# UPDATE

News from the School of Civil and Environmental Engineering

Cornell University Hollister Hall, Ithaca, New York 14853

*Spring, 1979* *R. N. White, editor*


## THE SURVIVOR OF THE BARK CANOE: Concrete Canoe Races, Revisited

Over the past decade students in CE schools across the country have developed a strong interest in designing, building and racing concrete canoes. The problems involved in making light, seaworthy craft out of concrete present an enjoyable break from the heavier responsibilities of the undergraduate curriculum. During the current spring term a group of freshmen and several upperclass CEE's are working in the Concrete Laboratory in Thurston Hall to produce a contender in the annual race. Professor Floyd O. Slate (pictured at left with junior Mike Rolband, the freshman design team, and the canoe) and instructor Stanley Olsefski are the advisors on the project. The students will have a chance to stand by--or swim from--their design skills at West Point in May, when they will race the canoe against concrete craft from other engineering schools. We expect a winner this year because of the advances we have made in super-lightweight concrete and methods of reinforcement.

Watch for news in Civil Engineering of concrete canoe races in your area. It's an entertaining way to watch the next generation of engineers come to grips with the age-old problem of adapting materials to needs. And in a field where public safety so often depends on engineering decisions, it's a valuable first lesson in integrity--structural and otherwise.

## RESEARCH IN CEE AT CORNELL: Building for the Future

CEE faculty and graduate students are involved in some thirty sponsored research projects with a total annual budget in excess of one million dollars. We plan to feature selected projects in future issues of UPDATE; here is a brief listing of research in progress.

### Environmental Engineering

--interactive water resources planning techniques compatible with mini-computers
--pollution analysis of lakes
--modelling of nearshore currents
--integration of processes for wastewater residuals management
--lake acidity and heavy metals pollution
--groundwater problems analysis
--integrated water quality/quantity management

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### Structural Engineering

--structural behavior of very-high-strength concrete
--interactive analysis and design using computer graphics
--seismic effects in nuclear containment vessels
--stability of cooling tower shells
--fracture mechanics
--splices in reinforced concrete structures in seismic zones
--cold-formed steel structures and their connections

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HOMECOMING: *CEE holds its second annual coffee and danish hour, 9-11 am in the Hollister Hall lounge, on Saturday, Nov. 3, before the Homecoming game. Bring your family for a weekend of sports and reunions with friends and faculty of CEE.*

RESEARCH, cont.

Environmental

--multiple reservoir operation
--water resources policy models
--non-point sources of pollution
--coastal engineering
--ocean thermal energy conversion
--integrated pest management
--spruce budworm research
--management of scarce resources
--environmental impact statements
--sludge treatment
--management of the Great Lakes

Structural

--interactive computer graphics in structural mechanics
--magnetohydrodynamics

In geotechnical engineering:

--uplift capacity of drilled shafts
--off-shore construction
--response of buried utilities to earthquakes
--earth-crustal mechanics
--in-situ liquefaction evaluation systems

Our geotechnical group is featured in the current issue of ENGINEERING: Cornell Quarterly. Articles by faculty, alumni and visiting faculty cover the history, range and specific applications of geotechnical engineering research. If you haven't received this issue, send your name and address to the School of CEE, and we'll have your copy in the return mail. It's a comprehensive, illuminating treatment of one of the most active areas in the field, one to which Cornell engineers have contributed since its earliest days.

