Before the Games Begin

Rensselaer alumni have already finished the race to design state-of-the-art Olympic facilities.
"When I retired, my charitable trust went to work."

Fred Leavitt '51

While Fred Leavitt '51 and his wife, Jeanne, were still working, they established a charitable remainder trust that deferred payment until their retirement. This trust saved Fred and Jeanne estate and income taxes, helped them avoid capital gains taxes, and benefited Rensselaer's interactive learning program.

For more information on how to supplement your retirement income and give to Rensselaer, phone Ruth Killoran at (518) 276-8726.
DID YOU KNOW?
In 1922, WHAZ, Rensselaer's first student-run radio station, began transmitting to places as far away as New Zealand. At the time, the human voice had never been carried so far. For more about Rensselaer's history-making, turn to page 16.

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Cover photo by Roy Ooms
Remembering
A Leader

As you receive this issue of Rensselaer magazine, many of you know that the Rensselaer family recently lost one of its most devoted citizens. President Richard Gilman Folsom died on March 11, 1996, at the age of 89.

It was my privilege to offer words of eulogy and condolences to his family and friends at the funeral held in St. Helena, Calif., near the home he and his wife, Carroll, had made after leaving Rensselaer. Dick Folsom became a good friend when I first assumed the presidency in 1993 and I always appreciated the wise counsel he offered for the Institute he loved so much.

Richard Gilman Folsom served as Rensselaer's 12th president from 1958 until his retirement in 1971.

Richard Gilman Folsom served as Rensselaer's 12th president from 1958 until his retirement in 1971. With strong, scholarly, confident, and dynamic leadership, he worked to transform Rensselaer into a true technological university.

With strong, scholarly, confident, and dynamic leadership, he worked to transform Rensselaer into a true technological university. He dedicated himself to establishing outstanding research and graduate programs and faculty while maintaining Rensselaer's tradition of excellence in undergraduate education.

Under his leadership, the campus experienced significant expansion, including the construction of the Materials Research Center, the Jonsson-Rowland Science Center, the Cogswell Laboratory, the Darrin Communications Center, the Rensselaer Student Union, and the Commons freshman dormitory complex.

President Folsom raised Rensselaer's aspirations for excellence in both teaching and research. He expanded the university's outreach to elementary and secondary schools. He strengthened the university's programs of development and fund raising. And he oversaw the expansion of the size of the student body.

Dr. Folsom was educated at the California Institute of Technology. He served on the faculty of the University of California at Berkeley for 20 years as a leading scholar in the field of fluid mechanics. His research interests included such diverse subjects as food preservation by radiation, landing of supersonic aircraft, and machining of tough metals. His involvement with professional societies and community organizations was extensive. He was director of the Engineering Research Institute at the University of Michigan before being chosen as president of Rensselaer in 1958.

On campus he is remembered as a man of great integrity and fairness who showed only the highest regard for all members of the Rensselaer community. He and his wife, Carroll, who predeceased him in 1977, established a sense of community on our campus through the hosting of numerous social events in their home.

To the end of his life, this scholar and educator was devoted to Rensselaer and to the task of preparing young men and women for leadership in a technological world. I will miss him very much.
Baseball Connection
I read with great interest the article on Mike Herman '62 and his involvement with the Kansas City Royals ["Going to Bat for Kansas City," March '96]. It's nice to know there is another RPI alumnus also involved with baseball.

Among other things, I am currently one of the owners and managing partners of the Norwich Navigators, which is the AA affiliate of the New York Yankees. We are members of the Eastern League and play all our home games in a brand-new stadium in Norwich, Conn.

Mark Smith '64
Connecticut

Sharing History
I don't know if this has already come to your attention, but the reminiscences you published in the Wartime Navy Reunion article [March '96] are exactly the type of material being sought by the United States Naval Institute (a nonprofit organization, not a part of DoD or DoN, but interested in all facets of USN/USMC/USCG issues and history) for their oral history project.

I have nothing to do with USNI, except being a member, but I share a love of history and the preservation thereof. I hope you will persuade the author of the article to contact them in order to ensure that the valuable recollections from the article are preserved for the future. Keep up the good work.

J.A. Gherlone Jr. '87
Lt. USN
North Haven, Conn.

Call for Nominations
Nominations are being accepted for the 1996 William F. Glaser '53 Rensselaer Entrepreneur of the Year award, sponsored by the Lally School of Management and Technology.

The award honors Rensselaer alumni who are successful entrepreneurs and role models. Past winners have been invited into the classroom to share their experiences with current students.

Please submit nominations to: Jane McCumber, 303 Lally School of Management and Technology, Rensselaer Polytechnic Institute, Troy, NY 12180. Or call (518) 276-8398 for more information.

The deadline for nominations is July 1. The winner will be announced at the Entrepreneur of the Year celebration this fall.

Rensselaer wants to hear from you. In order to provide space for as many letters as possible, we often must edit them for length. Please address correspondence to: Rensselaer, Office of News and Communications, Rensselaer Polytechnic Institute, Troy, NY 12180, or e-mail at alum.mag@rpi.edu.

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Experience of a Lifetime— The Class of ’96 Looks Back

Members of the Senior Class Council met in March with Juliane Pagel, a graduate student in the technical communication program, to reflect on their days at Rensselaer.

"We're going to miss everybody. I'm beginning to realize it more and more. Graduation will be hard," says Meg O'Bryan, chair of Senior Week.

