Corporations/Associations		55
Foundations		5
Hutchins Society	\$100,000	
Individuals		623
Corporations/Associations		166
Foundations		49
Ruthven Society	\$500,000	
Individuals		43
Corporations/Associations		22
Foundations		16
Angell Society	\$1,000,000	
Individuals		82
Corporations/Associations		29
Foundations		34

Partners in Leadership

Partners in Leadership, a new program designed to encourage and recognize annual gifts of \$1,000 or more to the University, has completed a very successful first twelve months. Over 50 volunteers were enlisted for the peer solicitation portion of the program, and over 4,000 donors were recognized as Partners.

The Partners program complements the existing Presidential Societies program, which recognizes cumulative lifetime giving, while the Partners program acknowledges donors who have contributed leadership gifts within the past fiscal year.



Alfred Berkowitz receives thanks from Blenda Wilson, Chancellor, U-M Dearborn.

Dearborn's Newest Treasure

The French expression "piece unique" means the only one of its kind. The term describes both *La Table Palette* and Alfred Berkowitz who donated it to the U-M Dearborn.

Berkowitz worked with France's famed *Cristalleries de Baccarat* to come up with *La Table Palette*. Approximately 3' x 4' and weighing 750 pounds, the table is shaped in an artist's palette with crystal paint dabs in Baccarat's signature colors.

A self-described "impetuous buyer," Berkowitz sent 400 boxes of Baccarat crystal to the U-M Dearborn in 1985 — a collection worth over half a million dollars. Dearborn's Baccarat

collection, the largest in the country, represents a major part of the U-M Dearborn's renowned glass collection displayed in the Mardigian Library.

Describing his joy in giving the U-M such treasures, Berkowitz told how he and Joseph Marks, Curator of Collections and Exhibitions, stumbled upon a student who sat on the floor sketching a spiral-shaped Baccarat sculpture. "When we asked him what he was doing, he said he planned on transferring his drawing to the computer and using it in his thesis. That's beautiful," concluded Berkowitz. "I'm proud the University has this fine collection, especially when students connect to it in their own ways."

VOLUNTEERS

Michigan Volunteers

Their professions may vary; their backgrounds may be diverse; and they may live a mile or a continent away from campus. But differences and distances are irrelevant to Michigan volunteers. They are united by their belief in the University and the knowledge that their involvement can and does make a difference in the quality of a Michigan education. And as the people profiled here clearly show, Michigan volunteers are also united by a generosity of spirit that motivates them, again and again, to give freely of their time, their talents, and their energy.



JOHN W. ENGLISH
(BS '36, MA '40, PhD '51)

Since long before his retirement as superintendent of the Southfield Public Schools 15 years ago, John English has been a volunteer for the School of Education. Over and over again he has demonstrated his commitment by offering encouragement, guidance, and unflinching support.

His advice has always been simple. "There are teachers and administrators in every school district in Michigan with degrees from the U-M. You can reach out to these people. They want to support you. They are proud that they graduated from Michigan."

In 1975, English became the first president of the newly established Education Alumni Society and was reelected to that post five times. In addition, he was the education spokesperson to the U-M's Alumni Association Board and served on the search committee that selected President Harold Shapiro. Last fall, as national chair for the School, he helped kick off the new Partners in Leadership program in Northern Detroit.

His dedication and leadership have been recognized not just by the School of Education, but by the entire U-M community. In 1983, he was named Distinguished Alumnus by the Education Alumni Society and in 1986, received the University-wide Distinguished Alumni Service Award.



LAWRASON THOMAS
(BSE '57, MBA '58)

"The University of Michigan prepared me well for my profession," commented Lawrason Thomas, president of Amoco Oil Company. In turn, Thomas has shared his professional expertise with Michigan.

Serving on the President's Advisory Group, Thomas has helped evaluate the U-M's objectives and opportunities for financial growth. As a member of the Corporate Advisory Committee and the Business School's Visiting Committee, he has helped Michigan build stronger corporate relationships.

Thomas believes that the U-M's greatest challenge will be to focus those involved in supporting this institution — the faculty, administration, regents, and government representatives — on what the University should be.