Cornell's program in Environmental Sensing, Measurement and Evaluation (ESME) is also mentioned in the Geotechnical issue of the Quarterly (13; 4). ESME continues to receive major funding from the National Aeronautics and Space Administration (NASA) to carry out its work in remote sensing. Using airborne and satellite imagery, and drawing on a world-wide catalog of digital and image data, the program has been involved in some of the major achievements of modern civil engineering. Its contributions include site selection for the construction of the capital of Brazil at Brasilia, and for the giant radio-radar telescope at Arecibo. In addition to the various research projects funded by NASA, the ESME group conducts a special seminar in remote

*Left: Prof. Gerhard Jirka injects dye into the new 900-square-foot stilling basin to study circulation patterns. Right: splices in reinforced concrete beams are subjected to simulated seismic loading with the new MTS loading equipment in the George Winter Structural Testing Laboratory in Thurston Hall.*

# DIRECTORY

The School of Civil and Environmental Engineering, Cornell University
Hollister Hall, Ithaca, NY 14853

Since 1970 the School has been divided into two departments plus a smaller group in environmental sensing, measurement and evaluation. Professor Daniel P. Loucks has been Chairman of the Department of Environmental Engineering since 1974, while Professor Arthur H. Nilson assumed the Chairmanship of Structural Engineering in July 1978. Professor Ta Liang heads the activities in remote sensing and measurement. The Director of the School is Professor Richard N. White, who assumed the post in July 1978, succeeding Professor Walter R. Lynn, who has returned to full-time teaching and research. Associate Professor George B. Lyon continues as Assistant Director.

Here is a brief directory of the other members of our faculty, their backgrounds and interests. All can be reached care of the School of Civil and Environmental Engineering in Hollister Hall. The telephone number for the school is 607/256-3690.

## Environmental Engineering

James J. Bisogni, Jr., Assistant Professor; Ph.D., Cornell. Sanitary engineering, applied aquatic chemistry.

Wilfried H. Brutsaert, Professor; Ph.D., California-Davis. Hydraulics, hydrology, groundwater flow.

Richard I. Dick, Joseph P. Ripley Professor of Engineering; Ph.D., Illinois; PE. Sanitary engineering, sludge treatment and disposal.

Leonard B. Dworsky, Professor; M.S., American; PE. Water resource planning, management and policy.

Gordon P. Fisher, Professor; Dr.Eng., Johns Hopkins; PE. Transportation systems and engineering, public systems.

Charles D. Gates, Professor; M.S., Harvard. Sanitary engineering, water quality, nonpoint waste sources.

James M. Gossett, Assistant Professor; Ph.D., Stanford. Sanitary engineering, biological treatment processes.

Gerhard H. Jirka, Assistant Professor; Ph.D., M.I.T. Fluid mechanics, hydraulics, thermal pollution.

James A. Liggett, Professor; Ph.D., Stanford. Hydraulics, fluid mechanics and hydrology.

Philip L.-F. Liu, Assistant Professor, Sc.D., M.I.T. Fluid mechanics, coastal engineering.

Daniel P. Loucks, Professor; Ph.D., Cornell. Water resource and environmental management systems.

Walter R. Lynn, Professor; Ph.D., Northwestern; PE. Environmental systems analysis, public health.

Arnim H. Meyburg, Professor; Ph.D., Northwestern. Urban transportation, planning and systems analysis.

Neil Orloff, Associate Professor; J.D., Columbia. Environmental law, social implications of technology.

Richard E. Schuler, Associate Professor; Ph.D., Brown; PE. Urban, spatial, and energy economics; public finance problems.

Christine A. Shoemaker, Assistant Professor; Ph.D., U.S.C. Water resource systems, pest management, ecology.

Jery R. Stedinger, Assistant Professor; Ph.D., Harvard. Stochastic hydrology, water resource systems, ecosystem management.

Agricultural Engineering faculty members holding joint appointments in the Department of Environmental Engineering are:

Douglas A. Haith, Associate Professor; Ph.D., Cornell. Water resource systems, nonpoint-source pollution.
Raymond C. Loehr, Professor; Ph.D., Wisconsin. Agricultural wastes.