For many members of the Class of '96, the happiness of graduating and entering a new phase of life is tinged with a sadness as well. Those who have made Rensselaer their home for the past four years will not soon forget their experiences here.

Experiences such as Grand Marshal Week, an event that attracts students and the surrounding community alike. From a date auction their freshman year to a LEGO contest this year, the senior class has many fond memories of this festive annual event.

The senior class proudly remembers the men's hockey ECAC championship last year, as well as the American Women's College Hockey Association championship in 1994. In fact, the women's hockey team moved up to the varsity level this season, they note.

The council members say they're glad that Rensselaer has worked to broaden its ratio of women to men in recent years. While men still outnumber women, the numbers have become more proportionate, they say. The Class of 1999, which entered this fall, is 25 percent women.

Academically, "it's been very challenging here," O'Bryan admits. "I worked hard and I'm proud of myself." O'Bryan and her peers feel Rensselaer gave them the skills and confidence to tackle whatever challenges the future may hold.

The seniors noted that Rensselaer has enhanced the scope of its academic offerings by starting to incorporate interactive learning into the curriculum. Bill Phillips, senior class president, worked as a teaching assistant in one of the first interactive physics classes. "Like anything, if you get to do something hands-on, you learn it better," he states.

Joe Freda, a student senator and advertising director for the Poly, points out another important change the class has seen. "A lot of administrative positions changed in our four years. Basically, just about every major director or dean or vice president changed," Freda observes.

"I think the positive side is that many of the administrators learned their new roles along with our class," notes Phillips. "I think there's more chance of having student input into running the school than if there were established people in those roles."

At the helm of this change stands President R. Byron Pipes, who came to Rensselaer in 1993, the sophomore year of the Class of '96. Phillips has found Pipes to be ready and willing to work with students.

"The president has been very, very accessible. I've walked over to his office before, without an appoint-
ment, and he lets you just walk in and talk to him. All the people who work for him are also just as accessible and enthusiastic about talking to students,” Phillips says.

In order to give back a part of what Rensselaer has given them, the seniors are presenting the university with a room for “recreational reading” in Folsom Library as their class gift.

Paul Taylor, a senior class representative and chair of the Gift Committee, explains, “The reading room is something students can really use, and it benefits the whole Rensselaer community.”

It is this community that the Class of ’96 will remember years after they cross the stage on graduation day to receive their long-awaited diplomas.

O’Bryan sums it up: “It will be hard to say goodbye.”

**Testing Fuel Cells**

A device that tests the performance of fuel cells has been designed and built by two undergraduate students working with supervisors in Rensselaer’s Department of Chemistry.

Oona Jackson, a sophomore chemistry major, and Alden Melbourne, a senior in computer science, designed and constructed the apparatus to test fuel cells under contract to the New York State Energy Research and Development Authority (NYSERDA).

NYSERDA, which has provided some funding to companies in New York state that develop alternative energy sources, needed to know how well certain fuel cells perform in tests conducted by independent researchers.

The authority turned to Rensselaer, where chemists first had to build an apparatus that could control and monitor the tests 24 hours a day for several hundred hours. The test apparatus had to provide continuous flows of hydrogen and oxygen (the energy sources) at specific pressures, temperature, and humidity. It also had to record all vital data minute by minute, including the fuel cell’s voltage and amperage and how much heat and water were being produced as byproducts of the chemical reaction.

Supervised by Peter Locke, a doctoral student in chemistry, and Norbert Hepfinger, associate professor of chemistry, Jackson and Melbourne tackled the task of designing computerized test equipment as part of Rensselaer’s Undergraduate Research Program.

“The undergraduate students did most of the work,” Locke says. “They designed the device, drew the schematics, designed the computer interface, ordered the parts, and assembled it. They did virtually everything.”

The fuel cells now being tested are small prototypes produced by Mechanical Technology Inc. (MTI), a Capital Region company that is developing cells for use in automobiles. Fuel-cell research at MTI is funded in part by NYSERDA and Ford Motor Co.

Fuel cells hold great promise as an efficient source of power that uses easily renewable resources and produces no harmful emissions, Locke says.
ENGINERS URGED TO EARN MASTER'S

One-year professional master's degrees, intended for engineering practice, have been inaugurated by Rensselaer in all 14 of its engineering programs.

"The National Academy of Engineering recently recommended that the first professional engineering degree be the master's degree rather than the baccalaureate degree," according to Richard T. Lahey Jr., dean of engineering.

"Industry increasingly seeks a master's degree for entry-level engineers. Moreover, master's students learn additional engineering skills that prove invaluable to career growth."

Starting salaries for engineers with a master's degree average $43,500, according to the National Association of Colleges and Employers, 20 percent higher than the starting salaries for engineers with bachelor's degrees.

Representatives of 150 companies recruited for master's degree engineers at Rensselaer this fall.

Unlike the traditional Master of Science degree, which is intended as the basis for further graduate work, the professional master's does not require a thesis and normally can be completed in one calendar year.

"Alumni who may be interested in the latest tools and technology, or in updating their skills, are encouraged to consider a one-year program that could be customized to meet their particular needs," says Vicki Lynn, assistant dean of engineering.

For more information on the one-year professional master's program, contact Lynn at (518) 276-6203 or lynnv@rpi.edu.

When in Rome...

