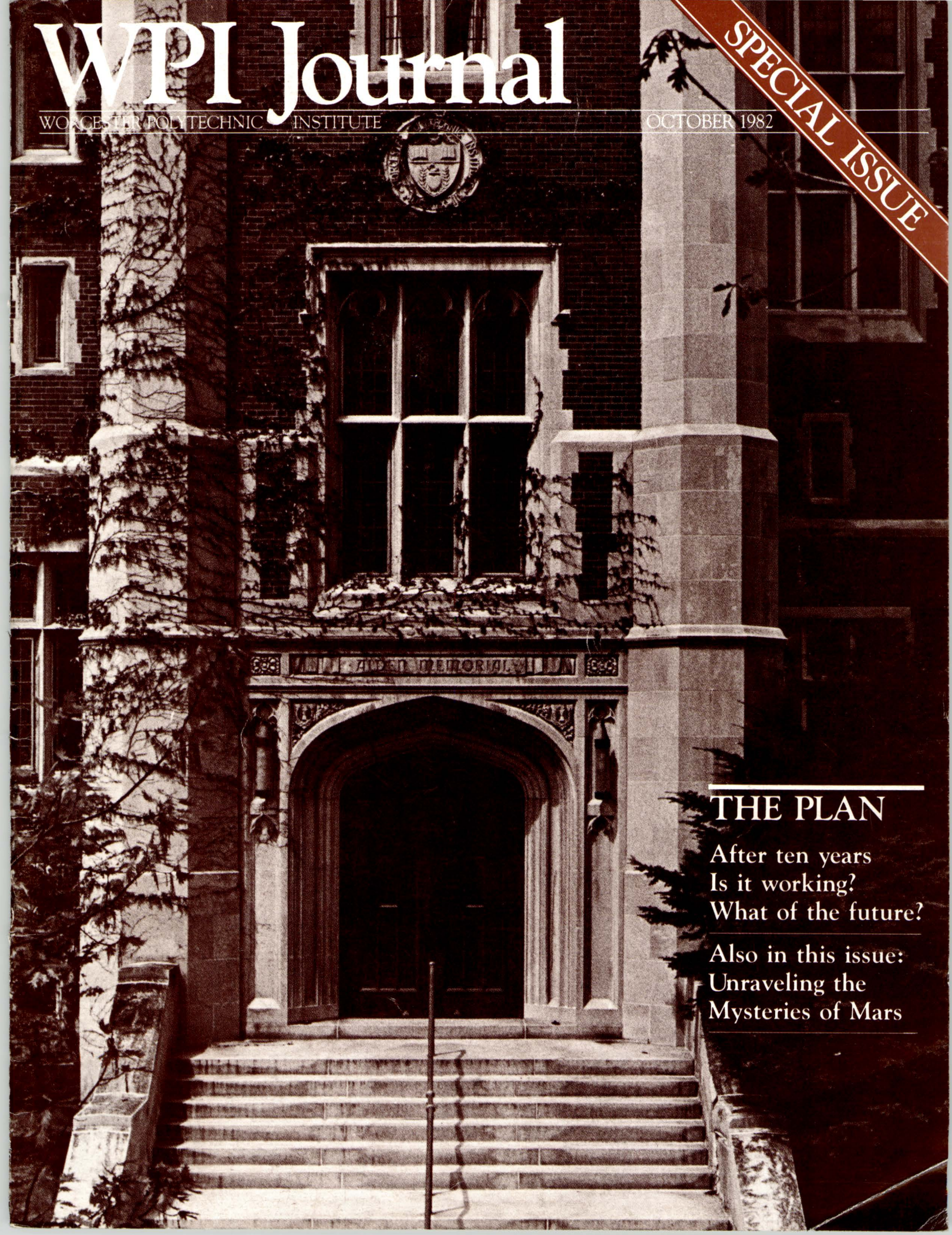
WPI Journal

WORCESTER POLYTECHNIC INSTITUTE

OCTOBER 1982

SPECIAL ISSUE



THE PLAN

After ten years
Is it working?
What of the future?

Also in this issue:
Unraveling the
Mysteries of Mars

Michael Carroll

EDITORIAL

"This day closes the first decade in the history of the Free Institution. It has been a period of discovery and settlement, crowded with the perplexities and anxieties inseparable from new enterprises."

—Charles O. Thompson, 1878

By coincidence, it was precisely a hundred years later that we marked a decade of life under the influence of the WPI Plan, an educational enterprise of unprecedented scope and boldness.

Looking back at the history of the Plan, one can conclude that in 1968, a unique combination of events, personalities and attitudes came together at a critical moment. For individuals, for the college and for the nation, the era was one of rapid maturing. Forces from all sides, each with real or perceived stakes in our decisions, let it be known that the educational status quo was no longer acceptable. Institutions everywhere were feeling the rigors of change.

The fuse of the scientific and technological explosion had just been lit. But those educators with the sharpest vision were convinced that instilling tomorrow's technologists with deep concern for the consequences of their work to the lives of *people*—a controlled burn, if you will—is the only prudent way to generate the huge energies embodied in technology. Thus was the Plan born.

The Plan survives. But does it produce the kinds of engineers and scientists who are prepared to deal with a world of technological opportunities and challenges unimagined just ten years ago? And can it sustain WPI in a time of relentless competition—for students, faculty, facilities, and academics?

In this special issue of the *Journal*, we take a hard look at how the Plan has fared in its inaugural decade. And we peek into the future. What we found may astound you.

—KLM

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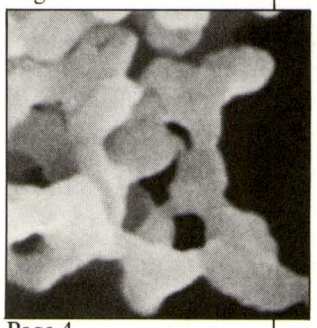

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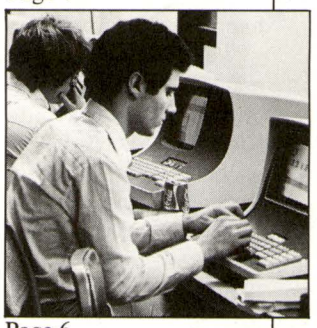

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Cover: Alden Memorial Auditorium, photographed by John F. Wellsman. Back cover: Student in Gordon Library, photographed by William Denison.

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NEWS FROM THE HILL

Alumni Fund Goes Over the Top—Again

Cliffhangers? Nearly everyone associates them with double overtime NCAA national championships or Gothic novels. But in the WPI Alumni Office this year, the term also applied to the Alumni Fund.

On June 15, Gift Recorder Eileen Scopetski assured the staff that we would meet the $800,000 goal; in fact we would probably exceed it on June 30, the closing day for the 1981–82 Fund year. Still hanging in the balance, however, was whether we would meet the *other* major goal we had hoped to reach—40 percent participation. When the entire recording process had been completed, the word spread quickly through the entire office that a record 5,343 gifts had been made to the 1981–82 Alumni Fund—eight more than we needed to reach 40 percent! (Of course, as in Gothic novels, you knew there would have to be a happy ending.)

We quickly phoned Fund Board Chairman Henry Styskal, Jr. '50, who passed on the news to Fund Board members Richard A. Davis '53, Gerald Finkle '57, Richard B. Kennedy '65, Allen H. Levesque '59, John M. Lindegren '39, Philip H. Puddington '59, and John M. Tracy '52.

Banner years are becoming the norm for the Alumni Fund. With over 1,125 alumni volunteers leading the way, how could it be otherwise? For in addition to the $807,855 in alumni giving, an additional $237,223 in unrestricted funds had been received from the 223 corporations who matched gifts during the year from their employees. A total of $1,045,078 in unrestricted gifts were generated for the Fund from alumni—another unprecedented performance!

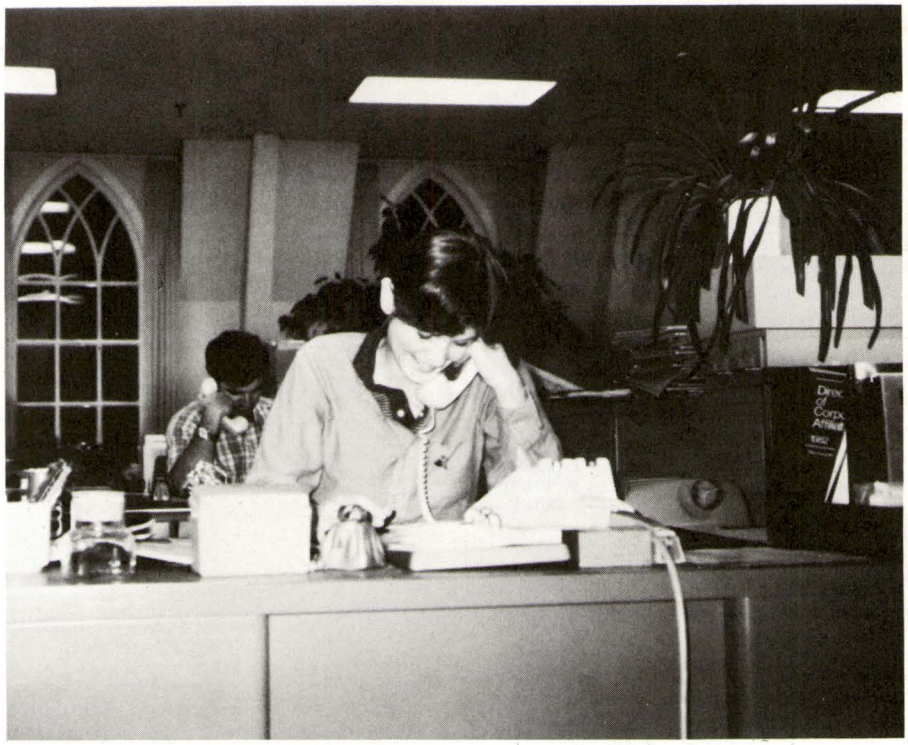
When the final Fund report was mailed in late September, it included yet another major announcement. On July 12, at the national assembly of the Council for the Advancement and Support of Education (CASE) in Toronto, Sharon C. Davis, Managing Director for the Fund, and Stephen J. Hebert, Alumni Director, received on behalf of the alumni body another CASE/U.S. Steel Foundation Award for Sustained Excellence. The WPI Fund has now received this award for four consecutive years. (Only two other institutions in North America, Dartmouth College and the University of Michigan, have been so honored.) This award reflects the ingenuity, time, and diligence of scores of volunteers not only this year, but for years past.

Other highlights for the Fund year include:

- A record number of gifts of $1,000 or more—167 alumni were recorded as members of the President's Advisory Council for 1981–82.
- The reunion classes of 1932, '42, and '57 made gifts totaling $258,535, and established individual class scholarships for future generations of WPI students.
- Nearly 200 undergraduates volunteered an evening of their time in mid-April at the annual Alumni Fund Phonothon. They recorded $60,811 in pledges during this outstanding program; two sororities, Phi Sigma Sigma and Delta Phi Epsilon, raised the greatest dollar amounts—and both in the same evening!
- Among classes who participated in the Class Agent Program (Classes of 1935–81, but omitting those classes celebrating 25th and 40th reunions), the Class of 1935 led all classes in participation (64.8 percent), the Class of 1973 had the largest number of donors (191), and the Class of 1938 raised the greatest dollar amount ($32,344). In the Alumni Office, Head and Class Agents are fondly referred to as "super agents," and it's not difficult to understand why!

Acknowledging the significance of all these accomplishments is important, but one might ask how the Fund is spent? That's the best part!

In general, the Fund supports common



Undergraduates played a vital role helping the Alumni Fund reach the million mark.

needs and interests: quality academic programs that attract the kind of students and faculty WPI seeks. But more importantly, the Fund helps provide the financial resources that enable the college to retain these fine people. Frequently, part of the Fund can be used for small but important things for which other funds are not available—support for student project opportunities off campus or for new intramural sports activities. The beauty of unrestricted funds for current operations is that important projects can be supported during the current academic year according to priorities established by the college.

Of course, every *good* story has to have heroes and heroines, and the best part of the end of the Fund year is sharing news of the terrific results with all those who helped make it happen. Thanks very much for making the 1981–82 Alumni Fund the success it was!

WPI Champions Catch Henley Fever

They had to leave their $100,000 trophy back in England and take home pewter mugs instead, but it doesn't matter. The first-ever alumni contingent from WPI—plus two student crews—will never forget June 26, 1982, the day they won three trophies during the Reading Regatta, a preliminary trial race held before the world-famed Henley Regatta.

Says Dave Ploss, '70, long-time WPI crew coach and coxswain, "We had to beat eight teams to get to the finals, then our Senior 'B' team with cox defeated Eton Excelsior by a length." Marlow Rowing Club was third. WPI 'B' team winners were Peter Clapp, '81, John Marden, Steve Zimmerman and Carl Hefflefinger, '82, and Ploss (cox).

WPI's Senior 'C' with cox won by three feet over Henley Rowing Club, after Oxford Polytechnic was disqualified for interference. "It was close," Ploss says. "When Oxford was disqualified, Henley took the lead for a while. But WPI was ahead at the end, when it counted." Winning team members were Paul Doe and Brandt Bonin, '82, and Paul Quigley and Joe Iantosca, '83. Ploss again served as coxswain.

Alumni Fran Madigan and George Wespi, '79, Jay Feenan, '80 and James McGee, '81, placed a strong second to Yale University in the finals of the Senior 'A' without cox. Although the Yale crew is ranked No. 1 in the U.S., WPI lost to them by less than a length.

At right, alumni rowers warm up on Lake Quinsigamond. Below are the Reading Regatta champions: center, David Ploss. Front row (left to right): James McGee, Paul Quigley, Paul Doe, Fran Madigan, Jay Feenan, George Wespi. Back row: Peter Clapp, Stephen Zimmerman, Brandt Bonin, Joe Iantosca, John Marden, Carl Hefflefinger.

With two firsts and a second at the Reading Regatta, WPI captured the prestigious $100,000 team championship cup—"Temporarily," Ploss comments wryly. Its permanent home is England. (Rules of the host country.)

While participating in the regattas, the WPI crew stayed with English families, who opened their homes to them on a "bed and breakfast" basis. "Very friendly people," says Ploss. "But they couldn't get the hang of making American pancakes. One morning some of us showed them how, with American pancake mix and real maple syrup. They really made a hit!"

John and Ginny Giordano FitzPatrick, '75, English residents for the past two years, made a hit with the visitors by hosting them to a bountiful home-cooked banquet. According to Ploss, "Everybody ate so much at noon, no one could lift an oar for the rest of the day."

Bad luck, muscle pulls and the flu hurt WPI during the Henley Regatta. The Engineers led the Visitor's Cup competition, which was open to colleges and schools in the 4-without-cox category, but lost it in a heartbreaker just three strokes from the end. Ploss says, "At the last minute, a steering problem developed and WPI was disqualified."

In another Henley race, the Wyfold Cup open competition for 4 without cox, the alumni drew Neptune, the champion Irish national lightweight team, to row against. Although Neptune was ranked seventh in the world in 1981, the alumni moved well against the highly-ranked crew in a losing cause. (Jeff Peel, '74, a former English exchange student and oarsman at WPI, also rowed in the Wyfold semifinals. He and his wife also put out the welcome mat for the visiting WPI crew.)

WPI entered the Prince Philip-Grand Challenge Cup, also at Henley, which is open to any amateur 4-with-cox team in the world. The Engineers made it to the semifinals, where they were defeated by the Australian national team (who outweighed them by more than 30 lbs. per man).

The Henley defeats, closely following their stunning Reading victories, did nothing to cool the oarsmen's Henley fever. Fran Madigan, '79, vows, "WPI alumni will compete again next year. Count on it!"

Ruth Trask

PROJECTS

Unraveling the Mysteries of Mars

On a lonely Martian plain, 206 million miles from earth, 37 minutes away by radio transmission, the Viking lander's sampler arm pushes slowly into the ground, scooping out a small trench, dumping the soil into a hopper leading down to the package of biological experiments on the lower deck. Before reaching the hopper, though, the red soil dribbles through a coarse and then a fine sieve. Then the scoop goes back to the trench for another load for a second hopper, which leads down to the gas chromatograph-spectrometer that examines the sample for organic chemicals.

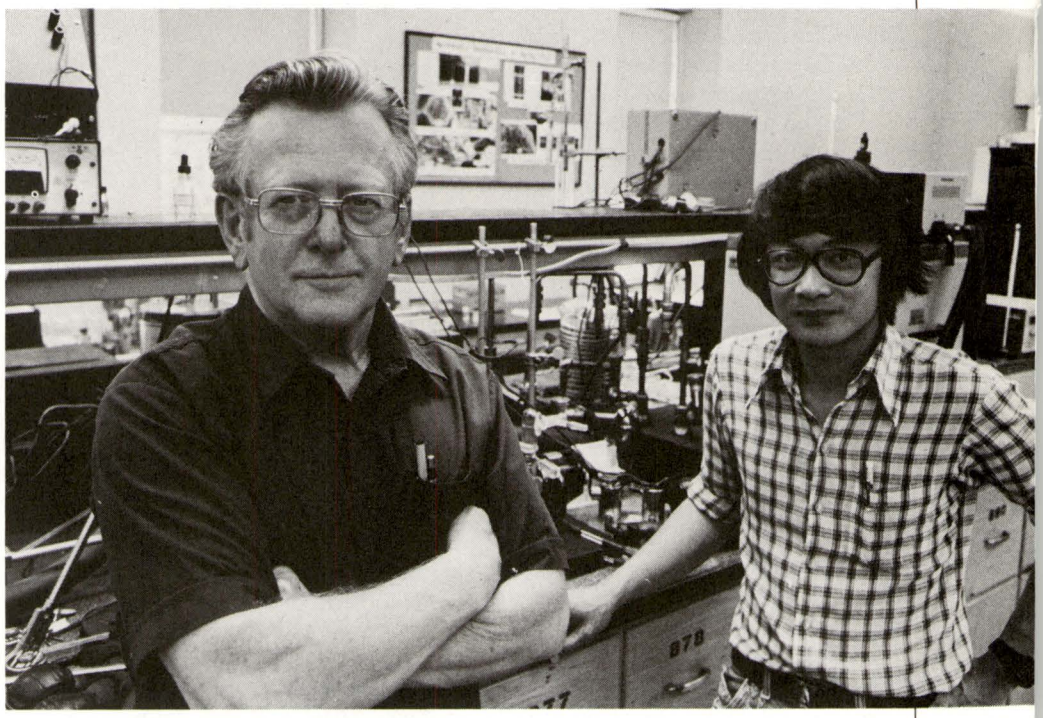
Is E.T. watching?

This sequence and others like it would be repeated countless times more in the months ahead, as the unmanned Viking lander pursued its mission some six years ago: to search for life—macro- or micro-organisms—on the surface of the planet Mars.

It was 1976, ten years since the National Aeronautics and Space Administration (NASA) had first conceived and begun preparing for the astonishing Viking expedition, a project rivaled only by Apollo's manned moon landings and the more recent Voyager fly-bys of Saturn. For Viking would land not one but two scientific stations on Mars, the first in late July (planned originally for July 4, to coincide with the bicentennial), the second three months later.

At last, thought Mars-gazers, the centuries-old mysteries of the Red Planet would be resolved once and for all.

From his Goddard Hall office, WPI Chemistry Professor Robert B. Plumb watched the expedition attentively. Already he'd consulted to NASA, a relationship that would continue throughout the mission. But his most dramatic role in this enticing who-done-it wouldn't unfold for another six years. More on that later. But first, some background.



Professor Robert C. Plumb (left) and Rewat Tantayanon.

Viking's package of experimental equipment resembled a can of sardines. Besides biological and chemical apparatus, a host of meteorological, geological, and other instruments measured everything from wind velocity to seismic phenomena. But the biological tests attracted the largest following among scientists and the public.

Besides scanning by television camera for beasts or rodents scurrying across the Marscape (admittedly a low probability), three biological experiments took place: pyrolytic release, gas exchange and labeled release (LR). In the LR test, soil samples were exposed to an organic nutrient labeled with carbon 14, a radioactive isotope of carbon. If, during incubation, radioactive carbon compounds were released from the reaction, scientists could trace this effect to biological origins.

Of the three biological experiments, the LR test presented the most striking effects. But the cause of the apparently positive results of this test have until now remained a mystery.

At both the V1 and V2 landing sites, 1,000 km apart, different soil samples exposed to C14 yielded similar, robust releases of radiation, indicating the presence of life in the soil tested (the theory being that the radiation is generated by micro-organisms metabolizing, or consuming, the radioactive compounds and releasing carbon dioxide, CO_2, labeled with C14). But when the same samples were given another dose of C14, instead of giving up more radiation, the level dropped dramatically and remained at a constant level.

Since this reaction is inconsistent with biological effects, scientists were given a clue that some other mechanism—perhaps chemical—was at work.

Meanwhile, as the plot thickened, back in Worcester Bob Plumb was postulating his own ideas and offering suggestions to the puzzled NASA biological team.

NASA needed more evidence. What, they wondered, would happen if different samples were sterilized by heat prior to the injection of the nutrient? Following more scooping and more incubating, tests indicated that sterilization—which would kill any micro-organisms—did in fact eliminate the release of radioactive gases from the soil. Now things were getting interesting. It was beginning to look as if there's life in them there hills after all.

Now, six years after Viking 1's landing pods kicked up the red dust of Mars, Professor Plumb believes he and his students, most notably Rewat Tantayanon, a Ph.D. candidate from Thailand, have unraveled the mystery. Their NASA-funded research shows that the effect found at Chryse and Utopia, Viking's landing sites, was purely chemical. In fact, they believe they have discovered and have synthesized at WPI a form of matter native only to Mars, a substance which may have broad applications here on earth.[1]

"One problem with the Viking experiments," Plumb said recently, "is that they put the cart before the horse, addressing the biology of the soil before they learned about its chemistry." Knowing the rate and amount of radioactive release, the effects of reabsorption and sterilization, and thereby being able to deduce the soil's acidity and desiccation, Plumb saw the problem as trying to uncover in an earth-bound lab the chemical mechanism that produced the effects observed on Mars, nearly a quarter billion miles away.

The WPI team theorized that a chemical agent in the Martian soil is responsible for the Viking finds. To uncover this compound, they studied several possibilities, including magnesium sulfate, exposing it to simulated Martian environmental conditions. The most striking of these conditions is Mars' day-night temperature extremes—falling from a day-time high of 0 degrees C. to −80 degrees C. at night.

The results are startling. When this temperature variation is duplicated in the lab, the volume of the magnesium sulfate jumps by a factor of seven—roughly equivalent to the difference between sleet and snow.

"This morphological transformation, in which crystals are broken down into a coral-like arrangement, has never before been observed on earth," says Tantayanon. "We're nearly 100 percent certain that magnesium sulfate exists on Mars and that simple temperature fluctuations there produce the same effects we observe in the lab."

With this material in hand and with a new-found understanding of the chemistry underlying the LR reaction, Plumb and Tantayanon have for the first time reproduced Viking's findings here on earth. Many other labs worldwide have tried and failed. As a bonus, their work provides a measure of the acidity and desiccation capacity of Martian soil. And incidentally, the gas emissions of the LR experiment were *not* CO_2, as most scientists assumed.

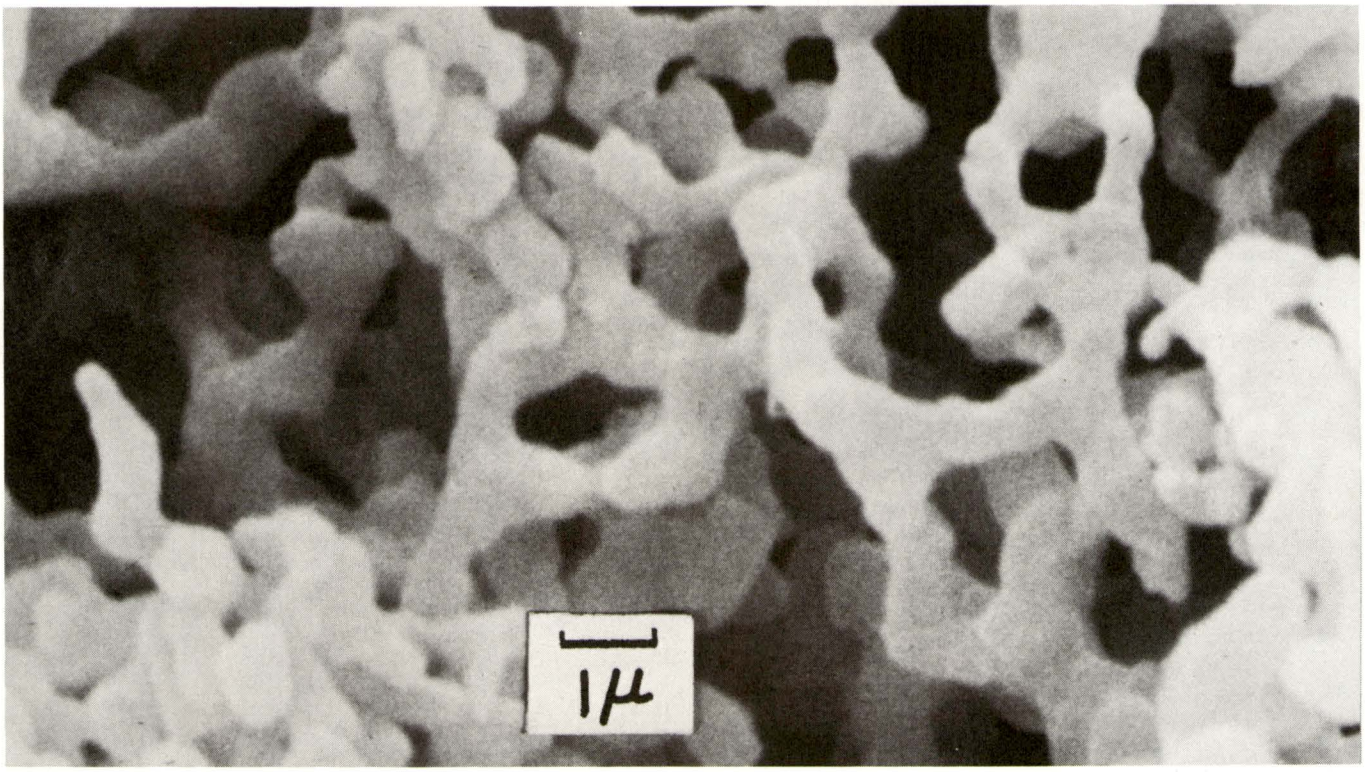
"Our findings strike a crucial blow to the belief that Mars holds life," Plumb says. "But life on Mars isn't our major interest. As chemists, we're interested in the chemistry that defines life. Our real objective has been to find the chemical processes that occurred in the first 'chemical' experiment ever carried out on another planet. Mars is just another majestic scientific puzzle."

The new high surface-area material Plumb has developed may have applications here on earth in the chemical industry, for example, as a super desiccant to soak up water from organic compounds.

According to Dr. Edward N. Clark, Associate Dean of Graduate Studies and Director of Research, "Professor Plumb's research is some of the most elegant work I've ever seen, some very fine scientific detective work."

Plumb sees things on a more earthy level. "If we can understand the chemical evolution of other planets, we can probably learn more about the chemistry and life of our own environment."

[1]Properties of this new material have also been studied by H. Peter McClain, '80 CH, Rodney Poole, '80 CH, James Toomey, '82 MS, and Sermin Üren, a Ph.D. candidate.



Coral-like crystals of magnesium sulfate exposed to Martian environmental conditions. Other-world material created on earth?

William Denison

The Plan: Is

By Shannon T. Devoe, Ph.D.

What does a decade of research to evaluate the WPI Plan have to say? Plenty:

- *First, the Plan is effective in attracting highly qualified students who have the potential to become competent scientists and engineers.*
- *Second, WPI does indeed prepare these students to become professionally qualified.*
- *Third, the Plan achieves more than merely training students for technical competence. WPI produces graduates who are confident of their abilities, who can integrate ideas from a wide variety of fields, who are creative problem solvers, and who can communicate effectively. They appear committed to social, cultural, and political involvement in their communities. And in the early stages of their careers, at least, they see themselves as more successful in and more satisfied with their jobs than a national comparison group.*

The statistics tell the story. In separate studies of applicants, freshmen, seniors, and graduates, all indications are that the WPI Plan is meeting—and often exceeding—the goals of its framers.

The results are intriguing and compelling. So is the story behind them. *–Ed.*

The Way It Was

Roger Perry, WPI's Director of Public Relations, remembers the scene vividly.

"President Harry Storke leaned back in his chair," he recalls, "and reflected pensively, 'I'm afraid I didn't make many friends today.' "

"Now what did you do?" Perry asked wryly.

"I've just appointed a committee of bright young faculty to conduct a study and tell me what this college should be ten years from now."

It was December 12, 1968. This appointment was the beginning of the WPI Plan.

When he took the reins in 1962 as WPI's tenth president, Storke recognized the school's tradition of excellence. He also saw a capacity for even greater things—a capacity he believed it had yet to utilize fully. From the beginning he had tried to nurture that potential for greatness through the established hierarchy. At the time, academic matters were handled by the various tenured department heads. The faculty as a whole had little to say in academic affairs except as it might convince the assembled department heads.

Storke told Perry often of his frustrations in trying to move this entrenched body to long-range planning—an activity Storke believed imperative for meeting the dynamic needs he

It Working?

The year: 1968. On college campuses across the nation, students and faculty joined to examine with a critical eye the most cherished ideals of education and our very way of life. Many precepts were found wanting. Retrieved headlines of riots at the nation's Columbias and Berkeleys are stark reminders of those turbulent times. Change was in the air.

At WPI, meanwhile, change was indeed on its way, but through constructive means, not destructive ones. The college saw the need to examine its educational program and found it to be solid, but neither distinguished nor distinctive. Faculty, at least, were deeply concerned that the heavy emphasis on coursework and examinations was stunting students' curiosity and creativity. There appeared to be a separation between the activities for which students were rewarded at the Institute and those in which professional engineers and scientists were engaged and for which they were rewarded.

But the disparity between training and practice was not limited to WPI. A year earlier, an American Society for Engineering Education report had stated, "Regardless of the academic route, the central characteristic of engineering is the creative synthesis of new systems and components. New learning experiences in this direction are much needed, and should provide a real challenge in engineering education."

The need for change in engineering education was thus established. In addition, there appeared a need for a new *kind* of engineer, one who could approach a broad range of social and environmental problems, one who would be aware of the impact of technological advances on society as a whole. Yet engineers had traditionally been less likely than any other group of college graduates to become involved in this broad range of problem areas.