Structural Engineering:

John F. Abel, Associate Professor; Ph.D., Berkeley; PE. Structural analysis, computer graphics, numerical methods.
Peter Gergely, Professor; Ph.D., Illinois; PE. Reinforced concrete, earthquake engineering, shell structures.
Anthony Ingraffea, Assistant Professor; Ph.D., Colorado. Structural mechanics, fracture mechanics of rock and concrete.
Fred H. Kulhawy, Associate Professor; Ph.D., Berkeley; PE. Geotechnical and rock engineering, soil-structure interaction.
William McGuire, Professor; M.C.E., Cornell; PE. Behavior and design of metal structures.
Arthur H. Nilson, Professor; Ph.D., Berkeley; PE. Behavior and design of reinforced concrete, prestressed concrete, light-gauge steel structures.
Thomas D. O'Rourke, Assistant Professor; Ph.D., Illinois. Geotechnical engineering and analysis, soil-structure interaction.
Teoman Pekoz, Associate Professor; Ph.D., Cornell. Stability of cold-formed, thin-wall structures, experimental methods.
Dwight A. Sangrey, Associate Professor; Ph.D., Cornell; PE. Soil behavior, soil dynamics, coastal geotechniques.
Floyd O. Slate, Professor; Ph.D., Purdue. Physical and chemical properties of engineering materials.
Richard N. White, Professor, Ph.D., Wisconsin; PE. Concrete structures, nuclear reactor structures, models.

Environmental Sensing, Measurement and Evaluation (ESME):

Ta Liang, Professor; Ph.D., Cornell. Aerial photography, the physical environment, remote sensing.
George B. Lyon, Associate Professor; M.S., Iowa State; PE. Surveying.
Arthur J. McNair, Professor; C.E., Colorado; PE. Geodesy and photogrammetry.
Warren R. Philipson, Senior Research Associate; Ph.D., Cornell. Aerial photography, remote sensing.

Enrollment

In the fall of 1978, we had a total of 252 students in the School of Civil and Environmental Engineering. By class and program, the figures break down as follows:

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| Juniors | 51 |
| Seniors | 65 |
| M.Eng. (civil) candidates | 42 |
| M.S. candidates | 40 |
| Ph.D. candidates | 52 |
| non-degree candidates | 2 |

FACULTY-ALUMNI FORUM *will be at Barton Hall, 10:30 am-2:00 pm, Friday, June 8. CEE will have a booth and display, where alumni will be able to meet individually with members of our faculty.*

sensing that features outstanding speakers from across the U.S. Those interested should contact the program care of the School of CEE.

The research in computer graphics applications in structural and environmental engineering deserves special mention for the recent award by the National Science Foundation of over $700,000. The grant will support the next three years of this research. Cornell's program of computer graphics is directed by Architecture Professor Donald P. Greenberg, who is a member of the graduate faculty of CEE. He will be working with Professors John Abel, Daniel Loucks and William McGuire on this research, which will also involve a number of CEE graduate students.

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Left: Chi Epsilon officers for the current year with their faculty advisor, Asst. Prof. Anthony Ingraffea. Left to right: Peg Zentner, secretary; Prof. Ingraffea; Bill Dass, treasurer; Eric Cyker, president; Henry Hughes, marshall; Maryann Wagner, editor; and Jeff Jacobson, vice president.

In other student society activities, the Cornell Chapter of ASCE sponsored the Upper New York State Regional ASCE Student Conference on the theme "Civil Engineering in the 1980's." Mr. Gerard Fox (BCE '48), Dr. Lev Zetlin (Ph.D. '53), Dean Russel C. Jones of the University of Massachusetts, and Dean Robert Doherty of the Cornell School of Industrial and Labor Relations were the featured speakers. Prior to the conference, National ASCE President Walter Blessey visited Cornell and conferred with student representatives of ASCE and Chi Epsilon. Prof. Tom O'Rourke is faculty advisor to the Cornell Chapter of ASCE.