Students participating in the School of Architecture's Roman Studies Program last fall got their hands dirty as they learned something about ancient Roman architecture. The 22 Rensselaer students worked with archeology students from the University of Rome to survey an ancient Roman site. The ruins of "some extremely interesting and complex villas" were discovered during excavation at the site where the new University of Rome campus is being built, according to Cinzia Abbate-Gardner, site director for Rensselaer's Roman Studies Program.

"The University of Rome archeology students taught our students how to recognize different techniques of Roman construction. In turn, the architecture students taught them how to draw and survey," says Abbate-Gardner.

The semester's memories—recorded in photos, sketches, drawings, and models—were shared in an exhibit at the Greene Building in February.

"The amazing thing was the cultural exchange," says Abbate-Gardner.

"Students who barely spoke each other's language became good friends."

The School of Architecture has been sending students to Rome for more than 15 years. During the semester abroad, students take part in three major field trips in Italy, visiting the northern region, the hill towns, and the southern region, including the Amalfi coast.

The tours include famous historical sites as well as contemporary Italian architecture, according to Abbate-Gardner, giving students the chance to "trace differences in culture, different expressions of architecture."

Architects abroad: Rachel Herwaldt '95 and Agnes Dolata '96

Trip planned for this fall

This fall, the school has organized a trip to Rome and the Amalfi coast for alumni and friends of Rensselaer. Intended as an "educational holiday," the 10-day trip will feature narrated tours of ancient ruins as well as current architecture. According to Alan Balfour, dean of architecture, "as much care will be given to eating and dwelling as to the scholarship that will inform the journey."

The trip is also intended as a fundraiser to help maintain the Roman Studies Program. If you're interested in learning more about the trip, contact Suzanne Collins at (518) 276-6478.
"Here's to old RPI, Her fame may never die. Here's to old Rensselaer, She stands today without a peer..."

The Rensselaer Music Association (RMA), which encompasses eight campus musical groups, has produced a CD of traditional Rensselaer songs and cheers. Featured are the symphony orchestra, symphonic band, jazz band, percussion ensemble, brass quintet, chorale, the Rensselyrics, and the Pep Band.

With production assistance from Cathedral Sound, an area recording studio, the groups performed and recorded their numbers in the Great Room of Heffner Alumni House. "The acoustics are wonderful, probably the best on campus," says Kiona Zukoski '96, RMA chair.

The 72-minute CD features approximately 20 pieces. Songs include the alma mater, "All We've Learned at Rensselaer," "Loyal Rensselaer," "On Reunion Day," and "Glorious Heights," as well as popular Pep Band cheers.

Included with the CD is a booklet that contains background information on some of the songs. "The CD will prove to be a valuable historical resource for Rensselaer in the future," predicts Mike Steele '95, RMA chair.

If you're interested in purchasing the CD, send $23.95 (includes shipping and handling) payable to: Rensselaer Union, Box 31, Rensselaer Polytechnic Institute, Troy, NY 12180. If you have questions, call (518) 276-6505 or e-mail rpi-music-cd@rpi.edu.

Mark Rice '71 and John Chen '96

Student Entrepreneur of the Year

John Richard Chen, a senior industrial management engineering major, has received Rensselaer's John R. Schumacher '43-Thomas Alva Edison Entrepreneurship Award. In winning, Chen has been named 1996 Undergraduate Student Entrepreneur of the Year by Rensselaer's Center for Entrepreneurship of New Technological Ventures in the Lally School of Management and Technology. Mark Rice '71, director of the center, presented the award Feb. 12 as part of the university's Professional Leadership Program.

The Schumacher-Edison Entrepreneurship Award provides a $500 fellowship to a Rensselaer undergraduate who has demonstrated outstanding entrepreneurial persistence and promise.

A 21-year-old resident of Andover, Mass., Chen is founder and president of C&P Sunrise Inc., which provides study-abroad experiences in mainland China for people with serious interest in the martial arts. The company realized more than $100,000 in sales during its first year of operation.

Chen is a 32nd-generation martial arts monk of the Shao-lin Temple founded more than 1,500 years ago in Henan, China. Proficient in both Mandarin Chinese and Taiwanese, the American-born Rensselaer student has taught conversational English at Tsing-Hua University and at People's University in Beijing.

Chen was leader of his Introduction to Engineering Design team, which won the 1994 best design award from Andersen Consulting and Procter & Gamble for its storage pipe inspection robot. He is now enrolled in the graduate-level course Starting Up a New Venture.

John R. Schumacher '43 is chairman of the board of Clinical Electronics in Menlo Park, Calif. As a boy, Schumacher met Thomas Edison, who encouraged him to become a chemical engineer. During his career he has started companies in geothermal energy, Formica processing, and other technical fields.
FROM GENE SPlicing TO GATORADE, some of the “brain children” conceived in university labs are making research profitable for schools and scholars alike. The race to the marketplace is called “technology commercialization”—and it’s hot on campuses nationwide. Intensive patent-and-licensing activities are relatively new at most universities, because schools did not “own” anything that came out of federally funded research until passage of the Bayh-Dole Act in 1980.

“We had wonderful ideas that never went anywhere because the government didn’t pursue commercialization,” says Charles Rancourt ’70, director of Rensselaer’s Office of Technology Commercialization (OTC). “Congress realized that the results of academic research would be put to better use if universities were allowed to market their discoveries. Bayh-Dole really benefited the country. And it created a whole new ‘business’ for universities,” he says.