Some colleges responded to this call for the "new" technologist by introducing into their curricula new courses in design and other quick-fix solutions. At WPI, the response was a total restructuring of the undergraduate learning experience. After more than a year of self-study, soul-searching, and discussion, the faculty and Trustees endorsed the following statement of goals:

> By means of coordinated programs tailored to the needs of the individual students, it is the fundamental purpose of WPI to impart to students an understanding of a sector of science and technology and a mature understanding of themselves and the needs of the people around them. WPI students, from the beginning of their undergraduate education, should demonstrate that they can learn on their own, that they can translate their learning into worthwhile action, and that they are thoroughly aware of the interrelationships among basic knowledge, technological advances, and human need. A WPI education should develop in students a strong degree of self-confidence, an awareness of the community beyond themselves, and an intellectual restlessness that spurs them to continued learning.

Less than a year after the endorsement of this statement, the WPI Plan emerged as a means for implementing these goals. The Plan called for competency-based education, with an emphasis on learning through projects, independent study, and collaboration with both faculty and other students.

In addition, the traditional grading system was replaced by one in which students could complete course and project requirements with distinction, pass, or (if they do not pass) with no record of failure. The academic calendar was changed from two fourteen-week terms to four seven-week terms, with optional three-week intersession and seven-week summer terms. Courses were seeking in their curricula greater relevance to the real world. The mood had spread to WPI as well. The times were right for change, and Storke sensed it. For several years, faculty and students alike had been chafing under the rigid prescribed curricula. In some departments, EE for example, professors had begun innovative programs to broaden students' educational experience. Faculty had successfully initiated expanded humanities electives. And women were first admitted to WPI in 1968.

saw ahead for WPI. As a retired Army lieutenant general, Storke was accustomed to governing through his chain of command. Since he wasn't getting the action he wanted, he had taken a step foreign to his years of leadership experience; he had bypassed his chain of command and asked his junior officers to do the task he knew must be done.

While his appointment of a faculty planning committee may have alienated some of the powerful department heads, who were not informed prior to the appointments, the move nevertheless was a popular one among faculty. His unorthodox move turned out to be a carefully calculated risk.

Throughout the nation, the late sixties were a time of reassessment of many social institutions and values. On campuses everywhere, students

Former WPI president Harry Storke. He had a vision.

In his charge to the committee, Storke explained that they were to concentrate on the broad objectives of the college and not become entangled in the details of needs and curricula in individual programs. Most important, he emphasized, was that they develop sound objectives—principles on which WPI's renewed mission would be founded.

For three months the committee labored. They carefully analyzed the existing strengths and weaknesses of the college. In developing recommendations, they sought the active participation of colleagues and students, for sweeping change required broad support if real advances were to be made. Finally, a comprehensive educational program had to be designed—one to which the college could direct its energies, one which could be articulated to a generation of students demanding relevancy, and one which could attract the necessary funds.

The committee found enthusiastic and sincere support from their constituencies in this work. They submitted their first report in March 1969. It discussed 12 possible types of institution which WPI could become. It also included a recommendation that planning continue and that faculty and students devote time to discussing the planning effort to date.

Then the committee resigned.

"Our resignation was one of the most important actions we

could be taken in a variety of ways—students could attend lectures, watch video-tapes of classroom presentations, or meet the course requirements through successful completion of an Individually Paced Instruction module. Sequences of courses were recommended, but not required. Students were responsible for planning their own courses of study; the role of the faculty member thus changed from that of arbiter to mentor. Virtually no aspect of the educational environment was left untouched.

WPI freshmen scored 150 points above the national average on SAT math tests.

In one broad sweep, WPI had transformed its role from that of the traditional engineering school to that of pioneer in the realm of innovative, creative educational investigation.

Further, this dramatic transformation took place, not in a matter of decades, but in a matter of years. In June 1972, three students graduated under Plan requirements; in June 1973, the number was 21. By June 1974, 32 students were Plan graduates; by June 1975, fully 50 percent of the seniors graduated under the Plan; that number was 90 percent in June 1976. By 1977, WPI was all Plan, with no other options available.

The Evaluation Strategy

When WPI committed itself to the Plan, it also committed itself to a long-term, intensive effort to evaluate this bold educational framework. The ultimate question, of course, remains: "Does the Plan work?"

Obviously, one of the original goals of the Plan was to graduate technically competent engineers and scientists. To measure this factor, external measures—assessments by qualified third parties—are required. However, the goals of the Plan go further: to produce graduates who are also more self-confident, more self-directed, more creative and resourceful in approaching and solving problems, more aware—of themselves, their technological expertise, other people, the society in which they live—and more effective in interacting with others.

As one reads through the Plan literature, certain ideas and phrases appear repeatedly which seem to cluster under three categories:

1. *Personal characteristics* (e.g., enthusiasm, self-confidence, maturity, self-motivation, responsibility, self-discipline, creativity)
2. *Skills* (ability to learn on one's own, ability to integrate ideas from diverse fields, ability to communicate effectively, ability to work with others as part of a team, ability to take a leadership role in working with others, ability to analyze problems across a wide range of issues)
3. *Values* (desire for life-long learning, desire to help others, desire to be involved in the social, cultural, and political life of the community)

Although these "value-added" characteristics are more difficult to measure, they are the features that distinguish a Plan education from any other. Most of the studies reviewed here have tried to measure these characteristics, skills, and values through self-reported and external assessments.

In sum, then, the evaluation strategy called for self-reported and external measures of both technical competence and personal characteristics, skills, and values of WPI students and a comparison group. Measures were made when students entered college, when they graduated, and at some time after graduation. Now, after ten years of assessment, we have in hand the statistical evidence to enable us to answer objectively the question, "Does the WPI Plan work?"

Salisbury Laboratories have been renovated.

John T. Wellsman

took," recalls William R. Grogan, '46, Dean of Undergraduate Studies, at that time an EE professor. "We had been appointed by the president, but we felt that if this planning effort were to be successful, the committee planning the next phase had to be elected by the faculty itself." Except for one member who chose not to continue, the original committee with one addition was overwhelmingly elected by the faculty.

"This represented a major turning point in the role of the faculty in college governance at WPI. And it brought WPI into line with the structure of most of America's leading colleges and universities."

The first Planning Day attracted wide faculty and student participation, and served to narrow the 12 possible scenarios down to just four.

Planning continued with renewed vigor. Subcommittees were formed, and, for the first time, students were invited to participate on an equal footing with faculty members. This marked a major turning point in the faculty-student relationship. It was no longer "them" and "us." Now it was "we."

In June 1969, at age 64, Harry Storke retired, a year before WPI's then mandatory retirement age. He had accomplished what he'd set out to do, and the time was right to turn over command to a president who could lead the college through the radical changes that were to come.

The trustees selected Dr. George Hazzard to succeed Storke. Hazzard often said that he would have had no interest in the position except for the challenges of implementing the Plan.

And the challenges were many. Hazzard brought to his office many years of experience as an educator. He could empathize with the faculty as they labored to resolve the inevitable conflicts in formulating the eventual WPI Plan. For the Plan was totally a new concept, modeled after that of no other college. There were no leads to follow.

In December 1969, after considerable debate, the faculty endorsed a statement of goals for WPI. This important step established the framework on which the next phase of intensive planning was based. The following June, the WPI Plan was formulated in essentially its present form. It was accepted by the faculty and soon thereafter was approved by the trustees. The trustees stipulated that, naturally, such change would require economic justification. Grants totaling nearly $3 million were provided by the National Science Foundation (NSF), the Alfred P. Sloan Foundation, and several other charitable organizations for implementation and evaluation.

President Emeritus George W. Hazzard. He made the Plan go.

Now WPI found itself committed to one of the most sweeping educational innova-

tions this nation had ever seen. The faculty and trustees had staked the future of the college on an educational program which had never before been tried—anywhere.

In place of conventional degree requirements met by passing a prescribed number of courses, most of which were required, the WPI Plan, which began in 1971, has these requirements:

- A major project in the student's professional field, known as the Major Qualifying Project (MQP)
- A major project which relates technology to the needs of society, known as the Interactive Qualifying Project (IQP)
- A Sufficiency in the Humanities, similar to a minor program
- A Competency Examination after the completion of three years' work, normally in the form of a week-long design or other problem, a written report and an oral exam, to establish that the students are indeed prepared to enter their chosen professional fields.

Under the Plan, all courses are elective and are chosen after consultation with faculty advisors.

The Plan places great responsibility on the students for identifying and achieving their own educational goals. Said Grogan recently, "From the beginning of the Plan, we were concerned that students not only benefit from classroom teaching, but learn how to make decisions—beginning with decisions that affect their very education." Projects are the basis of this experience. Students now tend to view faculty as colleagues in the educational process.

Not surprisingly, a decade ago, many alumni were deeply concerned over the changes planned at their alma mater. Most wanted assurance that these changes would make WPI an even better college than the one they'd known as undergraduates. A few were adamantly opposed to any changes in the WPI they'd come to love.

Today, the vast majority of alumni—both Plan and pre-Plan graduates—express pride in their alma mater, due in large part to the foresight and courage of the Plan's architects. In just over a decade, WPI has witnessed the enactment of an educational system which is today unique in the world, a system which skeptics warned would never work, but which is alive and healthy.

"Those early Plan years were often turbulent ones," Hazzard reflected recently. "Change was argued vigorously at every point—as well it should have been." So vigorous was the debate, that NSF advisor David Reisman of Harvard University predicted outright revolution among faculty and students. "But, if anything," says Grogan, "it's brought the WPI community closer together."

Demands on faculty and students—inherently more exacting in a project-based program than in conventional classroom teaching alone—have and will continue to be great. But in terms of enhancing the faculty-student relationship and preparing students for professional experiences—the real mission of the Plan—the rewards are great.

EVALUATION RESULTS

Applicants and Incoming Freshmen

One measure of the Plan's viability is the degree to which WPI has been able to attract prospective students. During the early years of the Plan, the numbers of applicants decreased significantly, then increased just as significantly, with large jumps in 1976, 1979 and 1980.

The school's ability to attract students has continued (see graph, page 10), even when WPI practiced a policy of negotiated admissions and accepted virtually any applicant who met basic high school course requirements and was willing to accept "self-admit" responsibilities. Scholastic Aptitude Test (SAT) scores of incoming WPI freshmen have declined slightly over the past decade, reflecting a national trend. However, the average Verbal SAT scores of WPI freshmen continue to be some 80 points higher than the national average, while the average Math SAT scores for WPI freshmen continue to be about 10 points higher than the national average.

Median class rank for WPI freshmen has increased systematically. In 1973, 50 percent of the incoming freshmen were in the top 18 percent of their high school graduating class; in September of 1982, 50 percent of the incoming freshmen were in the top 8 percent of their high school graduating class.

Obviously, the rosy picture painted by the figures on incoming freshmen is colored more strongly by the facts that they represent the tail end of the baby boom, and that engineering has become markedly more attractive over the past decade. Nevertheless, a comparison of the numbers of applicants to WPI and to the Massachusetts Institute of Technology (MIT) indicates that WPI is attracting more than its share of this growing pool of prospective students. Since 1977, the numbers of applicants to MIT

has increased by 26 percent, while the number of applicants to WPI has increased by 68 percent. And from 1981–1982, the number of applicants to MIT fell by 2 percent, while the number of applicants to WPI jumped by 8 percent. The WPI Plan is clearly attractive to students of high academic standing.

Studies of Freshmen

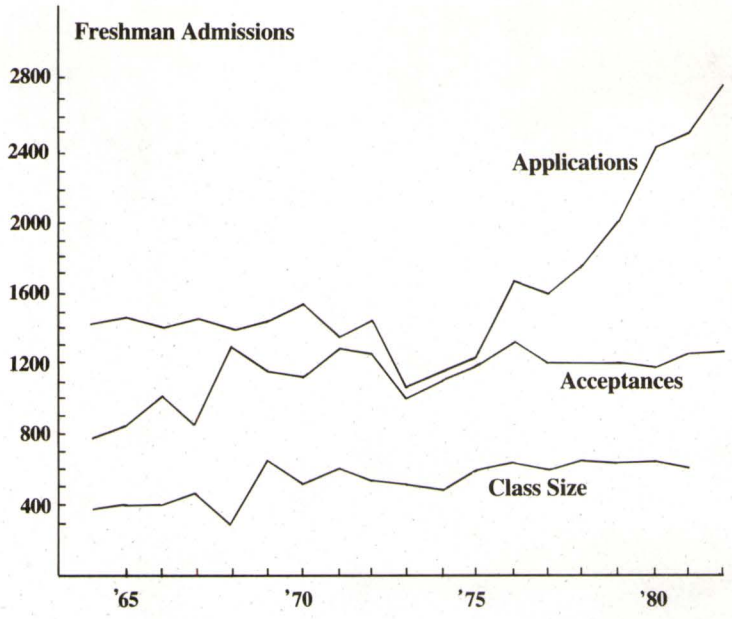
Given the distinctive attributes of the Plan, we can ask whether WPI attracts students who differ in personal characteristics, skills, values or competence from the students who have traditionally entered WPI and similar colleges of engineering and science.

In one study, Dr. Karen C. Cohen (1975) asked entering freshmen at WPI to fill out a standardized questionnaire prepared by the American Council on Education (ACE). The ACE data for WPI classes entering in 1973 and 1974 were then compared with the ACE data for freshmen entering two other technological colleges similar to WPI in the size and composition of their student bodies.

An examination of questions which related to academic competence indicates that these two incoming classes did not differ significantly from each other or from freshmen at the two other colleges in terms of SAT scores, high school class rank, or average grades while in high school.

Questions which reflected personal characteristics, skills, and values indicated that freshmen entering WPI in 1973 and 1974 did not differ significantly from freshmen entering the comparison schools, except that

- WPI freshmen were significantly more likely to indicate that they planned to obtain a degree beyond the master's level.
- WPI freshmen were significantly more likely to cite "working with ideas" as an important reason for making a long-term career choice, and significantly less likely to cite "high anticipated earnings" as the basis for this choice.



Greater selectivity is the bottom line for WPI admissions under the Plan.

- WPI freshmen were more likely to note "the special educational programs being offered in the school" as the reason for choosing WPI.

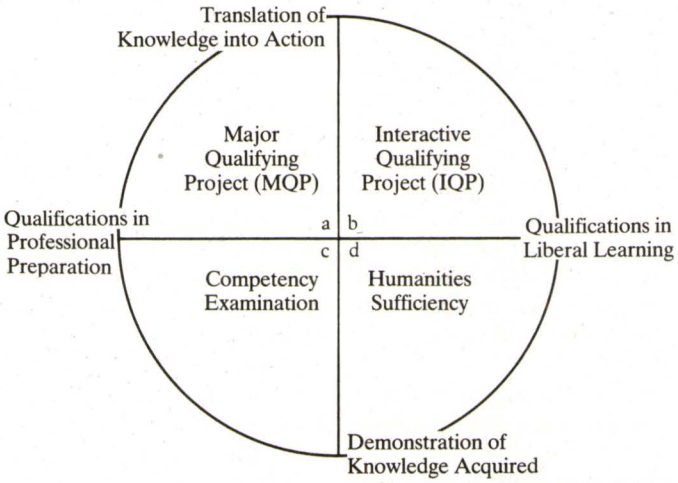
Studies of Seniors

Several studies of seniors have been conducted, one in which Plan seniors were compared to non-Plan seniors in the same WPI class, and two in which company recruiters were asked to com-

Projects—The Plan's Lifeblood

Picture yourself as a freshman entering the WPI Class of 1986, confronting the 284-page *Undergraduate Catalog*, the gospel of the WPI student. Things start to get interesting around page 13. Quote:

> There are four academic degree requirements, each of which is performance based and each of which is directly related to the goals of the college.
>
> These requirements might be considered in four quadrants [Already you realize you're in for an adventure], developed through two "knowledge" groupings of goals:
>
> 1. Professional Preparation (a,c) and Liberal Learning (b,d)



2. Translation into Action (a,b) and Demonstration of Knowledge (c,d) as illustrated in the diagram below.

Unquote.

Studying this diagram, you begin to realize just how big a role projects—MQPs and IQPs—play in the WPI educational experience: They will constitute two of your four academic degree requirements.

The next 25 pages of the catalog go on to discuss nearly every conceivable element of the projects program—from how to choose and begin your MQP or IQP; to on- and off-campus opportunities; to descriptions of special IQP programs, such as the Issues Research Collaborative and the Washington, D.C., Project Center; to discussions of each of the six IQP topic divisions, like Energy, Resources and Environment, and Issues in Economic and Social Development; to where you can get *more* information on projects.

"As far as we know," says Frank Lutz, Associate Dean for Projects, "no other college has a projects program that rivals WPI's. It's a lot to explain."

Despite well-conceived and articulate explanations and accounts of the projects program in the school's internal and external literature, and though projects are an integral part of

pare WPI seniors with seniors from other colleges of engineering and science.

In terms of technical competence, results from these studies have been mixed:

- Using Engineer in Training Examination scores as a measure of technical competence, Dr. Cohen found that Plan seniors, class of '75, scored significantly higher than did non-Plan seniors from the same WPI class.
- In two studies in which company recruiters were asked to rate WPI seniors relative to seniors from other colleges of engineering and technology, recruiters rated WPI students somewhat above average in terms of knowledge of fundamentals in their major field, technical ability, and general engineering knowledge. But, when asked in what ways, if any, WPI seniors differed from seniors at other similar colleges in which they had recruited, technical competence, per se, was not one of the most frequently mentioned items.
- In terms of personal characteristics, skills, and values, Dr. Cohen found that WPI students on the whole rated themselves as significantly more flexible and more broad-minded than did students at the comparison college.
- Company recruiters rated WPI seniors *above* average compared with other seniors in terms of their ability to integrate ideas from various fields and to communicate effectively, as well as in terms of their self-confidence and enthusiasm.
- In fact, of those able to make the comparison, over 80 percent said WPI seniors were different in a positive way—in teamwork, maturity, well-roundedness, and the ability to get things done and adjust to the world of work.

This evidence suggests that WPI seniors do reflect at least the "value-added" objectives of the Plan and are possibly above average in technical competence. But since none of these studies employed an explicit control group, the evidence remains suggestive rather than definitive.

Studies of Alumni

Two major studies of graduates in the early stages of their careers have been conducted. The first of these, conducted by Dr. Cohen (1978), involved WPI Plan graduates, alumni of a comparison college, and job supervisors of both groups. Here, both the graduates and their supervisors rated the technical competence, personal characteristics, skills, and values of the graduates.

In terms of technical competence, graduates of both WPI and the comparison school rated themselves above average on knowledge of fundamentals, ability to learn on their own, ability to get things done, and performance on the job. Similarly, the supervisors said both groups of graduates were above average on these factors.

But while these studies have not indicated that the Plan has produced graduates who are more competent technically than the comparison group, neither are they deficient. The studies indicate that WPI has always produced technically competent graduates, and continues to do so under the Plan.

Granted that the Plan is producing technically competent students, to what extent has it succeeded in producing graduates who demonstrate those "softer," value-added characteristics mentioned earlier?

The first hint that the Plan might be succeeding in these more amorphous areas came when the same Plan graduates, class of

Professor Raymond Hagglund, ME, veteran project advisor.

the WPI experience, the benefits of this element of the WPI Plan to students and project sponsors remain perhaps the most difficult to measure. And to anyone who's neither graduated under the Plan nor been on the sponsor end of things, the IQP, at least, may be the most puzzling aspect of WPI's educational structure.

But to James S. Demetry, Chairman of the Division of Interdisciplinary Affairs (DIA), which administers the IQP program (and an EE professor), the rationale for projects is uncompromising. "Any thinking, observing individual must conclude that a concentrated, seven-week experience that encourages expanded awareness and an appreciation for the complexity of things; that exposes a world that's very political, and where decisions are made in complicated, often extra-technical ways; and that demonstrates first hand that we all have an obligation to a community far bigger than the microcosm we call 'the company'—this experience must surely help prepare students for future professional careers." Mom and apple pie? Sure, he admits, but it may help discourage a myopic view of a complex, turbulent world.

Mechanical Engineering Professor Raymond R. Hagglund concurs. A veteran advisor on scores of projects, he points to a host of project requirements that mirror professional activities: understanding the problem, interacting with a project team and management, preparing a proposal, setting a course for attacking the problem, managing time

1976, were interviewed about a year and a half after graduation. Compared to a group of 1976 graduates from a traditional college of technology, the WPI graduates were:

- More likely to be involved in post-graduate studies.
- More likely to be using their college majors on the job only somewhat or not at all, and to be involved in jobs that were not traditional for their majors.
- Rated by their supervisors as better communicators.

What's more, despite their relatively wider range of current positions, correlations of supervisor ratings for graduates' skills and the importance of these skills for the jobs held were significantly higher for WPI grads. Said one supervisor, "Our WPI grads may be just average on some things, but on everything that's important to us, they're above average."

In summarizing the results of this study, Dr. Cohen noted that, "Although the groups [from WPI and the comparison school] are still remarkably similar . . . WPI graduates are consistently viewed as having a slightly different set of skills than the [comparison school] graduates. . . . In brief, it seems fair to conclude that the WPI Plan has been demonstrably effective at the undergraduate level. Its graduates are certainly rated well, are more effective communicators, and there are indications . . . that they are opting for, and succeeding in, a wider variety of professional roles than were 'traditional' for their majors."

Perhaps the most compelling evidence that the Plan is indeed producing a different breed of engineer comes from Dr. Geoffrey E. Bock's 1981 study.

Here, Plan graduates from the classes of 1976, 1977, 1978, and 1979 responded to a lengthy questionnaire about their current job characteristics and sources of satisfaction, the extent to which their college education had prepared them for the jobs they currently held, the general usefulness of a college education, and their personal values and aspirations for the future. The responses of WPI Plan engineering majors, then in the early stages of their careers, were compared to the responses of a national sample of engineering majors in the same career stages.

In some respects, Plan engineers and the national sample are similar: 95 percent of both groups are employed full time; approximately 40 percent are currently working toward a degree beyond the bachelor's; more than 75 percent are currently work-

Under the guidance of a computer science major, fourth graders are brought into the world of the computer—a tool many of them will be using before long.

and budgets, writing and presenting a final report to management, and, most critically, he says, "taking responsibility for their actions. It's projects that make the pace at WPI faster and more stimulating than at any other college I can think of."

"When the Plan began," recalls Lutz, "a recurring fear was that we'd never be able to attract enough projects from industry." The program has always relied for off-campus exposure on faculty, student and alumni contacts as well as word-of-mouth, he says. That fear soon vanished. Today, though 1,100 projects are conducted annually, Lutz and his staff are overwhelmed by proposals from industry. But, being able to be selective is a mixed blessing, he contends. "We can choose those that indicate the best fit between sponsor needs and students' interests. But in rejecting even good proposals, we don't want to turn off sponsors to future involvement."

Projects are an established part of the Plan, says Demetry, but they—especially the IQP—require constant nuturing, fine tuning. MQPs, he believes, have a natural home in the various academic departments. IQPs, on the other hand, often cut across disciplines.

Demetry cites a favorite example which helps to distinguish between MQP and IQP topics: the computerized automobile interlock. This device, if installed in your car, requires you to recall a sequence of numbers flashed briefly on a screen before you can start the engine. Its obvious job is to discourage the intoxicated driver from ever getting on the road. On this subject, a typical MQP would address some aspect of the computer technology that drives the device. But application of the technology raises issues such as the appropriateness of encumbering individuals' use of their own property, and the rights of the individual versus the right of society not to be endangered by intoxicated drivers. As with so many decisions, says Demetry, one must

ing as engineers; and approximately 90 percent feel they are best trained to be engineers.

But this is where the similarities end.

- While more than 50 percent of both groups are employed by manufacturing and construction firms, a significantly higher percentage of WPI engineers are working in such firms, and a significantly lower percentage of WPI graduates are employed by federal, state, or local governments.
- The groups differed in terms of the skills they feel prepared to perform and the extent to which their jobs call for them to perform these skills: Nine percent of the national sample, vs. 51 percent of the WPI engineers, felt prepared in the design area.
- A significantly higher percentage of WPI engineers are engaged in construction and design.
- Only 26 percent of WPI grads, vs. 41 percent of the national sample, felt prepared to perform mathematical, statistical, and actuarial procedures, although the WPI grads who do perform these procedures felt so prepared.
- Beyond the field of engineering technologies per se, significantly higher percentages of WPI engineers felt prepared to write, to speak to groups, and to lead discussions, while a significantly higher percentage of the national sample of engineers felt prepared to teach.

Thus, Plan engineering graduates feel equally well prepared for engineering, and much better prepared for design work and for written and oral communication than do their counterparts.

The preparations of WPI engineers for work appears to be different, and in fact, for many, the work they do is different. Once again, a significantly greater percentage of WPI graduates indicate that their current job is only somewhat or not at all related to their undergraduate majors. The reasons for this status appear to be voluntary, e.g., preference rather than lack of opportunity, interest in a non-related job, better opportunities. As Dr. Bock notes, "Plan engineers [in comparison to the national sample] appear to be prepared for a greater diversity of technical tasks and to have a wider variety of non-technical skills when they enter the labor force . . . [The data] suggest that [Plan engineers] are becoming involved in a greater diversity of careers than the national comparison groups."

Significantly higher percentages of WPI engineers indicated that their jobs involved working on a professional level, supervising others, having policy- and decision-making responsibilities, setting their own hours, designing their own programs of work, and full utilization of their skills.

Both recruiters and supervisors rate WPI seniors better at integrating and communicating ideas.

- WPI engineers seem to be assuming more responsibility, and to be having more autonomy, than a national sample of engineers at a comparably early stage of career development.
- A significantly higher percentage of WPI engineers indicate that they are well paid in comparison to others at the same job level, both in their own place of employment and elsewhere, that they are satisfied with their career progress to date, and that the current job fits their long-range career goals.
- WPI engineering graduates thus appear to be more satisfied with their current job responsibilities and prospective careers than do engineering graduates from the national sample.
- Significantly higher percentages of WPI engineers indicated that they were very satisfied with the autonomy, independence, extent of responsibility, opportunity for creativity, and variety in activities entailed by their current jobs.

Not only are WPI engineers more satisfied with their jobs than the national comparison groups, they appear to have more reasons to be satisfied. As Dr. Bock notes, "Plan graduates are more likely to feel they are succeeding in their current jobs. They

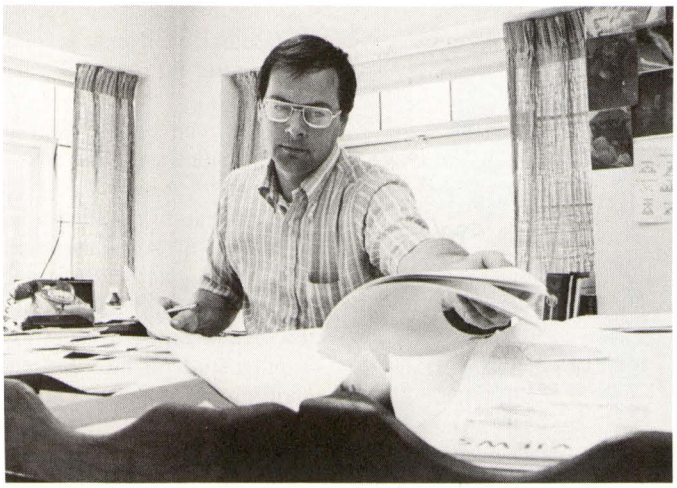
assess the costs and benefits of a decision to any group that it will affect. Such is the realm of the IQP.

Many projects can best be pursued away from the campus. WPI's Washington, D.C., Project Center was established in 1974 to provide exceptionally challenging IQP opportunities. Since then over 450 students and 33 faculty have completed nearly 170 projects in cooperation with 45 government agencies and private organizations—lobbying groups, consulting firms—and members of Congress.

Competition for the 30-or-so spots at the Center is keen. Last year over 100 students applied. For a seven-week term, these top junior and senior students live and work among the nation's top decision makers, working most often on the analysis of government policy options. Says Demetry, the world of policy is new and sometimes strange to most undergraduates. Engineering students, however, are by nature and preparation quite proficient at quantitative work and are good problem solvers. "With practice in the search for information and with the means by which inferences are made from such resources, they can develop an impressive facility with the concepts of policy analysis, its vocabulary and its application."

Recent projects include:

- For the office of Senator Paul E. Tsongas (D., Mass.), issues for international solar legislation.
- For the National Research Council, perceptions of management, labor and government on the social issues of applied CAD/CAM technology.



Associate Dean Frank Lutz. Annually, he oversees some 1,100 projects on and off campus.

- For the National Association of Manufacturers (NAM), evaluation of the effects of antitrust policy on cooperative research in the United States.

Brendon Somerville, Director of Innovative Technology and Scientific Policy at NAM, has good things to say about NAM's WPI experiences, which date back to 1974. "These encounters have been of extraordinary value to NAM." In seven short weeks, he observes, the

feel they have greater autonomy in their work, a higher degree of professional responsibility, and hence, a greater likelihood that they will be successful in the future."

In fact, when the graduates were asked to note the characteristics for which their college education had been very useful, significantly higher percentages of WPI engineers endorsed statements involving cognitive and personal development, e.g., increased general knowledge, increased creativity and ability to think clearly, and improved self-discipline, self-confidence, and perseverance. In contrast, the national sample of engineers saw the usefulness of a college education as primarily related to finding and holding a job. Thus, WPI engineers appear to be attributing much of their perceived success and job satisfaction to factors associated with their own very different kind of college education, and in general, they were also more satisfied with the educational aspects of their college experience than were their counterparts.

All in all, career prospects for WPI alumni are better than for the national sample.

Finally, when asked to indicate which personal values were essential or highly important to them, WPI engineering graduates continued to endorse values consistent with the Plan to a greater extent than the national sample of engineering graduates.

- A significantly higher percentage of WPI engineers indicated that influencing social values, helping others in difficulty, being a community leader, participating in community action programs, keeping up to date with political affairs, and participating in creative arts were very important to them.
- The national sample, on the other hand, was more likely to indicate that never being obligated to people was a very important value.
- WPI graduates scored significantly higher on most statements involving personal characteristics, skills, and values which are consistent with Plan goals; they do not differ significantly from the comparison group on most outcomes that are not particularly relevant to Plan goals.

To the extent that WPI engineers turn these statements of personal value into action, the Plan has succeeded in producing the new breed of engineer—technological humanists who are sufficiently involved in the social, political, and cultural activities of the community to be able to bring their technological background in problem-solving to bear on vital issues.