Maintaining the U-M's level of high academic achievement is important to Thomas. "I volunteer not out of any sense of debt, but rather out of respect for a great institution and a desire to keep it that way."



LYNNETTE TETHAL

When Lynnette Tethal, a senior in the School of Art, began working for the Michigan Telefund in her freshman year, she simply wanted to earn extra money. Since then, she has grown increasingly committed to raising private support for Michigan.

In her job, she learned first-hand the important role alumni play at the U-M. She explained, "Many people I talked to told me wonderful stories about their years at Michigan. It was great to hear what the University means to so many people and to learn of the different ways alumni can show their gratitude."

After working for the Telefund, it was only natural for Tethal to become involved with the Senior Pledge Program. In her junior year she was a member of the Student Advisory Committee, and this past year she co-chaired the Committee with Cristin Clauser and Andrew Stenzler.

"The Program was a really positive experience for me and the entire Committee," she reflected. "It was exciting to see students from all over campus work towards a common goal. Year by year, students are better understanding the need for alumni support and are learning just how much the U-M will depend on us in the future."



FRANK H. TRANZOW
(BSE '59, MBA '61)

Perhaps it's because he attributes much of his success as a business and community leader to his Michigan education; or perhaps it's because his father-in-law, Alan MacCarthy, is a former director of development at the University; or perhaps it's because the work allows him to combine his strong interest in people with his equally strong belief in Michigan. Whatever the reason, Frank H. Tranzow has worked on behalf of Michigan for 30 years.

Wherever he was living, whether in Detroit, Minneapolis, or Kansas City, he joined with other Michigan alumni in working to promote the University. Today, despite living even farther away in California, Tranzow still gives generously of his time and talents, following up his work as a major gift volunteer in the Campaign for Michigan, with service on the Los Angeles Major Gifts Committee. In addition,

he and his wife, "Till" (BSN '60) are members of the Presidential Societies Executive Committee.



R. MALCOLM CUMMING
(BBA '58, JD '66)

As a student earning two degrees from Michigan, R. Malcolm Cumming recognized the quality of the University. As a partner in a prominent law firm in Grand Rapids, he recognized the contributions the University makes to the state. And as an informed alumnus, he recognized that if the University was to sustain its quality and continue its contributions, private support of Michigan had to grow. That is why Cumming has been an active volunteer in the University's fundraising programs.

In addition to important work securing major gifts during the Campaign for Michigan, particularly for the School of Business Administration, and his current membership on the Grand Rapids Major Gifts Committee, Cumming has helped to launch Partners in Leadership, a University program designed to encourage and recognize donors who have contributed \$1,000 or more to the University within a given year. He is currently serving as the metropolitan chair of the solicitation effort in Grand Rapids, and he is optimistic about the program. "I think Partners in Leadership will continue to grow. In fact, I think we've only scratched the surface of its potential."



ALBERT P. "PETE" PICKUS
(BA '53)

New knowledge, good times, and lasting friendships are things that most Michigan alums associate with their time on campus; but for many Michigan families Camp Michigan offers these same things long after graduation. As Albert "Pete" Pickus described it, "My family and I have gone to Camp Michigan for 23 consecutive summers — first, with young children, and now, as empty nesters. Camp has brought us lifelong friendships, as well as offering a better way to know the University through faculty forums." His affection for the Camp is one reason that Pickus is giving of his time to serve as the chair of the Steering Committee for the \$2 million Campaign for the Advancement of Michigan Programs. Under Pickus' leadership the campaign is over half way to its goal.

Although the effort on behalf of Camp Michigan is particularly near to his heart, it is only one of the many fundraising assignments Pickus has taken on for Michigan. He was a participant in the \$55M Program, a member of the National Campaign Committee during the Campaign for Michigan, former president of the Alumni Association, a member of the Presidents Club Executive Committee, and is now serving on the Cleveland Major Gifts Committee.