Business has been brisk. Before passage of Bayh-Dole, fewer than 250 patents were issued each year to universities. Since 1990, the annual average has climbed to 1,500, and licensing activity is growing rapidly.

Rensselaer is determined to improve its share of the market. In March, President R. Byron Pipes asked Michael Wacholder, director of the Office of Economic and Technological Development, which oversees both the Technology Park and the Incubator Center, to head up a heightened effort to transfer technology. The Rensselaer Technological Entrepreneurship Council—RenTEC—is Wacholder’s answer to the challenge.

“RenTEC, a coalition of Rensselaer’s entrepreneurship experts, promises us significant tangible and intangible benefits,” Pipes says. “It is a creative plan for bringing innovations to the marketplace and, ultimately, much-needed new revenue streams into the university by putting our existing resources to better use. Equally important, RenTEC offers us ways to nurture, reward, and recognize the creative genius of our community of scholars and researchers.”

“By doing a better job at commercializing technology we can produce revenue for the Institute and at the same time help faculty members realize a financial reward from their work,” Wacholder says. “The exciting thing is that it can be a win-win for everyone—our faculty, their departments, the Institute, the students, the alumni, and the economy.”

More than the sum of its parts

RenTEC is not really a new creation—the key pieces have been in place for a long time. “We’re just combining our already considerable resources to create an organization that will feel bigger and perform far better than the sum of its individual parts,” Wacholder says.

The RenTEC team includes Dorothy Reynolds, manager of marketing and leasing for the Technology Park; Glenn Doell ’82, director of the Incubator; Mark Rice ’71, assistant dean of the Lally School of Management and Technology and director of the school’s Center for Entrepreneurship of New Technological Ventures (CENTV); and Rancourt, director of what until recently was called the Office of Patents and Licensing. A recent addition to the RenTEC team is Jerry Mahone, who returned to Rensselaer in April to work with Mark Rice as the managing director of CENTV. Mahone was formerly with Rensselaer as the second director of the Incubator during the mid-1980s.

“Our new name, the Office of Technology Commercialization, expresses our mission much better,” says Rancourt. “We’re looking to improve our success in commercialization—getting our technology to the marketplace. We need to become ‘smarter’ at what we do with patents and licenses, and focus on the success factors. And we think tapping into Rensselaer’s extensive entrepreneurship network will add tremendous strength to what we’re doing.”

Rice is an expert at bridging administrative boundaries. CENTV was created in 1988 for the express purpose of connecting the Lally School (and by extension the rest of the university) to the community of entrepreneurs in the Incubator, the Tech Park, and beyond. As former director of the Incubator, Rice has always been part of Wacholder’s Economic and Technological Development organization.

“This is one terrific team,” Wacholder enthuses. “These are really good people who know what they’re doing and who already work well together. It was just time to formalize and enhance the relationships.”

“This new organization offers new synergies and new opportunities for the OTC and for Rensselaer,” says Gary Judd, dean of the faculty. “Intellectual property is still very much an untapped resource for Rensselaer and for our individual inventors. Both can benefit greatly by recognizing the value of the ideas they create.”

All the way to Wall Street

What is today one of the nation’s highest-ranked entrepreneurship curricula made its debut in 1980. The national-award-winning Incubator opened in 1981 followed the next year by
RENSSELAER HATCHES A PLAN FOR COMMERCIALIZING TECHNOLOGY

By Margaret M. Knight

to Wall St.
ground-breaking for the Technology Park, which is now home to 50 companies with 2,000 employees.

"It didn’t happen all at once," Reynolds says, "but piece by piece, it’s grown so that today I think we do better than any other university at converting technological innovations into businesses and products. Eighty percent of the companies that have ‘graduated’ from the Incubator are still operating.* Thirteen of today’s 30 Incubator companies are faculty owned or founded. And what’s truly remarkable is that it’s seamless—from the laboratory or classroom all the way to the stock market."

Reynolds illustrates her point with three Tech Park companies—MapInfo, Exponential, and ILINC.

MapInfo, developer of one of the most successful desktop mapping systems in the world, began with an idea conceived by Sean O’Sullivan ’85 and John Haller ’86 for a student project. Laszlo Bardos ’85 teamed up with the pair in Professor Pier Abetti’s Principles of Entrepreneurship course. Encouraged to turn their hypothetical company into the real thing, the three invited Andrew Dressel ’84 to join them and launched their venture in 1985. With solid business advice and help from people like Rensselaer Trustee Warren Bruggeman ’46 and Michael Marvin, who left RPI to direct the fledgling business, MapInfo began to make entrepreneurial history.

In 1993 the company had grown to 180 employees (many of them Rensselaer graduates) and moved into a 40,000-square-foot building in the Tech Park. A year later, when MapInfo shares hit the stock market, the firm numbered 250 employees. Now they occupy more than 100,000 square feet in the Park, and they’re still growing.

“It’s all there,” says Reynolds. “Students, faculty, labs, the curriculum, the Tech Park, local and regional support—all the way to Wall Street.”

New companies no longer have to leave the area to get seed money, Reynolds continues. With Robert Godgart ’82 (another successful entrepreneur), Marvin founded Exponential Business Development Company. Exponential provides financial support and management services to start-up firms from its offices in the Tech Park.

One of the Rensselaer start-ups launched with money from Exponential—Interactive Learning International (ILINC)—is being hailed as the next success story.