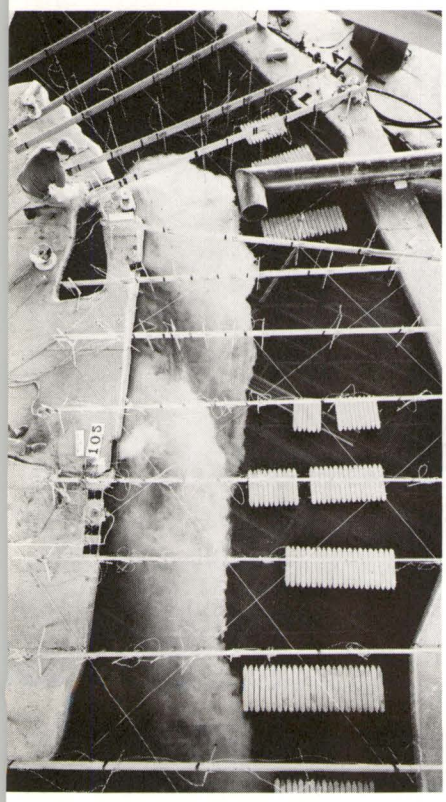
In yet another study of the Plan, conducted under the auspices of the Exxon Educational Foundation, Dr. Lee Harrisberger stated, "There is little doubt that experience-based education creates a powerful learning environment which results in new . . . skills and attitudes which are important to practicing engineers."

In concluding his 1975 study, Dr. Lee Harrisberger stated, "Experiential learning works." In the same year, Dr. Cohen concluded, ". . . it seems fair to say that the program is beginning to succeed in terms of its original expectations or goals." In 1978, she added, ". . . the WPI Plan has been demonstrably effective at the undergraduate level." And in 1981, Dr. Bock concluded ". . . the Plan is achieving its central purpose of training 'technological humanists.' "

After ten years of evaluation, it appears to be safe to conclude that indeed, the WPI Plan is working.

Shannon T. Devoe, Ph.D., is a clinical psychologist who specializes in consulting to educational institutions. Formerly a research associate at Clark University, she is currently an advisor to WPI and the Southbridge (Mass.) Public School System. For more information on the results of the studies cited in this article, write the Editor, WPI Journal.

Daniel P. Duffy Associates



At WPI's world-famous Alden Research Laboratories, research is current and demanding.

students are consistently able to research and assess current—not merely "backburner"—issues. For the student, he believes, the experience provides a unique inside look at the "capital system," so that they mature quickly within the milieu of Administration policy and regulatory agencies. "WPI is one of, if not *the*, nation's leading programs in truly bringing students into the real world and testing them at the professional level," he says.

Other, non-residential project centers exist at Digital Equipment Company, St. Vincent Hospital, the University of Massachusetts Medical Center, and the Norton Company.

William Densmore, '45 ME, Senior Vice President for Engineering and Information Systems at Norton, sees it this way: Beyond the long-term benefits of contributing to the educational process and helping to build much needed bridges between business and academia, rewards to Norton include tangible product development and process improvement, fresh thinking injected into the company, expanded contact with faculty project advisors, and assistance in recruiting.

While off-campus projects provide unusual opportunities for both students and sponsors, they constitute only about 40 percent of the 1,100 projects conducted annually. Actually, says Lutz, most projects—MQPs and IQPs—are proposed not by companies, agencies or students, but by faculty as part of their research activities. Students can thus become junior colleagues on faculty research, often co-authoring papers and making presentations at research symposia, making a real contribution to knowledge in a specific field. The depth and logistics of each project experience, he explains, make it *very* difficult for students to develop projects on their own from scratch.

Currently, most off-campus IQPs are sponsored by non-corporate public and private agencies. Nothing surprising about this, says Demetry. The nature of corporations is to involve students on projects which affect the profit and loss statement—a natural fit for MQPs—while the mission of public agencies is to solve less technical, often human problems.

To bring the two worlds together, WPI's Issues Research Collaborative (IRC) has been formed to identify topics of in-

Looking Ahead:
A Conversation with the President

A recent talk with Dr. Edmund T. Cranch gave the Journal *an inside look at the kinds of issues facing the highest ranks of the nation's educators. Here are excerpts from that conversation.*

Journal: Dr. Cranch, what's ahead for higher education in the next decade? For many colleges and universities, it is certain there will be hard times. In technological and science education we are confronted by at least three fundamental issues. First, in the post-Vietnam era, we experienced a surge of anti-technology sentiment by some facets of society. While this has subsided, historically engineering education has been closely coupled with the state of the economy. The question is whether this historical pattern will continue in this decade. Second, we have entered an era in which expansion of federal support for higher education is being markedly curtailed. This will have a major impact on the financing of education for students in the 1980 s. Third, demographic shifts—the end of the baby boom leading to a lower birth rate—will make it more and more difficult for colleges to attract students to their doors. The pool simply isn't as deep as it was just a few years ago. Clearly, to remain competitive we must develop imaginative programs of exceptional quality and be more assertive in our recruiting efforts. As you are aware, we have been quite successful in this endeavor.

terest to *both* public and private groups. Several elements of IRC complement the usual project selection process: (a) the Executive Issues Policy Council, made up of representatives from industry, the Governor's office and other public agencies; (b) development of a computer-based information retrieval system; and (c) access to existing data bases and analytical resources, most notably the Massachusetts Economic Policy Analysis (MEPA) Model.

IRC topics, which lend themselves to both student and faculty research, address both long-term issues that will underlie future events in New England and beyond, such as human resource needs and energy transit impacts, and the implications of policies that affect these issues.

At Genrad Corporation, for instance, a WPI project team has examined the organizational and quality-of-life issues surrounding women's increasing participation in the job market. Questions regarding child care benefits for employees—both women and men—and regional differences in job participation rates across the nation are just two of the issues being investigated.

One can conclude from all this that a decade of project experience has done nothing if it hasn't uncovered more and more opportunities.

Frank Lutz is the first to admit that the projects program is not without its shortfalls. "It's expensive and can require a big chunk of faculty time in advising students." Maybe this is why lesser schools haven't been successful or even undertaken a project program that amounts to a quarter of the degree requirement. "Still, I think it's what sets us apart from the competition." Dean of Undergraduate Studies William Grogan '46, concurs, and sees the lack of universal visibility of final project reports—on- versus off-campus presentation—as the major hurdle blocking across-the-board top quality projects.

And what of the next decade of projects? "We'll be looking at a host of issues," predicts Lutz, such as trying to enhance the quality of projects, looking for new, creative relationships, examining the feasibility of getting research funding for undergraduate projects, exploring the appropriate outlets for the 3,500-plus project reports in Gordon Library. "We don't expect to be just sitting around asking whether this or that form should be revised."

Jim Demetry has an eloquent way of summing things up. "It'll take a whole collection of careers to measure the effects of the WPI Plan. The conventional wisdom holds that an engineering education has a half life of seven years at best. How do we prepare someone for 40 professional years through undergraduate courses alone? It's impossible, I believe. So we're better off concentrating on fundamentals and the *process* of organizing, attacking and analyzing problems. *This* is learning. We say this a lot, but it's not just lip service. We honestly believe the projects help accomplish this."

Since the Plan came along ten years before these developments, what kinds of questions are you asking regarding its relevance to today's challenges? We've got to examine closely whether the aspirations of students, faculty, and the Institute as a whole are being met and try to predict the future needs of these groups. For example, projects are very faculty-intensive. Good project topics and stimulating faculty advising don't just happen automatically. They take time and conscious effort to develop. We're constantly challenged to provide meaningful projects for our students. We've got to review and assess on a regular basis what distinguishes really good projects from mediocre ones, then try to foster the positive factors in the entire projects program.

The humanities sufficiency and the IQP—what's the status of their health? They're both doing well. It's true that the IQP can call no academic department its natural home. Hence, we must work hard to incorporate the IQP into the Plan so that in the future both students and faculty will feel it is a constructive learning experience.

The humanities sufficiency plays a vital role in the Plan. It acts as an undergraduate minor in non-technical fields, thus helping the Plan meet its objective of educating the humanistic technologist. Further, it gives the humanities department a meaningful stake in an institution whose primary purpose is science and technology. At many technological colleges this group of faculty takes on second-class status. Through the sufficiency and IQP work, WPI faculty in the humanities are given an opportunity to interact with students whose interests amplify their own. We're seeing some outstanding work in the humanities area.

What is the role of faculty research in a college whose primary mission is undergraduate education? It plays a key role. As you know, it's generally conceded that some research is vital in order that faculty remain current in their fields of specialization. Only by teachers staying at the forefront of their fields can their courses and curricula reflect the state of the art. A major issue confronting us today is finding ways in which research activities can be assimilated into the Plan. MQPs and IQPs are important factors here because they are in many cases a facet or segment of faculty research. To provide classroom and project experiences that are relevant and exciting to students, faculty must be aware of the cutting edge of their field. One feeds the other.

Small and mid-sized private colleges have always played a vital role in America's educational system. How will they—and specifically WPI—survive the severe difficulties ahead? The developments I mentioned earlier—economic and demographic shifts—will call into question the reputation for excellence enjoyed by these institutions. Ten years ago, in the face of other serious challenges to education, innovation kept WPI vital. While WPI has an outstanding track record—both before and since the Plan's inception—we must remain alert to ways in which we can further improve our approach. A trap into which some institutions may fall is a temptation to make quick fixes. WPI is extremely fortunate that its educational Plan is fundamentally sound and has had sufficient time for thorough implementation. Certainly, we are committed to maintaining our tradition of excellence. In spite of the demographic factors mentioned previously. I believe that engineering and science education will benefit from the technological and economic imperatives implicit in modern society. With the increasing demand for engineers and scientists in almost all sectors of our economy, I believe we are in a position of strength to weather the storms ahead. The creativity and resourcefulness that characterize our faculty give me confidence in our future vitality.

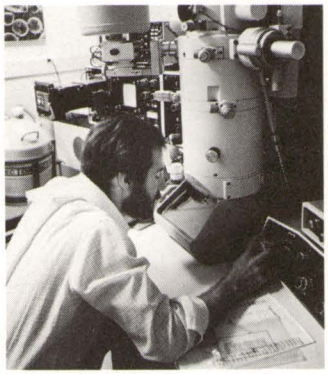
Getting a Job

The job market for graduating engineers and scientists has never been stronger. Engineers, for example, are in such great demand today that they receive the highest average starting salaries of all bachelor's degree recipients.

Bill Trask is Director of Graduate and Career Planning at WPI. In the past year, he says, well over 5,000 interviews were given by recruiters from more than 300 companies—an average of nearly ten for each graduating senior.

Trask has seen many a class go on to professional careers and graduate school. Even after graduation, his office can assist alumni seeking new employment or changing career paths.

"We see very impressive effects of the Plan during re-



cruiting interviews," he says. "Our kids can get up on their feet and be articulate about their experiences here, especially about their projects. Our kids really open up."

Recruiters interviewed by the *Journal* couldn't agree more. Among them is Jack Marcil of General Electric Company. WPI students, he believes, "are better interviewers—more at ease, self-confident and articulate—than engineering students from other colleges." Projects, he says, come very close to real-life industrial experiences. And in professional teamwork situations, the MQP, coupled with the IQP, enables grads to understand the needs of and communicate ideas better with people outside the realm of technology.

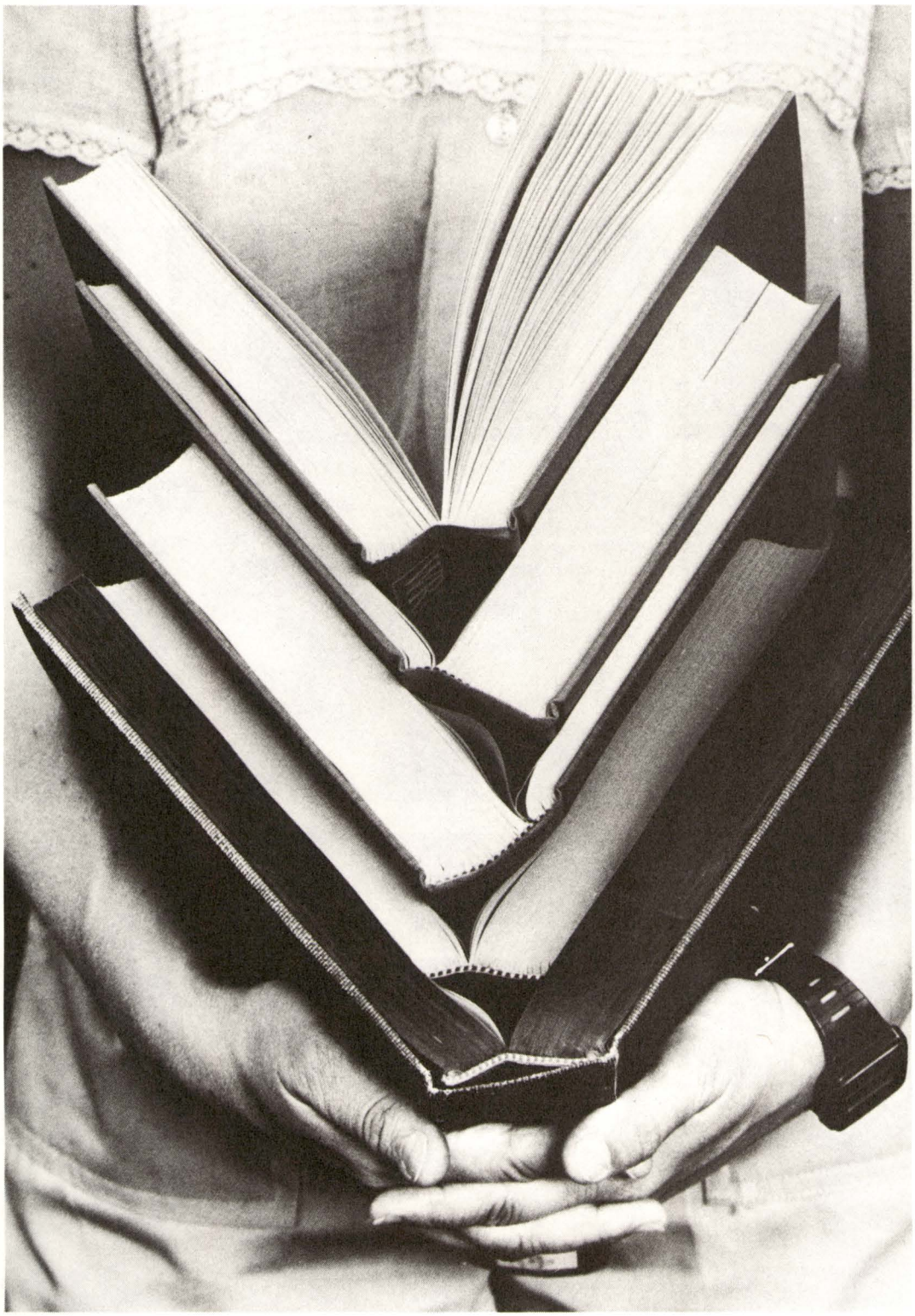
Dr. Norbert Smith, of the Electric Boat Division of General Dynamics Corporation, believes scientists and engineers, perhaps more than other professionals, must exhibit resourcefulness and assertiveness. "Projects help provide the basis for these characteristics." He sees only one problem with the Plan: grading. In general, he believes employers have trouble understanding WPI's Distinguished/Acceptable system of grading. "Most recruiters find equating this two-tiered scheme with conventional A-B-C-D-F system something of a hassle."

GE's Marcil mirrors Smith's concern for this anomaly, as does Ken Keane of the Torrington Company, a leading maker of bearings. "But this doesn't create a stumbling block in seeking WPI hirees," he says. WPI students, he adds, seem to gain a broader background than those he visits at conventional technological colleges.

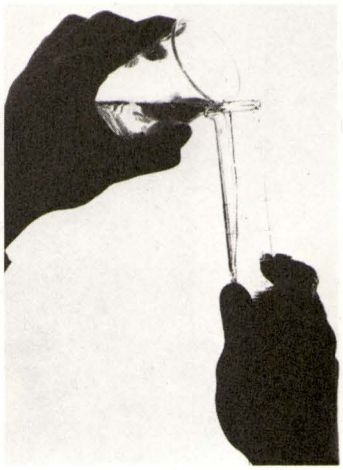
John Zifcak, '65 PH, now Section Manager, Science and Engineering Research Department at Foxboro Company, Foxboro, Mass., has seen the company hire several students who'd done projects at Foxboro. "They possess a certain intangible quality," he says. They come in with a maturity that other grads, who haven't gotten out of the classroom, don't enjoy. "It gives them a leg up on the competition."

An Alumni Omnibus

BEING A COLLECTION OF THOUGHTS ON THE PLACES AND WAYS THE MIND GETS HONED.



Photography by
William Denison

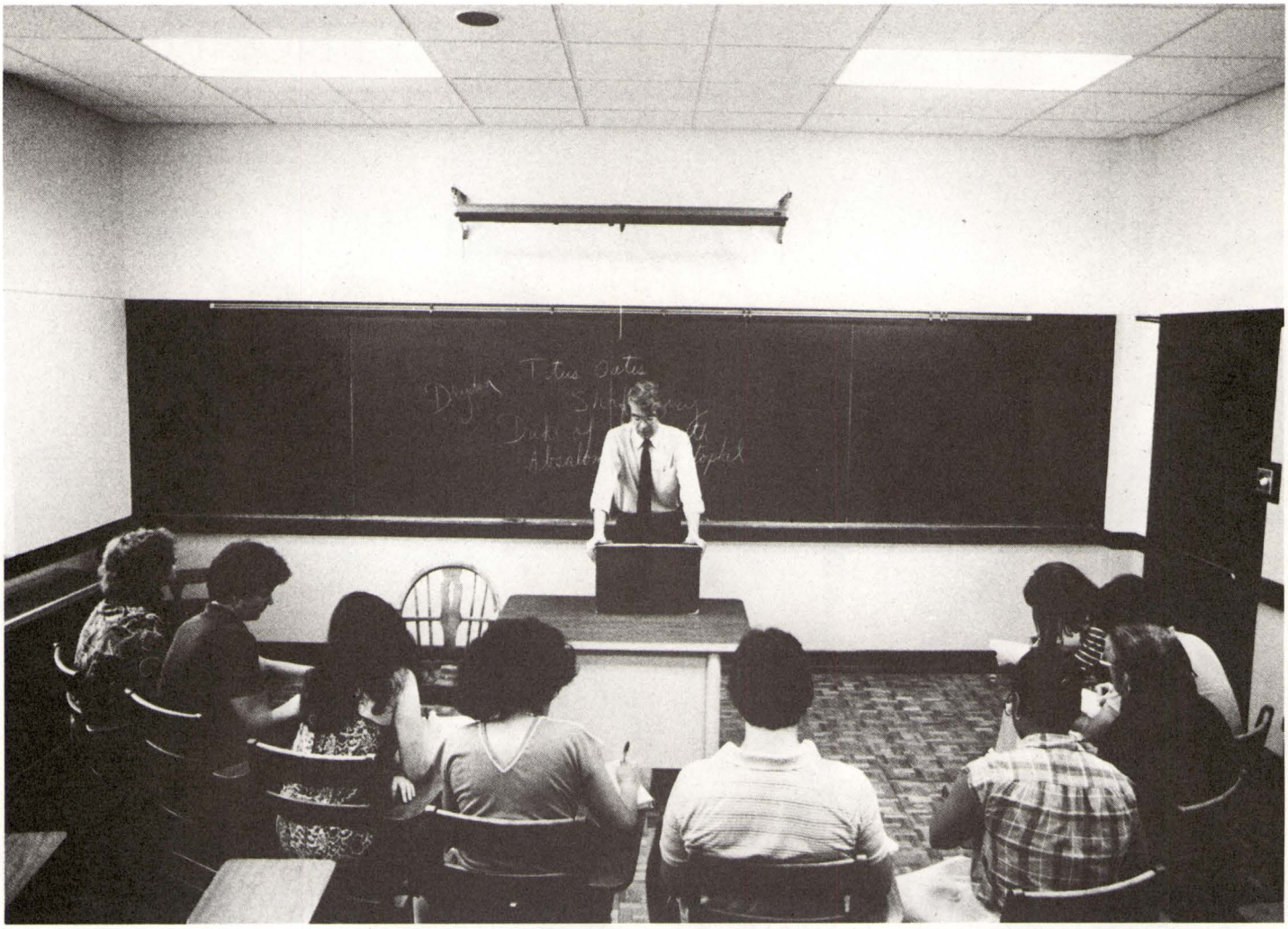


The hand is the cutting edge of the mind.

—JACOB BRONOWSKI

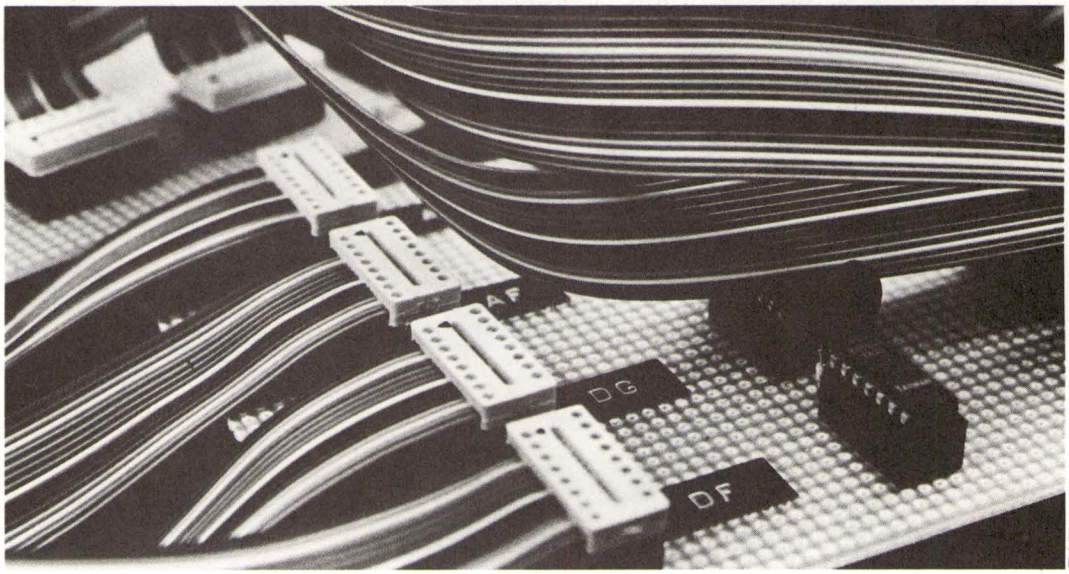
Education is a weapon, whose effect depends on who holds it in his hand and at whom it is aimed.

—JOSEPH STALIN

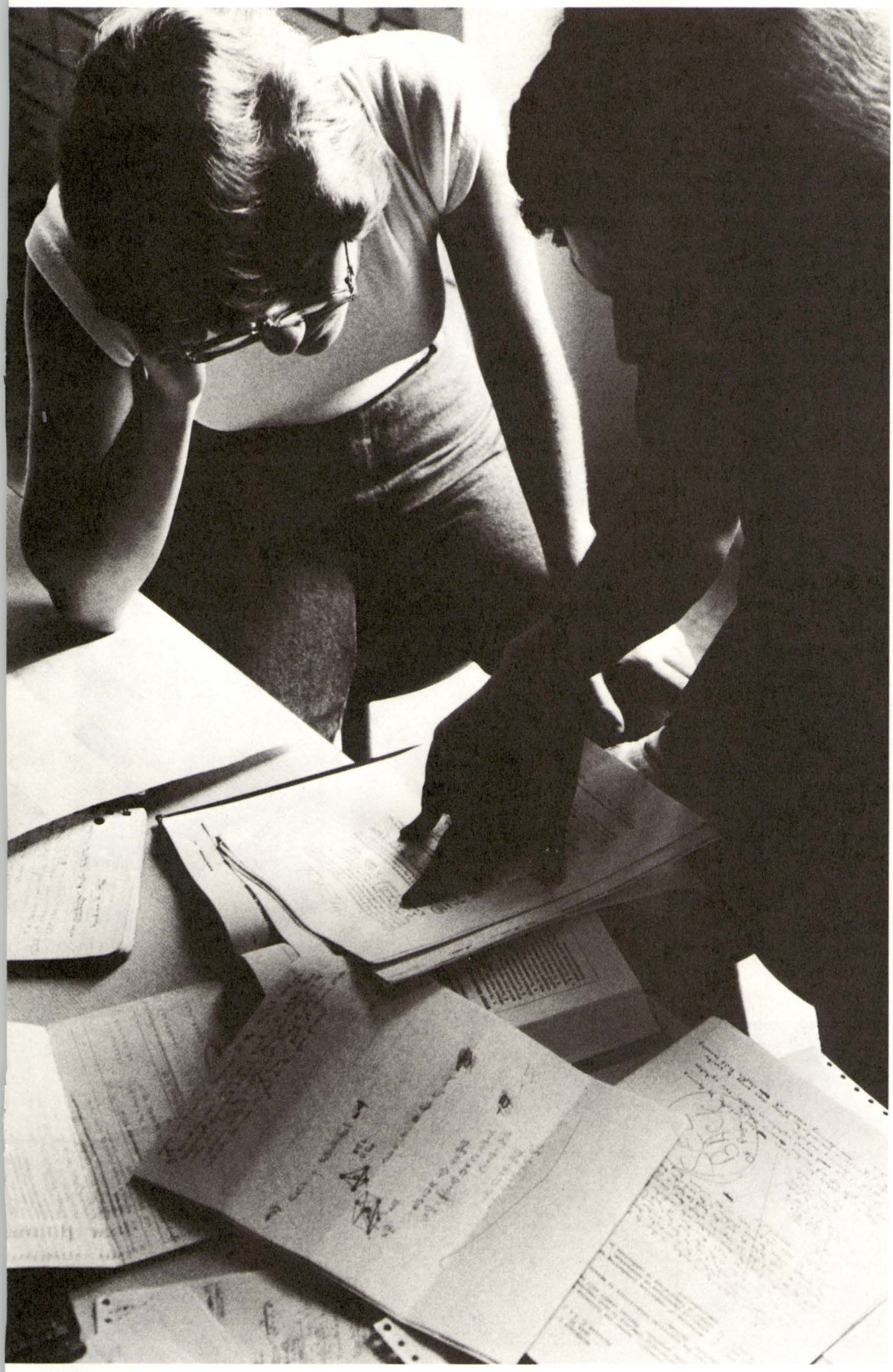


It is well to observe the force and virtue and consequence of discoveries, and these are to be seen nowhere more conspicuously than in printing, gunpowder, and the magnet. For these three have changed the whole face and state of things throughout the world, . . . in so much that no empire, no sect, no star seems to have exerted greater power and influence in human affairs than these mechanical discoveries.

—FRANCIS BACON



Ed Thorsett



I have yet to see any problem, however complicated, which, when you looked at it in the right way, did not become still more complicated. —POUL ANDERSON

The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas. Not, indeed, immediately, but after a certain interval; for in the field of economic and political philosophy there are not so many who are influenced by new theories after they are twenty-five or thirty years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest. But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil.

—J.M. KEYNES

Our universities have become the research and training centers on which American defense and industry and agriculture and the professions depend. Our progress in all these fields depends upon a constant flow of high-caliber and skilled manpower, upon new ideas and the ability to apply those skills. Thus, today, the university is, in the words of Woodrow Wilson, "the root of our intellectual life as a nation."

—JOHN F. KENNEDY

There is the greatest practical benefit in making a few failures early in life.

—THOMAS HUXLEY

Which would have advanced the most at the end of a month—the boy who had made his own jackknife from the ore which he had dug and smelted, reading as much as would be necessary for this,—or the boy who had attended the lectures on metallurgy at the Institute in the meanwhile, and had received a Rogers' penknife from his father: Which would be most likely to cut his fingers?

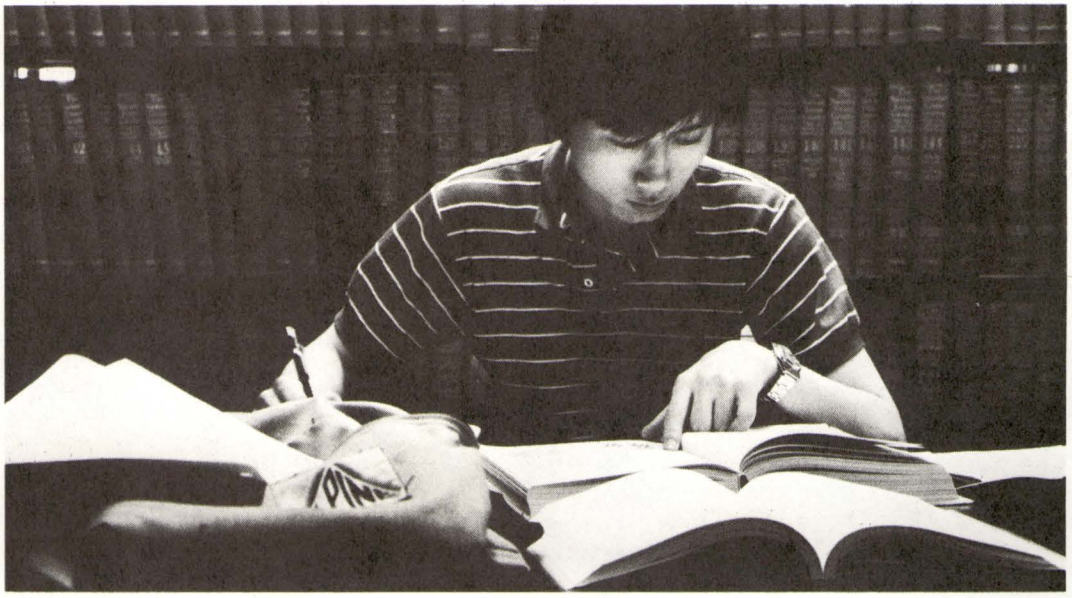
—HENRY THOREAU

The ends are achieved by indirect means—something said in private conversation one day in the street, a remark made by a teacher in the middle of a discussion, a book picked up in someone's room . . . .

—HAROLD TAYLOR

Take no thought for the morrow. Live neither in the past nor in the future, but let each day's work absorb your entire energies, and satisfy your widest ambition. . . . The student who is worrying about his future, anxious over the examinations, doubting his fitness for the profession, is certain not to do so well as the man who cares for nothing but the matter in hand, and who knows not whither he is going!

—WILLIAM OSLER

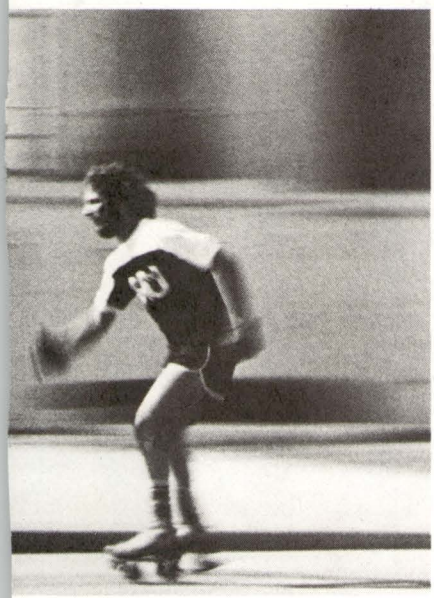


When he has learnt that bottinney means a knowledge of plants, he goes and knows 'em. That's our system, Nickleby; what do you think of it?