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FACULTY NOTES: Arrivals, Awards, Publications, and a New Dean for Engineering

This issue of UPDATE features a separate directory of the School for your files. Listed there you will find facts about the School's administration, enrollment and budget, and a complete directory of our faculty and their research interests. CEE is an active field, however, and we always have faculty activities to report. A recent addition to our number is Assistant Professor Thomas D. O'Rourke, who joined the geotechnical engineering group in the Department of Structural Engineering in August 1978. Tom was an undergraduate here (B.S. '70) before going to the University of Illinois, where he received his Ph.D. in 1975. Tom has worked with Dames and Moore and with the Tunnels Division of the Transport and Road Research Laboratory in the United Kingdom, in addition to serving as a visiting assistant professor at the University of Illinois. He is a recognized expert in tunneling and underground construction, and since coming to Cornell has received funding from the National Science Foundation to do research on the response of buried utilities to earthquake forces. He is also strongly interested in teaching and in student activities, and is already acting as

THE BRIDGES OF CHRISTIAN MENN: *for 5 weeks this fall, CEE, the College and the Herbert F. Johnson Art Museum will present a show of more than 30 photos of bridges by the famed Swiss bridge designer. Their aesthetic value will add to their use as teaching tools in our structural engineering courses. A lecture and seminar by Professor D. P. Billington of Princeton will accompany the exhibition.*

faculty advisor to the student chapter of ASCE. Tom recently wrote a history of geotechnical engineering at Cornell, as part of the special geotechnical issue of ENGINEERING: Cornell Quarterly published in April 1979.

The spring meeting of the American Concrete Institute (ACI) in Milwaukee was a special event for Cornell, because both Solomon C. Hollister and George Winter were honored with top ACI prizes for their achievements in civil engineering. Hollister, who was Professor of Civil Engineering and Director of the School before becoming Dean of Engineering in 1937, received the Henry C. Turner Award for his "profound influence on concrete codes and specifications and for distinguished service as a member and officer of the Institute." He is the oldest living past-president of the ACI, having served in 1932-33, yet he is still active in Engineering and other University affairs, and often meets with graduate students at his office in Hollister Hall. Dean Hollister holds many national engineering awards and is a member of National Academy of Engineering.


*Left: Emeritus Professor George Winter attended the dedication of the testing laboratory named in his honor. Right: Dean Hollister watches as Joseph DeFrees (CE '29) inspects a riveted boiler at the scene of the first commercial oil well in the U.S., near Warren, Pa. A collection of antique engineering instruments donated by Mr. DeFrees will be on display in time for Reunion Weekend in June.*

The ACI also honored George Winter (Ph.D. '40), the Class of 1912 Professor of Structural Engineering, Emeritus, with its Joe W. Kelly award for "distinguished teaching and direction of research that have greatly influenced the budding careers of a whole generation of professionals in concrete, including many of the subsequent leaders" in the field. Professor Winter remains active in the technical committee work of the Structural Stability Research Council and other professional groups. He is also a member of the National Academy of Engineering, and has just completed with Professor Arthur Nilson the ninth revision of their widely-used text on reinforced concrete, Design of Concrete Structures.

Among other faculty members honored recently for their work in CEE is Assistant Professor Philip Liu, who received the Huber Research Prize from the ASCE. The award was for his research on wave hydrodynamics and related engineering problems, including coastal currents and shoreline processes. Phil joins a large group of CEE facul-

THE AARE RIVER BRIDGE *under construction in Felsenan, Switzerland, 1974, is one of the bridges of Christian Menn to be featured in the exhibition sponsored by CEE, the College and the Johnson Art Museum.*

ty members who hold awards from ASCE, ACI, and other professional societies.

Professor Arthur Nilson, co-author of Design of Concrete Structures, also completed recently Design of Prestressed Concrete, published by John Wiley and Sons in 1978. Other books by CEE faculty include The Environmental Impact Statement Process: A Guide to Citizen Action by Associate Professor Neil Orloff, published late last year by the Information Resources Press; and Matrix Structural Analysis by Professors William McGuire and Richard Gallagher, published in April 1979 by John Wiley and Sons. Author Gallagher left us recently for a sunnier climate: he is now Dean of Engineering at the University of Arizona. We wish him well in his new responsibilities.