Founded in 1994 by two MBA graduates and Professor Jack Wilson, dean of undergraduate and continuing education, ILINC develops distance-learning software for the interactive virtual classroom. Sales increased 500 percent from 1994 to 1995, and the company grew from its three founders to 18 employees in just 18 months. It moved from the Incubator to larger quarters in the Tech Park in November 1995.

ILINC is an example of a company not just encouraged, but actually co-founded by a member of the faculty collaborating with students—MBA students who came to Rensselaer specifically for its world-class entrepreneurship programs. Mark Bernstein ’94 and Degerhan Usluel ’94 planned the company in Rice’s New Ventures class and joined Wilson. Early help with product development came from alumnus Paul Severino ’69, one of the nation’s most successful entrepreneurs and winner of Rensselaer’s Entrepreneur of the Year Award in 1993.

“Our entrepreneurial activities reach back into our research centers and academic departments where new ideas are generated. And they extend far out into the world through our vast alumni network,” Doell says.

**Picking the winners**

Wacholder is convinced that the Institute hasn’t yet begun to realize its potential for commercial success. But there are substantial risks, he cautions.

Patents are expensive. It costs at least $10,000 to get a U.S. patent, much more for an international one. And the process can take two years with no guarantee of commercial success.

“One of the biggest problems is that we just don’t know how to tell which inventions will succeed in the marketplace. And by ‘we’ I mean everyone in the field,” says Rancourt.

In an article in The Scientist, author Steven Benowitz writes, “[T]he challenge... is choosing the right project and matching it with the right industry at the right time.” He quotes Lita Nelsen of MIT saying, “We make case-by-case decisions all the time using a very cloudy crystal ball.”

Rensselaer’s unique expertise in entrepreneurship can help clear up that crystal ball, Wacholder believes.

“Many of the schools that are making millions from the commercialization of their technologies lack Rensselaer’s incredible resources. Most of them don’t have an incubator, a technology park, or a regional support network. They don’t have an entrepreneurship center linked to curriculum on the one hand, and to unbelievably savvy and successful alumnus entrepreneurs on the other.”

With RenTEC Wacholder plans to exploit these strengths.

First, RenTEC will capitalize on the know-how existing on campus—in the Lally School of Management and Technology (which Success magazine has named among the 25 best schools for entrepreneurs), in the Incubator (winner of the 1995 Incubator of the Year award), and in the world-renowned Technology Park.

Second, it will expand on programs and services that benefit the Institute’s commercialization efforts and offer new educational opportunities. An example is “Rensselaer Ventures,” created by Doell, Rice, and Rancourt in 1995. Here, students have developed commercialization plans for two faculty inventions and are now at work on an evaluation model for determining whether ideas have market potential. “We’re hoping to create new revenues for the Institute, but we’re not just looking for royalties,” says Doell. “Working with students, we’re trying to teach and learn what it takes to be successful in converting ideas into new products and businesses.”

Third, RenTEC will offer specialized services to promising Incubator entrepreneurs who choose to share equity in their companies with Rensselaer. The expanded program will rely heavily on volunteers in order to keep tenant costs low.

Finally, RenTEC will ask alumni to help decide which technologies Rensselaer should try to commercialize. “We have all these wonderfully successful alumni who have made their fortunes by transferring an idea or a technology from the lab to the marketplace,” Wacholder says. “Why wouldn’t we ask those people to help us? They’re the ones who really understand the markets. They’re the ones who can assess the technology, define the pathways, and access the networks.”

Academics and the discovery of new knowledge have always been fostered at Rensselaer. That will never change. But now Rensselaer’s proven entrepreneurs—on campus and off—will give the next generation of faculty and student inventors the clout they need to take their discoveries from 15th Street to Wall Street.
Seeing Is Believing
California alumnus pays for Rensselaer Medalists to visit campus

Fred Chau '71 has demonstrated how creative Rensselaer's graduates and supporters can be in using their generosity to help Rensselaer.

Last September, at an Orange County, Calif., alumni club event for winners of the Rensselaer Medal, Chau was asked to describe Rensselaer to the top high school students in the room. Chau did so—but also decided that prospective students cannot fully appreciate Rensselaer without seeing it. So he offered to pay round-trip air fare for any Medalist there.

Ten of the 18 students in attendance accepted Chau's offer. Most of them came for "Discovery Day," a November open house for prospective students. In addition to Discovery Day, the students' visit included a meeting with President Pipes, a hockey game, a campus tour, and a tour of the Capital Region. Rensselaer covered the other costs of their visit.

"High school seniors should have an opportunity to consider all their options," says Chau, who has given support to scholarships at Rensselaer. "Most people in California consider only UCLA and Berkeley and, if they're wealthy, Stanford. I thought I'd give these students a look at another option."

Nine of these students later applied to Rensselaer; all will be accepted, says Teresa Duffy, dean of admissions.

"When prospective students visit Rensselaer, meet our students, and see our facilities, programs, and classes, that significantly increases the likelihood that they will enroll at Rensselaer," Duffy says. "Mr. Chau's generosity enabled these prospective students to learn about Rensselaer's strengths in a way that just wouldn't have been possible otherwise."

Student Callers Boost Pledges to Annual Fund

Rensselaer students can be quite persuasive in making the case for donor support of Rensselaer students.

After a hiatus of nearly 10 years, the Rensselaer Annual Fund this year reinstated its "student calling program." The effort was a five-week blitz in January and February in which students telephoned graduates from the Darrin Communications Center during evening hours.