—CHARLES DICKENS

I learned three important things in college—to use a library, to memorize quickly and visually, to drop asleep at any time given a horizontal surface and fifteen minutes. What I could not learn was to think creatively on schedule.

—AGNES DE MILLE



The body of an athlete and the soul of a sage; these are what we require to be happy.

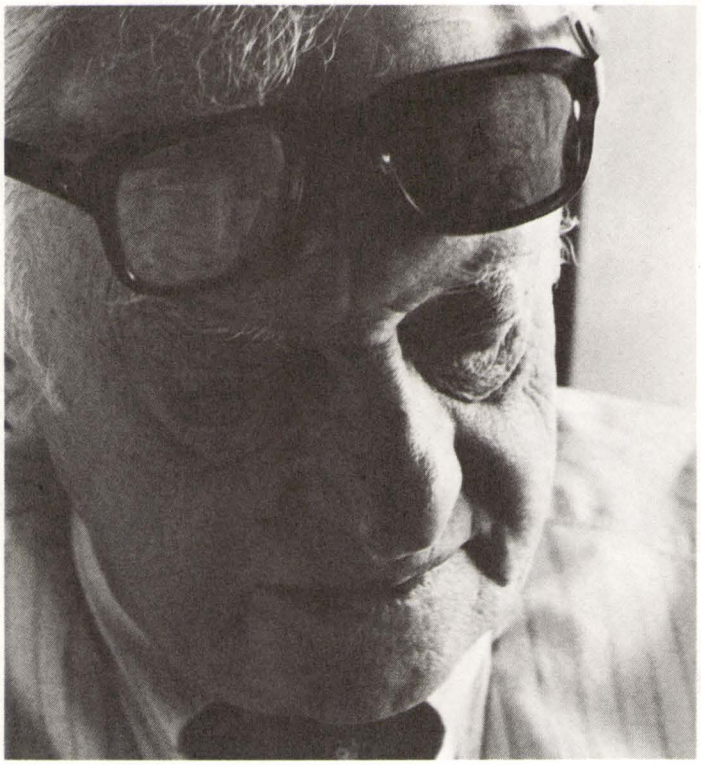
—VOLTAIRE

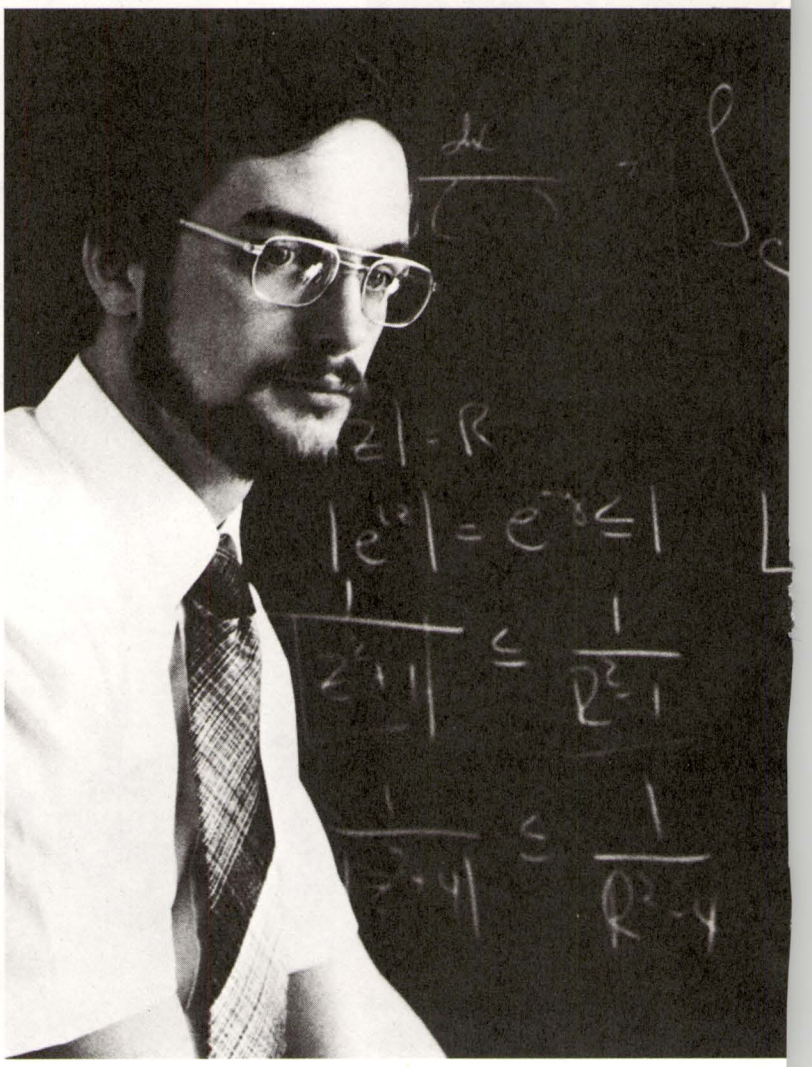
It is the attitude of mind developed in the student as he proceeds with his studies, and not primarily the information he acquires, which determine the character and extent of his education.

—LUTHER EISENHARDT

This is the age of knowledge, more of which has been established than in the whole recorded past. It has developed so rapidly that we are no longer at all sure of what we know. We can take no comfort in the belief that what appears to be the whole truth will be the whole truth tomorrow.

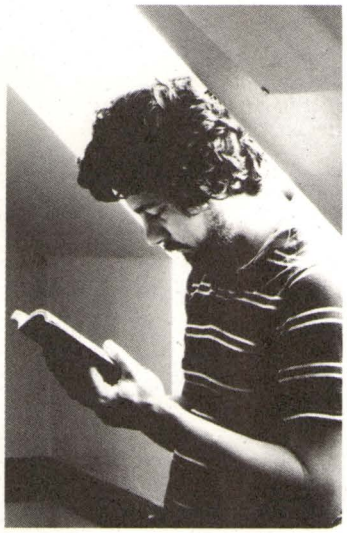
—BARNABY KEENEY





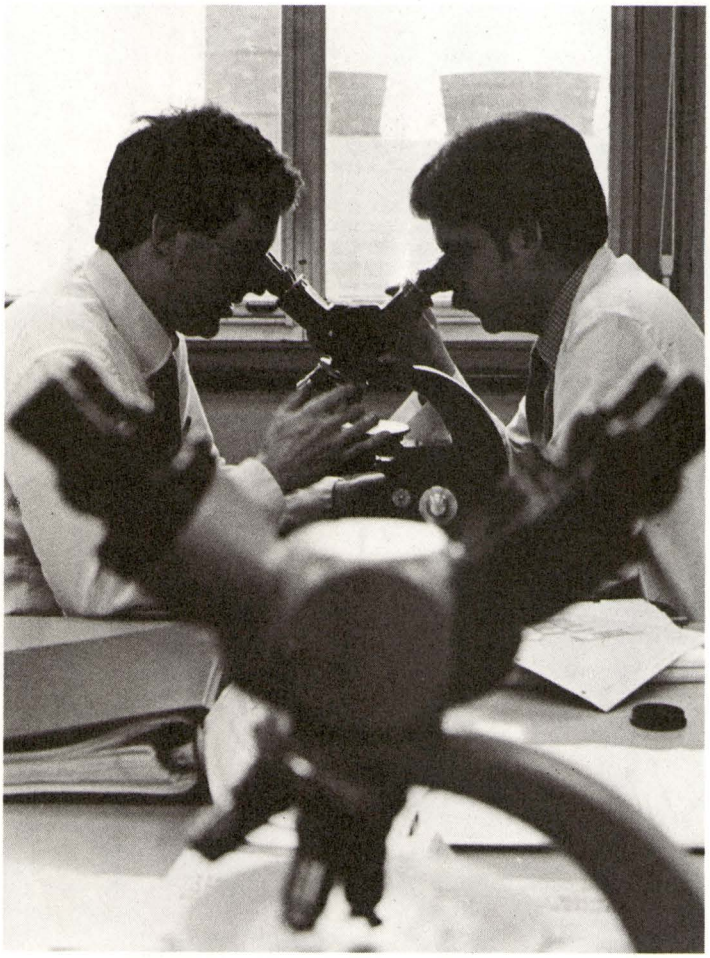
Two sorts of truth: trivialities, where opposites are obviously absurd, and profound truths, recognized by the fact that the opposite is also a profound truth.

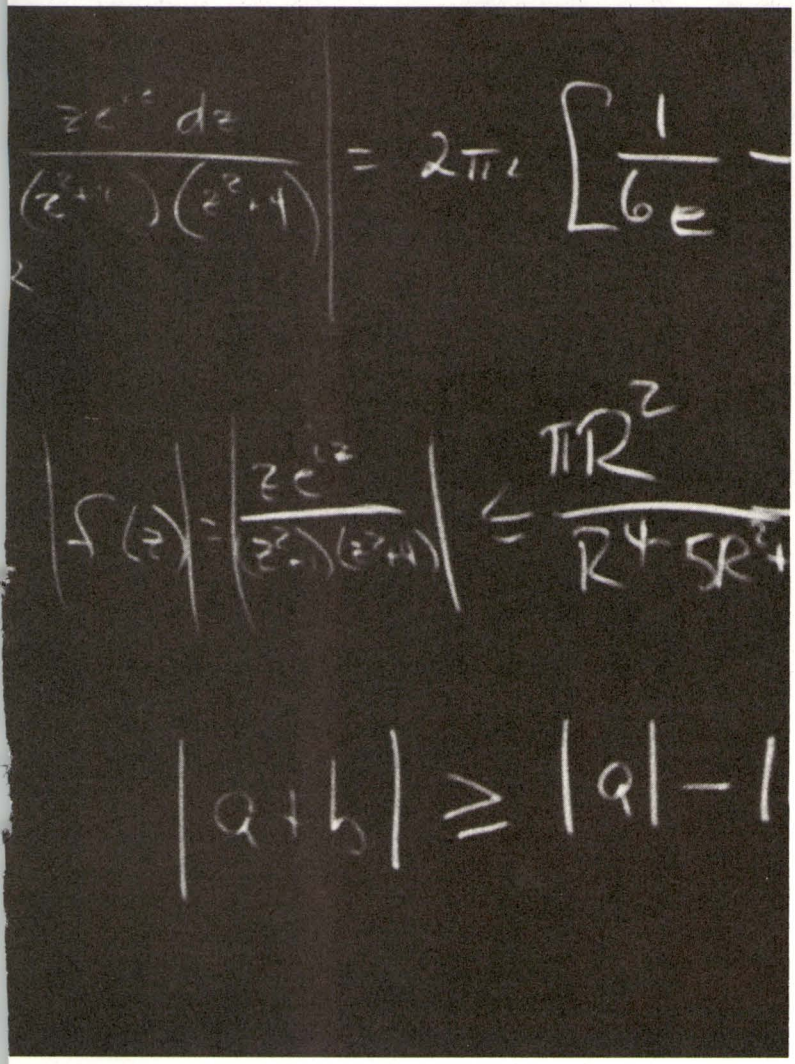
—NIELS BOHR



Few of us take the pains to study the origin of our cherished convictions; indeed, we have a natural repugnance to so doing . . . .The resentment aroused when doubt is cast upon any of our assumptions leads us to seek every manner of excuse for clinging to them. The result is that most of our so-called reasoning consists in finding arguments for going on believing as we already do.

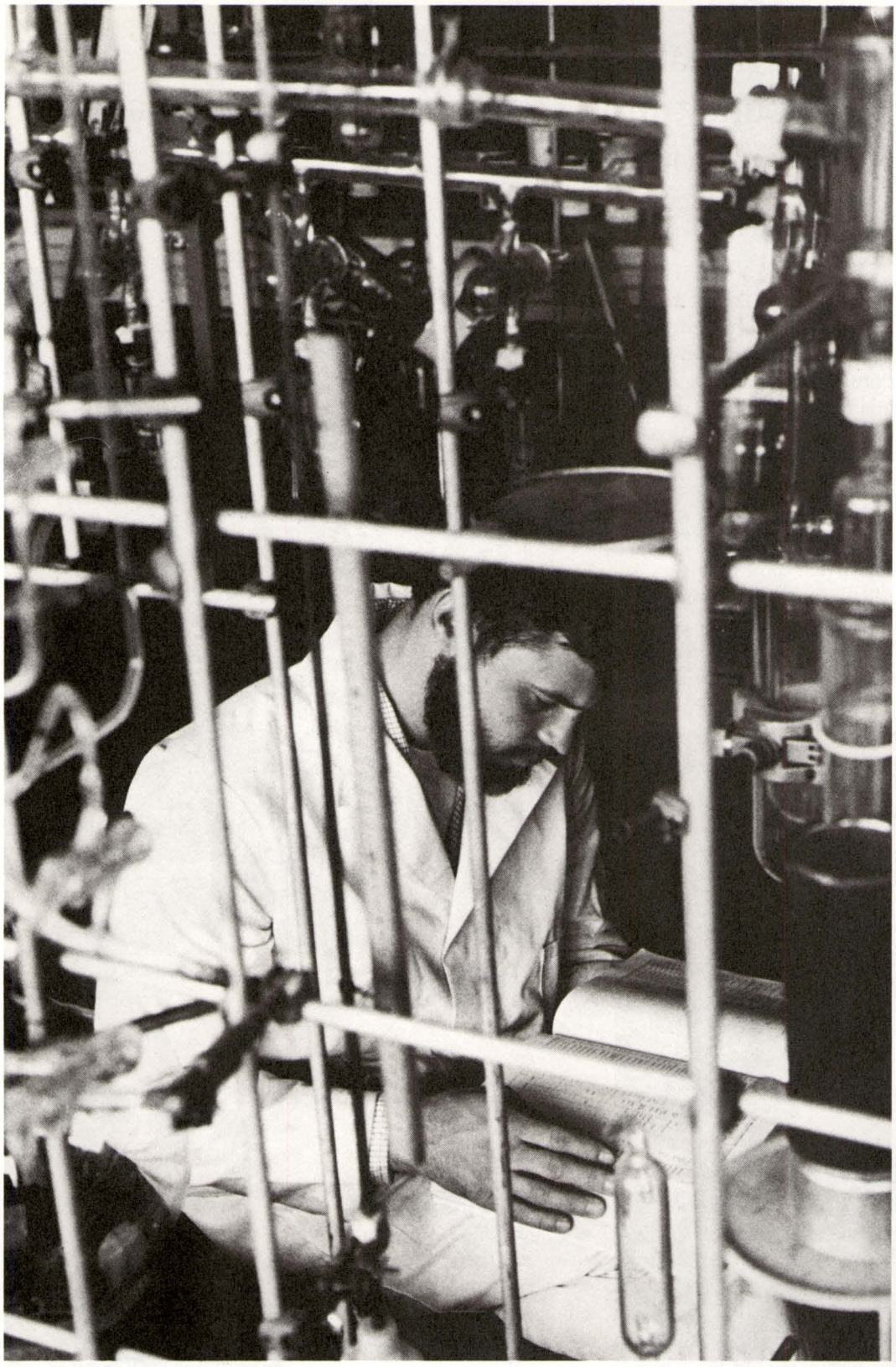
—J. H. ROBINSON





It's not the least of the functions of a true university to maintain a climate favorable to the growth of new ideas and novel practices, and then sit back and see what happens. In such a climate, weeds spring up along with wholesome new plants. Where weeds won't grow, nothing will grow. Trustees and visiting alumni . . . are apt to see the weeds and yearn to fly at them with a hoe. That would be dangerous because it's hard to tell at first which is the weed!

—ROMEYN BERRY

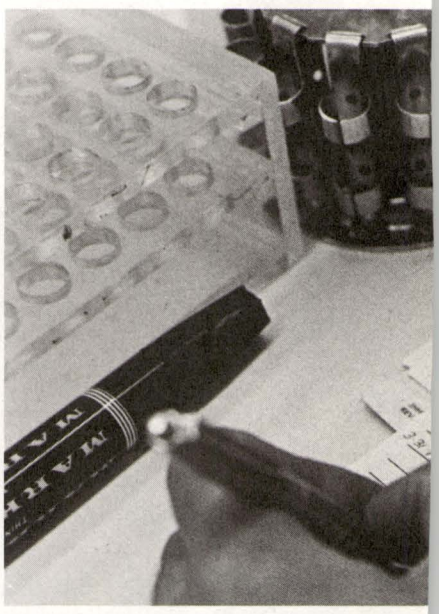


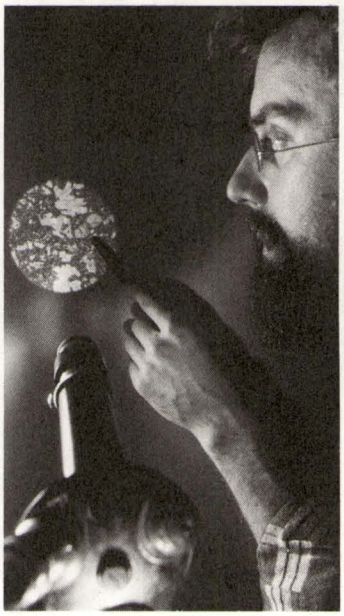
Every good laboratory consists of first-rate men working in great harmony to insure the progress of science; but down at the end of the hall is an unsociable, wrong-headed fellow working on unprofitable lines, and in his hands lies the hope of discovery.

—LORD RUTHERFORD

It ain't the things we don't know that hurt us. It's the things we do know that ain't so.

—ARTEMUS WARD





For God's sake, stop researching for a while and begin to think.

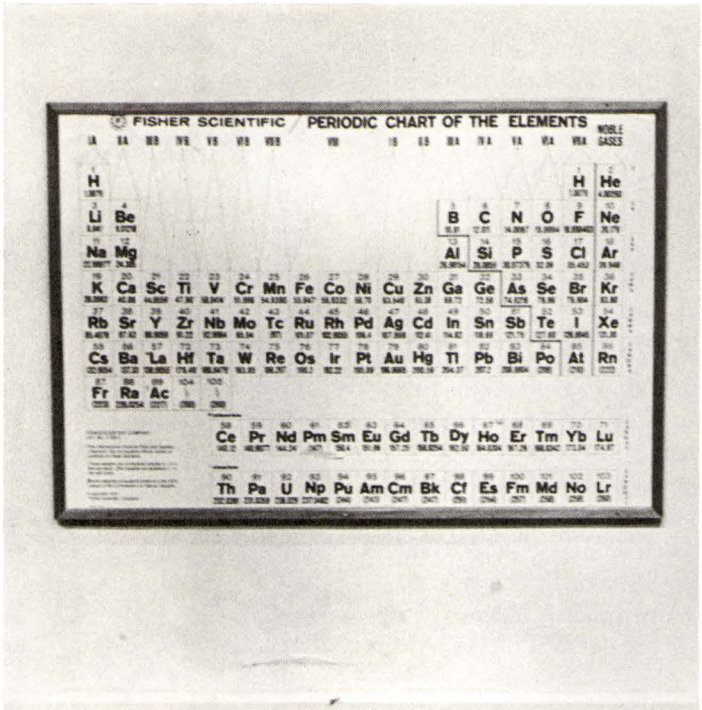
—WALTER HAMILTON MOBERLY

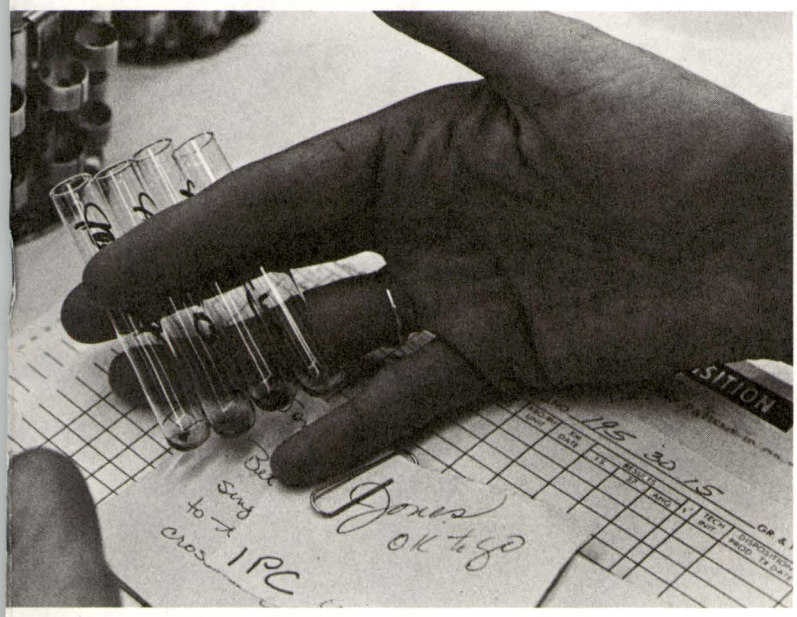
Do you wish to learn science easily? Then begin by learning your own language.

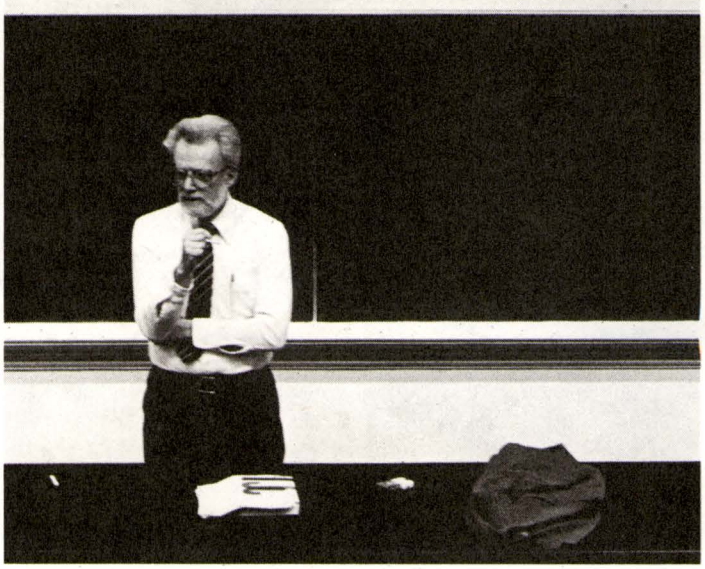
—ÉTIENNE BONNOT

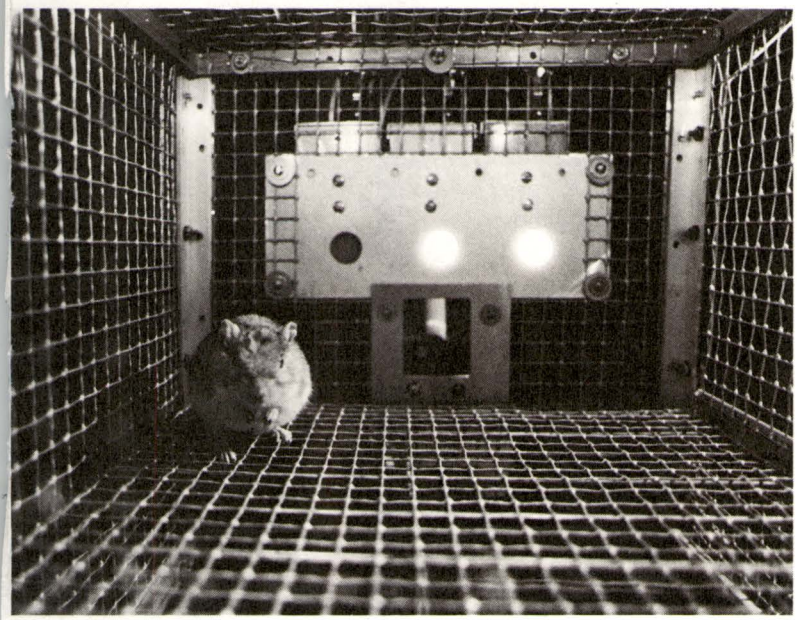
Here is the world, sound as a nut, perfect, not the smallest piece of chaos left, never a stitch nor an end, not a mark of haste, or botching, or second thought; but the theory of the world is a thing of shreds and patches.

—RALPH WALDO EMERSON









To arrive at the simplest truth, as Newton knew and practiced, requires *years of contemplation*. Not activity. Not reasoning. Not calculating. Not busy behavior of any kind. Not reading. Not talking. Not making an effort. Not thinking. Simply *bearing in mind* what it is one needs to know. And yet those with the courage to tread this path to real discovery are not only offered practically no guidance on how to do so, they are actively discouraged and have to set about it in secret. . . .

—GEORGE SPENCER BROWN

Animals studied by Americans rush about frantically, with an incredible display of hustle and pep, and at last achieve the desired result by chance. Animals observed by Germans sit still and think, and at last evolve the solution out of their inner consciousness.

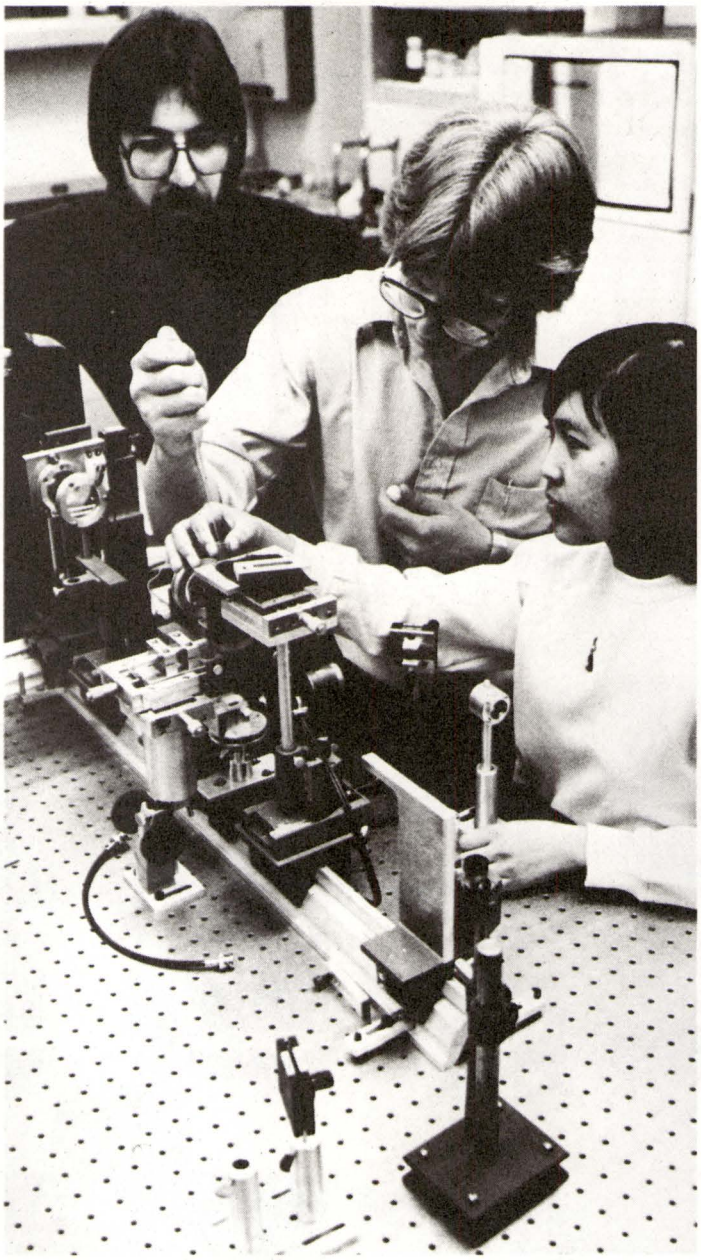
—BERTRAND RUSSELL

If we begin with certainties, we shall end in doubts; but if we begin with doubts, and are patient in them, we shall end in certainties.

—FRANCIS BACON

When a thing was new people said, "It is not true." Later, when its truth became obvious, people said, "Anyway, it is not important," and when its importance could not be denied, people said, "Anyway, it is not new."

—WILLIAM JAMES



Ed Thorsett

One hears a good deal nowadays of the hostility between science and technology. I don't think that is true, gentlemen. I am quite sure that it isn't true, gentlemen. It almost certainly isn't true. It really can't be true. . . . They have nothing whatever to do with one another.

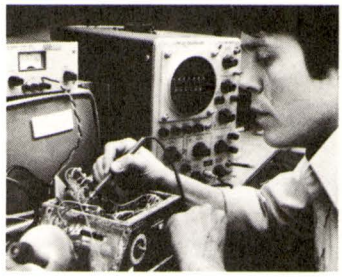
—DAVID HILBERT

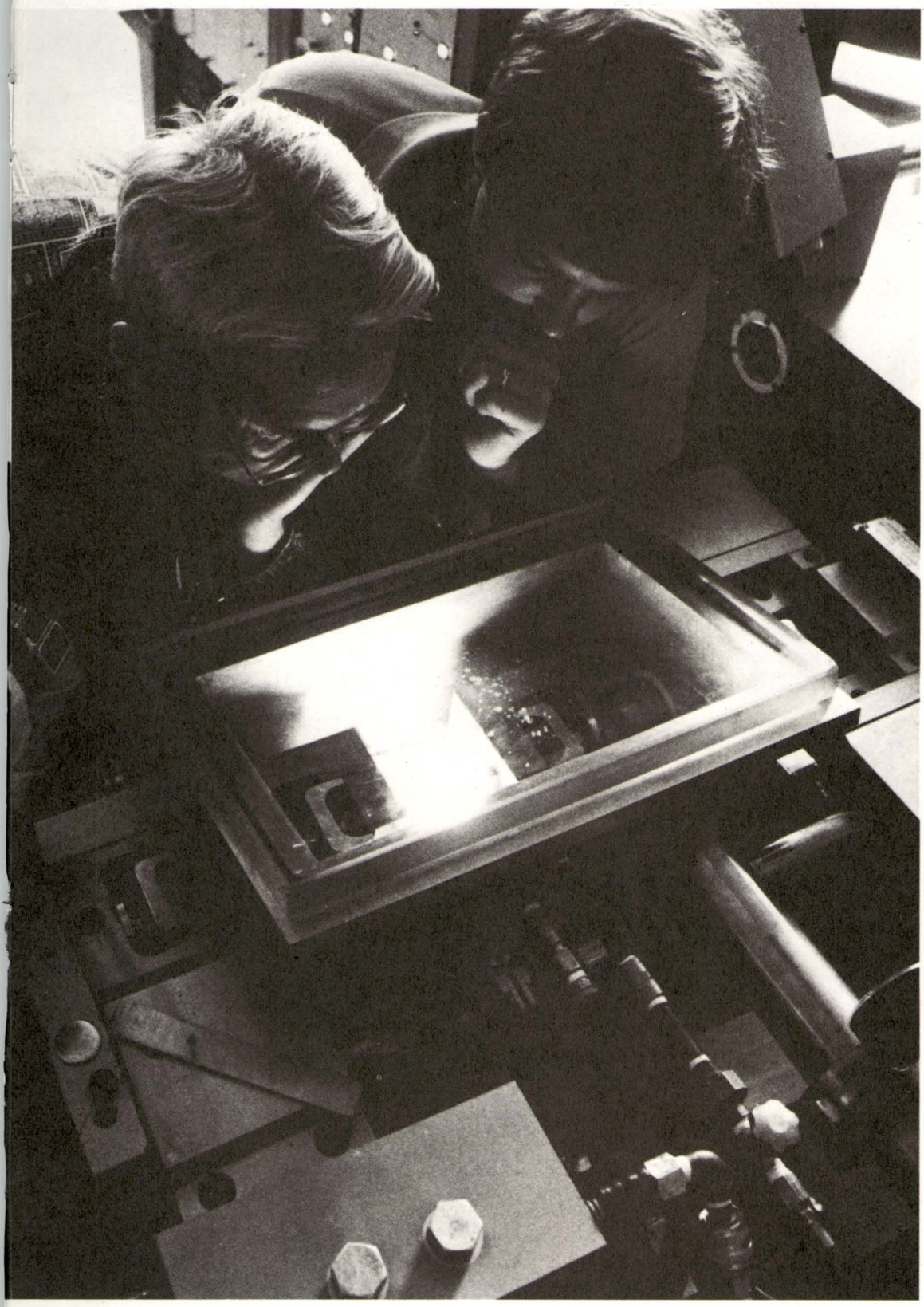
The Stone Age may return on the gleaming wings of Science.