We have our own new Dean of Engineering here at Cornell. He is Professor Thomas E. Everhart, who took office in mid-January of this year after twenty years on the engineering faculty at Berkeley. A summa cum laude graduate of Harvard, Dean Everhart earned his M.S. in applied physics at the University of California, Los Angeles. He was a Marshall Scholar at Cambridge University in England, where he received his Ph.D. in 1958. For the last five years of his tenure at Berkeley he was Chairman of the Department of Electrical Engineering and Computer Sciences. A specialist in microwave and semiconductor electronics, he has served as visiting professor or fellow in Japan, Germany and England on National Science Foundation and Guggenheim fellowships. He has served as president of several professional societies, and was elected a member of the National Academy of Engineering in 1978. It is an honor to have him as our dean.

## WORKING TOGETHER: Industry and Young Engineers in the Co-op Program

Many of you may not know that the CEE School joined the College of Engineering Co-operative Program a few years back. Our Co-op students, all of whom are in the upper half of their class, begin their first work assignments during the fall term of their junior year, having completed their fall courses during a special summer term on campus. This first work period lasts four and one-half months. The second occurs during the summer before their senior year, and students entering graduate programs may elect a third work session before their graduate work begins. The Co-op Program provides a way for students to gain a head start on their careers, and offers some real-world experience while they're still students. For the firms, it provides an opportunity to become involved with students and faculty within the College, and can take much of the guesswork out of recruitment. Almost 1,000 Cornell engineers have participated in the Co-op Program since its beginnings in Electrical Engineering in 1947. Companies currently active in the Program include Simpson, Gumpertz and Heger of Cambridge, Massachusetts; Greeley and Hansen, Chicago; Stearns and Wheler of Cazenovia, New York; Lester B. Knight Associates, Chicago; the Turner Construction Company of New York City; the Pittsburgh-Des Moines Steel Company, Pittsburgh; and Bovay Engineers of Houston. We are always pleased to answer inquiries from firms interested in joining the Co-op Program: write Professor Richard N. White at Hollister Hall, and he will forward information about the Program. The enclosed postcard is a convenient way to get the ball rolling--won't you take a minute and return it today? It could be the start of someone's career.

TALENT: *many of our students find their first jobs through alumni-faculty contacts. If your firm needs some of the outstanding talent offered by the Class of '79, write us and explain your needs. We'll send word to the students who fill the bill.*

## ALUMNI NEWS

We hope to expand this section of UPDATE in future issues, so please send us a note of your activities. We'd like to know what you're doing, and with whom. Past achievements and future plans are welcome, as is any news of other Cornell CEE alums.

Warner Lansing (B.S. '41, Ph.D. '49) recently visited the campus to give a seminar on advanced composites and to recruit students for Grumman Aerospace. Warner has been with Grumman since he left Cornell.

Raymond Hodge (MCE '48), partner-in-charge of the Washington office of Tippets, Abbett, McCarthy and Stratton, has been active in many major transportation projects in the Middle East, Africa and Asia since completing the monumental Dallas airport complex several years ago. He was in the ASCE delegation that visited China in late April.

Jack Mollard (Ph.D. '52), the best-known specialist in engineering airphoto interpretation in Canada, came to Washington in March to join an invited panel to review the past, present and future of photo-interpretation and remote sensing. He met there with his many Cornell colleagues before rushing back to his busy Canadian Arctic program.

John Walker (BCE '54) is head of the remote sensing section of the environmental and energy systems department at Calspan Corporation. He has been active in all facets of environmental remote sensing and particularly in developing image analysis techniques.

Phil Carskaddan (BCE '61, MCE '62) is in research and development at the U.S. Steel Research Laboratories in Monroeville, Pa. Phil returned to campus last fall to give a seminar, "Autostress Design for Steel Highway Bridges."