The results were outstanding, according to Robbee Baker Kosak, vice president for institute relations. The students reached their goal of $150,000 in pledges and corporate matching dollars. The group also convinced 125 "new donors" (people who had not previously given to Rensselaer) to give this year, well over its goal of 75 new donors.

"Our students are the reason we seek Annual Fund support and they are also our best argument for giving it," Kosak says. "Some of these students were so effective that they were asked for their resumes by the people they were soliciting."
DESIGNS ON T
When the Olympic flame ignites in Atlanta, Ga., July 19, two Rensselaer alumni will share the same anticipation as many of the athletes themselves. That's because two of the 27 competitive venues at the 1996 Olympic summer games were designed by Rensselaer graduates. The Georgia Dome, site of two of the most popular events—basketball and gymnastics—as well as the finals of men's team handball, features a first-of-its-kind roof designed by Gerardo Castro, M.S. '80, Ph.D. '86, who was senior engineer at Weidlinger Associates when the Dome was built. And the Stone Mountain Velodrome, which will host the world's top bicycle racers, was designed by maverick engineer and former bike racer Chris Nadovich '80. Both engineers charted new territory with their nontraditional designs, using new materials, relying heavily on mathematical software, and establishing time- and cost-savings precedents. BY MEG GALLIEN

Chris Nadovich '80
at the Stone Mountain Velodrome
UP ON THE ROOF

The Georgia Dome was completed in the summer of 1992, well before but in anticipation of the Olympic summer games and the 1994 Super Bowl, because Atlanta wanted a permanent facility that would host a variety of events year-round. Home to the NFL Atlanta Falcons, the Dome is located adjacent to the Georgia World Congress Center, the nation’s busiest convention center. Together the two facilities, situated in the heart of the city, host world-class conventions, exhibitions, trade shows, entertainment, and sporting events.

The $214 million Dome was designed and constructed within a 30-month period on time for the opening kickoff of the Falcons’ 1992 season and under budget. The oval-shaped stadium holds 70,500, with good sight lines from any seat. Because the roof is supported by cables, there are no columns to obstruct spectators’ views. And because the roof is made of “translucent teflon” that lets in natural light, the stadium has an airy, almost outdoor feel.

“When I look at the Dome in pictures, every little detail, every cable, every post, every connection, I know how it was done. Almost by heart, I can see it. I created the geometry, so I love it.”

The stadium features the world’s first large-scale oval dome, a milestone in the development of lightweight structures. Gerardo Castro was one of a team of three at New York City-based Weidlinger Associates, structural engineer for the Dome, who designed the unique fabric roof.

“The building is based on an invention by an American inventor, Buckminster Fuller,” says Castro, a native of Bogota, Colombia, who returned there to live in 1993 and established his own engineering and architectural consulting firm with his sister, an architect.

“He created the concept of tensegrity, which he defined as islands of compression in a sea of tension,” says Castro. “But he never really built it. He just created the idea.”

Circular fabric domes had been built, notably by David Geiger, who designed two arenas for the 1988 Olympic Games in Seoul, South Korea. But the oval shape raised the complexity of the design, says Castro.

“We were learning as we were going,” says Castro. “It was challenging and frightening at some points. But once we got the system, tested all kinds of schemes and loadings and modeled the whole structure in the computer, I was sure it was going to work,” he says.

“I think it’s one of the most beautiful domes in the States right now,” says Castro.

Spanning 748 feet, the roof avoids one major pitfall of many other fabric domes that are stabilized by mechanically blown air: it can’t deflate. Poles provide the roof’s structural stability, yet they don’t block the spectators’ views because they are suspended from wires rather than planted in the ground.

The roof structure is covered with 130 sections of Teflon-coated fiberglass, constituting a dramatically large skylight.

“When you come into the Dome, it’s a great feeling,” says Castro. “The light gets through, so it’s like you are in an open field.”

Computer software played an important role in the design of the roof. The structure is not typical, like a building or a bridge that behaves in a linear way, says Castro. “That means that the geometry is changing as the force is changing. So you need a special software,” he says. His team used some existing software, including LARSA software for structural and earthquake engineering, but also had to write a lot of their own.

Castro credits his Rensselaer education for the computer proficiency that he acquired.

He also credits Rensselaer for instilling in him a “new way of seeing things.” Arriving at RPI with a good basis from his undergraduate studies at Universidad de los Andes in Bogota, he says that what he gained from his graduate studies was “not as much the technical knowledge, the detail, the equation, but the philosophy behind how to look at a problem, how to solve it.”

Castro, who attended Rensselaer as a Fulbright Fellow, is especially indebted to his adviser, Professor Michael O’Rourke, and other civil engineering faculty, including Ricardo Dobry, Larry Feeser, and William Spillers, who taught him his first lesson on cables and tensioned structures.

“Creative problem solving is something I learned from the people in the civil engineering department at RPI,” says Castro. “And that has definitely marked my life. Today I’m not afraid of taking on any challenge in a project.”

Some of his current challenges include designing steel buildings in a country where concrete has been the traditional choice. He also is involved in the design and construction of tension structures, involving cables and architectural membranes, in Latin America.

While unsure if his schedule will allow him to attend the Olympics, Castro will surely focus his attention on the Georgia Dome this summer.

“When I look at the Dome in pictures, every little detail, every cable, every post, every connection, I know how it was done. Almost by heart, I can see it. I created the geometry, so I love it.”