—WINSTON CHURCHILL

Engineering . . . is the art of doing that well with one dollar, which any bungler can do with two after a fashion.

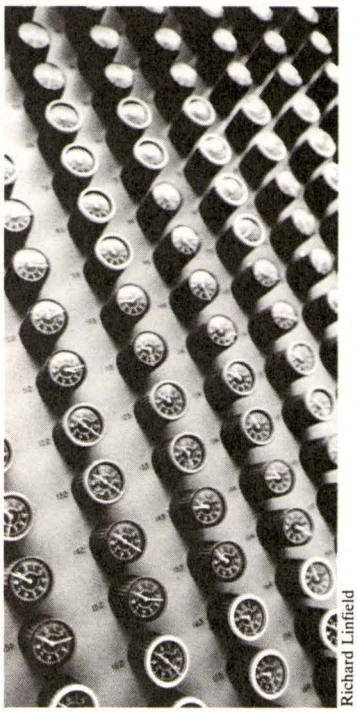
—ARTHUR M. WELLINGTON





The habit of apprehending a technology in its completeness: this is the essence of technological humanism, and this is what we should expect education in higher technology to achieve. I believe it could be achieved by making specialist studies the core around which are grouped liberal studies which are relevant to these specialist studies. But they must be relevant; the path to culture should be through a man's specialism, not by-passing it. . . . A student who can weave his technology into the fabric of society can claim to have a liberal education; a student who cannot weave his technology into the fabric of society cannot claim even to be a good technologist.

—ERIC ASHBY



Richard Linfield

The adventurous student will always study classics, in whatever language they may be written, and however ancient they may be. For what are the classics but the noblest recorded thoughts of man? They are the only oracles which are not decayed, and there are such answers to the most modern inquiry in them as Delphi and Dodona never gave. We might as well omit to study Nature because she is old.

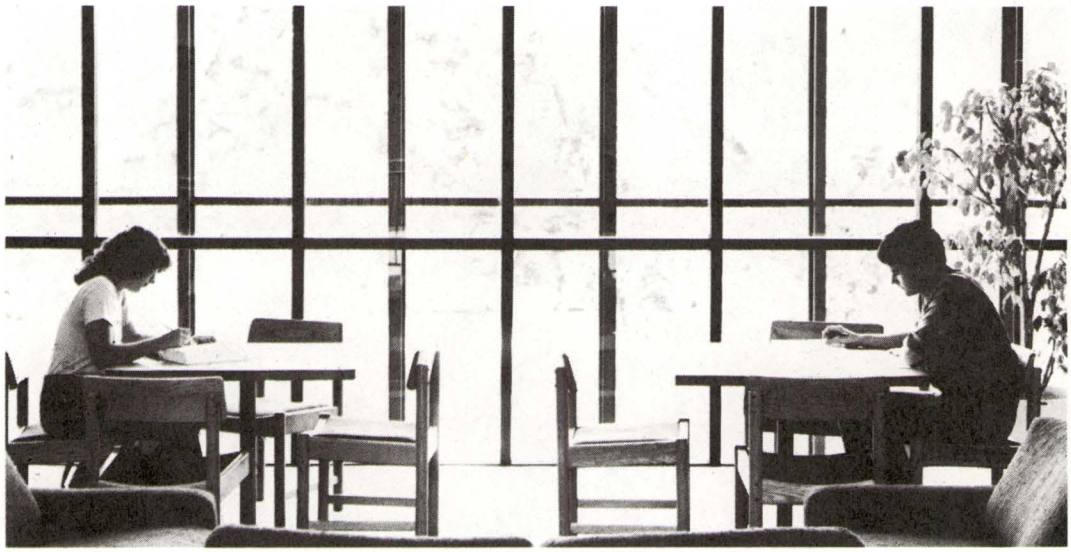
—HENRY THOREAU

Knowledge is one. Its division into subjects is a concession to human weakness.

—HALFORD JOHN MACKINDER

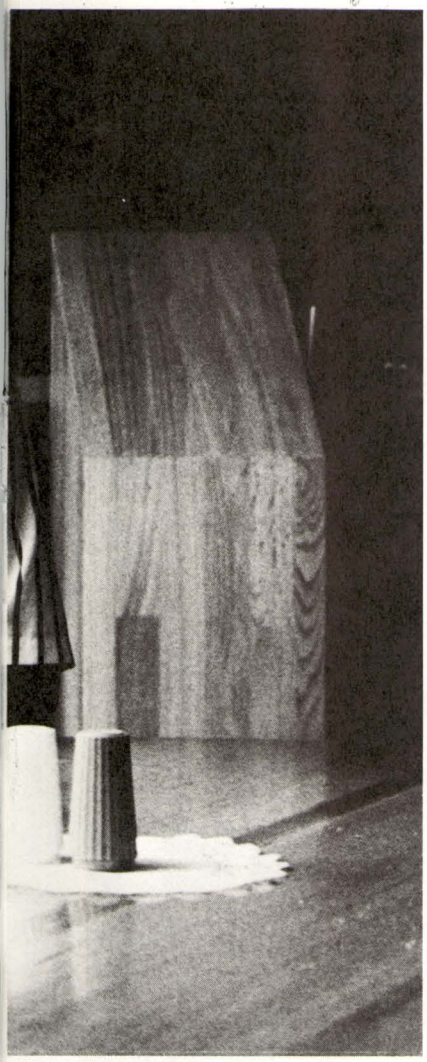
Books won't stay banned. They won't burn. Ideas won't go to jail. In the long run of history, the censor and the inquisitor have always lost. The only sure weapon against bad ideas is better ideas.

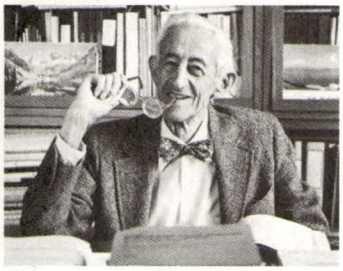
—WHITNEY GRISWOLD



The first rule of intelligent tinkering is to save all the parts.

—PAUL EHRLICH



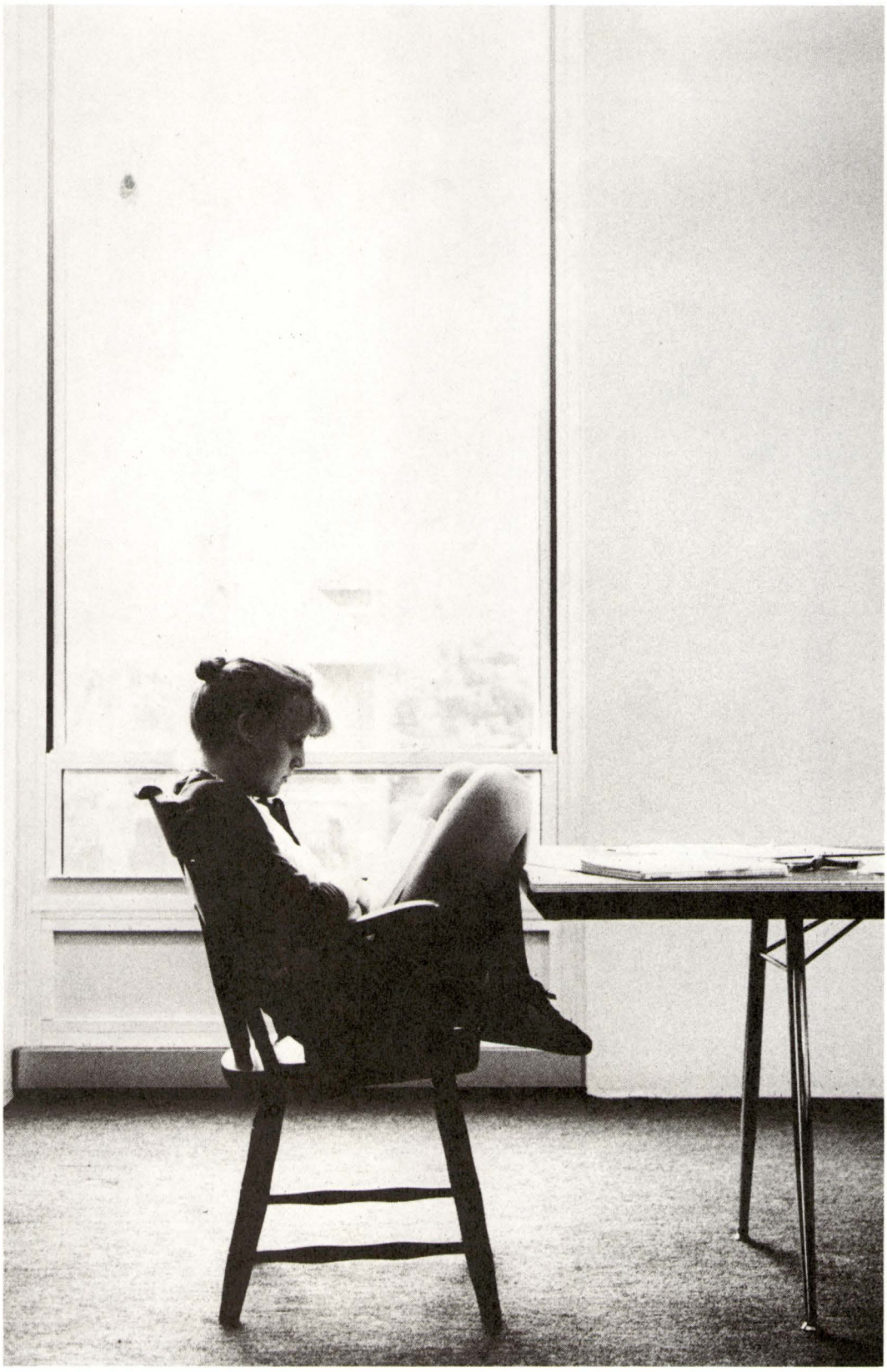


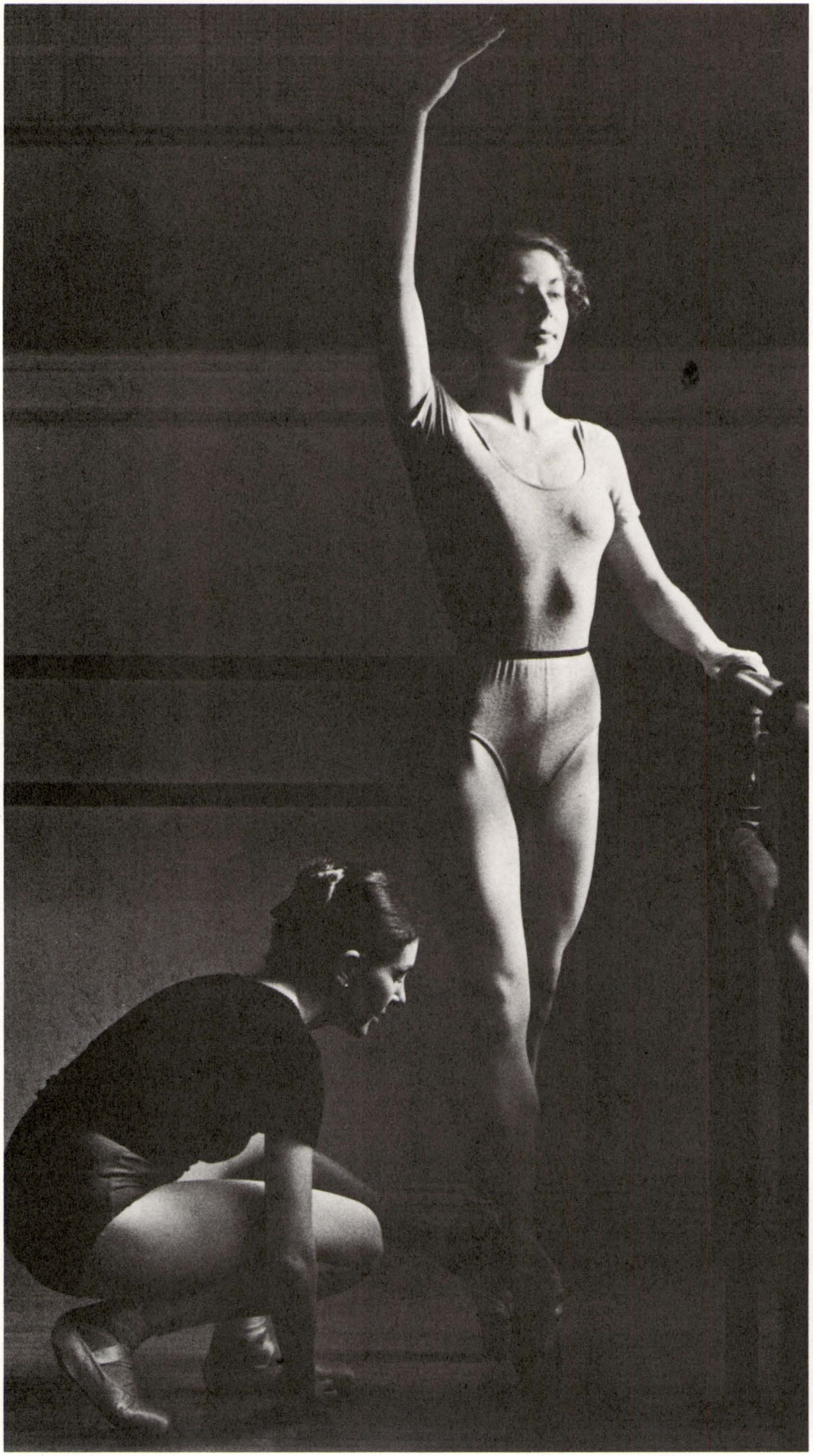
It is not so important to be serious as it is to be serious about the important things. The monkey wears an expression of seriousness which would do credit to any college student, but the monkey is serious because he itches. —R.M. HUTCHINS

A man doesn't learn to understand anything unless he loves it.
—GOETHE

Asked if he could summarize the lessons of history in a short book, Charles A. Beard said he could do it in four sentences:

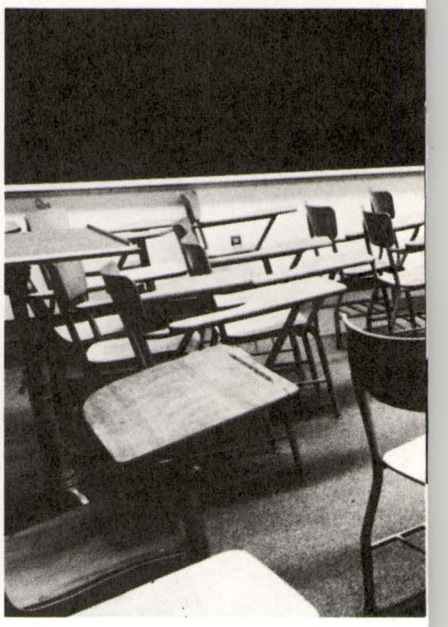
1. Whom the gods would destroy, they first make mad with power.
2. The mills of God grind slowly, but they grind exceedingly small.
3. The bee fertilizes the flower it robs.
4. When it is dark enough, you can see the stars.





There is nothing more notable in Socrates than that he found time, when he was an old man, to learn music and dancing, and thought it time well spent.

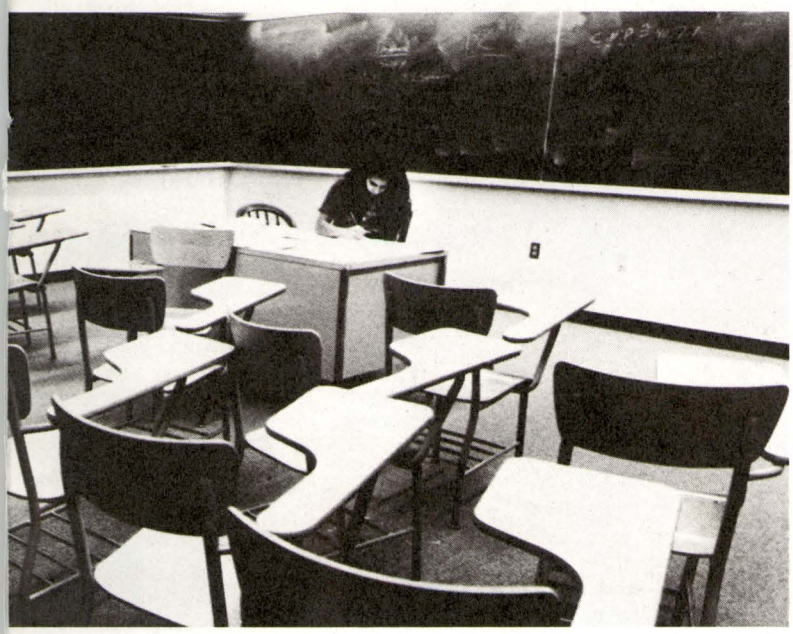
—MONTAIGNE



Whatever gains we may make in our material condition, whatever limitations are still obvious, let us not forget, my friends, that men and methods make universities, not halls, nor books, nor instruments, important as these are.

—DANIEL COIT GILMAN

Ed Thorsett

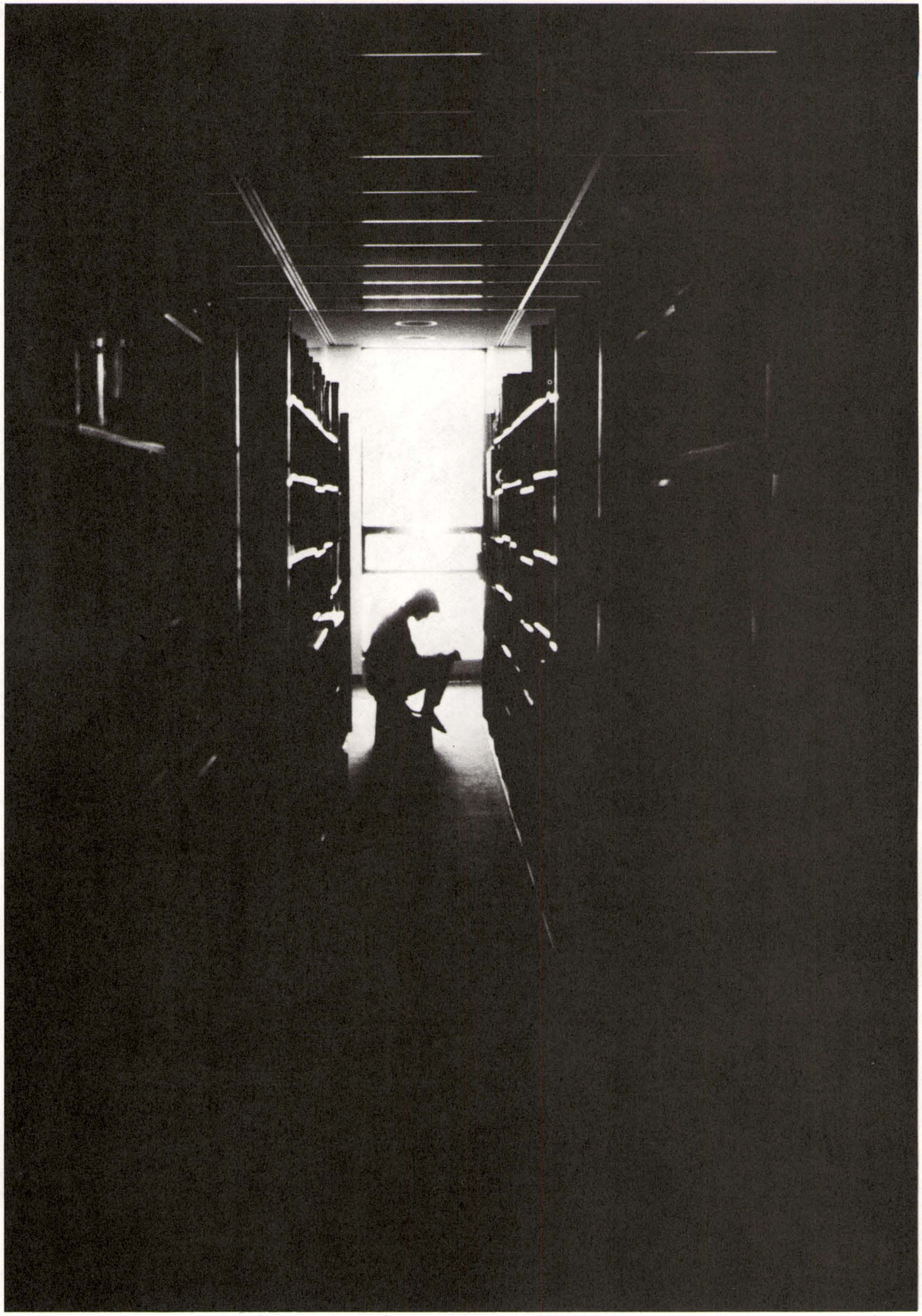


To know only one thing well is to have a barbaric mind: civilization implies the graceful relation of all varieties of experience to a central humane system of thought. The present age is peculiarly barbaric: introduce, say, a Hebrew scholar to an ichthyologist or an authority on Danish place names and the pair of them would have no single topic in common but the weather or the war (if there happened to be a war in progress, which is usual in this barbaric age).

—ROBERT GRAVES

Education is . . . hanging around until you've caught on.

—ROBERT FROST



WPI CLASS NOTES

1912

MARRIED: Norma Larson, honorary member of the Class of 1912 and former director of records and services at WPI, to Richard Quinzani in Worcester on July 10, 1982.

Norma, the unofficial first lady of the Alumni Office for 30 years, has been a friend to hundreds of alumni and their families. In 1976, she was the first WPI woman staff member to be tapped for Skull. In 1977, she left WPI to go into private business. Currently, she is with Ben Bousquet Gallery of Homes, Worcester.

Dick, a registered professional engineer, holds a BSEE from the University of Massachusetts, Amherst. He has been a project liaison engineer for Boston Edison on WPI projects, participating in a number of MQPs and IQPs. A past chairman of the Boston Chapter of the Power Engineering Society (PES), he is now the Northern Region I Chapter representative from the Boston, Worcester County and Manchester (NH) chapters to the national PES Council. He is a member of the IEEE.

1917

Dick Daniels writes that he still has his amateur radio license, although he seldom transmits. He started out in "wireless" in 1908, four years before the government required exams and "put us all where it decided it would be difficult to send beyond state boundaries. That backfired, because we were still able to talk around the world." Dick and his wife live in South Yarmouth and enjoy the Cape.

Art Gorman, who was unable to attend reunion, was slated to be in New England in late August. During his career, he was a sanitary engineer for the U.S. Public Health Service, worked on Chicago's water problems and ended up with the Atomic Energy Commission before retirement.

At 88, **Bob Hanckel** continues keeping up his garden and grounds in Scituate, MA. "My son, Stuart, lives right next door to keep a watch over my doings." Since Betty passed away, he has rented part of his big house so that he can have company.

Mac Mackenzie and his wife live a quiet life, with some travel, in Spartanburg, SC. Mac likes gardening and tinkering in his woodshop. They have two children and seven grandchildren, scattered from Cleveland, Ohio, to South Carolina. Mac was unable to attend the 65th class reunion.

The **Louis Jacobys** recently celebrated their 50th wedding anniversary. Their son, Robert, lives near them so they often see their four grandchildren. Although Jacoby retired ten years ago, he walks about a mile every day to a branch office of Bache & Co. to meet with friends and watch the stock market reports.

Last spring, **Earle Pierce** fell and hurt his back. He spent three weeks in the hospital, "with nurses around the clock." Once out of the hospital he recuperated at his cousin's house. His wife passed away in March. Earle lives in Middlebury, CT.

Brig. Gen. **Hermon Safford,** Ret., resides in La Jolla, CA, with his wife Annemarie. Hermon has two children, five grandchildren and three great-grandchildren. He was sorry to miss his 65th reunion, "but 3000 miles is a pretty long haul for an old-timer."

Frank Swallow says that after 42 years with the U.S. Envelope Company, he retired in 1959 and moved to DeBary, FL, "a pleasant, peaceful community." He and his wife have been married for 64 years. Their daughter and grandson and family live only 30 miles away in Daytona Beach.

Jack Wheeler, who lives in West Mystic, CT, still sails his 35-ft. sloop and plays golf. For the past six months, his wife has been ill, but since their children and their families live nearby, he planned to attend the reunion luncheon.

Betsy and **Laurence Wood** of Columbus, OH, recently spent nearly six months in Florida. Says Larry, "We have enjoyed 57 years of happy married life."

1922

Howard Carlson writes he was unable to attend his 60th reunion, but recalls when he and several other WPI students residing in a rooming house saved a mother and child overcome by gas fumes. "We called ourselves the 'Gas House Gang' after that near-fatal event, and as alumni we often got together on a yearly basis."

Charles Clarkson from California could not attend the reunion either. He has warm memories of "two of the finest teachers that I ever met, Dr. Masius and Dr. Morley." According to Clarkson, they could solve problems both inside and outside the classroom.

George Walker, WPI trustee emeritus, was unable to make reunion because of his busy schedule, but alumni activities have been "almost a full-time extracurricular program for 50 years." In 1962 he received the Taylor award for distinguished alumni service to WPI. He still walks four miles a day or pedals 20 miles a day on his exercise bicycle.

1927

Mr. and Mrs. **Richard Bliven** observed their 50th wedding anniversary in September of 1981.

While his 55th reunion was taking place at WPI, Dr. **Richard Irons** was receiving a silver bowl during Prize Day ceremonies at Groton (MA) School in recognition of his 50 years as school tennis coach. While he was coach, Groton teams won 55 of 58 matches between 1967 and 1972 and had 20 straight years of winning seasons, from 1962 to 1982.

1930

Ed Delano, who at 77 still rides his bicycle for pleasure and competition (up to 5,000 miles per year), rode for the benefit of the CROP Pedal Push Over Hunger held in Davis, CA, in May.

1931

Frederick Farrar was recently named a Paul Harris fellow by the Keene (NH) Rotary Club. The honor recognizes significant community service and affiliation with the Rotary Foundation, an organization connected with the Rotary Club that furthers international understanding. Farrar, who founded Frederick A. Farrar, Inc., of Keene, has been active in

Scouting for many years. He was an original member of the President's Advisory Council at WPI.

1935

Al Moran is enjoying retirement pursuing his hobbies, studying genealogy and serving as treasurer of the local AARP chapter. Formerly he was with what is now the Organic Chemicals Division of American Cyanamid, Bound Brook, NJ.

John Molloy is retired and living with his wife, Doris, in Tucson, AZ. They have six children and several grandchildren. Previously, Molloy was a long-time employee of the U.S. Geological Survey, Water Resources Division. In 1974 he was listed in *Who's Who*.

Ted Swan serves as an alternate Dad in his local Boys' Club program called B.U.D. (Boys Under Direction). The program is supervised by the New York State Redevelopment Center. Says Swan of his particular "son," "We spend up to 16 hours a week together."

1936

Mr. and Mrs. **Roger Bruce** of Worcester were honored in April on their 40th wedding anniversary at a reception given in their home by their family. They have five children and two grandchildren. Bruce is retired from the former American Steel & Wire Co. and is vice president of Persons-Majestic Mfg. Co.

Alexander Gordon, research director for Vellumoid, Inc., Worcester, has been named a 1982 recipient of the Award of Merit by the international standards-writing organization, ASTM. During the awards ceremony in Charleston, SC, in April, he was cited for 18 years of active service on ASTM gasket committees. Gordon, who was the first member of (gasket) Committee F–3 to receive the Award of Merit, is now a fellow of ASTM.

1939

E. Bruce Crabtree has been named vice president of sales at Bryant Grinder Division of Ex-Cell-O in Springfield, VT. He joined Bryant in 1974 as manager of sales and service. The following year he was named general sales manager.

Chester Ferguson, Jr., retired as a senior engineer for Boeing Co., Renton, WA, last year.

Charles Thulin, formerly a department head at Bell Labs, is retired and living in Matawan, NJ.

1940

Frank Delany retired in July of 1981. He had been with Hazeltine Corp. of Greenlawn, NY.

Judson Lowd was a featured speaker at the Hancock Bank Sixteenth Annual Economic Symposium held in Biloxi, MS, in February.

Herbert Shaw, Jr., who headed American Re-Insurance Company's facultative division for the past 13 years, has retired. Shaw joined the New York firm in 1963 after wide experience in the industry since 1948.

1941

William Bowne has retired from D/B/A Aeroconomy Agency as a manufacturing engineering representative. He is located in Schenectady.

Alexander Chodakowski is self-employed in Oxon Hill, MD. He has a PhD from the University of Illinois.

In February **F. Warren Crowley** took early retirement from Alexander & Alexander, Inc. He has moved to Whiting, NJ.

R. Keith McIntyre is a self-employed data processing consultant in White Plains, NY.

Richard Ramsdell works as a senior project engineer at Parker Seal Co., Culver City, CA. The company is a subsidiary of Parker-Hannifin Corp.

William Wiley holds the post of division engineer at Master Builders, a division of Martin-Marietta in Woburn, MA.

1942

E. Curtis Ambler has retired as captain of the Newington (CT) Volunteer Fire Dept. after 35 years of service. He has been a fire-engine buff since his youth, and his wife says of his retirement, "I wonder who'll fix the trucks now when they won't start?" Ambler is vice president in charge of R&D in the industrial hardware division of The Stanley Works.