MIKE WALLACE (BA '39)

Mike Wallace of CBS's "Sixty Minutes" is known for getting to the heart of an issue through his incisive questions. It is a practice he continues when he speaks of his alma mater. "Those of us who went to the U-M were the beneficiaries of many good things. I have no doubt our years in Ann Arbor helped to launch us. How do we begin to repay that debt and to help make that opportunity available to others?"

For Wallace, the answer lies in providing not only financial support — two years ago he pledged \$500,000 to the Michigan Journalism Fellows Program establishing a fellowship in investigative reporting — but exceptional guidance and volunteer leadership as well.

He is currently chairman of LS&A's Enrichment Fund, an unrestricted fund designed to help the College face unexpected needs and realize new opportunities. In addition, he is a member of the President's Advisory Group and the Manhattan Major Gifts Committee, two significant focus groups aimed at strengthening Michigan's development efforts. And he stands behind his financial commitment to the Michigan Journalism Fellows Program by serving as a volunteer fundraiser.

As Wallace noted, "Life is a series of choices. One of them is the choice of how to give. It's important to give where it's most useful."



FRANK WESTOVER
(BBA '61, MBA '62)

Ask individuals at the Business School about Frank Westover and the words "prototypical volunteer" resound. Ask Westover about Michigan and without a pause he vows, "I love that school."

Senior vice president and controller of Whitman Corporation, Westover is a member of the Chicago Area Major Gifts Committee, has served on the School of Business Administration's Development Advisory Board and was three-time national chairman of the Business School's Annual Fund. For many years, he has been instrumental in the success of the School's Chicago phonathon.

Westover's commitment to the U-M originates in part from being a scholarship recipient. "A Michigan MBA opens doors, and I am deeply indebted to the University for giving me the scholarship that made it all possible."

As a volunteer, Westover enjoys being involved. He explained, "I like learning what's happening on campus. It has been wonderful to watch Gil Whitaker's initiatives take form at the Business School, seeing its excellent programs and reputation improve."

Partners in Leadership

THE UNIVERSITY OF MICHIGAN • ANNUAL GIVING



... to sponsor seminars

Rackham School of Graduate Studies: The democratic revolutions that swept across the world in 1989 were unprecedented in their scope and swiftness. Using undesignated gifts from its Annual Fund, the Rackham School of Graduate Studies was able to help students and faculty put these events in perspective. Rackham joined other units on campus to present a timely seminar titled "Emerging Concepts of Democracy: China, Eastern Europe and the Soviet Union."

Alain Touraine, director of studies at the School of Higher Studies in the Social Sciences in Paris, was the keynote speaker at the conference held April 5 and 6. In his address before an overflow crowd, Touraine placed the new democratic movements in an historical context. Subsequent speakers from France, the United States and Poland discussed the current state of the movements in the different regions.

The momentous changes in the world's political order were unforeseen and the necessity for a seminar on the meaning of those changes could not have been anticipated. The flexibility of The Annual Fund, however, enabled the Rackham School of Graduate Studies to join with others and successfully meet this unexpected need.



... to support students

School of Natural Resources: When the School of Natural Resources identified student support as its highest priority, annual gifts provided the funds to meet the need. Using \$250,000 in contributions from its alumni/ae and friends and a \$250,000 challenge grant from the University, the School created an endowed scholarship fund. This permanent resource for student support is being used to help offset tuition costs for continuing students and to underwrite the costs of internships.

The fund has already provided opportunities for students to gain valuable field experience. This past summer Jane Cassady and Shannon Nelson worked in Alaska, Cassady with the Southeast Alaska Conservation Council analyzing the Forest Plan and Environmental Impact Statement for the Tongass National Forest, and Nelson with the Division of Parks and Recreation in environmental education and resource management.

Partners in Leadership, the University program designed to encourage and recognize significant annual giving, has completed a very successful first year.

When the program was begun, 3,200 donors qualified as Partners by contributing \$1,000 or more in one year. At the end of the first year of the program, the number of Partners had increased to 4,000.

Partners in Leadership is a Universitywide effort to reach selected alumni/ae and friends across the country and to inform them of the real impact that significant annual gifts can have on the quality of Michigan's programs in research and teaching. (See related stories on this page.) In this first year, the University contacted prospective Partners by phone, by mail and, in two pilot cities, by volunteers.