ON TRACK

Chris Nadovich ’80 may have had designs on the Olympics when he took time out from his engineering career in the early ’80s to train as a competitive bicycle racer. What he didn’t know then was that it would be his engineering expertise, as well
thought, what have we got to lose? So Nadovich recalculated his numbers, sent in a proposal, "and lo and behold, we won," he says.

Nadovich says that even though he's an electrical engineer, his work has provided relevant experience. "There are some similarities in the work of designing a big reflector antenna to designing a velodrome. It is a curved surface supported by steel," says Nadovich. "So I wasn't completely out of my depth in doing the design."

Nadovich says he and Hughes won the contract because of two innovative features in their proposal, "both of which translate into cost." First, they proposed a much more economical surface for their track. Traditionally the better bicycle tracks have been made of wood. Their main competitor for the velodrome contract proposed a rare rain forest wood—very expensive. Hughes proposed an extra-thick polyester/wood laminate panel on top of a steel structure.

The second design feature in their favor was the track's removability. ACOG specified that many of the venues be temporary, for economic reasons, says Nadovich. As a result, when the games are over, Hughes and Nadovich will be looking for a buyer.

The final design, which was completed by the end of 1994, took "a grand total of about four weeks," says Nadovich. "The reason it was so fast was because of the tremendous amount of computer power that I used to design it." To specify all the parts correctly, in such a short period of time, would have been impossible for a human being to do, says Nadovich.

The track is made up of 236 sections, each of which comprises about 100 different pieces of steel. And each section is slightly different to make the oval banked surface. It is designed to be ridden counterclockwise and have the fastest possible single lap time, says Nadovich, "a fraction of a second better than if we didn't make it a little asymmetric."

The computer specifications also enabled Nadovich to design with the precision required for parts that would not be assembled until they reached the site. He used Mathematica, a symbolic mathematical software, to design the position of every bolt and screw, every bracket's size and dimensions.

"I had complete confidence that it would all fit, because I had seen it on the machine," says Nadovich. "It already had been validated in my mind."

In October '95 the Atlanta Invitational was held at the track to qualify the venue for international races.

"We passed with flying colors," says Nadovich. "In fact, the two fastest times for the 200-meter event, which is a bench-mark event, were faster than all the other tracks in the United States with the exception of one." Nadovich thinks they may beat that time yet, possibly during the Olympic Games.

Did the cyclists like the new breed of track?

"Oh, they hated it," says Nadovich. "It made a different sound under their tires. It was a different material, and they said it didn't feel fast."

Nadovich tried it himself. "I can understand some of their feelings. But the stop watch is really the objective measure of it and they don't seem to be going slow."

He acknowledges that bike riders are very tradition-oriented in an old sport. "Bike racing was very popular around the turn of the century. It used to be the thing to do in the evening—to go to these six-day races and watch the guys race late at night, after the bars would close."

Nadovich thinks track racing has brought an excitement to the scene. "If your only experience in bicycle racing has been the Tour de France, you may want to rethink it, because it's a very exciting sport to watch on a track," he says. "The races go about 40 miles an hour around this track."

And he didn't let the cyclists' complaints dampen his excitement. "No matter how much the riders did or didn't like it, to me I got chills up and down my spine when I saw the best riders in the world competing on it for the first time."
A Rensselaer experiment on the space shuttle Columbia made scientific history in March. While certainly exciting, making history is nothing new for Rensselaer. Since 1824, the Institute and its faculty, students, and alumni have been leaders in the technological revolution. From transportation and television to composites and computer chips, Rensselaer people have impacted so many aspects of our daily lives.

"Unfortunately, not many people know very much about the history of Rensselaer," says Lester A. Gerhardt, associate dean of engineering.

Until now. The School of Engineering has created a lasting tribute to these great achievements with a timeline display on the third floor of the Jonsson Engineering Center. The timeline focuses on the history of technology, with an emphasis on the contributions of Rensselaer and its alumni.

"It's meant to instill pride in ourselves and our accomplishments," Gerhardt says.

The timeline was suggested by the School of Engineering's Student Advisory Board, and students served on the timeline committee, helping to prepare the exhibits. Mark Dixon, chair of the student board, says most people don't appreciate Rensselaer until after they've graduated. "We wanted something that would help them appreciate it while they're here," he says.

Text, photos, objects, and drawings make up the display. According to Gerhardt, who directed the project, the timeline is meant to be expandable. Current and future research and discovery will be recorded on a second wall in the coming years, he says.

"We hope people will look at the timeline and be inspired to add to it," he says. Suggestions already have been received from faculty and students alike, Gerhardt says.

The recent book on the history of Rensselaer, Rensselaer: Where Imagination Achieves the Impossible, served as "the bible of the committee. It was our reference manual," Gerhardt states.

At the dedication of the timeline display in February President R. Byron Pipes said, "I think this wonderful tribute is a chance for you — the individual students and faculty — to become acquainted with your family." The challenge, he said, is for the students to become the "leaders of tomorrow."

"I hope you enjoy it, take pride in it, and gain personal inspiration from it," Gerhardt told the crowd who gathered for the celebration. "May this timeline help you to have pride in our past and faith in our future."

*Read more about the recent shuttle experiment, as well as other Rensselaer achievements in space, in the September issue of Rensselaer.
A Glance at the Timeline

Some of Rensselaer’s engineering contributions depicted in the new timeline exhibit include:

- John F. Winslow, Rensselaer’s fifth president, helped convince President Lincoln to build the Monitor, and he helped pay for the construction. The vessel defeated the Confederate Virginia (better known as the Merrimac) in 1862 in the first battle of ironclad ships.