Philip Camp continues as principal of Philip L. Camp Assoc., Inc., Ft. Pierce, FL.

1943

Continuing with the Hose Product Division of Parker-Hannifin Corp., **William Currie** is currently a chief staff engineer for the firm in Wickliffe, OH.

Harry Merkel is president of Mercury Co. of Norwood, Inc., Brockton, MA, a subsidiary of Fischbach Corporation.

1944

Hal Blake has been an hydraulic engineer with the Bergen County (NJ) Department of Public Works since 1969. Previously, he had been assitant town engineer in Bloomfield, NJ, and had been affiliated with Tippetts-Abbett-McCarthy-Stratton in New York City, where he enjoyed numerous overseas stints. Hal and his wife, Marge, are looking forward to retirement in their passive solar home in North Carolina.

For the past 15 winters, **Sherm Campbell** has served as a volunteer National Ski Patrolman near his home in Perry, NY. Sherm holds the post of R&D manager with Champion Products and travels coast to coast "endeavoring to excel in screen printing on athletic and campus sportswear." Earlier in his career, he worked on development of the first atomic submarines and has a patent on design of the Nautilus, plus five other design patents.

Irving James Donahue, Jr., of Shrewsbury, MA, a WPI trustee, continues as president of Donahue Industries, Inc. and Donahue International, Inc. His company has a product line of more than 400 parts used by grinding-wheel manufacturers and users. Before starting his own business in 1957, he had been with Carlstrom Pressed Metal, Westboro, Reed & Prince Mfg. Co. and American Steel & Wire, Worcester. He holds an MBA from Harvard Business School and has been selectman in Shrewsbury, as well as a local finance committeeman, president of the Central Mass. Employers Assoc. and governor of the Worcester Country Club. A past president of the WPI Alumni Association, he received the Stephen Salisbury Award from the WPI trustees and the Herbert F. Taylor Award from the WPI Alumni Association.

Blitz Krieger is still a nuclear weapons designer for Sandia Laboratories, Albuquerque, NM, at their branch lab. in Livermore, CA. Once he spent 13 months in Washington, DC, as a technical consultant to the Arms Control and Disarmament Agency on Project Cloud Gap, a test of a proposed treaty with the Russians on dismantling nuclear weapons. After hours, Blitz is involved with the Episcopal Church and bird-watching.

Erling Lagerholm is currently a real estate counselor with Norwood Group International, Inc., in Bedford, NH. Previously he was with Cabot, Cabot & Forbes Co., American Appraisal Co., Thomas F. McSweeney Associates and Exxon Research and Engineering Co. Some Lagerholm highlights: "Crossed the Atlantic to Cowes, England in a 50-ft. sloop; dated Ronald Reagan's daughter, Maureen, in London; and visited Berlin before 'the Wall.'" In 1979 he married Emilie Hofmann and "took on one wife, four kids, two cats and one dog." The newlyweds honeymooned by climbing Mt. Olympus in Greece and cruising around the Aegean Islands.

Since 1967, **William Raymond, Jr.,** has served as chief traffic engineer for Gannett Fleming Corddry and Carpenter, Inc., Harrisburg, PA. During the past 13 years he has flown over 250,000 miles for the firm, including tours in Guatemala, Ecuador, Cameroon, Israel and Thailand, as well as to numerous U.S. cities. He has been a member of the ASCE Committee on Geometrics of Highway Design since 1965. He was named president of the Central Pennsylvania Section of the ASCE in 1972 and Master of his local Masonic Lodge in 1974. For 25 years he has sung with his church choir and for three years with the Harrisburg Choral Society.

Wallace Underwood is now designing underwater test equipment with Sippican Ocean Systems in Marion, MA. A founder of the WPI Sailing Association, he is ex-commodore of the Manchester (MA) Frostbite Association, a member of the Corinthians ocean racing club, Beverly Yacht Club and a senior member of the U.S. Power Squadrons. Also interested in amateur theater, he has served on the board of directors and been production manager of the Monmouth (NJ) Players. A graduate of the Rhode Island School of Design, Wally formerly designed refrigerators for Westinghouse, ran a product-design consulting business in

Boston and managed product development and plastics research with American Can. He has designed about 100 familiar manufactured products, as well as his own passive solar home.

1945

Robert Edgerly is employed as a group leader of operations at Grumman Aerospace Corp., Bethpage, NY.

John Hyde, senior vice president of the chemical unit of Diamond Shamrock Corporation, retired in August following 30 years of service. He entered the chemical industry immediately after World War II. During his career at Diamond Shamrock, he advanced to division operations manager, division manager and senior vice president. He served in the U.S. Navy.

Still with Cincinnati Milacron-Heald Corp., Worcester, **Donald MacKay, Jr.,** is now manager of advertising and product promotion.

1946

Robert Bartlett serves as manager of refrigeration engineering for Babson Brothers Co., Oak Brook, IL.

Alpheus Farnsworth is affiliated with Gregory Group, Inc., North Bergen, NJ.

William Grogan, dean of undergraduate studies at WPI, was guest speaker at the Hudson (MA) Rotary Club annual banquet for National Honor Society members of local Hudson schools last spring.

William Jaegle is president of Marketing Technology, Inc., Calabasas, CA.

Allan Johnson has been elected to a four-year directorship of Kemper, S.A. and a one-year term as director of Kemper International Insurance Company. He joined Kemper in 1964 to establish the firm's HPR department. He has been directing the activities of the national-international department. He serves as HPR officer for Kemper's principal insurance companies and senior vice-president and director of American Protection Insurance Company. A member of the Society of Fire Protection Engineers, Johnson is also a registered professional fire protection engineer in California.

1947

Jacques Metenier holds the position of chairman of the board of Delas Weir, an international company located in France, which is concerned with the optimization of condensers, feed water heaters and heat exchangers. The firm is first in its field in Europe.

1948

Louis Block and his son, Richard, are now in the wholesale and importing business of candy and toys. He writes: "We are moving this month into our new 60,000 sq. ft. warehouse." Block, who remarried five years ago, says that he has seven children between the ages of 1 and 31.

Milton Bradley's Idea Man Retires

If your youngsters put a Pac-Man board game, a Smurf card game or the ever-popular electronic game, Simon, on their Christmas lists, you can thank Jim Houlihan, '42, who retired in June as vice president of R&D at Milton Bradley Co., East Longmeadow, MA.

As his career with MB began to unfold nearly 40 years ago, Houlihan never dreamed he'd become the firm's chief idea man. "I wanted to be a chemical engineer," he says. "Following World War II, I joined MB's art department developing crayons. Before long, I transferred over to R&D when I discovered I was more interested in making games than making crayons."

For Houlihan the move was a good one. Developing new games is big business, and he has the knack of knowing what the game players of the world want. What's the hottest name in arcades today? Pac-Man, of course. And MB had the foresight to snare the contract to produce the Pac-Man board game, which should be a hit come Christmas.

What's more, before any other toy company was interested, MB picked up the rights to produce the little people known as Smurfs. Currently, "The Smurfs" is TV's most widely watched Saturday morning cartoon show, and spin-off games are now in the works.

Houlihan also helped bring out such trendy games as Electronic Stratego, Dark Tower, Domination, Knock Knock, and The Fall Guy—all part of Milton Bradley's latest line of best-sellers.

"I was responsible for riding herd on the staff as they created new games, toys and puzzles," he reports. "At the time of my retirement, there were 80 employees developing non-electronic games and 80 more working on electronic versions."

Because the game market is so competitive (another firm pirated ideas from MB's Simon and called their toy Copy Cat), Milton Bradley has a locked security wing, opened only to those who know a secret code. Jim Houlihan, of course, knows that code and a host of MB trade secrets.

With his inside knowledge, did he have to go through a debriefing program when he left Milton Bradley?

He grins. "I guess we have some sort of program like that."

Frederick Curtis, Jr., holds the position of vice president of General Dynamics, Ft. Worth Division.

Bob Hubley, who recently retired as a division manager for Western Union in Washington, DC, is now involved with video advertising and videotaping weddings, anniversaries, birthdays and reunions. He also has made several videotapes for entertainers for use in presenting acts to prospective employers.

Richard Seagrave holds the post of vice president of operations at J. I. Case Co., a division of Tenneco, Inc., in Racine, WI.

1949

Dean Amidon, District One highway engineer for the Massachusetts Department of Public Works, was recently elected president of the Northeast Association of State Highway and Transportation Officials (NASHTO). The association covers the six New England states, Delaware, Maryland, Pennsylvania, New York, the District of Columbia, Puerto Rico, the Virgin Islands and several provinces in Canada. Amidon, a DPW employee for over three decades, is a former state commissioner of public works and vice president of NASHTO.

Richard Coughlin has been elected vice president of Boston Edison Company. He will head the new procurement, stores and service organization. He has been director of the stores and service departments since 1972. A registered professional engineer in Massachusetts, Coughlin joined Boston Edison in 1949.

Henry Ezen says that he is a part-time tour guide for skiing trips in New England. Since 1970 he has skied and hiked twelve times in the Alps. He plans to continue hiking and skiing in the Alps as a tour guide for travel agencies.

In May, **Charles Gerber** was honored at a retirement reception at Mitchell College in New London, CT. A graphic science teacher at the college, he had participated in 30 of Mitchell's 38 commencement programs. Several years ago he retired from the Naval Underwater Systems Center. During his early retirement, he served as a full-time member of the college maintenance staff, while continuing to teach in the engineering division. He has been responsible for training an entire generation of draftsmen at Electric Boat.

John Hunter has been promoted to assistant general manager-engineering at General Dy-

namics' Electric Boat Division, Groton, CT. With the firm since 1949, he has held various engineering management posts. He is a registered professional engineer in Connecticut and the state of Washington.

Robert Quattrochi was recently reelected president of the Country Club of Pittsfield, MA. He is president of Pete's Chrysler-Plymouth, Inc., past treasurer of the Massachusetts State Auto Dealers Association and chairman of the National Subaru Dealer Advisory Council.

Joseph Skidmore serves as a sales engineer in the construction products division at Armco Steel, Tacoma, WA.

1950

Lawson Hill, Jr., holds the post of president of British Isles Collection, North Conway, NH.

John Orcutt has been named director of research and development of the Air Correction Division of UOP, Inc., Norwalk, CT. The division designs and manufactures air pollution control systems and equipment. Before joining UOP, Orcutt was manager of process development at Stauffer Chemical Company. He holds a PhD in chemical engineering from the University of Delaware.

Besides working full time in system engineering at Calspan Corporation, **Hugo Radt, Jr.,** also teaches courses in flight dynamics and vehicle dynamics and control at the State University of New York at Buffalo.

Tejinder Singh is now general manager of supplies and distribution with Bharat Petroleum Corporation in Bombay, India. He writes: "Our daughter and her husband, who live in the U.S., recently had a baby girl." His address is: Flat No. 32, 1A S.K. Barodawala Marg, Bombay 400–026, India.

Robert Stewart, a WPI trustee, has been elected executive vice president of corporate planning and development at IC Industries, Inc., Chicago. He joined the company in 1979 as senior vice president of corporate planning and development and is also a member of the Management Policy Committee. Most recently, he had been president of Arlen Realty Corporation, New York City.

1951

Leon Bassett holds the post of director of international operations for Skil Corp., Chicago.

William Haslett, Jr., works as an engineering specialist at Fisher Controls, Marshalltown, IA.

Robert Ripley holds the post of new products engineering manager of extrusion at Carlon, Cleveland, OH.

1952

Daniel Bernatowicz is headquartered in Cleveland, OH, as chief of the power systems branch at NASA Lewis Research Center.

Donald Krauss is now program manager for Raytheon in Portsmouth, RI.

A. Theodore Ponds is the current sales manager of Armco Autometrics in Boulder, CO.

1953

Henry Burger serves as manager of hotel services for Colonial Williamsburg Foundation, Williamsburg, VA. Formerly he was a commander with the U.S. Navy.

Currently, **Jack Schmid** works as a plant engineer for Great Lakes Chemical Corporation (Velsicol Chemical Corp.) in El Dorado, AR. The company products are related to bromine and used to make medicines, flame retardants, agricultural pesticides and fungicides.

Paul Snyder, Jr., holds the position of venture technical manager at Mobil Technical Services, Inc. He is headquartered in New York City.

1954

Joseph King is an assistant professor at Vermont Technical College, Randolph Center, VT.

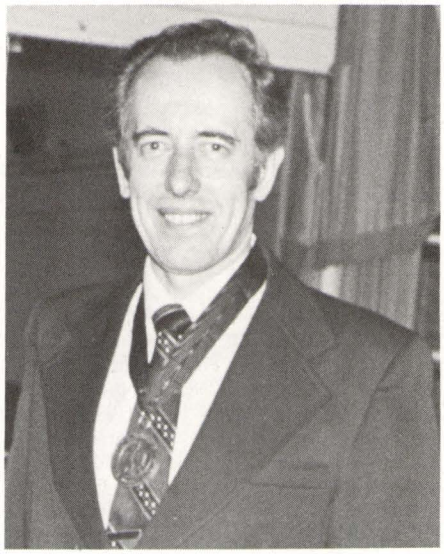
Donald McEwan, president of the ITT Avionics Division, Nutley, NJ, was feted as "Man of the Year" by the American Institute of Aeronautics and Astronautics' North Jersey section at its annual award dinner in Clifton. He was selected for the award for his role in leading the ITT division in its acquisition of two highly competitive defense contracts in 1981 (representing a potential of $2 billion in production business for North Jersey over the next decade). McEwan has spent his entire career at ITT Avionics in New Jersey.

Wesley Wheeler's firm, Wesley D. Wheeler Associates, Ltd. (International Maritime Consultants), New York City, has been named eastern regional sales representative for Wartsila diesel heavy fuel engines. Wheeler reports that the Finnish Wartsila Vasa diesel is the only medium-speed unit designed from the bed plate up to burn only heavy fuel and operate at low load or idle for long periods of time. For nearly a decade Wheeler's staff of naval architects and marine engineers has provided a range of services to the marine industry, including vessel construction, conversion and modification plans.

1955

Kirby Ducayet, III, is staff vice president at Kimberly-Clark Corp., Neenah, WI.

Geza Ziegler: A Voice For Freedom



Named Engineering Fellow at BEI

In 1957, after the Soviets tightened their grip on Hungary, Geza Ziegler, '59, a Hungarian student at Budapest Polytechnic Institute, fled to the United States. He entered WPI, where he later received both his BSEE and MSEE.

Away from the nightmare of Soviet domination, Ziegler became a willing participant in the American dream, which he viewed as the right to define personal goals, the right to pursue those goals and the right to receive recognition for personal success. In May, he was elected a fellow of the Bridgeport (CT) Engineering Institute (BEI), the highest internal honor bestowed by the Institute.

Ziegler, who has also been named director of the Danbury branch of the evening college, has been with BEI as an instructor and administrator since 1963. His fellowship award cited him for his "long, honorable and selfless service to the students, faculty and administration."

It also stated: "Geza Ziegler is an excellent example of the advantages afforded by the U.S. to its newly adopted citizens. However, such opportunities are only attainable by those who know how to grasp and use them."

During his 19 years with BEI, Ziegler has served as assistant chairman of mathematics, dean of the faculty of the Stamford branch and dean of college extension. In his capacity of dean of college extension, he was the prime mover in the establishment of the BEI Danbury branch on the Western Connecticut State College campus.

Along with his BEI post, Ziegler serves as director of manufacturing for Cognitronics Corporation in Stamford. He is vice president of Stamford's Long Ridge Volunteer Fire Company and city representative to the Area 9 Cable Council, whose operations committee he chairs.

Actively involved with educational and community activities, as well as with his professional engineering duties, Geza Ziegler represents what is good about America. Thus it's no mere coincidence that he does voluntary free-lance broadcasting for Radio Free Europe extolling the American way of life.

Arthur Rudman is a special representative for Franklin Life Insurance Co. He is located in North Anson, ME.

1957

Crosby Adams, still a project director for Wilbur Smith & Assoc., Columbia, SC, has recently been involved with company projects in Hong Kong, Norfolk, VA, and Lansing, MI.

Since 1959, **Edwin Ahlstrom** has served as a research physical scientist at the U.S. Army Electronics Technology and Devices Laboratory at Fort Monmouth, NJ. With the U.S. Army Reserves for 22 years, he retired as a division inspector general.

Saltwater fishing and cross-country skiing are two activities enjoyed by **Arthur Anderson,** who is chief of test engineering at Hamilton Standard in Windsor Locks, CT. Active in his church, he has been Sunday School superintendent, trustee and a deacon.

Joseph Arcari, Ltc., U.S. Army, Ret., is currently a general engineer and program manager for military construction for the U.S. Army in Europe. He likes to fix old cars.

Raymond Archambault is concerned with product operations management at Digital Equipment Corp., Merrimack, NH. Running and amateur theatricals are outside interests.

"Have always been involved in all aspects of military satellite communications," says **John Atchison, Jr.,** a group leader at Mitre, Bedford, MA. He belongs to the IEE, ARRL and the Masons.

Adrian Atkins, a registered civil engineer in Connecticut, holds the post of manager of the Civil Engineering Division at Aetna Life and Casualty, Hartford, CT. He also conducts his own construction/demolition business and is actively engaged in the design and selling of Ward Log Homes.

After spending 23 years with FMC Corp., **Philip Backlund** joined Rockwell International in Troy, MI, in 1980. As manager of energy and environmental management, he is responsible for environmental control and energy conservation for approximately 40 plants within automotive operations.

John Bandarra, Jr., is plant manager for Tampax, Inc., in Clarement, NH. He is active in Rotary and the K of C and previously served on the board of directors of the YMCA and the Chamber of Commerce.

Currently, **Dick Barlow** holds the position of president at Bentley Harris, a subsidiary of Raychem, in Lionville, PA. Earlier he had been with the Signal Corps and GE. He attended Harvard Business School.

Fred Barry, president of Valve Components, Inc., Worcester, has three sons who work in family businesses and are "trying to push Dad into early retirement." (They are **Wayne, '81, Al, '77,** and Frederick, who graduated from Worcester State in 1977.) Fred is also president of New England Specialty Nut Co., Inc. and Largo Corporation.

1958

Robert Bernard is president of Canaan Computer Corporation in Westport, CT.

Lionel Irvine serves as associate transportation engineer for the California State Department of Transportation with headquarters in Los Angeles.

Continuing with GenRad, Inc., **Howard Painter, Jr.,** is now vice president and general manager of the firm in Phoenix.

Stewart Staples was slated to be chairman of the Ladies Professional Golf Association event held in Tucson last summer. Earlier he was named tournament chairman of the $300,000 Joe Garagiola Tucson Open. He is owner of Staples Building and Development Co., Inc.

Currently, **Andrew Szypula** serves as assistant chief engineer for Bethlehem Steel Corp. in Baltimore.

Robert Weinberg continues as president of Economy Electric Supply, Inc, the business he took over from his father 16 years ago. The company, located in Manchester, CT, is one of the country's largest single-distribution centers.

1959

Robert Basil has been appointed marketing manager of new products for Waring Products Division in New Hartford, CT. He is responsible for the division's marketing efforts in the development of new products. Prior to joining Waring, Basil was founder and president of his own consulting firm which specialized in market development and investment activities for clients within the consumer products and chemical industries.

Richard Bourne is general supervisor at Kodak Apparatus Division, Rochester, NY.

Normand Depratti holds the position of R&D manager of electronics for American Optical Corp. He is headquartered in Keene, NH.

John Gale is a senior program manager for AVCO Systems Division, Wilmington, MA. He lives in Sudbury.

Dr. **Frederick Lutze, Jr.,** is a professor in the department of aerospace and ocean engineering at Virginia Polytechnic Institute, Blacksburg, VA.

Alexander Swetz, Jr., works as a division substation engineer for Public Service Electric & Gas in Clifton, NJ.

Winthrop Wassenar, assistant director of the physical plant at Williams College since 1964, will become director in December. A registered professional engineer, he is also a member of the American Arbitration Association, called upon to arbitrate disputes that arise during construction projects. While at Williams, he has supervised many major construction projects.

John Wolfe continues with EG & G Sealol, North American Operations, Warwick, RI.

1960

George Beebe is a staff engineer for MIT Lincoln Lab., Lexington, MA. He writes: "Will return from Kwajalein to Massachusetts in June."

Donaldson Dow serves as a senior analytical engineer at Perry Oceanographics, Inc., Riviera Beach, FL.

Russell Fransen is a consulting engineer and land surveyor for Fransen Consultants, Norwich, CT.

William Kerr serves as a project manager at Pratt & Whitney Aircraft in East Hartford, CT.

Donald MacMillan is a technical manager at GCA Corporation, Burlington Division, Bedford, MA.

Lt. Col. **Robert Mulholland, Jr.,** writes that he is director of procurement for R&D for the U.S. Army at Ft. Monmouth, NJ.

Dr. **Charles Stevens** was recently appointed dean of the School of Engineering Management and Technology at Purdue University (Calumet) in Indiana. Previously, he was acting dean of the Southern Technical Institute, the engineering technology division of Georgia Institute of Technology, and before that he had served on the faculty and administrative staff of Southern Tech in Marietta, GA. A registered professional engineer, he has conducted consulting assignments for such industries as the Bendix Corporation, Caterpillar Tractor Co. and Hallmark Cards.

Jon Thorson is an advisory engineer for IBM in Kingston, NY.

1961

Roger Faulk has been appointed assistant director in the casualty-property commercial lines department at the Travelers Insurance Companies in Hartford, CT. He joined the companies in 1971 as an underwriter.

William Holmes holds the post of manager of product marketing at Wyman-Gordon Co., Grafton, MA.

Thomas Maloney, Jr., a vice president of E.F. Hutton and manager of the firm's Burlington (MA) office, has been named to Hutton's 1982 President's Club. Appointment to the group, based on individual leadership performance, is awarded to only 25 managers from the total of 320 in Hutton's branch office system. Maloney joined Hutton in 1975.

Paul McCarthy holds the position of district manager at New England Telephone in Framingham, MA.

Yesugey Oktay has been promoted to division head of mechanical and structural engineering at Boston Edison Company.

Alan Roseen serves as a senior engineer at GE in Utica, NY. He resides in Frankfort.

Edward Sundburg was recently named as a worldwide business manager at Norton Industrial Ceramics Division, Worcester. Previously business manager of advanced ceramics, he will now be responsible for business operations of Crystar(R) recrystallized silicon carbide electronic components throughout the world.

1962

William Brutsch was recently appointed director and chief engineer of the Metropolitan District Commission Water Division in Boston. He supervises the division's $11 million budget, its $100 million capital program and 400 employees. A major in the U.S.A.F. Reserve, he also belongs to the National and the Massachusetts Society of Professional Engineers.

Robert Chapin has been with the New York State Dept. of Transportation for 20 years.

Formerly with GTE Sylvania, **David France** is now technical director for UNNEX, Salem, NH. He resides in Hillsboro.

Lewis Huntoon has been promoted to manager of purchasing and production services at Hitox Corporation of America and Nova Oil Field Chemicals, a division of Hitox.

Dr. **John Lukens** serves as vice president of Geodata Systems International in Nairobi, Kenya. He received his PhD from Cornell.

Bernard Meister has been advanced to associate scientist at the Dow Chemical Co., Midland, MI.

Philip Pilibosian is general manager at Pacific Telephone in Los Angeles.

Eugene Rheault is now a principal engineer at International Laser Systems, Orlando, FL.

Dr. **John Tien,** professor of metallurgy and director of the Center for Strategic Materials, Henry Krumb School of Mines, Columbia University, was coauthor of "Metallurgy in China Today and the First U.S.A.-China Bilateral Metallurgical Conference," which appeared in the March issue of the *Journal of Metals.*

1963

Earl Fratus serves as project manager at Sheldon L. Pollack Corp. He is located in Houston.

Dennis Heath is supervisor of production engineering for GE in Plainville, CT.

Dr. **Richard Kashnow** continues with GE in Cleveland, OH. He is now product general manager.

Robert Jamaitis has been appointed vice president of manufacturing at United Technologies' Norden Systems. He joined Norden in 1963 and most recently served as operations manager. He holds an MBA from the University of Bridgeport.

Steve Mozden has been appointed to the town appropriations committee in East Longmeadow, MA. He is a senior engineer in preliminary design at Hamilton Standard and recently received his MBA from Western New England College.

1964

John Arserio, Jr., serves as New England area sales manager at Hewlett-Packard Co., Lexington, MA. He resides in Andover.

Frederick Borgeson holds the position of director of engineering at Aydin Microwave, San Diego.

Walter Gonia serves as marketing manager for industrial products at Johnson, a division of UOP, Inc., St. Paul, MN.

Philip Johnson works for Electro Mechanics, a subsidiary of Combustion Engineering in New Britain, CT.

Charles Lombardo is president of Petro-Art Ltd., Inc., Trenton, NJ.

Bruce Ochieano serves as director and assistant treasurer at Advanced Micro Devices, Inc., Sunnyvale, CA.

Richard Parzuchowski holds the position of vice president at Chromalloy R&T, Orangeburg, NY.

David Stone is manager of engineering for the Power Breaker Division of Siemens-Allis, Inc., Jackson, MS.

Pete Tancredi holds the position of vice president at Camp Dresser & McKee, Walnut Creek, CA.

John Wetherell is engineering and operations manager for the Federal Reserve Bank of Boston.

1965

Marvin Berger has formed Adelphi Management Services, a consulting firm in Bedford, NH. The firm aids small and medium-sized companies in solving operational problems. Previously, Berger was vice president and general manager of the Chancellor Equipment Co., and served in sales, marketing and management posts at IBM.

Continuing with BF Goodrich Company, Akron, OH, **Francis Cantello** is currently a technical manager for the firm in Aukland, New Zealand.

David Clayton is the senior vice president of finance at Trans Ocean Leasing Corp. in San Bruno, CA.

Jim Fee has joined Contrex, Inc., Burlington, MA, a newly formed company that develops products which will apply artificial intelligence and machine vision to the inspection process in manufacturing operations. He is sales and marketing manager.

Nicholas Gallinaro was coauthor of "Fabricated Valves Work for Sasol II," which was published in the April issue of *Welding Design & Fabrication.*

David Geiger serves as manufacturing manager at The Torrington Co., Torrington, CT. He has an MS in management from RPI.

Donald Gregoire works as an electromagnetic systems engineer for IBM in Owego, NY.

Charles Hunnicutt serves as a department head for Bell Telephone Labs. in Naperville, IL.

Robert Klauber is now with Volt Technical Services, New York City. In March he received his PhD from Virginia Polytechnic Institute & State University.

Philip Nims is chief of product development at Leesona in Warwick, RI.

Richard Seaver holds the post of project manager for Building Automation Systems, Farmington, CT.

1966

Dr. **Andrew Fish, Jr.,** assistant professor of electrical engineering at the University of Hartford, co-chaired the nonlinear group at the 1982 American Control Conference in June in Arlington, VA. He presented a paper at that conference, as well as other papers at recent similar conferences in Raleigh, NC, and New York.

Dr. **John Lauterbach** is an analytical research division head for Brown & Williamson Tobacco, Louisville, KY.

John Morawski, still with Niagara Mohawk Power, is now associate senior project control engineer for the company in Syracuse, NY.

George Ordway is president of C. G. Bostwick Co. and of Bostco Industries, Hartford, CT.

Donald Petersen, Jr., is working in the display products area for IBM in Kingston, NY. He recently moved to Woodstock, NY, from Miami.

Robert Plum is the principal engineer at Converse Consultants, Seattle, WA.

Anthony Sacovitch serves as chief engineer at Wright Machine Corp., Worcester.

Tod Wicker continues as manager of financial projects for the Public Service Co. of New Hampshire in Manchester. He holds an MBA from Northeastern, is married and the father of two sons, Eric and Tom.

1967

Charles Bergeron continues as supervisor of nuclear safety at Stone & Webster, Boston.

Charles Case holds the post of department manager at Raytheon in Sudbury, MA.

Roger Daugherty has been named vice president of corporate development for SelectTV, Marina Del Rey, CA. Formerly he was vice president of management systems. In his new post, he will be in charge of technology planning and development in the area of home communications and entertainment.

Roy Fedotoff is employed as a supervising engineer at Brown and Caldwell, Consulting Engineers, in Walnut Creek, CA.

1968

Paul Arruda is an area technical superintendent for Du Pont in Beaumont, TX.

William Belisle is still training manager at Airesearch Mfg. Co. in Torrance, CA. In March he received a certificate in personnel management from UCLA.

Joseph Borbone is a project engineer for Warner & Swasey Co., Grinding Wheel Division, in Worcester.

John Cyranski is now an assistant professor in the department of physics at Hobart and William Smith Colleges, Geneva, NY.

John Elphinstone is manager of cost accounting at L'eggs Products, Inc., in Winston-Salem, NC.

After eight years with the Connecticut Department of Public Utility Control Authority, last November **Rob Gallo** joined American Water Works Service Co., Haddon Heights, NJ, where he is director of rates and revenue.

Mark Hubelbank holds the post of vice president of Cardio Data Corp., Marlboro, MA.

Paul Larini has been named an associate of the Society of Actuaries. He is the manager of individual reinsurance services at State Mutual in Worcester and has an MS degree in actuarial science from Northeastern.

Israel Mac wrote "Atlanta and Transportation: Entering the New Decade" for the April issue of *ITE Journal.*

William O'Neil now works in project control for Union Carbide in Oak Ridge, TN.

Raymond Racine has been named assistant manager of the Cool Water Coal Gasification Program in Texaco's Alternate Energy Department. With headquarters in Harrison, NY, Racine is responsible for coordinating Texaco's engineering, construction and operations activities in the $300-million program.

Robert Woog is district data systems manager for AT&T Long Lines, Morristown, NJ.

1969

James Atkinson is now engaged in the practice of law at 50 Milk St., Boston, and in South Harwich, MA.

John Connell, Jr., has been appointed assistant director, strategic planning, automation, in the data processing and management services department of Aetna Insurance Company.

J. B. Flynn received his MBA from the University of Lausanne in Switzerland last year. He is national sales manager of Commercial Financial Service, General Electric Credit Corporation, Stamford, CT.

James Haury serves as a director of manufacturing at Farrel Company, Ansonia, CT.

Larry Katzman, president of Thermal Data Corporation of Newtonville, MA, was a seminar discussion leader and workshop director at the NEFI Sales Direction Seminars held in Waltham, MA, and Concord, NH, in January. He spoke on "Effectively Opposing Natural Gas (and Electric Heat) Competition."

Richard Palm continues with Digital Equipment Corp. He is now the professional software service business manager for the company in Waltham, MA.

Raymond Stanley serves as engineering supervisor at General Dynamics-Electric Boat in Groton, CT.