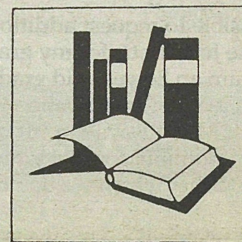
R. Malcolm Cumming '58 BBA, '66 JD, the metro-chair for Grand Rapids, Michigan, and Ira Jaffe '63 JD, metro-chair for northern Detroit, led 50 volunteers in a peer solicitation effort. This initial use of volunteers on a broad scale to solicit annual support yielded some pleasant outcomes in the first year and optimism for the coming year.

"My 'star' donor was a young woman in her 30s," related volunteer Betty Edman '52. "She was very positive about Michigan and was very happy to have a chance to contribute."

It is this type of donor response that makes Jaffe optimistic about the second year of the program. "We were quite pleased with our results in the program's first year," he said, "but with the experienced volunteers we have returning, I look for the second year to be even better." Jaffe, Cumming and the other volunteers have already begun working to make it so. The second year of the Grand Rapids effort was kicked off Sept. 6 and the northern Detroit effort on Sept. 12.

In addition to increasing the research capabilities of students and faculty with the CD-ROM work station, the Library increased the speed with which articles in scholarly journals can be retrieved from other libraries. Again using annual gifts, the Library purchased a FAX machine, which has greatly improved the turnaround time for requested articles. Now faculty members can expect to receive an article within 24 hours either by electronic mail or FAX.

These equipment purchases by the School of Education and the U-M Dearborn are just two examples of how annual funds are being used to give students and faculty greater access to resources for education and research.



... to provide study rooms

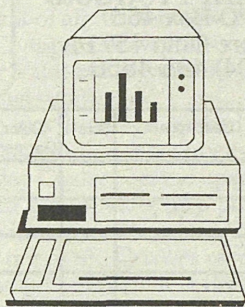
Rackham School of Graduate Studies: From the time many years ago when the East Room was reserved for women, the West Room for men and the Central Room was where the twain could meet, the study halls in the Rackham Building have been oases for graduate students who wished to study in quiet comfort.

The 150 study spaces in the halls have always been heavily used, especially on Saturdays and Sundays. For the past decade, however, students have had to find other places to study during much of the weekend because budget considerations forced the study halls to be open only limited hours on Saturdays and not at all on Sundays. But now, thanks to annual gifts, the Rackham School of Graduate Studies is once again able to open the three study halls on Sunday and to expand Saturday hours. Since gifts to Rackham's Annual Fund are unrestricted, the School can use them to cover the costs of offering the additional study times. Providing the support that allows facilities and resources to be used to the fullest is just one of the basic needs met by annual gifts.

The Many Uses of Annual Gifts

Laura Miller interned with the Natural Resource Defense Council in Washington, D.C., and worked on projects related to the Clean Air Act and right-to-know legislation. Jeff Frank traveled to New Delhi as an intern with the Centre for Science and the Environment. He developed audio-visual programs on environmental issues.

Such wide-reaching projects demonstrate a realization that there is no such thing as someone else's pollution. A degraded environment in one country can have direct impact on the environment of a country on the other side of the world. Addressing the issue requires a global perspective, and thanks to annual gifts, that is the kind of perspective these and other students of the School of Natural Resources have had a chance to work toward attaining.



... to purchase equipment

School of Education: Student teaching can be a lonely and perplexing experience. But it doesn't have to be. To make sure it isn't, to make sure it's rewarding and instructive, the School of Education has used annual funds

to provide its student teachers with ready access to information and support through a computer network.

In this program, student teachers can borrow personal computers and modems that give them access to the Michigan Terminal System. Through a communications program on the system, the students can have conferences with and leave questions for other student teachers, the School's teacher education staff, and outside education professionals whom the School has enlisted to form a Teacher Corps. Each semester more than 100 people participate in the program, discussing practical problems such as classroom strategies and theoretical issues such as the definition of literacy, as well as general concerns and ideas about being a teacher.