- Washington Roebling, Class of 1857, succeeded his father as chief bridge engineer during construction of the Brooklyn Bridge.

- George Washington Ferris, Class of 1881, built the first Ferris wheel in 1893.

- Sanford Lockwood Cluett, Class of 1898, who received more than 200 patents, originated the Sanforizing process to prevent fabric from shrinking.

- William Gurley ’39 and his brother, Lewis E. Gurley ’45, founded W. and L.E. Gurley in 1945 in Troy. The company designed and created generations of basic science, engineering, and surveying instruments.

- In 1922, WHAZ, Rensselaer’s first student-run radio station, began transmitting to places as far away as New Zealand (10,000 miles). At the time, the human voice had never been carried so far.

- Alan B. Dumont ’24 is generally considered “the father of modern television.” With more than 75 patents, he brought the cathode ray tube, the key element of television, to commercial reality.

- Rensselaer’s contributions to the computer age began early and continue today. Ted Hoff '58, was co-inventor of the 4004 microprocessor, which revolutionized computer development. J. Erik Jonsson '22 co-founded Texas Instruments. C. Sheldon Roberts ’48 co-founded Fairchild Semiconductor Corp. The computer display also includes a ground-breaking integrated circuit with copper multilevel interconnections and polymer interlevel dielectrics, which was fabricated by the New York State SEMATECH Center of Excellence at Rensselaer.

- George M. Low ’48, former Rensselaer president, was director of NASA’s manned spacecraft program, which landed the first astronauts on the moon. Martin E. Glicksman ’57, professor of materials engineering at Rensselaer, sent a microgravity experiment up on space shuttle Columbia in 1994. This experiment is causing theorists across the country to revise their ideas about how crystals form in metal, information that could affect production of everything from soda cans to cars and jet engines. Glicksman sent up a second experiment in a launch earlier this year.
Class Notes Deleted for Privacy Concerns
Even before becoming the new president of the Rensselaer Alumni Association at Reunion 1996, Michael Jhin '71 was already looking far beyond the upcoming year. His tenure will see the culmination of work that began almost a year ago, when Jhin and other board members began a revision of the RAA's long-range plan. The new plan maps the route the RAA will take into the year 2000 and lays a foundation for the association to build on in the 21st century.

Focus on Partnership
The RAA's new mission statement focuses on engaging alumni as partners in the Rensselaer community, and on the Institute and the association working hand-in-hand to pursue mutual goals.

Jhin and other board members found that over its 75-year history, the RAA has grown into an organization with a strong, influential voice, adapting to meet the changing needs of the Rensselaer community. According to Jhin, the spirit of collaboration voiced in this long-range plan will serve the RAA well as it works to accomplish its mission:

"The Rensselaer Alumni Association serves and represents alumni and the Institute by engaging and empowering all alumni as active and effective partners in the Rensselaer community; and by promoting the lifelong, mutually beneficial pursuit of the aspirations shared by Rensselaer and its alumni."

Strategic goals of the long-range plan include:

- **Service.** Areas of focus will include career programs and activities and membership benefit programs for alumni, greater alumni interaction for students, and admissions and academic support to the Institute.

- **Advocate/Liaison.** The RAA will seek to be the voice for the diverse alumni population, and represent the needs of the Institute back to the alumni.

- **Infrastructure.** Areas such as leadership succession, volunteer support, and strong communications will be focused on.

Jhin emphasizes that the strength of the RAA has been achieved through the efforts of many alumni and friends, and that current successes are built on the shoulders of alumni interest, support, and leadership over the last 10 years. Jhin's own past in the RAA—serving as a board and committee member, and a leader in the RAA's effort to enhance campus life—has a passionate interest in assuring that students are satisfied with their Rensselaer experience—which he believes is a significant and critical ingredient for Rensselaer to truly excel, as well as forming the basis for students to become active, connected alumni.

Jhin's professional career spans over two decades in health care administration. He and his family reside in Houston, Texas, where he is president and CEO of St. Luke's Episcopal Hospital, the patient care partner of the internationally renowned Texas Heart Institute.

**Student Government Reunion Sept. 27-28**

Student government leaders past and present will gather on campus Sept. 27-28 at a special Fall Alumni Weekend reunion. Mark your calendar now, and plan to join them for football, Fall Fest, and fun! Watch AlumServ and your mailbox for details as the date approaches, or contact Peter Pedone at (518) 276-6061, pedonp@rpi.edu, or write to him at the Heffter Alumni House, 1301 Peoples Ave., Troy, NY 12180.
AlumServ is the World Wide Web site for Rensselaer alumni. Developed by the Rensselaer Alumni Association, the site provides alumni around the world with an easy way to stay connected to Rensselaer and each other. • AlumServ is regularly updated with current Rensselaer news and alumni announcements. When you arrive at the AlumServ Web site, you’ll find:
• information about Reunion, Fall Alumni Weekend, Freakout, and other alumni events • the on-line version of Rensselaer, the alumni magazine, as well as other on-line campus publications • video, audio, and photography from campus events such as Freakout and GM Week • links to other Rensselaer Web sites including those for schools and departments, athletics, Greek chapters, students, and faculty • alumni e-mail directory.

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