1970

MARRIED: Lillian M. Peplau and **Craig D. Olmsted** in Lexington, MA, on June 12, 1982. The bride, a free-lance graphic artist, graduated from UConn. Olmsted holds master's degrees in engineering and management and is employed at Chas. T. Main, Inc., Boston.

John Boyd works as a technical marketing supervisor at Hewlett-Packard, Waltham, MA.

Lawrence Cohen has rejoined Cavedon Chemical Co., Inc., Woonsocket, RI, where he is assistant to the president. He will be responsible for directing R&D activities and overseeing manufacturing and quality control. Previously, he was a research chemist at Union Carbide and Kendall Company.

John Ducimo serves as manager of reclaim systems for Nelmor Co., Inc., North Uxbridge, MA.

Dom Forcella is one of two Yale graduate students who have been studying possible uses of some town-owned property in Waterford, CT. The town study is a requirement for his master's degree in environmental studies.

Robert Grillo has been hired as an assistant engineer by the City of Willimantic, CT. For the past five years he has served as senior transportation planner for the Nashua, NH, Regional Planning Commission.

Robert Kenney has joined Vermont Yankee Nuclear Power Corp. He resides in Keene, NH.

Raymond Pajer serves as a senior research engineer at Smith-Corona in the R&D lab. in Newtown, CT.

Randolph Sablich currently is director of subcontracts business operations at Grumman Aerospace, Bethpage, NY.

Anthony Toscano is now a senior project manager for GE's Environmental Services, Inc., Lebanon, PA.

Frank Zone, Jr., is a staff engineer for Riley Stoker in Worcester.

1971

Richard Arena serves as regional sales manager for Weber Metals, Farmington Hills, MI.

Paul Ash, director of professional personnel and staff development in Wellesley, Mass. schools, recently received his PhD in educational administration and supervision from Boston State College. He has his master's degree in teaching from the University of Massachusetts in Amherst and a certificate of advanced study from the Harvard University Graduate School of Education.

John Giordano has been promoted to assistant vice president in the management science section of the corporate finance group at Rhode Island Hospital Trust National Bank, West Warwick, RI. Before joining the firm in 1970, he was with Old Stone Bank. Last year he served as treasurer of the New England Economic Project.

Mathew Gluckson holds the post of vice president at Sunrise Knitwear Co., Inc., New York City. He and his wife, Judy, have two children and reside in White Plains, NY.

Michael Hitchko is with Chas. T. Main, Inc., Boston.

Chris Johnson has been named chief of the radioisotope group at Letterman Army Institute of Research, San Francisco. His wife, Karen, is working in microbiology at Letterman Army Medical Center.

Emile Levasseur holds the position of process engineering manager at King-Seeley Thermos Co., Norwich, CT.

Dr. **Richard Lindsay** was co-editor of a book entitled *Grinding Technology and Troubleshooting* published by the Society of Manufacturing Engineers, Dearborn, MI, in January.

Currently, **Joseph Najemy** serves as president of Solar Marketing Associates, Inc., Worcester.

Kevin O'Connell works as a staff engineer at Arkwright-Boston Insurance, a division of Factory Mutual, in Greenwich, CT.

Francis Scricco has been appointed general manager of the GE Room Air Conditioner Department, Louisville, KY. After six years as a management consultant with the Boston Consulting Group, he joined GE in 1979 as manager of strategy development for consumer products at corporate headquarters in Fairfield, CT.

Norman Sousa, Jr., serves as vice president of Sousa Corp., West Hartford, CT.

Thornton Waite is a project engineer at EG&G, Inc., Idaho Falls, ID.

Dana Worthley is an associate engineer at Fram Corporation. He is located in East Providence, RI.

Michael Zarrilli holds the position of vice president at Manufacturers Hanover Trust Co., New York City.

1972

Jared Bruckner is chairman of the mathematics and applied science department at Atlantic Union College, South Lancaster, MA.

Samuel Cuscovitch has been appointed assistant director of telecommunications services, information services, in the resources and services division of Connecticut General Life Insurance Company. He joined information services in 1976 as senior data communications analyst and was named senior technical consultant in 1980. In 1974 he received his master's in information sciences from the Hartford Graduate Center.

John Ferraro has been promoted to supervisor of generation electrical engineering at Northeast Utilities, Hartford, CT. He began as an assistant engineer in the protective relaying department at the company's Berlin general offices in 1972. A member of IEEE, he is also a registered professional engineer in Connecticut.

Joseph Gotta was recently promoted to eastern regional sales manager for Galileo Electro-Optics Corp. He will be responsible for all sales activity within the eastern part of the U.S. and Canada.

David Horrocks serves as facilities engineering manager at The Foxboro (MA) Company.

Currently, **Stephen Joseph** holds the post of manager of New England Telephone, Boston.

Vahe Krikorian is manager of manufacturing quality assurance at Digital, Marlboro, MA.

Thomas Murphy is regional sales manager for Filterite, a subsidiary of Brunswick Corporation located in Timonium, MD.

Gary Rand currently works as a project engineer for Xylogics, Inc., Burlington, MA.

Thomas Reynolds is supervisor of the Corporate Internal Audit Department at Occidental Petroleum Corp., Houston, TX.

Dr. **Kenneth Wadland** continues with Wadland Software Consulting, Fitchburg, MA.

1973

MARRIED: Bruce J. Foster to Melissa S. Kirchner in Dalton, MA, on May 22, 1982. She graduated from Bryant College, Smithfield, RI, and is a computer graphics secretary for GE in Pittsfield, MA. Foster is a microprocessor design engineer at GE.... **Michael L. Hetzel** and Kathleen E. Williamson in Cape Elizabeth, ME, on May 1, 1982. She graduated from SUNY at Oswego, did graduate work at Cornell University, and now manages a gift store. The bridegroom is a reliability engineering specialist for Data General Corp., Westbrook, ME.

David Bedard holds the post of B Company Commander for the U.S. Army. He resides in Edgewood, MD.

Dennis Beliveau is employed as manager of product control for rotating parts at GE's Gas Turbine Division in Schenectady, NY.

James Davis manages technical services for the coal products group at Wen-Don Corp., Roanoke, VA.

Ralph Desmond is starting the second year with his own computer-education firm, Desmond & Associates, Boston, MA. He also teaches at UMass in Boston. Last December he spoke on entry-level DP training at a national conference: Data Training, '81.

George Harris is employed as a senior hardware engineer at Gould Inc.-Modicon Division in Andover, MA.

Herbert Hedberg serves as vice president of

operations at Autochrom, Inc., Milford, MA.

Steven Jaffe is employed as a senior field representative at Hamilton Standard in Holland.

Stephen Kaminski works as an assistant engineer for New Hampshire Electric Cooperative, Inc., in Plymouth.

Basil Karanikos is employed as a senior electrical engineer at Sweetheart Plastics, Inc., Wilmington, MA.

Robert Kibler, still with Rodney Hunt Co., Orange, MA, is currently quality assurance manager for the firm.

Donald Kray serves as a development administrator at Aetna Life & Casualty, Hartford.

Continuing with Raytheon Service Co., **John Manzo** serves as general manager of the company's Mid-Atlantic systems facility in Mount Laurel, NJ.

William Nutter is now data processing system (DPS) STS–3 flow lead engineer at Rockwell International, Kennedy Space Center in Florida. Besides being responsible for DPS planning and scheduling, he is single-point contact for all DPS activities.

Thomas Savage works as a market development specialist at GE Plastics in Louisville, KY. The Savages have three children.

Thomas Szatkowski is an attorney with Cravath, Swaine & Moore in New York City.

Now with Fenn Manufacturing, **John Taylor** holds the post of project engineer in Newington, CT.

A. Richard Urjil, Jr., formerly with the Borg Warner-Morse Chain Division, is now a sales manager for Lamont & Getrag Gear Co.

James Viveiros works as a product marketing engineer in the Colorado Springs Division of Hewlett-Packard in Colorado.

Currently, **Mary Zoeller** is employed as a product manager at Hewlett-Packard Company, San Diego, CA.

Tee for Two— And, Maybe, Five!

His oldest son, Joey, 5, can already hit a golf ball 50 yards, Jack Gale, '70, reports with parental pride. His twin sons, Michael and Daniel, 3, cannot match their big brother's swing, but it's a safe bet that they will take a liking to the little white ball. If golf genes can be inherited, surely the sons of Jack and Mary Carr Gale have them in generous supply.

Take Jack, for instance. Golf has been his life. A member of the Professional Golfers' Association, he's served as a pro at Worcester's Green Hill Country Club, Holden Hills and the Rochester (NH) Country Club. This year he became pro at Tatnuck Country Club, introducing the club to its first pro-member tournament.

Take Mary. She's won the New Hampshire women's championship twice. This summer she was champion of the Worcester County Women's Golf Association. Her brother is Joe Carr, the current New England PGA champion.

When Jack invited Mary to join him for the Pro-Lady Championship in 1978 and 1980, they won both times. In 1973 he led his team to victory in a pro-member club tournament in Melbourne, FL. Since that time, he has often played the winter golf circuit in Florida.

Jack, the son of Joe Gale, ME laboratory technician at WPI, caught the golf bug late. "But once I started playing in my mid-teens, I was hooked." At WPI he captained the golf team. "When I graduated, there weren't many jobs for mechanical engineers. I loved golf. I decided to turn pro."

Teenage boys often dream about becoming professional athletes. Jack Gale dreamed, too. The difference is, he made his dreams come true.

1974

BORN: to Judy and **James W. Bowen** a daughter, Margaret Ann, on April 16, 1982. Margaret has a sister, Andrea, 4, and a brother, Christian, 2. Jim is with Pratt & Whitney Aircraft, Government Products Division, West Palm Beach, FL. . . . to Mr. and Mrs. **Lee D. Turner** a daughter, Kathleen Elizabeth, on March 21, 1982.

Roger Broeker, Jr., serves as a senior instrument design engineer for Crawford & Russell, Inc. He is located in Houston.

Wayne Bryant is now manager of Host Computer group at Teradyne, Boston.

Recently **Steve Dacri** performed at the Magic Castle in Hollywood, with Barbara Mandrell (also in Hollywood), on the "Good Day" TV show in Boston and with Robert Klein in Acapulco, Mexico.

Stephen Engel works as a project engineer at Grumman Aerospace Corp., Bethpage, NY.

David Gerth is involved with financial planning at Computervision Corporation in Bedford, MA.

Formerly with California Pacific Utilities, **David Gracie** is currently employed as a project manager for Levi Strauss & Co., San Francisco.

Michael Hartnett has been named director of research of The Torrington Co., where he will be responsible for development of new products and materials, as well as manufacturing processes. With a PhD from the University of Connecticut, he joined Torrington in 1972 as a project engineer. Since 1980 he has been assistant director of research. The author of several scientific papers, Hartnett has introduced state of the art, computer based techniques for advancing the design and application of rolling element bearings.

Lawrence Hunter holds the post of senior engineer at Westinghouse Electric, Baltimore. He resides in Glen Burnie.

James Kennedy is a hurricane planner with Civil Defense in Hawaii.

Jim Kudzal has received his master of engineering administration degree from The George Washington University. Jim, who also holds an MS in physics, is employed as a technical manager by the U.S. Navy in Washington, DC. He recently won a trophy for outstanding performance in karate.

Fr. **Victor Melehoy** (formerly Melechow) is now a priest at the Holy Resurrection Russian Orthodox Church in Worcester.

Robert Praino, Jr., who resides in Westwood, MA, works in R&D and film manufacturing development at Polaroid, where he is a senior engineer.

S. Scott Rine serves as a deputy equal opportunity training officer for the Navy, Department of Defense, Boston.

Joe Strempek continues as a field service engineer for Babcock & Wilcox. He just completed the start-up of a 450-megawatt lignite-fired utility power plant where he was lead engineer for a $200-million contract which included the boiler electrostatic precipitator and wet-limestone scrubber systems.

Richard Takanen holds the position of manager of shop operations at GE in Cincinnati, OH.

Jay Thayer has been elected president of the Jaycees in Westboro, MA. He is an assistant project manager for the Yankee Atomic Electric Co. in Rowe.

Craig Tyler was recently named a military sales engineer for R.F. Cable Products Division of Times Fiber Communications, Inc. Formerly he was with Tuttle & Bailey Co., a manufacturer of products for the energy industry. Currently, Tyler is completing his MBA at the Hartford Graduate Center.

Peter Walworth is manager of facility planning and engineering at Applicon in Burlington, MA.

1975

MARRIED: Charlene M. Hodgkins to Roy K. Rigie on April 4, 1982 in Sutton, MA. The bride is with Cyro Industries in Stamford, CT. Her husband, a chemical engineering graduate of the University of Connecticut, works for American Cyanamid, also in Stamford. . . . **Edward T. Griffin** and Leong Foong Har in San Diego, CA on May 8, 1982. Griffin, still employed at Dymac Division, is also studying for his MBA at the University of San Diego.

BORN: to Julie and **Dick Perreault** a daughter, Maressa Anne, on May 13, 1981. Dick is a field engineer for the circuit test systems group at Hewlett-Packard, Lexington, MA.

Jon Anderson now works for the Vermont Department of Public Service representing the public in rate cases before the Public Service Board.

Continuing with the Linde Division of Union Carbide, **John Batt** currently serves as marketing product specialist in Somerset, NJ.

Karenann Brozowski is a senior process engineer at Corning Medical & Scientific, a division of Corning Glass Works in East Walpole, MA.

Mark Chevrier is employed as a project engineer at Lego Systems, Inc. He is located in Enfield, CT.

Still in Houston, **James Costello** is now a senior construction engineer at Transcontinental Gas Pipeline Co.

William Cunningham is with Chas. T. Main, Inc., Boston. Besides his MS from WPI, he holds degrees from Worcester Junior College, Northeastern and Western New England College.

Bill Faltas, senior actuarial assistant with Aetna Life & Casualty of Hartford, received his associateship designation in the Casualty Actuarial Society at the Society's spring meeting. The designation can be achieved only through successful completion of seven comprehensive insurance examinations.

Stephen Fitzhugh has been appointed sales representative in the Northeastern District for GE's Wire and Cable Department, which manufactures a complete line of insulated electric wires and cables.

Eric Isbister holds the position of chief nuclear test engineer at Electric Boat Division of General Dynamics, Groton, CT.

Nicholas Kyriakos continues as a construction resident engineer for Texasgulf, Inc., Aurora, NC.

Ronnie Materniak recently returned to Wilmington, DE, as a specialist engineer in the design division, following two years with Du Pont's Construction Division in Richmond, VA. This spring he completed his MBA at the University of Richmond.

Paul O'Brien is a seminarian at Pope John XXIII National Seminary, Weston, MA.

Barrett Pett is a general manager at Tally's Inc., Gloucester, MA.

Francis Schlegel, Jr., serves as production area foreman at UniRoyal Chemical Division in Geismar, LA.

Wayne Stratton is an electronics technician at Microlog Corp., Gaithersburg, MD.

Stephen Zambarano, who is with the Systems Laboratory Branch of the Naval Underwater Systems Center in Rhode Island, has been selected by NUSC to participate in its long-term graduate level training program. An electronic engineer, he will attend the University of Rhode Island.

1976

MARRIED: Greg W. Dubin and Linda A. Morrissey in West Hartford, CT, on June 12, 1982. The bride graduated from Hartford College for Women, the University of Hartford. Dubin serves as a research engineer at Combustion Engineering in Windsor. . . . **James R. Hall** and Laurie J. Dempsey in Dedham, MA May 1, 1982. She graduated from Smith College. Hall is a consultant at Arthur Andersen & Co., Boston. . . . **Stuart B. Siegel** and Debra L. Swartz on January 24, 1982 in Malden, MA. The bride, who is employed by the Boston Eye Clinic, has a BA from UMass. Siegel is a chemical engineer at Hewlett-Packard in Waltham.

Joseph Adams is a project engineer at D'Appolonia in Milwaukee.

Richard Allen owns Richard K. Allen, P.E., Meriden, NH.

Daniel Brock is a captain in the Southborough (MA) Fire Dept.

Ray Calabro serves as a pipe engineering supervisor for Daniel Construction at the Wolf Creek Project in Kansas.

Mike Dabkowski works as a research engineer at Mobil Research & Development Corp., Paulsboro, NJ.

Andra Eslami Finkel has received her JD degree from Whittier College in California and was slated to sit for the July California bar exam. She is now with Blakely, Sokoloff (**Stanley Sokoloff, '59**), Taylor & Zafman in Beverly Hills, specializing in patent, trademark and copyright law. She and her husband, Charles, have one son.

Sidney Formal is with the U.S. Army Corps of Engineers at the Water Resources Support Center in Ft. Belvoir, VA.

Richard Hansen serves as president of Air Stations, Inc., Boston, MA. Last year he received his MBA from Boston University.

Sterling "Buzz" Hassler has been promoted to divisional vice president and general manager for the U.S. Diamond Products Division of Norton Co. Previously, he had been director of marketing planning in the abrasives marketing group.

John Heid holds the post of manager of distribution operations at Max Factor & Co., Oxford, NC.

Paul Jacques, still with Kodak, is now a senior coordinating engineer for the firm in Rochester, NY.

Greg Kedderis has received his PhD in biochemistry from Northwestern University Medical School in Chicago. He is a postdoctoral fellow at the Chemical Industry Institute of Toxicology in Raleigh, NC.

Peter Krupinsky is a public defender in Los Angeles County, Los Angeles, CA.

Paul Lessard holds the post of chief of the department of engineering for the 102nd Air National Guard. He resides in North Truro, MA, with his wife, Noreen, and two children.

Jay Manning works for Megatest in Wakefield, MA.

Penny McLean is currently a senior engineer in the Tech Photo Division of Polaroid providing manufacturing technical support to the 4x5/Roll Film Manufacturing Group. She is headquartered in Waltham, MA.

John Moroney, Jr., is employed as operations manager at Microwave Associates, Burlington, MA. He lives in Boston.

Still with Riley Stoker, Worcester, **John Scott** serves the company as a proposal engineer.

Michael Whelan works as a clinical engineer at the University of Massachusetts Medical Center, Worcester.

1977

MARRIED: Gordon Walton, III, and Rhonda K. Carlson in Houston, TX, on May 29, 1982. The bride graduated from the University of Houston and is a software design engineer for Texas Instruments, Houston, where her husband is an electronic design engineer. Walton holds a master's degree from Northwestern University, Evanston, IL.

E. J. Betti serves as a stress analyst for Bechtel (subcontractor) in Ann Arbor, MI.

Robert Cataldo is a programmer-analyst for the Hartford Insurance Group of ITT in Hartford, CT.

Bill Cunningham is now in marketing in the commercial division of Meditech in Cambridge, MA. This spring he not only graduated with his MBA from Tuck School, Dartmouth, he was selected by the members of his class to be guest speaker at the graduates' investiture service.

Gary Davis works as a systems analyst for Dialcom, Inc., of Silver Spring, MD. He also is a student in motion-picture production at the University of Southern California.

Elizabeth Ernst continues with the department of engineering at Inco Electro Energy, Madison, WI.

Kenneth Fox is a senior account associate at the Foxboro Co., West Hartford, CT.

Eric Hertz is employed as a staff supervisor at AT&T Long Lines in Bedminster, NJ.

Robert Hyland is a research associate at Hahnemann Medical College and Hospital in Philadelphia.

Todd Leen continues as a graduate student in the department of physics at the University of Wisconsin in Milwaukee.

Jim Leighton, formerly with Raytheon, Reading, MA, has taken a new post in navigation systems analysis at Analytic Sciences Corporation. The Leightons have purchased a condominium and still enjoy sailing their 25-ft. sailboat.

Stuart Merrell is a design and estimating engineer at Reisner Metals, Southgate, CA.

Bruce Minsky has received his MD degree from the University of Massachusetts, Worcester. For his residency, he is specializing in radiation oncology at New England Deaconess Hospital, Boston.

Daniel Rodrigues serves as a software design engineer at Simplex Time Recorder Co., Gardner, MA. He and Maryann have two children and reside in Lunenburg.

Continuing with GTE Sylvania, **Amy Schneider** is currently a senior programmer for the company in Danvers, MA.

J. Gilbert Wilson, III, holds the position of manager of sales engineering at Varco Pruden Buildings in St. Joseph, MO.

1978

MARRIED: Thomas Monroe and Denise Fournier in Mansfield, RI, on April 17, 1982. The bride graduated from Westfield (MA) State College and is a special-needs teacher in Foxboro. Monroe serves as a senior project engineer for Johnson Controls at the Seabrook nuclear power plant in New Hampshire. . . . **Carla L. Smith** and David Gamari on May 1, 1982 in New Castle, NH. Mrs. Gamari graduated from UNH and received her master's degree from WPI. She is with Digital Equipment Corp. of Bedford. He is a graduate of Hobart College and works for Hybrid Components, Inc., Beverly, MA.

Gerald Baird, Jr., is a captain in the Ordnance Corps for the U.S. Army.

Donald Clemmey has been promoted to actuarial assistant at State Mutual Life Assurance Co. of America in Worcester. He joined the firm as actuarial associate in 1979. This year he earned his associate designation in the Society of Actuaries.

Jeffrey Firestone holds the post of level II designer for ground support equipment and electrical systems at Rocketdyne, Canoga Park, CA.

Don Fontaine works as a sales engineer at

Electro-Craft in Hopkins, MN.

Bryce Granger is a project engineer at McNeil Akron, Inc., Akron, OH.

Ruth Heselbarth serves as a senior accountant (CPA) at Peat, Marwick, Mitchell & Co., Boston.

Osamu Kimura holds the post of utility construction management specialist for the New York State Public Service Commission.

Carl Klein graduated from Harvard Business School in June. This fall he starts work as an associate in Fleet Venture Resources, Providence, RI.

Terry Landers, a data base manager at the New England Telephone Co., spoke at Dedham (MA) High School in March on "Careers in Engineering."

Laura Mattick, still with Procter & Gamble, was recently promoted to mechanical department manager at the St. Bernard soap and detergent plant. She has responsibility for 15 craftsmen, nine production lines and a $1.8-million productivity improvement project.

Alok Misra writes that he is the sole proprietor (computer consultant) for ACM Software, Burlington, MA. He is also a graduate student at MIT.

Anthony Raymond is a senior engineer in storage systems at Digital Equipment Corp., Maynard, MA.

Robert Sherburne continues as a graduate student at the University of California, Berkeley.

Ken Swenson works for General Ionex in Newburyport, MA.

Karlis Viceps is an environmental engineer at Energyscapes, Taos, NM.

John Wallace is on the technical staff at Bell Labs, Naperville, IL.

Randall Wyatt is a project engineer at GE in Collingdale, PA.

1979

MARRIED: Roland Brooks and Cornelia Moore recently. The bride, a secretary, graduated from the State University of New York at Delhi. Brooks is now a teaching assistant in the CAB Labs at WPI. . . . **Garrett A. Chace** and Dianne M. Parker in Tiverton, RI, on June 12, 1982. Mrs. Chace graduated from Quinsigamond Community College, Worcester. Her husband is with Killingly Building Products, Dayville, CT. . . . **Mark J. Groves** to Barbara G. Sweeney on May 8, 1982 in Cumberland, RI. Mrs. Groves graduated from Becker. The bridegroom has an MSEE from Syracuse University and is a system engineer at Simmonds Precision in Vergennes, VT. . . . **Carolyn Jones** and 1st Lt. John Kikuchi, an electrical engineering graduate from the University of California at Berkeley, on October 24, 1981. The bride is still stationed at Brooks AFB, where she is an AF acoustics consultant.

Dean Bogues is a sales representative for Hewlett-Packard in Lexington, MA.

Scott Booth works as an assistant project engineer for Turner Construction Co. and lives in Burnt Hills, NY.

Stephen Caputo holds the post of district sales manager at GE in Milwaukee.

Robert DeMarco is now a diagnostic imaging sales representative in GE's medical systems sales and service operation, Syracuse, NY.

In June, **Douglas DeSimone** returned from studying at the Biocenter in Basel, Switzerland. He spent the summer at the Marine Biological Laboratories in Woods Hole, MA. This fall, he is working in a PhD program in biology at Dartmouth College, Hanover, NH.

Stephen DiPietro has been awarded a master's degree in nuclear engineering at MIT. He is employed at the Bettis Atomic Energy plant in West Mifflin, PA.

Alwyn Fitzgerald plans to attend UMass, Amherst, this fall, to study full-time for his MBA degree.

Peter Greer is a pilot plant engineer for American Cyanamid in Stamford, CT.

Claire LaChance is a member of the technical staff at Mitre Corp., Bedford, MA.

Thomas Lau serves as a programmer at Subliprint Far East, Ltd., Hong Kong.

William Newhard is with Honeywell in Billerica, MA. He and his wife, Linda, live in Lincoln.

Keith Payea works as a test engineer for the John Fluke Mfg. Co., Inc., Everett, WA.

Dusan Petranovic is a lecturer at the University of Titograd in Yugoslavia.

Formerly with Procter & Gamble, **Steve Rusckowski** is now a graduate student at the Sloan School, MIT.

Carl Rutigliano holds the post of product engineer at Anderson Greenwood & Co., Houston.

Richard Schneider is employed by Texas Instruments, Attleboro, MA.

In May, **Edward Tidman, III,** received his MBA from Babson College with high distinction. He is with the commercial loan division at Mechanics Bank in Worcester and plans to attend Suffolk Law School.

Philip Turek holds the post of production planner for Parker Hannifin in Wickliffe, OH.

Paul Wrabel is a manufacturing process engineer at Babcock & Wilcox, Barberton, OH.

1980

MARRIED: William J. Keville, III, and Ann M. Lynn in Stamford, CT, on May 8, 1982. The bride graduated from Stamford High School and is employed at St. Joseph Hospital. . . . **Gary C. Sawicki** and Penny A. Pullinen on May 1, 1982 in Ludlow, VT. Mrs. Sawicki graduated from Becker and is a physical therapy assistant. Sawicki works for Texas Instruments, North Attleboro, MA. . . . **Frank P. Sloan, Jr.,** and Mary L. Pettis on May 9, 1982 in Holden, MA. Mrs. Sloan graduated from Wachusett Regional High School and is employed at American Screen Printers in Leominster. Her husband is with Norton Company, Worcester. . . . **James J. Wilbur** and **Claudia A. Huehmer** in Hudson, MA, on June 6, 1982. The bride is studying for her master's degree at WPI. Wilbur serves as a fire protection engineer for the Kemper Insurance Co.

BORN: to Eileen and **Art O'Leary** a son, Arthur James Bernard, on November 19, 1981. Art is a mechanical engineer at Artisan Industries, Inc., Waltham, MA, and Eileen works part-time at Sentry Insurance, Concord. . . . to Judy Gemma-Sjostedt and **John E. Sjostedt** their first child, Peter John, on May 24, 1982. John is still employed as a chemical engineer at Du Pont's Washington works, West Virginia plant. The baby's grandfather is **Rowland Gemma, SIM'79,** chief estimator at Morgan Construction Company, Worcester.

John Apostolou serves as a sales and development representative at Du Pont in Nashville, TN.

Keith Brown is an environmental engineer at Ecology & Environment, Inc., Woburn, MA. Formerly he was with Cullinan Engineering.

Michael Cheamitru is employed as a structural engineer at the David W. Taylor Naval Ship R&D Center, Bethesda, MD.

Duane Delfosse, an associate manufacturing engineer at IBM, lives in Mountain View, CA.

Michael Gariepy is a senior process engineer in semiconductor processing at Advanced Microdevices, Sunnyvale, CA.

David Gura serves as a senior field engineer for Schlumberger Well Services in Corpus Christi, TX.

Thomas Hogan is a hardware engineer at Prime Computer, Inc., Framingham, MA.

Rango Keshavan has a new post as an electrical engineer with the strapdown systems design group at Litton Guidance and Control, Woodland Hills, CA.

William Lee, Jr., works for Stone & Webster in Boston.

Mark Lefebvre is now a test engineer technologist at Teradyne, Inc., Boston.

Linda McInnis continues as a hardware technical writer at Computervision, Bedford, MA.

Maryellen McLaughlin is a staff engineer at HDS, Inc., Reston, VA. She is also attending Virginia Polytechnic Institute part-time, studying for her MSEE.

John Natalizia has been elected vice president of the Providence (RI) Gas Company, a wholly-owned subsidiary of Providence Energy Corporation. He joined the firm in 1975 as a statistical analyst and was subsequently promoted to director of rates and assistant vice president. A graduate of Boston College, he holds a master's degree from WPI.

Rosemary Murphy O'Brien entered Tufts University Graduate School in September to study chemical engineering. For the past two years, she has been with Critical Fluid Systems at A.D. Little.

Michael Parulis is a nuclear construction engineer for the General Dynamics Electric Boat Division in Groton, CT.

Cathryn Ricci serves as a packaging engineer at Digital Equipment Corp., Hudson, MA.

Matthew Rubano is an associate engineer at Northeast Utilities, Hartford, CT.

Peter Sherer is employed as a machine design engineer at Kodak, Rochester, NY.

Richard Stephens was recently promoted to regional sales manager of the fluid drives and controls division for the Northeastern part of the U.S. at Dana Industrial Group, Paramus, NJ.

Thomas Storey is now a fire protection engineer at Public Service Electric & Gas, Hancocks Bridge, NJ.

James Sweeney, III, is employed as a systems analyst in GE's Energy Applications Program Department, Schenectady.

Alan Weeks works for GE's Mechanical Drive Turbine Department in Fitchburg, MA.

William Woishnis is a manufacturing engineer at Hewlett-Packard in Palo Alto, CA.

John Zagorski is a PhD candidate in the department of biochemistry at the University of Massachusetts in Amherst.

1981

MARRIED: John F. Brady, 3rd, and Anne Pepe on April 16, 1982. The bride graduated from Immanuel College with a BS in political science and Spanish. She holds a teaching certificate in elementary education. Brady is employed as an electrical engineer at Texas Instruments, Dallas. . . . **John T. Eagan, Jr.,** and Marie A. Wooley in New Milford, CT, on May 1, 1982. Mrs. Eagan, who is with a Dallas, TX, real estate firm, graduated from New Milford High School. The groom is a mechanical design engineer at Texas Instruments, Dallas. . . . **Ralph Malboeuf** and Diane M. Motta in Provincetown, MA, on May 1, 1982. Mrs. Malboeuf graduated from Becker. He is an electrical engineer in Long Island, NY, and is also studying for his master's degree at Hofstra University.

James R. Morin and Darcy A. Boyea in Marlborough, NH, on May 21, 1982. The bride graduated from Bay Path Junior College, Longmeadow, MA, and is a legal secretary in Milford. Her husband serves as a manufacturing engineer in Milford at Hitchner Manufacturing Co. . . . **Gregory J. Phipps** to Ingrid I. Rasmanis in Providence, RI on May 1, 1982. The bride graduated from the University of Rhode Island and works for Data Resources, Inc., Lexington, MA. Phipps is an applications engineer at Automatix, Inc., Burlington.