Fred Hart (BCE '63) gave a seminar on "The Engineer's Role in Developing Public Policy" at Cornell in February. Fred has his own consulting firm, Fred C. Hart Associates, Inc. in New York, and specializes in environmental problems.

Samuel Zimmerman (BCE '69) is now Chief of the Evaluation Branch within the Analysis Division of the Office of Planning, Urban Mass Transportation Division, U.S. Department of Transportation in Washington. He helps administer UMTA's alternatives analysis requirement for major public transit investments, working with local, regional and state agencies that are planning bus and rail transit systems in the U.S. Sam also participates in the Transportation Department's Training Program in Urban Transportation Planning, which is for planners in the U.S. and abroad.

Constantine Toregas (M.S. '70, Ph.D. '71), formerly with International City Managers' Association in San Jose, California, is now Vice President of Public Technology, Inc. in Washington, DC.

Douglas Haith (Ph.D. '71) is concentrating on non-point runoff models in his research program in the Department of Agricultural Engineering at Cornell.

Martin Wanielista (Ph.D. '71), now at Florida Tech University, and Robert M. Clark (Ph.D. candidate 67-68) now with the Environmental Protection Agency, have recently published a book pertaining to environmental engineering.

Barry W. Gehron (B.S. '73, M.Eng. '75) is with Energy Resources Co., Inc. in Boston. Barry was on campus in February to visit and to recruit among CEE students.

Daniel T. Huang (B.S. '73) is in the Office of Research of the Federal Highway Administration in Washington. When we last saw Dan, he was manning the FHWA display and information booth at the Transportation Research Board meetings in January.

REUNION: *plan now to bring your family to the annual breakfast for CEE alumni and friends, Saturday, June 9, 7:30-9:00 in Hollister Hall's Lounge. For more than 50 years folks have gathered to renew friendships and remember CEE at Cornell.*

Charles "Rick" Scherer (Ph.D. '73) was busy making an excellent reputation in water resources systems as an assistant professor of civil engineering at Berkeley, until his untimely and unexpected death last December. His death is a personal and professional loss to us all.

Bruce Spear (Ph.D. '73) left his post with the Federal Highway Administration several months ago to join Transportation Systems Center in Cambridge, Massachusetts, which is the Department of Transportation's in-house consulting agency. As a member of the Urban and Regional Research Division, he is involved with research related to UMTA's service and methods program and to evaluation of its demonstration projects.

Larry Dannenberg (B.S. '74, M.S. '76) also visited Cornell this spring to recruit students for his employer, Structural Dynamics Research Corporation. Other Cornell CE's at SDRC are Jesus Suarez (Ph.D. '77) and Stanley Mills (B.S. '75, M.Eng. '76).

Craig D. Mackay (B.S. '74) is an environmental engineer with United Engineers and Constructors in Boston.

David W. Myers (B.S. '74, M.Eng. '76) recruited CEE students on campus this spring for his firm. David is an environmental engineer with Energy Impact Associates, Inc. in Pittsburgh.

Linda Zall (M.S. '74, Ph.D. '76), has been happily employed by the Earth Satellite Corporation since completing her graduate work at Cornell. In addition to studying airphotos and satellite images in Washington, she has travelled to different parts of the world for field investigations and to train foreign personnel.

Rob Ferry (B.S. '76), Chief Engineer at Conservatek in Conroe, Texas, and Randy Kissel (B.S. '76), also of Conservatek, are busy perfecting the design and construction of a new kind of dome structure.

Stephen Lew (M.Eng. '76) is doing structural analysis and design for LeMessurier Associates/SCI in Cambridge, Massachusetts. Other Cornell CEE's at the same firm are Seth Berman (B.S. '77, M.Eng. '78) and Franklin Tseng (M.Eng. '78).

Bob Wardle (B.S. '76, M.Eng. '77) is with Carl Walker and Associates, Inc. in Kalamazoo, Michigan, and writes that most of his colleagues are graduates of Purdue and Michigan.