The students become quite attached to the system. As one student put it in an end-of-term note, "I'm going to miss this machine. I've got a lot of great memories (especially signing on around 4 a.m.), and I'm going to miss the opportunity to connect with so many people."

The U-M Dearborn: Using a computer to search for source materials can lessen the time needed and increase the resources available for scholarly research. But if the computer is available only at the end of a very slow-moving line, the time savings are lost and the expanded resources may not be accessible.

Using gift money from its Annual Fund, the University of Michigan-Dearborn alleviated this problem by purchasing a CD-ROM multi-user work station for its Mardigan Library. The new work station will accommodate up to 20 users at one time, giving more students and faculty quick access to the 9,000 scholarly publications stored in the system's three databases and rapid retrieval of the Library's education and psychology indexes.

Donors recognized as Partners in Leadership or as members of the Presidential Societies are invited to President's Weekends. The fall President's Weekend, November 9-10, will center around the issue, "Emerging America: Reviving the Dream." Donors who have not received an invitation or who have questions about the Weekend may call (313) 998-7900.

Younger all the time

Lisa Failer

If Carlton Daniels earns his M.D. on schedule in 1997, he will be just 22 years old.

Daniels, who turned 16 in June, is one of the youngest students ever to be admitted into the Integrated Pre-medical-Medical (Inteflex) Program, the University's seven-year accelerated medical sequence, but Daniels balks at comparisons with television's fictional medical whiz kid, Doogie Howser, M.D.

After all, "Doogie was already a practicing doctor at 16," Daniels notes. But sometimes, he admits, "I'll be on the phone and a friend will still pop up with an occasional 'Doogie.'"

Daniels, a graduate of West Bloomfield (Michigan) High School, is used to being at a different academic level from his chronological peers. When he was 4 and living in Ann Arbor, a local newspaper and a Detroit TV station ran stories about him that featured the fact that he could read his parents' college textbooks — and understand them.

By the end of kindergarten, school officials did not know what grade to classify him in. Some preferred to identify him simply as a genius, but he disapproves of the term. "It's a word I really don't like to hear about myself," he says earnestly. "because I don't find it true at all, not in the least."

Although his parents had his I.Q. tested when he was a child they will tell him only that he is, like the fictional radio-land children of Lake Wobegon, Minnesota, "above average."

"They don't want me to rely on my I.Q. for success," Daniels says, and he emphasizes that he has "always had to work hard for my grades."

Daniels has wanted to become a physician since he was 6, after learning that his grandmother was suffering from colo-rectal cancer. "She'd say, 'Carlton, are you going to one day find a cure for cancer?' and I'd say, 'Sure, Grandmother.'"

Although his grandmother is now considered cured, his childhood commitment was reaffirmed when in 1989



Daniels

his grandfather was diagnosed with incurable colo-rectal cancer, and his mother contracted a disease doctors think is lupus.

His mother's illness cinched his decision because "she was suffering a lot and getting sicker and sicker, and they couldn't find out what she had. It was very discouraging to see that."

In view of his age, Daniels was surprised when he was admitted to Inteflex, which accepts only 44 students a year from 450 to 500

applications. Inteflex integrates LSA and medicine curricula and cuts a year off the standard eight-year undergraduate-medical school time span.

Dr. Alphonse Burdi, director of Inteflex, says Daniels's age was not an issue in considering his application. "The decision to go into medicine comes at any time," he says. "You just can't look at age as a factor in these things. Sometimes the differences between 16 and 17 or 18 aren't that great."

In addition, Burdi points out, because all incoming "Flexies" live together in East Quad for their first year — and receive counseling and "nurturing" throughout their seven years, students even as young as Daniels have the support they need.

Despite the heavy academic pressure he'll face, Daniels doesn't expect his Michigan experience to differ much from what he's gone through before.

"That's my life," he says. "I've been younger all the time."