Doug Anderson serves as a test and service field engineer for Koppers Co. in Baltimore.

Donald Calawa continues as a graduate assistant in the electrical engineering department at WPI.

Thomas Connerton serves as a project manager at Topper & Griggs Steel Co., Inc., Plainville, CT.

Jeanne Coughlin has been employed as a junior process engineer at IBM in Endicott, NY.

Mark Feeney has joined Daniel O'Connell's Sons, Inc., Holyoke, MA.

Jorge Garcia is with Texaco, Inc. of Panama.

Edward Gonsalves works for Texas Instruments, Attleboro, MA.

Robert Gottberg serves as an associate engineer at IBM in Poughkeepsie, NY.

Webb Grouten, Jr., is a field planning engineer at Stone & Webster in Piketon, OH.

Waleed Hajjar works as a senior engineer for Advanced Technology Lab., Bellevue, WA.

Robert Hevey, Jr., is an associate engineer at Electric Boat in Groton, CT.

Ladan Homayoon, who is studying for his master's degree in engineering, is a teaching assistant at Cornell University, Ithaca, NY.

Thomas Hyrniewicz serves as a programmer for Donnelley Marketing Information Services in Stamford, CT.

Charles LaBrec is a teaching assistant in the physics department at Purdue University in West Lafayette, IN.

Cynthia Lozeau is with Corning Glass Works, Corning, NY, where she is employed as a mechanical engineer.

Dr. **Paul McLaughlin** is a senior analytical chemist with Sterling Drug, Rensselaer, NY.

John Norton is a chemical engineer at the Naval Ordnance Station, Indian Head, MD.

Michael Patz is a research associate at New England Nuclear, North Billerica, MA.

Jeffrey Petraitis is employed as a product design engineer at Texas Instruments in Attleboro, MA.

Stuart Ross is employed as a project engineer at CBS Technology Center, Stamford, CT.

Stanley Siver serves as a naval aviation intelligence officer for the U.S. Navy.

David Thompson works as a lab technician at Riogen, Cambridge, MA.

Marc Trudeau is a sound engineer at Peavey Electronics, Inc. in Meridian, MS.

Thomas Weaver serves as a scientific programmer at Cabot, Billerica, MA.

Mark Wilcox is a systems engineer at IBM in Hartford, CT.

1982 WPI Alumni Directory

An up-to-date listing of all living alumni, including their residence and business addresses, is available by contacting:

WPI Alumni Office
Institute Road
Worcester, MA 01609
(617) 793-5600

The cost is $13.95 postage paid.

1982

MARRIED: Arthur P. Christian, 2nd, and Diane M. Caswell on June 12, 1982 in Suffield, CT.

Ronald Alexander has been employed as a software engineer at Prime Computer, Inc., Framingham, MA.

The Foxboro Co., Foxboro, MA, has hired **Glen Bashian** as an electronic product engineer.

Jane Bebar is with IBM in Endicott, NY.

Thomas Berard serves as a management trainee at New England Telephone, Boston.

Craig Brock has joined Hamilton Standard, Windsor Locks, CT.

Jane Bulejcik is now with EUA Service Corp., Lincoln, RI.

Digital Equipment Corp., Tewksbury, MA, has employed **James Cahill** as a software engineer.

Brian Chase works as a field engineer at Turner Construction Co., Boston.

Deborah Chichlowski is currently a quality engineer at Digital Equipment Corp., Westminster, MA.

Carl Cianci works for Electric Boat, Groton, CT.

Scott Connally has been named a member of the technical staff at Hughes Aircraft Co., Fullerton, CA.

Terry Crook has joined Hamilton Standard, Windsor Locks, CT as a field service engineer.

Martin Curry is now a project engineer at Procter & Gamble, Cincinnati, OH.

Lynne D'Autrechy has been named a member of the technical staff at Bell Laboratories, Piscataway, NJ.

James Diemer is a research assistant in the CE department at the University of Illinois in Urbana.

Lawrence Donohue, Jr., is a manufacturing engineer at the Torrington (CT) Co.

Robert Edwards is with the ground systems group at Hughes Aircraft Co., Fullerton, CA.

Currently, **Richard Ferron** is a teaching assistant at WPI.

Gregory Fitzgerald has joined the Sylvania Systems Group, Communication Systems Division, at GTE in Needham Heights, MA.

Eric Fredrickson works for GE in Waterford, NY.

Cynthia Gagnon has joined Bell Laboratories in Holmdel, NJ.

Sharyn Germata works as a cost analyst at Chase in Westboro, MA.

Michele Giard is employed at Exxon in Houston.

Stephen Griffin holds the post of design engineer at Hamilton Test Systems in Tucson, AZ.

Jeffrey Gross has joined Intel Corporation in Chandler, AZ.

Edward Hinton is a member of the technical staff at Wang Labs, Inc., Lowell, MA.

Richard Hoft serves as a design engineer at Microwave Associates.

John Iannarone is employed by Digital Equipment Corp., Tewksbury, MA.

Michael Iassogna has joined Du Pont, Wilmington, DE, where he is a project engineer.

David Johnson is now concerned with business installations at New England Telephone in Worcester.

Stuart Joseph has joined Yankee Atomic Electric Co., Framingham, MA.

Peter Kearney serves as a test engineer at Analog Devices, Wilmington, MA.

Jolanta Klepacz is an industrial engineer at Kodak, Rochester, NY.

Michael LaFleur has joined Tau-Tron in Chelmsford, MA.

State Mutual, Worcester, has employed **Robert Mitchell** as a student actuary.

Stephen Morgan is now with Pratt & Whitney Aircraft, Hartford, CT.

Thomas Neale works as an electronic engineer at Intel Corp., Santa Clara, CA.

Robert Neville is a nuclear engineer at Palo Verde Nuclear Generating Station, Phoenix, AZ.

Richard Nicholson works for Sanders Associates, Nashua, NH.

Kevin Nute, an electronic engineer, is also with Sanders Associates.

Lynne Ondek is in the advanced engineering program at Honeywell Small Systems and Terminals Division, Billerica, MA.

Richard Petrucci has joined Stone & Webster, Boston.

Bell Labs, Piscataway, NJ, has employed **Ronald Pettit** as a member of the technical staff.

William Poe is enrolled at Tufts University School of Medicine, Boston.

Mark Ramberg has begun work at Teradyne Co., Boston.

Chris Reeve serves as an associate industrial engineer at Data General in Southboro, MA.

Marc Yaffe is now in pilot training at Vance AFB in Oklahoma.

SCHOOL OF INDUSTRIAL MANAGEMENT

MARRIED: Jeffrey B. Ray, '78, and Debra L. Sutcliffe in Shrewsbury, MA, on April 3, 1982. The bride, a graduate of Leo's Beauty Institute, Worcester, is a hairdresser. Her husband graduated from Nathaniel Hawthorne College,

Antrim, NH, and holds the post of vice president of Barco Mfg., Inc., Worcester.

Stephen McCabe, '64, has been elected vice president of operations at Armatron, International, Inc., a publicly-owned company in Melrose, MA. The firm manufactures electronic bugkillers and electric log-splitters, radios for tractors and buses, satellite TV receivers and CB and amateur radio antennas. McCabe has directed operations at Armatron since 1979. During his 22-year career at Norton Company, he was a director of operations and manager of manufacturing.

John McCarthy, '65, has been appointed director of management information systems at Wyman-Gordon Co., Worcester. Responsible for systems and data processing at all company plants, he joined the company in 1956 and has worked in several data processing jobs. Most recently, he was manager of systems for the eastern division. . . . **Ralph Bednarik, '74,** has also been promoted at Wyman-Gordon. Currently, he serves as manager of operations of the eastern division at the Grafton plant.

NATURAL SCIENCE PROGRAM

Arthur Gage, '72, continues as a physics teacher at Agawam (MA) High School. He and his wife, Margaret, have two children. . . . In June, **Peter Johnson, '78,** who taught high school biology in Attleboro, MA, for seven years, became a medical doctor in graduation ceremonies at the University of Massachusetts. The father of three quit teaching full-time in 1978 to go to medical school. He helped support his family with a string of part-time jobs. Now, Johnson plans to go into internal medicine.

COMPLETED CAREERS

Correction: We reported erroneously in the August *Journal* that **A. Hugh Reid, '11,** and **James K. Healy, '35,** had passed away recently. Both are alive and well. In fact, Mr. and Mrs. Hugh Reid recently celebrated their 70th wedding anniversary! We sincerely regret any distress or inconvenience which this misprint may have caused these alumni, their families or friends.

Mrs. **Esther Kisk Goddard,** widow of Dr. **Robert H. Goddard, '08,** America's pioneer rocket scientist, died at her home in Worcester on June 5, 1982. She was 81 years old.

Dr. Goddard, who launched the world's first liquid fuel rocket, died in 1945. Following his death, Mrs. Goddard, a Worcester native, edited his papers, obtained patents on many of his inventions and lectured and traveled worldwide to receive honors on his behalf.

After attending Bates College, Mrs. Goddard graduated from Johns Hopkins University and Clark University. Later she became secretary to the president of Clark, where she met her future husband and assisted him during his earliest experiments in rocketry. In 1966 she was honored as the "first missile-tracking photographer" by a chapter of the Society of Photo-Optical Instrumentation Engineers.

Others honors included: "Woman of the Year" (Worcester Business and Professional Women's Club), "Mrs. Goddard Day" (WPI), honorary membership in the American Rocket Society and degrees from Clark University, Anna Maria College and the University of Maryland. In 1969, she became the first woman ever awarded an honorary doctor of science degree from WPI.

Charles F. Goldthwait, '09, one of the country's premier textile chemists, died in Pittsburgh, PA, on April 29, 1982. He was 96.

During his career he was with Klearflax Linen Looms and Baltimore Processing Co. and served as a senior industrial fellow at Mellon Institute, Pittsburgh. Also, he was with the South Regional Research Lab, USDA, in New Orleans and a visiting professor at North Carolina State College in Raleigh.

Until four years ago, he performed research on virtually all natural and man-made fibers. His final articles appeared in the official journal of the American Association of Textile Chemists and Colorists, of which he was a charter member. He developed a semi-elastic cotton gauze bandage for military use which is now commercially available.

Four times he was honored for his work with the USDA. He was the inventor of the differential dye test for maturity and processing quality of cotton fiber in the boll. In "retirement" at North Carolina State, he developed stretch cotton fabric—of considerable importance to cotton manufacture in this country.

John J. Desmond, '14, of Rochester, NY, passed away on April 28, 1982 at the age of 91.

Graduated as a chemist from WPI, he worked for the Henry Souther Engineering Co. and Bridgeport Brass Co. and served in the U.S. Army from 1917 to 1919. From 1919 to 1955 he was with North East Electric Co., where he rose to chief chemist and metallurgist, staying with the firm as Delco appliance division director when General Motors acquired North East.

Mr. Desmond was a life member of the American Society for Metals, and a past president of the Rochester chapter, as well as a past member of the American Chemical Society. He had served as president of the Rochester chapter of the WPI Alumni Association and as WPI Council representative from 1953 to 1958. A native of Fall River, MA, he was born on May 3, 1890.

John M. Bond, '15, of Lakewood, NJ, died on March 3, 1982.

A native of Providence, RI, "Jig" was born on April 23, 1892. Graduated as an electrical engineer, he worked a short time for American Steel & Wire, Worcester. Other employers were National Carbon Co., Westinghouse and the New York City Transit Authority.

During his career, he developed and patented an electric snow melter for track switches which became a standard device in subway systems. In 1918 and 1919 he served with the U.S. Naval Reserve and was assigned to the Experimental Station in New London, CT, developing anti-submarine devices.

A member of Phi Sigma Kappa, Mr. Bond also belonged to the New York Railroad Club, AIEE and the American Electric Railway Association.

Warren W. Parks, '17, WPI trustee emeritus, died in Cincinnati, OH, on August 5, 1982.

Born in Russell, MA, on February 14, 1896, he received his BSCE in 1917. Later he was with Durkee, White & Towne, Boston & Albany Railroad and Fay, Spofford & Thorndike. From 1943 to 1966, he was village manager of Indian Hill, OH.

As a former resident engineer of the town of Mariemont, he was responsible for the building of one of the first English-Norman style churches erected since the 12th Century.

Besides serving as a church trustee, Mr. Parks provided leadership in many professional societies. In 1961 he was named Engineer of the Year by the Technical and Scientific Societies Council of Cincinnati. He was a past director of ASCE (life member) and past president of the Ohio Municipal League. He was an honorary member of Tau Beta Pi and the father of Russell Parks, '41.

Arnold H. Woods, '18, a former insurance executive, died on June 3, 1982 in Allentown, PA, at the age of 85.

A civil engineer, he joined the State of Illinois Highway Department. Later he was employed by the Stock Co. Inspection Bureau and Improved Risk Mutuals. In 1945 he founded the former Arnold H. Woods Insurance Agency in Allentown.

Mr. Woods belonged to the Society of Fire Prevention Engineers and Tau Beta Pi. He was a past president of the Lehigh Association of Insurance Agents in Allentown and an original member of the Certified Property and Casualty Underwriters. During World War I he served as an officer in the U.S. Navy. He was born on May 16, 1897 in Lunenburg, MA.

Percy G. Sharpe, '20, died on April 18, 1982 in Atlantis, FL. He was 83 years old.

A native of Ware, MA, he was employed for 42 years by the Marlboro Savings Bank, which he served as assistant treasurer. He retired in 1968. He belonged to the Baptist Church and the Masons.

Lawrence K. Hyde, '22, of Gladwyne, PA, formerly the assistant to the vice president of Baldwin-Lima-Hamilton Corp., died suddenly on June 3, 1982. He was born on April 6, 1901 in Westfield, MA.

During his career, he was with the National Bureau of Standards and O.S. Peters Co. (president), Washington, DC, and McCollum Exploration Co., Houston, TX. For 30 years he was employed by Baldwin-Lima-Hamilton Corp., Waltham, MA. After retirement from the latter firm, he served as manager of the Testing Machine Division at Wiedemann Machine Co. in King of Prussia, PA.

Mr. Hyde belonged to ATO and earned his BSME at George Washington University. Other memberships included Sigma Tau, ASM, ASTM, ISA and the Washington Society of Engineers. He was a registered professional engineer in Washington, DC. He was a former

vice president of Civitan International (DC), a past president of the Washington chapter of the WPI Alumni Association and the father of **John Hyde, '56.**

Donald McAllister, '23, of Palos Verdes Estates, CA, a former employee of Robertshaw Controls, died on March 28, 1982.

He was born on May 8, 1902 in Adams, MA, and received his BSME from WPI, where he belonged to ATO and Skull. He worked for T.K. McAllister & Co., and General Fibre Box Co., both of Springfield, MA, as well as Worthington Pump of Holyoke. Other employers were North American Aviation and Grayson Controls in California. He was retired from Robertshaw Controls of Long Beach. An Army veteran, he rose to the rank of major.

Harold P. Latimer, '25, a long-time employee of Simonds Saw & Steel, Fitchburg, MA, passed away on January 31, 1982.

A graduate mechanical engineer, he joined Simonds, where he retired as a sales engineer in 1960. Later he was with Industrial Supplies, Inc.

Mr. Latimer, a 32-degree Mason and Shriner, belonged to Phi Sigma Kappa and Skull. He resided in Laguna Hills, CA, and was born on February 12, 1903 in Leominster, MA.

Paul R. Nelson, '30, a former control engineer at Norton Co., died on June 15, 1982 in Cape Cod Hospital, Hyannis, MA. He was 79.

He received his BSEE from WPI. For 35 years, until his retirement in 1960, he was with Norton Co., Worcester, which he served as a manufacturing control engineer.

Mr. Nelson was born on November 27, 1902 in Worcester. Besides attending Bates College, Lewiston, ME, he did graduate work at Boston University. He belonged to Phi Sigma Kappa, the Norton 25-Year Club and the Norton Foreman's Club. He was past master of Montacute Masonic Lodge.

Warren N. Doubleday, '31, Quabbin Reservoir historian, died at his home in New Salem, MA, on May 2, 1982 at the age of 72. He was born in North Dana, MA, on February 8, 1910.

Graduated as an electrical engineer, from 1934 to 1937 he was an engineer for the Quabbin Reservoir project, in which his hometown, North Dana, was flooded. Prior to his retirement in 1972, he was a civilian employee for the Department of Defense Air Force Eastern Communications Region.

Mr. Doubleday was a well-known Quabbin Reservoir historian. He often lectured about pre-flood days in the area and had memorabilia which he displayed. A past president of the Swift River Valley Historical Society, Mr. Doubleday had also been a trustee of New Salem Academy and a member of the Congregational Church, the Masons and Lambda Chi Alpha.

Manning Holoff, '33, president of Manning Holoff Co., manufacturers of Magna-Lite, Los Angeles, CA, passed away on March 28, 1982.

A Worcester native, he was born on March 27, 1911. After graduating as a mechanical engineer from WPI, his employers included Pratt & Whitney and Ranger Aircraft. In World War II he was chief production engineer with Rolls Royce, then works manager at Indian Motorcycle in Springfield, MA, and production manager with McCulloch Motors in California.

Later he formed Holoff Construction Co., and built custom homes in the Los Angeles area. In the 1970s he developed Magna-Lite, an improved lighted magnifying glass, and founded his own firm to manufacture the product. Recently he designed a large reader now sold worldwide.

William F. Atwood, Jr., '36, formerly of Waltham, MA, died recently.

He was born on July 27, 1913 in Waltham. During his career he was with General Dyestuff Corporation, Boston, D.E. Cummings Co., Newport, ME, and Pacific Mills, Lawrence, MA. Also he worked for the Boston Naval Shipyard and the Philadelphia Naval Shipyard. He received his BS from WPI in 1936.

Marvin Handleman, '41, a retired chief engineer for the American Forces Network in Berlin, West Germany, died in Hyannis, MA, on June 17, 1982. He was 63 years old.

Mr. Handleman was born on August 6, 1918 in Paxton, MA. In addition to WPI, he attended the RCA Institute in New York City. During World War II, he was in the U.S. Army Signal Corps in Europe. From 1946 to 1948 he was with his family's real estate management business. Later he joined Radio Free Europe as an electronics engineer and then the American Forces Network in Berlin as chief engineer. He belonged to the Institute of Radio Engineers and the IEEE.

Stanley S. Ribb, '41, the recently retired president of Blackstone Valley Electric Co., died in Pawtucket, RI, on June 4, 1982 at the age of 64.

An electrical engineer, he joined General Electric, staying with the firm until 1959, when he went with Blackstone Valley Electric. In 1961 he was named chief engineer, in 1968, vice president and in 1971, president.

Mr. Ribb was a native of Worcester and a member of Sigma Xi. He belonged to the Rotary Club, the Masons, the Rhode Island Commodores, the Providence Engineering Society and the Electrical League of Rhode Island.

Active with the Boys' Club and Community Library Association, he was also a past chairman of the Providence AIEE section and a former vice president of the Rhode Island chapter of the WPI Alumni Association. During World War II he was with the U.S. Navy.

John H. Quinn, Jr., '42, of Santa Rosa, CA, passed away recently.

He was born on July 19, 1920 in Fitchburg, MA. After receiving his BSME, he joined NACA, Langley Field, VA, as an aerodynamics research scientist. Later he was employed by Chance Vought Aircraft and Temco Aircraft. After leaving Lockheed Missiles & Space Co., Sunnyvale, CA, and Martin Co., Denver, he went with McDonnell-Douglas Astronautics from which he retired in 1976 following 34 years of continuous employment in aerospace.

One of the highlights of his career came when he helped load the first Polaris submarine.

Frank S. Jurczak, '50, died unexpectedly on June 10, 1982 in New Britain (CT) General Hospital. He was 58 years old.

Before retiring in 1981, he had been employed by United Technologies Corp. and its subsidiaries for 31 years. While with the firm, he served in various capacities, including test engineer for Pratt & Whitney Aircraft, East Hartford and as manager of control systems at Turbo-Power & Marine, Inc., Farmington.

He was a past grand knight for the Knights of Columbus. Besides being involved with Scouting, he belonged to Phi Kappa Theta, Tau Beta Pi, Sigma Xi and the ASME. He was a World War II Army veteran, was born on December 16, 1923 in New Britain, CT, and received his BSME from WPI.

John E. Leach, '53, class head agent, died of an apparent heart attack at his home in Fort Madison, IA, on May 29, 1982.

He had been plant manager for Du Pont in Fort Madison for the past six years, having originally joined Du Pont in 1953 in Philadelphia. During his career with the company he held numerous manufacturing and technical assignments. He was mainly involved with making paint and allied polymers.

Recently, Mr. Leach was instrumental in Du Pont's donating land for a proposed Fort Madison branch library. He was also a member of Sigma Phi Epsilon, the Elks and the local country club. A native of Rockingham, VT, he was born on October 3, 1931. He received his BSCE from WPI in 1953 and then served with the U.S. Army.

Lt. Col. **Thomas J. Merchant, SIM'62** U.S. Army Ret., died June 23, 1982 in Worcester at age 60.

He was born in Westboro, MA, graduated from Wentworth Institute and did graduate work at WPI, Holy Cross and MIT. Since 1949 he had worked for Bay State Abrasives, Westboro, MA, where he was an environmental and safety coordinator.

Mr. Merchant was a veteran of the U.S. Army Corps of Engineers and saw action in World War II and Korea. He belonged to the American Society of Safety Engineers, the Reserve Officers Association (DC) and several other military, church and community organizations. He had belonged to the Westboro town advisory board and had served as chairman of the board of selectmen.

Roger W. Williams, '65, a long-time employee of General Electric Co., died at his home in Lunenburg, MA, on May 21, 1982 at the age of 44.

After graduating from the University of Maine, he received his MSME from WPI. He worked for 22 years as a mechanical engineer at the GE plant in Fitchburg and was the recipient of the GE Electric Power Systems Sector Award in 1979.

Mr. Williams was also affiliated with Tau Beta Pi, the ASME and the Elfun Management Association and was a registered engineer and land surveyor in Massachusetts. He was born in Westbrook, ME.

Joel S. Schoenholtz, '68, of Upper Saddle River, NJ, passed away in May.

A native of New York City, he was born on March 24, 1945. He graduated as a civil engineer from WPI. During his career, he had been with Bethlehem Steel and Custom Chemical Co., Elmwood Park, NJ, where he was plant manager. He belonged to AEPi and Skull.

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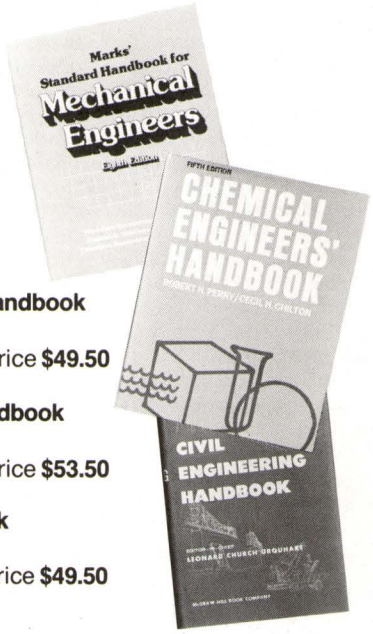

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Plates and Paperweights

Paperweight
Gold-plated seal with red and white enamel detail, mounted on 2" x 2" x ¾" Carrara marble with cork base.
Item **105** **$3.50**

Plate
10¾" Armatale pewter-like service plate with embossed WPI seal.
Item **106** **$17.95**

Ceramics and Glassware

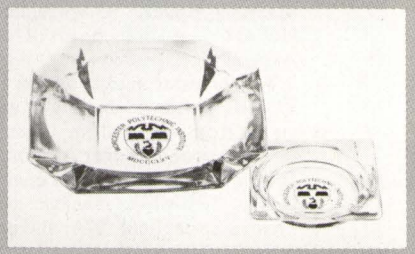
Ceramics and glassware priced per item.
Ceramic items decorated with multi-colored WPI seal.

A. 16 oz. Coed **$8.50**
B. 1½ oz. Mini-mug **$2.95**
C. 32 oz. Jumbo **$9.50**
D. 24 oz. Classic **$8.75**

E. Salt & Pepper shakers **$4.95 pr.**

Ashtrays
Glass with 24kt gold and red WPI seal.

F. 8" size **$4.00**
G. 4" size **$1.95**



Shirts

Hooded Sweatshirt
50% creslan, 50% cotton. White with maroon design. S-M-L-XL
Item **122** **$15.50**

Football Jersey
Stretch nylon knit navy mesh body with white yolk and gold seal. S-M-L-XL
Item **107** **$9.50**

Snoopy Jersey
Interwelt knit, 100% combed cotton. Multi-colored design. S-M-L-XL
Item **108** **$11.50**

Baseball Shirt
50% cotton, 50% polyester. Natural/red. S-M-L-XL
Item **120** **$7.75**

Stuffed Toys

Teddy Bear
Approx. 9" tall
Item **109** **$6.95**

Dog
Approx. 7" tall
Item **110** **$6.95**

Goat
Approx. 8" tall
Item **111** **$7.25**

Jogging Suits

Child's Jogging Suit
Maroon with white trim, cotton/polyester.
Sizes—12 mos., 14 mos.
2T (27-32 lbs) and 4T (33-37 lbs.)

Hooded sweatshirt (not shown)
Item **114** **$8.75**

Long pants (not shown)
Item **115** **$6.25**

Short-sleeved t-shirt (not shown)
Item **116** **$5.75**

Short pants (not shown)
Item **124** **$5.50**

Pennants

Wool Felt Pennants
Maroon with multi-colored seal and gray letters.
Size 12" x 30"
Item **103-A** **$5.95**
Size 9" x 24"
Item **103-B** **$4.95**

Glassware decorated with 24kt gold and red WPI seal.

H. 32 oz. Brandy **$4.95**
I. 24 oz. Brandy **$4.25**

J. 4½ oz. Martini **$3.25**
K. 4½ oz. Whiskey Sour **$3.25**
L. 6½ oz. Wine **$3.50**

M. 15 oz. Executive **$2.70**
N. 11 oz. Executive **$2.50**

O. 15 oz. Dble. Old Fashioned **$2.70**
P. 9 oz. Old Fashioned **$2.25**
Q. 1½ oz. Shot Glass **$1.55**

R. 15 oz. Roly-poly **$2.70**
S. 11 oz. Roly-poly **$2.50**

Order Form

No./ letter	Item	Size	Qnty	Cost	Total

Total
Add 5% Mass. tax if shipped within Mass.
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"Adding two numbers which probably have never been added before is not considered a mathematical breakthrough."

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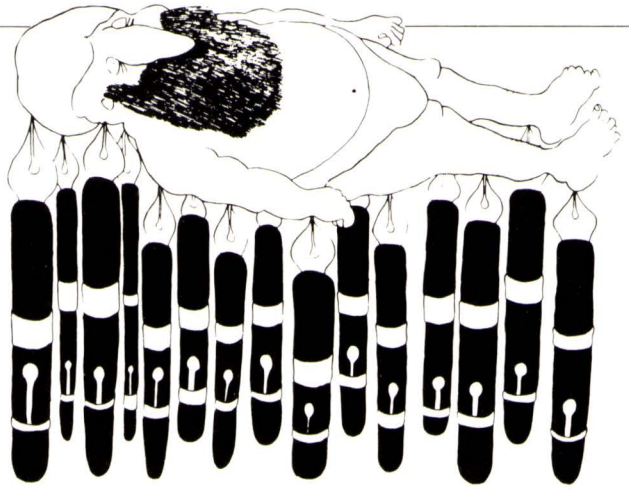
AMPERSAND

Equation Fluency Test

This test does not measure your intelligence, your fluency with words, and certainly not your mathematical ability. It will, however, give you some gauge of your mental flexibility and creativity. In the years since the test was developed, we've found few people who could solve more than half the 24 questions on the first try. Many, however, reported getting answers long after the test had been set aside—particularly at unexpected moments when their minds were relaxed, and some reported solving all the questions over a period of several days. Take this as your personal challenge.

Instructions: Each equation contains the initials of words that will make it correct. Finish the missing words. For example: 26 = L. of the A. would be 26 = Letters of the Alphabet. Correct—at least plausible—answers appear below.



Ralph Brown, Jr.

a. 26 = L. of the A. _____

b. 7 = W. of the A.W. _____

c. 1001 = A.N. _____

d. 12 = S. of the Z. _____

e. 54 = C. in a D. (with the J.) _____

f. 9 = P. of the S.S. _____

g. 88 = P.K. _____

h. 13 = S. of the A.F. _____

i. 18 = H. of a G.C. _____

j. 32 = D.F. at which W.F. _____

k. 90 = D. in a R.A. _____

l. 200 = D. for P.G. in M. _____

m. 8 = S.S. on a S.S. _____

n. 3 = B.M. (S.H.T.R.) _____

o. 4 = Q. in a G. _____

p. 24 = H. in a D. _____

q. 1 = W. on a U. _____

r. 5 = D. in a Z.C. _____

s. 57 = H.V. _____

t. 11 = P. on a F.T. _____

u. 1000 = W. that a P. is W. _____

v. 29 = D. in F. in a L.Y. _____

w. 64 = S. on a C. _____

x. 40 = D. and N. of the G.F. _____

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a. 26 = *L*etters of the *A*lphabet
b. 7 = *W*onders of the *A*ncient *W*orld
c. 1001 = *A*rabian *N*ights
d. 12 = *S*igns of the *Z*odiac
e. 54 = *C*ards in a *D*eck (with the *J*okers)
f. 9 = *P*lanets of the *S*olar *S*ystem
g. 88 = *P*iano *K*eys
h. 13 = *S*tripes of the *A*merican *F*lag
i. 18 = *H*oles of a *G*olf *C*ourse
j. 32 = *D*egrees *F*ahrenheit at which *W*ater *F*reezes
k. 90 = *D*egrees in a *R*ight *A*ngle
l. 200 = *D*ollars for *P*assing *G*o in *M*onopoly
m. 8 = *S*traight *S*ides on a *S*top *S*ign
n. 3 = *B*lind *M*ice (*S*ee *H*ow *T*hey *R*un)
o. 4 = *Q*uarts in a *G*allon
p. 24 = *H*ours in a *D*ay
q. 1 = *W*heel on a *U*nicycle
r. 5 = *D*igits in a *Z*ip *C*ode
s. 57 = *H*einz *V*arieties
t. 11 = *P*layers on a *F*ootball *T*eam
u. 1000 = *W*ords that a *P*icture is *W*orth
v. 29 = *D*ays in *F*ebruary in a *L*eap *Y*ear
w. 64 = *S*quares on a *C*heckerboard
x. 40 = *D*ays and *N*ights of the *G*reat *F*lood