Saw-Teen See (B.S. '77, M.Eng. '78), and Bill Faschan (B.S. '77, M.Eng. '78) are both with Skilling, Robertson and Helle in New York City.

Brian Markham (M.S. '78) joined the NASA Goddard Space Flight Center after graduation and has been involved in various sensor-related studies for future earth-resources satellites. He has maintained close contact with Cornell's Remote Sensing Program and has provided assistance to graduate students.

## UPDATE ... FROM THE DIRECTOR

The School has undergone some changes that may startle those who have been away from campus for a while, but they have given an exciting richness to activities in Civil and Environmental Engineering at Cornell. We now teach courses in environmental law, systems engineering, and analysis of complex structures by the finite element method; sponsored research projects cover such topics as design and behavior of complex steel structures, water resources planning, management of diminishing resources, and design of earthquake-resistant nuclear facilities. Our thirty-member faculty includes lawyer Neil Orloff, economist Dick Schuler, and many others with diverse backgrounds in

civil engineering and related areas. Education and research remain our most important concerns, as they continue to challenge and reward all of us involved.

One challenge has been a recent decrease in our undergraduate enrollment. To remedy this we have stepped up our recruitment this spring among freshman and sophomore engineering students, and we are contacting every incoming freshman who expresses an interest in CEE. We also expect to increase the number of students transferring into CEE next fall. Your help in talking with interested students around the country is always welcome, so please let us know if you would like to become involved in our recruitment efforts. The enclosed postcard has a space where you can indicate your interest in helping out, or in becoming involved in our Co-op Program and other activities within the CEE school at Cornell. Many young people simply don't know about the breadth of activities available within modern CEE practice, nor do they realize how many and how bright the opportunities are in both private and public practice. A talk with an experienced engineer can do much to bridge this gap in a prospective student's knowledge.

Graduate student enrollment is very strong. Our 135 grad students this year place us near the top of all graduate fields at Cornell. More than forty students are in the professional M.Eng. program (which we will feature in the next issue of UPDATE). Over thirty students are pursuing the M.S., and more than sixty are working toward the Ph.D. The research and design projects undertaken by these students keep life interesting for everyone in Hollister Hall, and we are pleased that so many talented young people have chosen to study with us.

Computer graphics is an exciting new addition to CEE activities. Many of our faculty and graduate students are doing sponsored research at the Program for Computer Graphics under the general direction of architecture Professor Donald P. Greenberg; we are starting an instructional facility for undergraduates with funding recently received from the National Science Foundation (NSF). Our long-range goal is to integrate this revolutionary new tool with our teaching of both concepts and interactive analysis and design methods across our entire spectrum of undergraduate and graduate courses. This will require considerable resources in terms of both equipment and development of suitable software.

Our laboratory development continues at a very healthy pace. The George Winter Structural Testing Laboratory complex in Thurston has been greatly improved by gifts from Bethlehem Steel and Inland-Ryerson Steel, and an equipment grant from the NSF. These gifts allowed us to purchase new dynamic loading equipment and data acquisition systems. The Structural Dynamics Research Corporation donated a shake table, with which we plan to simulate earthquake effects on model structures, and we are using newly-constructed facilities in Hollister to study foundation problems. In environmental engineering, we recently completed construction of a 900-square-foot model stilling basin for hydraulic experiments, and the sanitary engineering laboratory is being upgraded for both teaching and research. We continue to have many needs for new equipment, of course--one of the persistent problems facing any modern civil engineering school is the necessity of keeping pace with the rapidly expanding technology for improved experimentation.

Keeping up to date is a challenge to everyone in civil engineering: our research is as timely as today's news, and the men and women we teach today are the future of engineering. In this and future issues of UPDATE, we hope to keep you informed of specific events, and to give you news of people and research at Cornell and of our wide-ranging alumni. We hope your contributions will be an important part of future UPDATES.