Whitaker is provost and academic veep

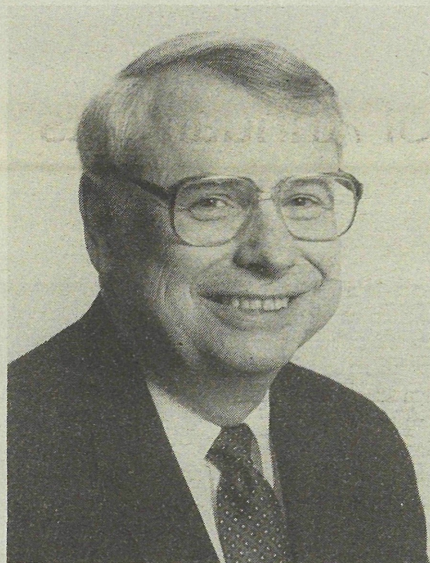
Gilbert R. Whitaker Jr., dean of the School of Business Administration since 1979, assumed new duties Sept. 1 as U-M provost and vice president for academic affairs. He succeeded Charles M. Vest, who left to become president of the Massachusetts Institute of Technology.

In announcing Whitaker's appointment President James J. Duderstadt said, "Gil Whitaker has provided outstanding leadership for the School of Business Administration. His strong personal vision has helped to make the School one of the top schools of business in the country."

As provost, Whitaker will be responsible for academic policy and personnel and for the budget of the entire University, which is now \$1.6 billion.

"I welcome the opportunity to serve the University as provost and vice president for academic affairs," Whitaker said. "Our principal challenges will be managing our resources so we can enhance the intellectual vitality of the institution and promoting intellectual respect and cooperation across disciplines."

Whitaker, 58, a native of Oklahoma, earned a B.A. in economics at Rice University, and an M.S. and Ph.D. in economics at the University of Wisconsin. Before coming to the U-M as dean in 1979, he taught at Northwestern University and Washington University in St. Louis, and was dean and pro-



Whitaker

fessor of business economics at the M. J. Neeley School of Business at Texas Christian University from 1976 to 1978. He and his wife, Ruth, have three children.

The following are excerpts from Whitaker's interview with the *University Record* on a variety of University issues:

On challenges facing the administration and faculty: "The challenge, I believe, is to keep improving our excellence as an intellectual center. In doing so, we will face some budget constraints that will make the job difficult."

"We also need to understand each other better. All of us are experts in our disciplines, but we don't always communicate well across disciplines. Each discipline has its own language and set of issues and it's often difficult to find a common ground. As we deal with the intellectual challenges of the institution, we must deal with each other responsibly and respectfully. That's the challenge for the decade."

Undergraduate education: "The real challenge in undergraduate education is to deal with the scale of the institution. There are so many undergraduate students that it's difficult for them to find their personal 'place in the sun' here as freshmen and sophomores. When they enter more structured programs or declare ma-

jors, they find more experiences that are conducive to learning.

"On the other hand, scale has an advantage by providing the richest mixture of possible intellectual adventures. But finding them, finding a place where one feels at home, is difficult."

Underrepresented minority groups: "Minority enrollment is something to which we must pay considerably more attention. The work at the Business School [which has brought minority enrollment to almost 25 percent] was an 11-year effort. It didn't happen overnight. We have just begun that same intensity in the University, one I feel will pay off in increased enrollment."

"There are a great many team projects in Business School classes and through this the students learn to work together, learn respect for each other. Working in groups is a terrific learning experience, both for personal growth and for enhanced intellectual achievement."

"Any opportunities we can provide for multiple constituencies in classes will help the overall environment. This will be made easier by sheer force of numbers as the numbers of underrepresented minorities grow. There will be more opportunities and respect can build from this."

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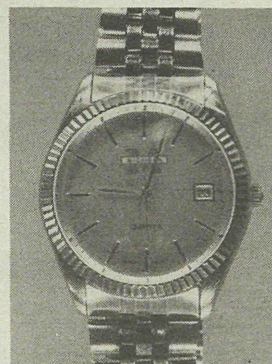
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'THE BIRTH OF THE VIRGIN,' tempera on panel by Sano di Pietro of Siena, Italy, ca. 1450 (Collection of the University of Michigan Museum of Art). The Siennese School was known for retaining Gothic and Byzantine ornamentation and style while other Italian schools were developing the vision and motifs associated with the Renaissance. (See story on front page.)

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